



We inspire
with energy.

Annual Report 2018





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 Reference to other information contained in this report.

 Reference to other information on the internet.

 **GRI** Reference to a sentence or paragraph that contains disclosures in accordance with the Sustainability Reporting Guidelines of the Global Reporting Initiative.

 **GRI** If underlined, the reference indicates a section.

To enhance comprehension, the information provided to meet our reporting obligation pursuant to § 315b and § 315c in conjunction with § 289c to e of the German Commercial Code (HGB) is printed in blue.

MVV at a Glance

SALES

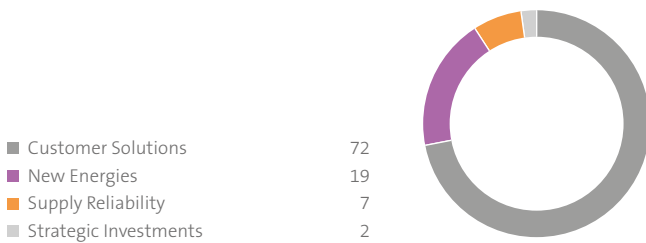
3.9 Euro billion

ADJUSTED EBIT

228 Euro million

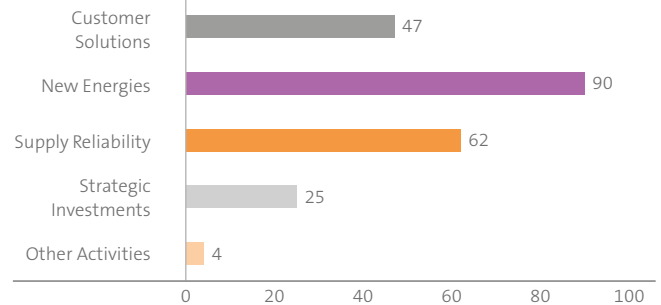
SALES BY REPORTING SEGMENT

Shares %



ADJUSTED EBIT BY REPORTING SEGMENT

Euro million



INVESTMENTS

290 Euro million

2018

MVV in Figures

	FY 2018	FY 2017	% change
Financial key figures			
Sales excluding energy taxes (Euro million)	3,903	4,010	-3
Adjusted EBITDA ¹ (Euro million)	443	407	+9
Adjusted EBIT ¹ (Euro million)	228	224	+2
Adjusted annual net income ¹ (Euro million)	111	107	+4
Adjusted annual net income after minority interests ¹ (Euro million)	94	93	+1
Adjusted earnings per share ¹ (Euro)	1.43	1.41	+1
Dividend proposal/dividend per share (Euro)	0.90	0.90	0
Cash flow from operating activities (Euro million)	331	474	-30
Cash flow from operating activities per share (Euro)	5.03	7.19	-30
Adjusted total assets at 30 September ² (Euro million)	4,152	4,248	-2
Adjusted equity at 30 September ² (Euro million)	1,550	1,490	+4
Adjusted equity ratio at 30 September ² (%)	37.3	35.1	+6
Net financial debt at 30 September (Euro million)	1,075	1,077	0
ROCE (%)	8.5	8.2	+4
WACC (%)	6.3	6.1	+3
Value spread (%)	2.2	2.1	+5
Capital employed (Euro million)	2,674	2,734	-2
Investments (Euro million)	290	194	+50
of which growth investments	124	64	+94
of which investments in existing business	166	130	+28
Non-financial key figures			
Direct CO ₂ emissions (Scope 1) (tonnes 000s)	1,547	1,646	-6
Net CO ₂ savings (tonnes 000s)	485	482	+1
Installed renewable energies capacities (MW)	467	455	+3
Share of renewable energies in proprietary electricity generation (%)	63	56	+13
Concluded development of new renewable energies plants (MW)	1,011	411	> +100
Number of employees at 30 September (headcount)	5,978	6,062	-1
of which women	1,701	1,740	-2
of which men	4,277	4,322	-1
Share of female managers at 30 September (%)	14	16	-13

1 Excluding non-operating measurement item for financial derivatives, excluding structural adjustment for part-time early retirement, excluding restructuring result and including interest income from finance leases

2 Excluding non-operating measurement item for financial derivatives

To Our Shareholders

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Letter from the CEO

DEAR LADIES AND GENTLEMEN,

The future has already begun – with us, at MVV. That is our claim and our reality. After all, we have been aligning MVV to the energy system of the future for years now. Tomorrow's energy will be environmentally friendly, reliable and economical. That is why we have consistently invested in renewable energies, energy efficiency and forward-looking products and services for many years now. All this means that we are an active shaper of the transformation in our energy system.

MVV is working on tomorrow's energy system

Even if MVV's basic focus on the future energy supply is a constant, we are nevertheless developing our company further and adjusting our strategy to current and future changes in the market, the competitive climate and the energy policy framework. We will invest a further total of Euro 3 billion in the years ahead. This way, we are further expanding renewable energies and enhancing energy efficiency both in our own operations and at our customers. We are focusing our growth investments on onshore wind power, biomass, biomethane, photovoltaics, plants that put waste to targeted use and our various customer groups. Our generation portfolio will change and become even greener and more highly diversified. To enable us to measure our performance in this respect, we set ourselves some targets at the beginning of the 2017 financial year. By 2026, we intend to double our own green generation capacity to 850 megawatts.

And because the energy turnaround involves far more than just electricity, we will gradually be reducing the CO₂ intensity of our heating energy supply. Here too, we will be heading for climate neutrality, for example by linking our highly efficient combined heat and power generation with expansion in our environmentally-friendly district heating. Not only that, we are developing innovative services and products to make smart, decentralised energy management possible. In short, we give our customers the tools they need to implement their own energy turnarounds. Alongside that, by 2026 we will press ahead with developing renewable energies plants in absolute figures as well by connecting a total of 10,000 megawatts to the grid. Our targets will also impact positively on the climate. By 2026, we will triple our CO₂ savings in the overall system to one million tonnes a year.

The fundamental transformation in the energy system will present us with challenges in the years to come as well, and many of these will centre on tackling the "big three Ds" of the energy turnaround – decentralisation, decarbonisation and digitalisation.

Renewable energies: cornerstone of the system change

Producing energy from renewable resources is one of our core topics – ever greater volumes of electricity and heating energy are being generated, stored and consumed on location at decentralised plants. Onshore wind power plays a particularly major role here, but solar power is also gaining in significance. Alongside these, we mainly work with biomass. The energy derived from regenerative sources is capable of storage and is CO₂-neutral in terms of its generation. In 2018, we took over a biogas plant in Dresden while another plant of this kind, in this case in Bernburg, is already in the planning stage. In future, it will be about promoting a wide variety of options in this area to enable the complementary strengths of the respective technologies to be drawn on.

Climate protection, but also supply reliability

We need solutions that can guarantee supply reliability, and that also in the current phase of gradually moving from controllable to volatile generation. Despite all efforts to expand renewable energies, for the foreseeable future we will not yet be able to do without conventional energy generation. More than anything, it is now about intelligently connecting the various components. The best example here, and one that will help significantly in making a success of the energy turnaround, is our new gas-powered CHP plant in Kiel, which is due to be connected to the grid in 2019. This power plant can reach full capacity in less than 5 minutes and be powered down just as quickly. That makes it the perfect supplement to generation from renewable energies.

Digital transformation

If we are to align energy production and demand more effectively, we will have to measure generation and consumption in real time and link the two sides of the equation in a smart energy management system. The insights provided by this data will make the energy system even more efficient. And our customers can take part in this process with the innovative products and services we have tailored to their needs. That is why we are complementing our existing skills by forging strategic partnerships with companies in new areas. This way, our customers benefit from a combination of energy industry expertise, software intelligence and broad-based experience.

Slight increase in adjusted EBIT

Our strategic positioning is also reflected in our key figures. In 2018 we again met our target for adjusted EBIT. At Euro 228 million, this was – as forecast at the beginning of the financial year – slightly ahead of the previous year.

This kind of success is only possible with the dedication, expertise and experience of our employees. I would therefore like to take this opportunity, and that on behalf of the whole Executive Board, to express my thanks and respect to them. This strong team gives us every reason to be confident that we will be one of Germany's leading energy companies in future as well.

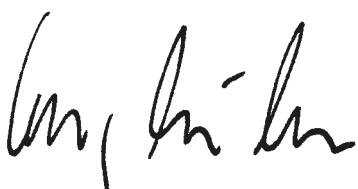
We have the right strategy

The tasks involved in the energy turnaround are challenging and the climate in which we operate will remain dynamic. We are convinced we have the right strategy to seize this transformation as an opportunity and generate long-term growth with the energy turnaround. One aspect of the new climate is that our earnings performance has become more volatile overall – and that not only in our renewable energies project development business. That is something we have to be aware of. After four years of earnings growth, from an operating perspective we expect our adjusted EBIT for the 2019 financial year to roughly match the figure for the 2018 financial year. We will be stepping up investments in our growth and existing businesses. After all, they form the basis for our future earnings.

Despite all the disruptions on the energy markets, we have been able to maintain our continuity-based dividend policy each and every year. That is also true for 2018. The Executive and Supervisory Boards will again propose a dividend of Euro 0.90 per share for approval by the Annual General Meeting on 8 March 2019. That once more corresponds to a high payout ratio of 63 %.

That you – ladies and gentlemen – have placed your trust in MVV is a key factor powering our success. We would like to thank you for this and hope you will remain at our side as we continue our journey towards the energy system of the future.

Yours faithfully,



Dr. Georg Müller
CEO

Executive Board



Dr. Georg Müller

Dr. Georg Müller was born in Höxter in 1963. He gained a doctorate in law and followed this up with a master's degree from the University of Cambridge. Having worked as a lawyer, he came to the energy industry in 1995. His career took him from RWE AG, where he ultimately headed the Legal and Board Affairs department, via a position on the Executive Board at VSE AG (Technology and Sales Director) to RWE Rhein-Ruhr AG, where he was CEO. He has been CEO of MVV Energie AG since 1 January 2009.

Ralf Klöpfer

Ralf Klöpfer was born in Backnang in 1966. He studied electrical technology, majoring in the energy industry, and thus laid a foundation for his subsequent career. This took him from Badenwerk AG to EnBW AG, where he built up EnBW Gesellschaft für Stromhandel mbH and the Energy Industry/Optimisation department at EnBW AG. He later worked as Director of Risk Management at EnBW Trading GmbH and as Spokesman of the Management at EnBW Vertriebs GmbH. After a stint as Managing Partner at enevio GmbH, he was appointed to the Executive Board of MVV Energie AG on 1 October 2013.



Dr. Hansjörg Roll

Dr. Hansjörg Roll was born in Offenburg in 1965. A graduate in chemical engineering, he went on to obtain a doctorate in engineering. After this, he worked at Badenwerk AG and EnBW Ingenieure GmbH as a project engineer and project director for power plant planning. In 2003, he came to MVV and took over the management of the industrial power plants at Gengenbach and Ludwigshafen. He subsequently held further management responsibilities at what is now MVV Enamic GmbH. He then worked as Managing Director at MVV Umwelt GmbH before being appointed to the Executive Board of MVV Energie AG on 1 January 2015.



Supervisory Board Report

Dr. Peter Kurz

Supervisory Board Chairman of
MVV Energie AG



DEAR LADIES AND GENTLEMEN,

In the 2018 financial year, MVV managed yet again to increase its adjusted EBIT compared with the previous year – and that despite the challenges presented to companies by the dynamic developments in the energy market. That gives us reason to be pleased, as it shows once more that MVV has taken the right strategic decisions. Our targeted investments are now bearing fruit. MVV has a forward-looking, competitive structure – also with regard to the increasing digitalisation of the energy world.

Key focuses of Supervisory Board activities

In the year under report, we once again fulfilled all aspects of our duty to advise and supervise the Executive Board. We maintained an ongoing dialogue with the Executive Board throughout the period under report and were kept continuously and comprehensively informed of the latest developments in the energy industry and in energy policy, as well as in the Group's strategic alignment, business performance and situation, including its risk situation and risk management. The Executive Board particularly addressed variances between the business performance and the original planning and provided the reasons for these. Our body discussed investment decisions in great detail. As Supervisory Board Chairman, I was in close contact with the CEO outside of meetings as well in order to discuss current topics and developments.

In the full Supervisory Board and in our committees, we reviewed, questioned and openly discussed all reports and other information provided by the Executive Board. We convinced ourselves of the legality, expediency and correctness of the business management. We were provided with the relevant documents in good time, so that we always had sufficient time to prepare the meetings. Key focuses of our training and development measures included "Heating Vision" and new metering possibilities. Not only that, we visited the grid control room and the trading floor at the Mannheim location. This gave us the opportunity to deepen our knowledge of the associated energy industry topics.

Supervisory Board meetings and attendance

The Supervisory Board held four regular meetings in the 2018 financial year. These were attended by an average of 94% of the members. The German Corporate Governance Code states the expectation that all Supervisory Board members should each attend more than half of the meetings of the full Supervisory Board and its committees; at 91%, our corresponding attendance figure far exceeded this expectation.

Main topics of discussion at Supervisory Board meetings


At our meeting on **7 December 2017**, we prepared the agenda for the Annual General Meeting on 9 March 2018 and voted on the necessary draft resolutions. Apart from that, at this meeting we also reviewed and approved the consolidated financial statements (IFRS) and annual financial statements for the 2017 financial year. We also held detailed discussions concerning the project to build a sewage incineration plant with a phosphorous recovery facility at our CHP plant in Mannheim – we see this as representing a very promising investment.

At the meeting on **8 March 2018**, we extended the appointment of Dr. Georg Müller, Chief Executive Officer, for another five years and thus to the end of 2023. Furthermore, we decided to adapt the business allocation plan for the Executive Board of MVV Energie AG to the new reporting structure.

On **13 June 2018**, we dealt extensively with the CSR Directive Implementing Act. MVV Energie AG is obliged to apply the requirements of this law, which came into force in 2017, for the first time in the 2018 financial year. Among other aspects, these require the company to provide disclosures on its diversity concept for its Supervisory and Executive Boards in its Corporate Governance Declaration. Consistent with this requirement, we devised and adopted diversity concepts for our Supervisory and Executive Boards. Moreover, we decided to commission the auditor to review the contents of the Combined Separate Non-Financial Report in accordance with the International Standard on Assurance Engagements (ISAE) 3000. At this meeting, we also addressed the status of an internal reorganisation project at MVV.

The key focus of the meeting on **20 September 2018** was the company's strategic alignment. Based on its long-term strategy, the Supervisory Board discussed and approved the business plan for the 2019 financial year and the three-year plan. A further topic was the Corporate Governance Report, which we adopted for the 2018 financial year. Moreover, following exhaustive preparation by the Audit Committee the Supervisory Board adopted a resolution for tendering the audit of the annual and consolidated financial statements of MVV Energie AG for the financial years from 2019 to 2023 and prepared the election proposal for the 2019 Annual General Meeting.

Committee work

The topics discussed and resolutions adopted at Supervisory Board meetings are efficiently prepared by the relevant **Supervisory Board committees**  **Page 202**. The committee chairmen inform our full body regularly and promptly about the activities of the committees. Any decisions due to be taken at the next Supervisory Board meeting are also discussed.

The **Audit Committee** held a total of five scheduled meetings and three special meetings in the year under report. Key focuses of its work included the annual financial statements of MVV Energie AG, the consolidated financial statements and combined management report for the 2017 financial year and the situation of the company at the end of each quarter of the 2018 financial year. Moreover, the committee dealt on a quarterly basis with the company's risk situation and risk management.

A further focus of the committee's activities involved selecting the auditor for MVV Energie AG and the Group for the financial years from 2019 to 2023. At three special meetings, the committee first approved the tender documents and assessment matrix. The presentations made by auditing companies were then reviewed, discussed and evaluated in detail. The Audit Committee submitted proposals concerning the selection of the auditor of the annual financial statements and the fee agreement to the full Supervisory Board. Together with the Executive Board, it also discussed the company's 2019 business plan, medium-term planning and strategic alignment. Following careful examination, it recommended that the Supervisory Board should approve the budget for the 2019 financial year. The committee accepted supplementary reports from the company – relating to group internal audit, the internal control system (IKS) in respect of the financial reporting process and the compliance management system – and ascertained that all systems were appropriate, functional and effective. In this context, the committee addressed the management and control systems at the MVV Group. Furthermore, it determined key audit focuses for the 2018 financial year. Other topics addressed by the committee included reporting on Juwi, the progress made with building the gas-powered CHP plant in Kiel, activities in the environmental energy business in the UK and the CSR Directive Implementing Act.

The **Personnel Committee** met three times in the 2018 financial year. It discussed the reappointment of the CEO, Dr. Georg Müller, and recommended that the Supervisory Board should extend his contract. Furthermore, matters relating to the compensation of Executive Board members also formed part of the committee's discussions.

The **Nomination Committee** met on one occasion. At this meeting, it compiled a proposal for the candidate to be nominated for election to the Supervisory Board by the Annual General Meeting. It based its selection on the requirements profile for the composition of the Supervisory Board – the diversity concept for the composition of the Supervisory Board referred to above was only adopted at a later date.

Neither the **New Authorised Capital Creation Committee** nor the **Mediation Committee** met in the year under report.

Composition of Supervisory and Executive Boards

In the year under report, Steffen Ratzel was appointed as a member of the Supervisory Board of MVV Energie AG as of 1 January 2018 by court order issued by Mannheim District Court on 21 December 2017. He thus succeeded Carsten Südmersen, who stood down from his position as of 31 December 2017. On 9 March 2018, the Annual General Meeting elected Steffen Ratzel as a Supervisory Board member through to the conclusion of the Annual General Meeting in 2021. We would like to thank the former Supervisory Board member Carsten Südmersen for his commitment and the work he performed to the benefit of the company.

Dr. Georg Müller, Chief Executive Officer, was reappointed, with his contract being extended to 31 December 2023. He has been a member of the Executive Board since January 2009.

Corporate governance

As in previous years, in the 2018 financial year we once again dealt closely with the recommendations and provisions of the German Corporate Governance Code (DCGK). We endorse the Declaration of Conformity with the German Corporate Governance Code submitted by the Executive Board. MVV Energie AG complies with all of the Code recommendations. We approved the Corporate Governance Report, which also includes the Declaration of Conformity and the Corporate Governance Declaration, at our meeting on 20 September 2018. This was published on the internet on 5 November 2018 www.mvv.de/corporate-governance and **Page 100**.

Handling conflicts of interest and independence

All members of the Supervisory Board are obliged to disclose any conflicts of interest arising without delay. As in previous years, no such conflicts arose in the year under report. We conducted a review and ascertained that all members of our body are independent in the sense defined in the German Corporate Governance Code.

Audit of annual and consolidated financial statements

PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft (PwC) was elected as auditor of the financial statements for the 2018 financial year by the Annual General Meeting on 9 March 2018. The declaration of independence from the auditor has been submitted to the Supervisory Board.

The annual financial statements of MVV Energie AG for the 2018 financial year have been prepared pursuant to the provisions of the German Commercial Code (HGB) and the German Stock Corporation Act (AktG). MVV's consolidated financial statements and combined management report have been prepared in accordance with International Financial Reporting Standards (IFRS) as applicable in the EU. The auditor audited the consolidated financial statements and combined management report of MVV and the annual financial statements of MVV Energie AG and granted unqualified audit opinions. Both the annual financial statements and the consolidated financial statements and combined management report for the 2018 financial year are published in the Federal Gazette (Bundesanzeiger).

We were provided in good time with the following documents: the consolidated financial statements, combined management report, annual financial statements of MVV Energie AG, the Executive Board's proposal concerning the appropriation of profits and the auditor's audit reports. Both the Audit Committee and the full Supervisory Board examined these documents carefully and in great detail. Both bodies held in-depth discussions of the documents in the presence of the auditor. No objections were raised. At our meeting on 7 December 2018, we approved the consolidated financial statements and combined management report of MVV and the annual financial statements of MVV Energie AG. The annual financial statements are thus adopted. We endorsed the Executive Board's proposal concerning the appropriation of profits. The auditor also audited the monitoring system established by the Executive Board pursuant to § 91 (2) AktG. The auditor determined that the system was suited to detect at an early stage any developments that could threaten the company's continued existence.

The Executive Board submitted a Combined Separate Non-Financial Report for the first time for the 2018 financial year. We held in-depth advance discussions of this report at the meetings of the Audit Committee and the Supervisory Board, focusing our deliberations on the various concepts and on the internal processes and checks involved. We critically reviewed and assessed the plausibility and expediency of the Non-Financial Report with regard to MVV's business model. The Supervisory Board did not raise any objections to the reporting by the Executive Board.

According to the report compiled by the Executive Board on relationships with affiliated companies (Dependent Company Report) for the 2018 financial year, MVV Energie AG was not disadvantaged by the legal transactions performed with affiliated companies outlined therein. The auditor audited the Dependent Company Report and granted the following audit opinion: "Following our audit and assessment performed in accordance with professional standards, we confirm 1. That the factual disclosures made in the report are accurate and 2. That the company's compensation in the transactions listed in the report was not incommensurately high." Both the Dependent Company Report and the associated audit report compiled by the auditor were submitted to the Supervisory Board in good time. Based on our own review, we concur with the auditor's assessment and approve its report.

Thanks

Notwithstanding the challenging conditions prevalent in the energy market, MVV concluded the 2018 financial year on a successful note. The employees can rightly feel proud of the results, which were only possible because of the efforts made by all involved: from the Executive Board of MVV Energie AG to the executive boards and management teams at subsidiaries through to employees and works council members. On behalf of the entire Supervisory Board, I would like to thank them for their work and for the great dedication they have shown!

Mannheim, December 2018

A handwritten signature in black ink, appearing to read 'P. Kurz', followed by a large checkmark.

Dr. Peter Kurz
Chairman

Share

Volatility on stock markets

Despite numerous political and economic risks, global stock markets posted a positive overall performance in the period under report. The DAX also rose at the beginning of the period and passed the 13,000 point mark for the first time in October 2017. This was due to extremely loose monetary policies at the European Central Bank (ECB), the robust development in the global economy, strong corporate earnings figures and the euro/dollar exchange rate, which was favourable for German exports. Thanks to booming US stock markets and relief upon the resolution of the US budget dispute, the DAX reached its high at 13,560 in January 2018. Strong US labour market figures, giving rise to concerns about interest rates and inflation in the USA, then led to a downward spiral which began on Wall Street and then spread to international stock markets. In February 2018, the DAX plunged by more than 1,000 points in just a few days and even risked undercutting the 12,000 point mark. Recovering from this setback, the DAX subsequently regained ground and returned to above 12,400 points.

Developments in the further course of the year were also characterised by marked fluctuations, with clear upward trends following on from equally distinct losses. Whether the indices happened to be moving upwards or downwards was always dependent on the degree of escalation or easing of tension in the trade disputes pursued by US President Donald Trump with China and the European Union. Following talks held between President Trump and EU Commission President Juncker in July 2018, a “rally of relief” began and this enabled the German lead index to pass the 12,800 point mark. As the trade dispute between the USA and China escalated further, however, the DAX fell once again at the end of September, closing at 12,247 points and thus 4.5% below the previous year’s figure. Investors are clearly gaining the impression that the tariff dispute will hit Germany’s large numbers of export-driven companies that depend on global markets more than it will affect US groups, which focus more on their domestic market. That is also the reason for the upward trend on US stock exchanges, while the DAX has detached itself from developments on the strong US markets.

Key figures on share and dividend of MVV Energie AG

		FY 2018	FY 2017
Closing price on 30 September ¹	Euro	26.30	22.85
Annual high ¹	Euro	26.80	24.15
Annual low ¹	Euro	22.94	19.90
Market capitalisation at 30 September	Euro million	1,733	1,506
Average daily turnover	No. of shares	3,307	8,313
Number of shares at 30 September ²	000s	65,907	65,907
Dividend per share ³	Euro	0.90	0.90
Dividend total ³	Euro million	59.3	59.3
Adjusted earnings per share ^{4, 5}	Euro	1.43	1.41
Cash flow from operating activities per share ⁵	Euro	5.03	7.19
Adjusted carrying amount per share ^{5, 6, 7}	Euro	19.71	18.88
Price/earnings ratio ⁸		18.4	16.2
Price/cash flow ratio ⁸		5.2	3.2
Dividend yield ⁸	%	3.4 ³	3.9

1 XETRA trading

2 Number of shares at 30 September corresponds to weighted annual average

3 Pending approval by Annual General Meeting on 8 March 2019

4 Excluding non-operating measurement items for financial derivatives, excluding structural adjustment for part-time early retirement, excluding restructuring result and including interest income from finance leases

5 Number of shares (weighted annual average)

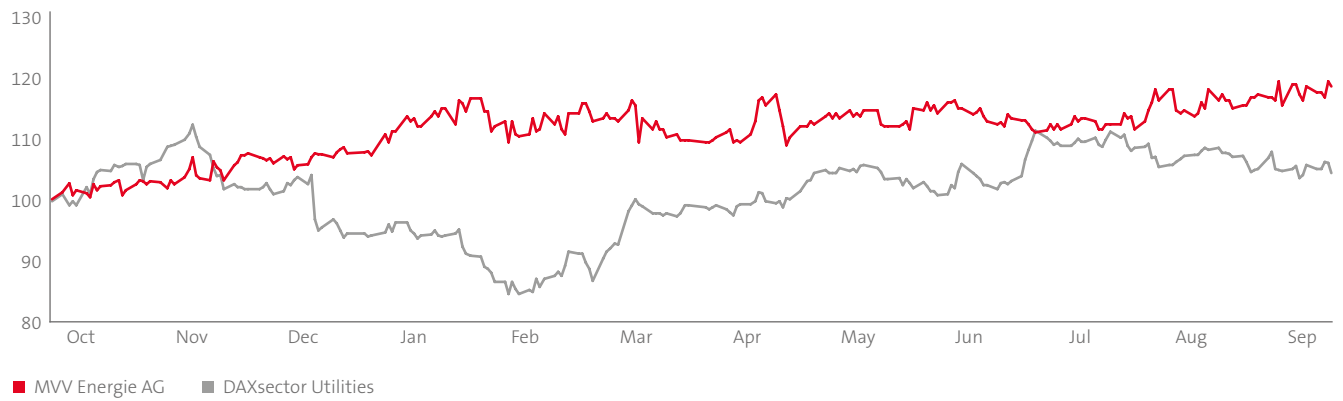
6 Excluding non-operating measurement items for financial derivatives

7 Excluding minority interests

8 Base: closing price in XETRA trading on 30 September

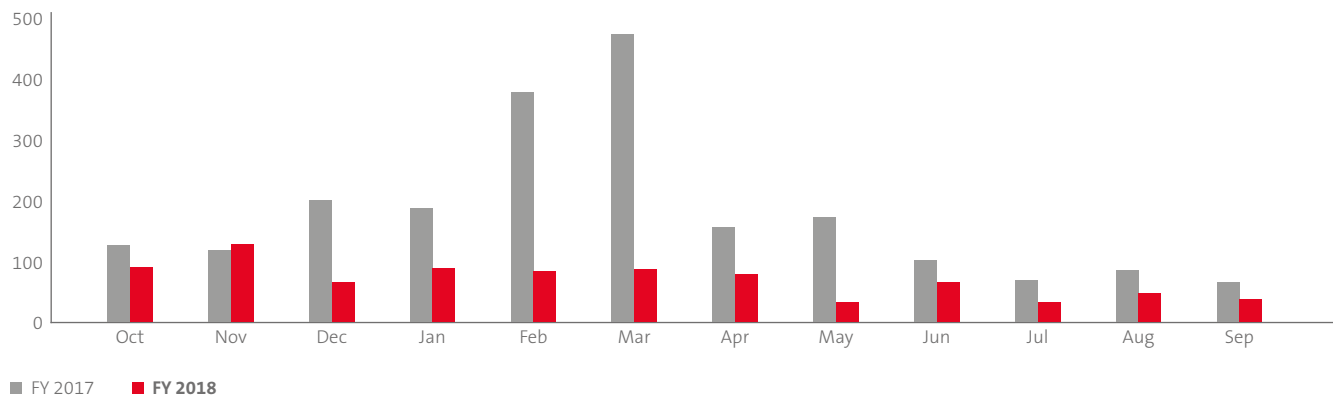
MVV ENERGIE AG SHARE PRICE PERFORMANCE COMPARISON FY 2018

(%)



MONTHLY SHARE TURNOVER

(no. of shares in 000s)



Increase in share price

The MVV Energie AG share was listed at Euro 26.30 on 30 September 2018, corresponding to a 15.1% rise compared with its price of Euro 22.85 on 30 September 2017. Including the distribution of a dividend of Euro 0.90 per share in March 2018, our share price even rose year-on-year by 19.2%. The DAXsector Utilities, the comparative sector index for the energy industry, improved by 4.9% over the same period. The share price performance chart includes our dividend payment.

Higher market capitalisation and lower trading volumes

Driven by our positive share price performance, our market capitalisation grew from Euro 1,506 million at the previous year's balance sheet date to Euro 1,733 million at 30 September 2018. The 4.8% free float share was measured at around Euro 84 million (previous year: Euro 73 million). A total of around 0.8 million MVV Energie AG shares were traded on all German marketplaces in the 2018 financial year – 60.8% fewer than in the previous year. Due above all to this factor, the equivalent value of trading volumes fell to Euro 21 million (previous year: Euro 47 million).

Stable dividend

The Annual General Meeting held on 9 March 2018 accepted the proposal submitted by the Executive and Supervisory Boards and approved the distribution of a dividend of Euro 0.90 per share for the 2017 financial year. Based on 65.9 million shares, the distribution sum totalled Euro 59.3 million.

We intend to pay an appropriate dividend to our shareholders in future as well. At its meeting on 7 December 2018, the Supervisory Board adopted the dividend proposal for the year under report. The Executive and Supervisory Boards intend to propose a dividend of Euro 0.90 per share once again for approval by the Annual General Meeting on 8 March 2019. Based on the share's closing price in XETRA trading on the balance sheet date on 30 September 2018, that would correspond to a dividend yield of 3.4%.

Data on MVV Energie AG share

Stock exchanges	XETRA Frankfurt, Official Trading in Frankfurt and Stuttgart, Free Trading in Berlin, Dusseldorf and Hamburg
Transparency level	Prime Standard
Market segment	Regulated Market
Index membership	Prime All Share, CDAX, DAXsector Utilities
ISIN International Security Identification Number	DE000A0H52F5
WKN Security Identification Number	A0H52F
Symbol	MVV1
Reuters Instrument Code	MVVG
Bloomberg Symbol	MVV1:GR
Share category	Individual registered shares (ordinary shares), prorated share of share capital per individual share: Euro 2.56
Share capital	Euro 168,721,397.76
Share capital (number of shares)	65,906,796
Date of initial listing	2 March 1999

Our investor relations activities

As in previous years, in the year under report we outlined the core features of our company and its strategic alignment to institutional and retail investors. We are still always available to accept questions and suggestions from our shareholders. At analysts' conferences, the Executive Board presented our company's latest business performance. On our website at www.mvv.de/investors, we make recordings of analysts' conferences and the accompanying analysts' presentations available to the public.

Two financial institutions currently analyse MVV Energie AG, namely Deutsche Bank and Landesbank Baden-Württemberg. Both these institutions recommended holding our share as of 30 September 2018. The price targets stated by the analysts for our share amounted to Euro 24.70 and Euro 25.00.

Sustainability

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60 Explanatory Comments about Combined Separate Non-Financial Report

Sustainability at MVV


- » Consistent implementation of our strategic sustainability targets
- » Further expansion in proprietary renewable energies generation portfolio
- » 485,000 tonnes of CO₂ saved

Select material sustainability key figures for MVV: FY 2018

			Year-on-year change
Ecological	CO ₂ emissions (Scope 1)	1,547k tonnes	↘
	Net CO ₂ savings	485k tonnes	↗
	Share of renewable energies in our electricity generation	62%	↗
Economic	Value added	Euro 877m	↗
	Concluded development of new renewable energies plants	1,011 MW	↗
	Electricity generation volumes	1,835 GWh	↘
	Investments	Euro 290m	↗
Social	Employees	5,978	↘
	Share of management positions held by women	14%	↘
	Accident incidence rate (LTIF) ¹	6.2	↘
Energy-related	Fuel efficiency	57%	↘
	Installed renewable energies capacities	467 MW _e	↗

¹ 2017 calendar year

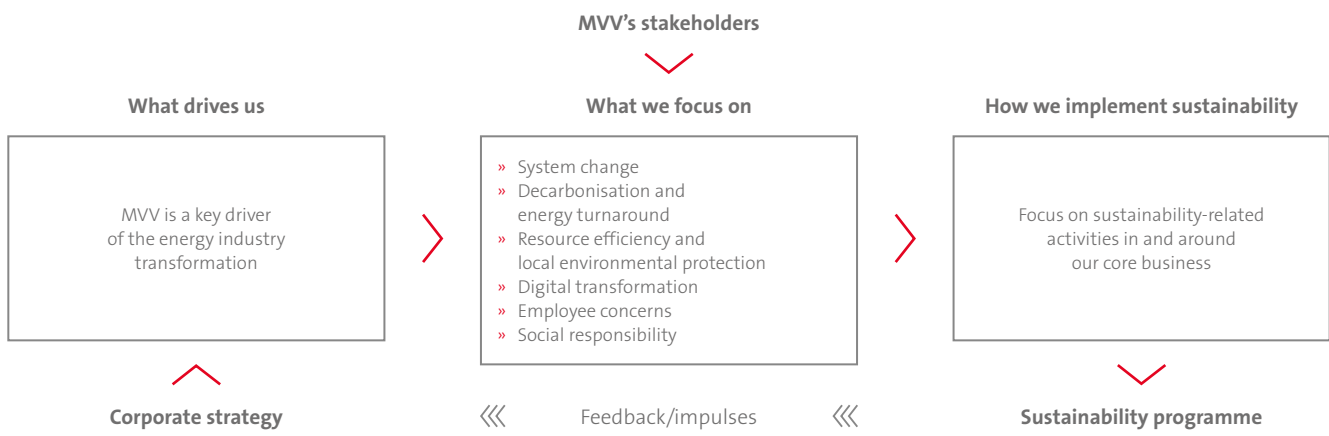
SUSTAINABILITY STRATEGY

Sustainability is the central pillar of our corporate strategy  **Page 65**. For us, acting responsibly means:

- Maintaining a balance between profitable growth and social responsibility
- Consistently developing our business model further and thus securing our long-term economic success
- Being aware of the ecological and social implications of our own business activities and reducing our impact on the natural world
- Creating and retaining sustainable jobs and training positions for our employees
- Making a measurable contribution to converting the energy industry and to protecting the climate and the environment.

We are making an active contribution to tackling the ecological and social challenges of our times. In this, we are focusing on topics that are closely related to our core business and that are significant to our stakeholders.

MVV'S SUSTAINABILITY AT A GLANCE



Long-term sustainability targets act as compass

The consistent implementation of our corporate strategy led us to invest in renewable energies and energy efficiency at an early stage of developments. Moreover, climate and environmental protection remain key aspects of the responsibility we bear as a company, as does supply reliability. We aim to do justice to this approach with the sustainability targets which we set ourselves at the beginning of the 2017 financial year and intend to meet by the end of the 2026 financial year.

- » We will triple annual CO₂ savings at our fully consolidated companies and the companies we recognise at equity to 1 million tonnes a year.
- » We will double our proprietary electricity generation volumes from renewable energies at our fully consolidated companies and the companies we recognise at equity.
- » We will connect 10,000 MW of renewable energies to the grid.
- » The energy system of the future will remain our key investment focus. We will invest a further total of Euro 3 billion in the energy turnaround.
- » As a competent partner, we will offer all customers – from private households to industrial players – the products and services they need to implement their own energy turnarounds.

The latest results of external sustainability rankings are available on our website www.mvv.de/ratings-english.

Lived culture and high standards

As a company that intends to help build the future, we value a lively corporate culture [Page 50](#). Our four core values, namely Community, Appreciation, Responsibility and Courage, shape our interactions with each other and our dealings with customers and other stakeholders.

In our Corporate Governance Report [Page 100](#) we provide information each year on the implementation of our standards. This is consistent with the great significance we attach to transparency and integrity. Our compliance management system covers all substantial commercial activities and processes at MVV, thus enabling us to check compliance with applicable laws and our internal codes of conduct. A compliance handbook provides clear orientation to our employees. We grant particular attention to preventing corruption and bribery. These topics also form part of the regular compliance training sessions we hold. In the year under report, we trained a group-wide total of more than 650 employees in a variety of measures. MVV shows zero tolerance towards acts of corruption and also uses its compliance management system to monitor the effectiveness of anticorruption and anti-bribery measures within the group of companies.

TARGET ATTAINMENT FY 2018

	from FY 2017		FY 2026
Net CO ₂ savings per year ¹	339 k tonnes	438	1 million tonnes
Proprietary electricity generation (installed renewable energies capacities) ¹	430 MW	479	860 MW
Concluded development of new renewable energies plants	0 MW	1,422	10,000 MW
Investments	Euro 0 million	484	Euro 3 billion


¹ Fully consolidated companies and companies recognised at equity

Respect for human rights acts as a further basis for the values embodied in our corporate culture. This is also integrated into our compliance management system. Moreover, compliance with human rights is also part of our supplier management on group level  **Page 25**. Our human rights policy  www.mvv.de/responsibility underlines our commitment to internationally recognised principles of human rights. With this commitment, we thus also take due account of the National Action Plan for Business and Human Rights (NAP). Our human rights policy was adopted by our Executive Board, while the management at our companies and locations is responsible for compliance with all requirements of the policy.

Moreover, in our procurement terms we also require our business partners to respect and comply with human and personality rights. The overwhelming share of our business activities are located in Germany, as well as in the UK and the Czech Republic. Most of our suppliers come from Germany and from other countries in which respect for human rights can generally be assumed. For select business fields with potentially critical conditions we have introduced specific measures to perform a sustainability evaluation in our supplier management activities. Acquisitions of companies or shareholdings in companies are preceded by a careful due diligence process which also includes checking compliance with human rights, adherence to compliance-related requirements and further sustainability factors such as environmental protection and occupational safety. We are continually working to enhance our approach. One current example is our first progress report on the UN Global Compact of the United Nations, in which we underline our commitment to the ten principles of corporate responsibility  **Page 221**. Moreover, to satisfy UK regulatory requirements we publish a declaration on human rights for the British market  www.mvv.de/responsibility.

 **GRI 102-16**

SUSTAINABILITY MANAGEMENT

In our sustainability management, we focus on those topics, processes and measures that we view as forming part of our core business, particularly with regard to the energy turnaround, climate protection and innovations.  **GRI 102-44**

Our sustainability management, for which the Executive Board bears overall strategic responsibility, is anchored across various levels of the Group. We continually review, evaluate and manage the Group's performance based on sustainability indicators and medium-term targets. We also evaluate our investment projects by reference to sustainability criteria. In organisational terms, the sustainability programme is located in our Group Strategy and Energy Industry department, where the team coordinates the sustainability strategy, plans the projects and measures within our group-wide sustainability management and implements these. This team regularly reports to the Steering Committee on Group level. Those sustainability-related activities that only affect one location or exclusively involve business operations are the responsibility of the specialist organisational units on location and are implemented by these units.


Our sustainability programme covers our most important business fields and locations. We are continually working to develop our project portfolio further and initiate around 10 to 15 new sustainability projects each financial year. In the year under report, for example, we began working on a project intended to exploit energy efficiency potential in operations at our plants. Furthermore, Stadtwerke Kiel is supporting the objectives of the climate protection strategy adopted by the City of Kiel with a range of specific measures. A further project is intended to improve employee mobility while at the same time reducing the company's ecological footprint.


In the year under report, we adjusted the organisational structure of the sustainability programme to the changes in the structure of the company and its business fields. We also founded the Management Forum, a body with members of the first management tier that meets several times a year to discuss our sustainability strategy, obtain information about sustainability projects and activities at our locations and provide momentum to enhance sustainability at the company.



 **GRI 102-18**

In dialogue with stakeholders

We operate at a variety of locations and in diverse business fields and therefore come into contact with the interests of numerous, often heterogeneous groups of stakeholders. Our shareholders, employees and customers are among our most important stakeholders, as are political representatives. Other major stakeholders include non-government organisations (NGOs), analysts, local residents at our locations, the media, associations and suppliers. These are joined by cooperation partners, business partners and research institutes.

 **GRI 102-40**

We have an open and transparent information policy towards our stakeholders and keep them informed both in one-to-one contacts and with the publications on our websites, in press releases, on social networks and in specialist formats such as analysts' conferences. We take part in public discussions and other events, such as energy industry conferences and public information events.  **GRI 102-43**

We take our stakeholders' concerns seriously and factor these into our decisions. We perform an internal review each year to identify the topics important to our stakeholders. We evaluate the insights gained, for example in public discussion groups and at energy industry conferences, and systematically analyse the findings of, for example, focus groups. In the 2018 financial year, we again held interviews with stakeholders to review material topics. We work with MVV's specialist departments and companies to ascertain the extent and ways in which specific concerns are to be accounted for. The results of this process are subsequently discussed by the experts in the sustainability programme and then implemented. In our comments on material topics, we refer to the core concerns of our stakeholders. In the year under report, we also addressed the Sustainable Development Goals (SDG) of the United Nations and have for the first time published an overview of the goals to which we are contributing  **Page 222.**  **GRI 102-42**

 **GRI 102-44**  **GRI 102-45**

Focus on customer satisfaction

We develop innovative products and services that promote a sustainable energy supply and offer great customer benefits. Our retail customers, for example, use various online services enabling them to compile their own cost and consumption forecasts. Apps enable them to input their meter reading by photo. Customers receive one-to-one advice at our customer advice centres on location and via our free service numbers. Our "Customer Atelier" offers a platform for directly sharing ideas on a regular basis. We support our retail, business and commercial customers in becoming more energy efficient



 **Page 41.**

Our aim is to continually improve our relationships with our customers. To measure our performance objectively, we hold regular customer surveys with a variety of market research institutes. In the year under report, we extended our surveys to include the so-called net promoter score, which will enable us to gain further insights into our customers' satisfaction on a long-term basis. This score has been a recognised parameter for recording customer loyalty for many years now and is used worldwide by prestigious companies across all sectors. In the year under report, we again took part in the BDEW service monitor. This monitoring programme focuses in particular on how our customers perceive their service contacts in their day-to-day business dealings. The customer service study aims to survey customer satisfaction, identify potential improvements and facilitate comparison with other study participants. All in all, MVV's customers are more satisfied than in 2017: The overall satisfaction figure improved and is at a good overall level. Customers' willingness to remain with the company can still be assessed positively.

We also use surveys for our internal target/actual analyses. Based on the findings, we work together with the relevant specialist departments to set the target values for what we aim to achieve in the subsequent year. We take measures to improve the situation when actual values fall short of the standards we have set ourselves.  **GRI 102-43**  **GRI 102-44**

Shaping the energy turnaround in industry networks and local initiatives


We play an active role in the relevant bodies, associations and networks, participate in research projects and take part in the public debate focusing on the transformation of the energy system. Via our membership in industry associations, we take part in energy policy and energy industry discussions. We are members, for example in the following associations relevant to the areas in which we operate: Bundesverband der Energie- und Wasserwirtschaft e. V. (BDEW), Verband kommunaler Unternehmen e. V. (VKU), Energieeffizienzverband für Wärme, Kälte und KWK e. V. (AGFW), Bundesverband Neue Energiewirtschaft e. V. (BNE), Bundesverband WindEnergie e. V. (BWE) and Bundesverband deutscher Wohnungs- und Immobilienunternehmen (GdW). Not only that, our subsidiaries and shareholdings on location are involved in local initiatives and networks. Apart from our membership fees, we do not make any payments to associations or other institutions. We occasionally finance studies and surveys on matters relating to the energy industry. These are published and our involvement is suitably signalised.


We also get involved at the locations in which our group of companies operates by helping to develop local or regional energy concepts and climate protection programmes or contributing to such concepts and programmes. We are, for example, a shareholder in the climate protection agency in Mannheim  www.klima-ma.de. Moreover, we support select social welfare projects  **Social Commitment Page 58.**

 **GRI 102-12**  **GRI 102-13**



MATERIALITY ANALYSIS



The materiality analysis has been a fixed component of our sustainability management since the 2012 financial year. We continually monitor public debate and the positions of our shareholders and regularly assess whether and how these have altered the relevance of our material topics. This multi-stage process involves ongoing desk-based research, internal analysis and surveys of those specialist departments with interfaces to external stakeholders. Furthermore, we hold workshops and interviews with select stakeholders. We review all aspects of the materiality process every three to four years, most recently in the 2018 financial year. In the interim periods, we perform an annual update of the main characteristics and prioritisations involved in the process.

In terms of its contents, the materiality analysis accounts for global challenges and megatrends, industry and technology-related trends and the expectations of internal and external stakeholders. In this, we now consider three levels. On the one hand, we include the two perspectives relevant to the GRI, namely significance to stakeholders and the impact of our business activities. These perspectives result in the topics that we then identify as material pursuant to GRI. Furthermore, we also consider topics that are relevant to MVV's existing and growth businesses  **Page 27.** We have now included these topics as well in our sustainability reporting.

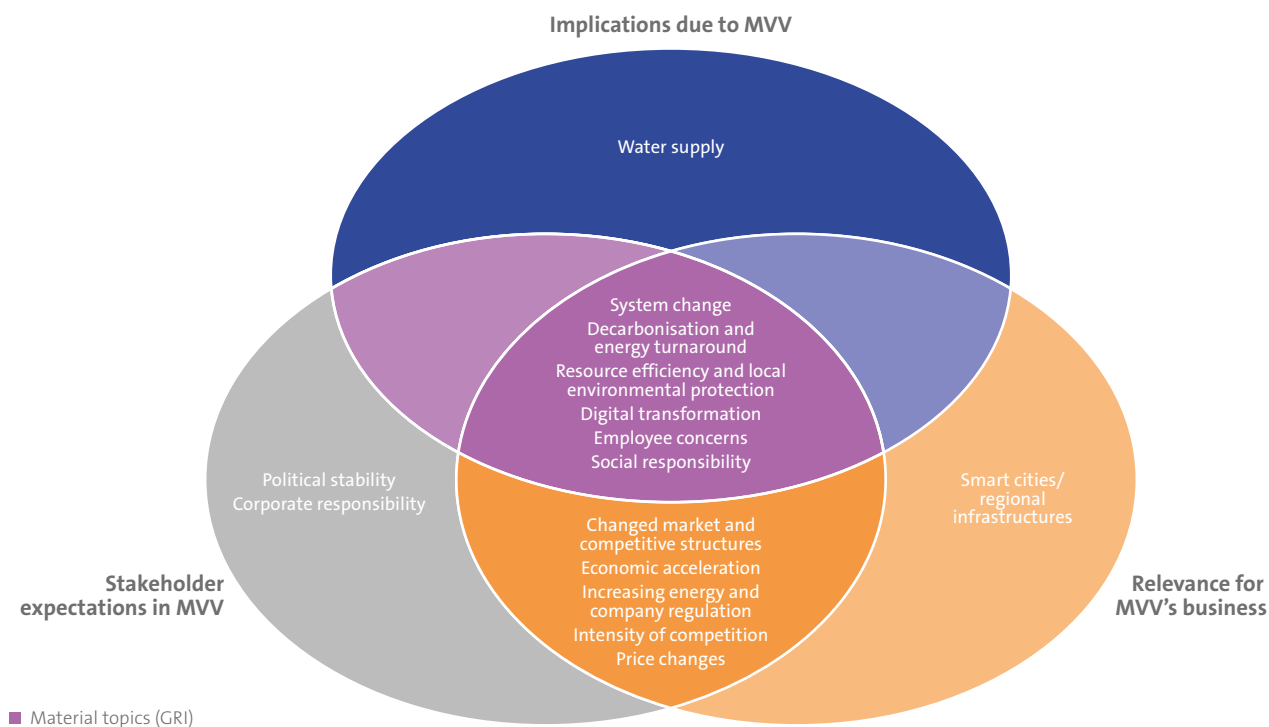
In determining the GRI-based material topics, we proceeded in accordance with the approach recommended by the GRI. We derived company-specific topics from the most important sustainability challenges, as well as from trends in the energy industry and within society. In determining topics, we took account of the perspective of MVV's specialist departments and companies, as well as of the findings of extensive stakeholder analyses. We validated and prioritised the topics thus identified in a materiality process and compiled the list of GRI-based material topics for MVV. We classify a sustainability topic as material when our stakeholders deem it relevant and/or the impact of MVV's business activities is high. We report in detail on the GRI-based material topics  **table on Page 22.** This year, we have based this reporting for the first time on GRI Standards (previously: GRI-G4). The results of this process were discussed on Executive Board level and their relevance confirmed.

 **GRI 102-46**

Within our sustainability reporting, we regularly publish an updated listed of GRI-based material topics and comment on any changes compared with the previous year  **table on Page 217.** These changed compared with the previous year, with this being due in part to the findings of the stakeholder interviews. We have therefore newly aggregated some topics, or amended their designation, not least to account for the interrelatedness of their respective contents.  **GRI 102-49**

With the exception of employee concerns (only inside) and social responsibility (only outside), all the GRI-based material topics listed in the table below are material both inside and outside MVV.  **GRI 103-1**  **GRI 102-44**

RESULTS OF MATERIALITY ANALYSIS



Material topics (GRI)

Material topic	Specific disclosure ¹	What we aim to achieve	What we achieved in the year under report
System change	Diversified generation portfolio (MVV)	We combine renewable and highly efficient conventional energies in ways that make sense and help to safeguard supply reliability.	We further expanded our own broad-based generation portfolio, particularly in terms of using biomass and biogas – but also of waste incineration with the plant in Dundee – and implemented projects that are expected to result in more diverse generation capacity in the years ahead.
	Sector coupling (MVV)	We systematically expand our range of products and services for electrical applications in the heating energy sector and in the field of electro-mobility.	We initiated sector coupling infrastructure projects: In Ingolstadt we are building a district heating storage facility like those already in place in Mannheim and Kiel.
	Indirect economic implications (GRI)	In the years ahead, we will invest a further total of Euro 3 billion in the energy turnaround.	We invested Euro 290 million, of which 43 % in growth and 57 % in our existing plants and grids.
	Changed energy demand (MVV)	We prepare our supply grids for those changes in energy demand in the electricity and heating energy sectors that result from the energy system conversion or from energy efficiency measures.	As well as systematically accounting for this factor in our strategic investment planning, we also initiated and/or maintained research projects.

Material topics (GRI)


Material topic	Specific disclosure ¹	What we aim to achieve	What we achieved in the year under report
Decarbonisation and energy turnaround	Emissions (GRI)	By the end of the 2026 financial year, we will triple our annual CO ₂ savings to 1 million tonnes a year. (basis: start of 2017 financial year: around 339,000 tonnes)	Annual CO ₂ savings at our fully consolidated companies and the companies we recognise at equity amounted to 438,000 tonnes.
	Concluded development of new renewable energies plants (MVV)	We will connect 10,000 MW of renewable energies to the grid by the end of the 2026 financial year. (basis: start of 2017 financial year: 0 MW)	We developed projects with capacities of 1,011 MW.
	Electricity generation volumes from renewable energies (MVV)	We will double our proprietary electricity generation from renewable energies by the end of the 2026 financial year. (basis: start of 2017 financial year: 430 MW)	Installed capacities for renewable energies and the biogenic share of waste/RDF at our fully consolidated companies and the companies we recognise at equity amounted to 479 MW, 11 MW more than one year earlier.
	Energy (GRI)	We will raise plant efficiency levels and reduce emissions from proprietary generation and at our customers.	The fuel efficiency rate at our fully consolidated companies and the companies we recognise at equity fell from 63% in the previous year to 61%.
	System efficiency (MVV)	We aim to reduce grid losses in our electricity and heating energy grids.	Grid losses fell year-on-year in our electricity grids and rose year-on-year in our heating energy grids.
Resource efficiency and environmental protection	Materials (GRI)	We reduce our ecological footprint by expanding highly efficient combined heat and power (CHP) generation and district heating and thus reducing the use of non-renewable fuels.	We further expanded and increased the density of district heating at our locations. Construction work on our new gas-powered CHP plant in Kiel made further progress. Moreover, we initiated projects that will be implemented in the years ahead.
Digital transformation	Industry 4.0 (MVV)	By promoting digitalisation and process networking at our company, in our products and at our customers we safeguard MVV's future performance capacity.	We were awarded the silver quality seal "Digital Champions in Inspiring Customers" in acknowledgement of our digital customer proximity. With digitalisation and networking we made substantial progress within our digitalisation programme.
	Customer solutions (MVV)	As a competent partner, we offer all customers – from private households to industrial players – the products and services they need to implement their own energy turnarounds.	We supplemented our portfolio of solutions with newly developed services and extended our sales activities.
	Information security and data protection (MVV)	We work with an extensive range of technical and organisational security measures to ensure information security and data protection.	We are continually improving the processes used to protect information. In the year under report, we further enhanced our processes in line with GDPR.
Employee concerns	Training and development (GRI)	We attach great value to offering ongoing training and development to our employees.	As of 30 September 2018, MVV employed a total of 312 trainees. Our employees took part in a variety of internal and external training and development programmes.
	Promoting women (MVV)	By 2021, we aim to raise the share of female employees at our Group to 35% and the share of management positions held by women to 25%. (basis: 30 June 2015: 27% and 14%)	As of 30 September 2018, women accounted for 28% of our Group's total workforce and 14% of its managers.
	Occupational health and safety (GRI)	We support our employees in maintaining their health and make systematic efforts to keep accident numbers as low as possible.	In the 2017 calendar year, our accident incidence rate amounted to 6.2, as against 7.8 in the previous year.
Social responsibility	Economic output (GRI)	As a successful economic player, we contribute to regional value creation.	We raised our net value added by Euro 6 million year-on-year to Euro 877 million.
	Local communities (GRI)	We actively seek dialogue with relevant stakeholders in order to raise acceptance for existing and new infrastructure projects.	We further developed our communications instruments and increased public transparency, also by including new contents in our sustainability reporting.
	Social commitment (MVV)	We show our commitment by supporting local and regional welfare, education, cultural and sports projects.	We continued our sponsoring and support measures in a targeted manner.


1 (GRI): Disclosure pursuant to GRI Standards; (MVV): additionally reported contents

Further topics highly relevant to MVV's business

We accord great value to offering comprehensive information about our business activities and company objectives. For this reason, we also address three topics which our analysis identified as primarily being relevant to MVV's existing and growth business but which do not form part of the GRI topics. This way, we help to ensure a transparent overall presentation of our corporate responsibility.

Changed infrastructures and smart cities


The implementation of the energy system transformation is increasingly taking place on a decentralised level. In particular, concepts for urban districts and quarters are in great demand, as the ongoing trend towards urbanisation places significant burdens on the environment. Here, information and communication technology solutions can help tackle the challenges faced by towns and cities. These can be made more efficient and sustainable and enhance their quality of life by putting available municipal infrastructure to smart use and integrating IT, mobile and cloud computing technologies. To achieve this, various areas of urban life are addressed, such as public transport, parking management and the digital management of utility-related tasks. In Mannheim, for example, we are involved in various activities for the urban use of conversion areas. These have arisen above all due to the rededication of former military facilities. One example is the "C/sells" project in FRANKLIN District, which is part of a cellular energy system  **Page 69.**

Another example is our involvement in **ENSURE**, a "Kopernikus project" looking into new energy grid structures for the energy turnaround  www.kopernikus-projekte.de/projekte/neue-netzstrukturen. Stadtwerke Kiel is one of the 23 partners from science, business and society that are taking part in this 10-year research project due to run until 2026. Among other aspects, the project is addressing how a sensible balance of central and decentralised supply elements can be achieved and how an efficient and widely accepted transformation process can succeed. We are involved in various subtasks (clusters) of the project. Together with other project partners, for example, we are modelling the gas-powered CHP plant and simulating various deployment scenarios for our generation park. This way, we can show how to increase flexibilities in the electricity grid, how to decarbonise the heating energy sector and how to guarantee a secure heating energy supply. Decentralised solutions of this kind are very significant to the long-term further development of our business, even if existing conditions vary widely from location to location.

Energy and company regulation

The future market design for renewable energies and energy efficiency is a factor that directly impacts on our core business, as does grid regulation. After all, the regulatory framework determines the course and boundaries of our activities and of specific technologies deployed in connection with the energy system conversion. The further development in the German Renewable Energies Act (EEG), for example, directly affects the technological focuses and pace of expansion in our renewable energies generation portfolio. Relevant decisions are taken on various levels of the political system – from the EU to the federal government through to regional level. Our influence on these developments is limited, but we monitor and analyse them closely and align our approach accordingly. In select topic areas, particularly secure energy supply and renewable energies, we actively contribute to the political debate. We hold talks with various levels of decision makers and give presentations at conferences, for example. This way, we stake out our position on important topics.

Price changes

Energy prices impact directly on the economic viability of energy-saving services and thus on their market volumes. Moreover, they also influence generation volumes and CO₂ emissions and the profitability of our proprietary power plants. Our structured procurement activities mean that we are able to offer the best possible prices at all times to our business customers. Not only that, we also support our customers in enhancing their energy efficiency and thus in realising cost savings  **Page 41.**

The development in national and international energy prices for natural gas, oil, coal and CO₂ directly affects the energy price for end customers. We have little direct influence in this respect as we too are exposed to fluctuations in energy prices. We pass on developments on the wholesale markets to our customers. Within the limits of the possibilities available to us, we are nevertheless committed to ensuring price stability for our customers, particularly for the basic supply. One way we do this is by implementing efficiency enhancements.

VALUE CHAIN

Within our value creation process, we exercise influence on topics relating to sustainability along the upstream and downstream supply chains. In the upstream supply chain, for example, we can decide who we wish to do business with and which minimum requirements we place in our suppliers. Key factors influencing our supplier selection from a sustainability perspective customarily include the topics of anticorruption measures, human rights, employee rights, including work safety, and climate and environmental protection. Our stakeholders increasingly expect us to exert influence via our procurement policy. For our customers in the downstream supply chain, we create incentives, for example by enabling them to monitor and reduce their energy consumption. We ourselves also invest in decentralised energy solutions.

The energy industry supply chain is very much shaped by trading with energy sources, while other suppliers account for a markedly smaller share of total procurement volumes. Overall, our value chain comprises the following elements:

- Purchasing and marketing electricity and natural gas in the international wholesale business
- Procuring waste, biomass and – to a minor extent – coal
- Generating electricity, heating energy and biomethane
- Developing new generation plants, especially onshore wind and photovoltaics plants, for proprietary and third-party operation
- Operating electricity, natural gas, district heating and water grids and energy storage facilities
- Supplying electricity, gas, heating energy and water to end customers and secondary distributors
- Producing, processing and supplying drinking water
- Providing energy-related services.

 **GRI 102-9**

Low influence on MVV's fuel suppliers

The majority of our procurement volumes involve energy carriers such as electricity and natural gas. We typically hedge these by way of financial transactions but do not physically procure them. Energy carriers are offered by numerous producers as standardised products on wholesale markets. These are subsequently traded between market participants – often changing hands many times. It is thus regularly not possible to determine either the producer or the origin of the energy carrier with any degree of certainty. For these commodities, we are not aware of any material sustainability-related topics which we can influence.

In terms of fuels, hard coal is a focus for various stakeholders. We therefore receive individual enquiries concerning the use and procurement of hard coal. Stakeholders are interested here in the origin of the hard coal used at our power plants and the extent to which we exert influence on production conditions at the coal mines. Our business activities solely involve three hard coal power plants. We ourselves operate the CHP plant in Offenbach. Here, we directly procure hard coal on a scale of around 77 thousand tonnes a year. In this case we are aware of the origin. The hard coal we use currently comes from Germany and Russia. We are familiar with conditions there due to our longstanding relationships with the suppliers but do not have any direct contractual relationships to mine operators. Other than this, our very low volume of demand means that we have very few possibilities of exerting influence on location. Hard coal is also used at the joint power plant in Kiel (Gemeinschaftskraftwerk Kiel – GKK) and at the large power plant in Mannheim (Grosskraftwerk Mannheim – GKM), in which we are shareholders. In line with our procurement contracts with these power plants, the share of hard coal used as fuel at these plants that is attributable to us came to an arithmetic total of 968 thousand tonnes in the 2018 financial year. Based on this volume, we do not have any direct influence on business activities as we do not operate these plants. We are nevertheless aware of our responsibility and exert our influence by raising sustainability topics and requesting information from management and via our supervisory board positions.

At our biomass-fired power plants, we chiefly use waste timber, residual forest timber and green cuttings. We obtain these fuels from disposal companies and incinerate them in accordance with strict legal requirements. Most of the waste timber incinerated comes from the regions surrounding the respective plants.

Sustainability audit at other suppliers

Our remaining procurement volumes are relatively low. Most of our other relationships with suppliers involve procuring goods and highly qualified services from contractual partners in Germany, many of which have been known to us for many years. In addition to the requirements of German law, these contractual relationships are also governed by our contractual procurement terms, which include aspects of compliance and requirements for employees and environmental protection. In addition to the documents relating to procurement terms, we have also published our specific requirements in our suppliers in respect of compliance, occupational health and safety and IT security on our website www.mvv.de/centralprocurement. MVV shareholdings for which procurement is not managed by the relevant central departments at MVV Energie, Energieversorgung Offenbach and Stadtwerke Kiel also address a number of non-financial aspects in their procurement activities.

We expect our suppliers to comply with ecological, welfare and social standards. Suppliers to MVV Energie AG, Energieversorgung Offenbach AG and Stadtwerke Kiel AG are all assessed in terms of sustainability, risks and compliance. Within our supplier management system, new suppliers are required to provide disclosures on their anticorruption efforts, on environmental protection factors and on how welfare and social responsibilities are met at their companies. As a general rule, we do not make enquiries about suppliers located further upstream in the supply chain.

We deposit the information provided and any accompanying certifications in the supplier database. Compliance with social welfare standards also forms part of our contract awarding process. We also perform due diligence processes to review the ethical, social, compliance and environmental aspects involved in business fields in new regions or markets.

GRI 102-16

Large numbers of subcontractors, most of which based in European Union countries, work on behalf of MVV. As human and employee rights are legally protected in these countries, we assume that employment conditions there are humane. High safety standards are a particularly important factor for our subcontractors as well. We are therefore committed to ensuring compliance with legal requirements and have issued corresponding requirements which provide, for example, for health and safety instructions to be issued to employees at third-party companies. At present, we do not perform systematic audits of our subcontractors. In particular, we do not keep comprehensive records of data on working conditions at our subcontractors, especially at their production locations.

Material Topics (GRI)

The reporting on our GRI-based material topics refers to MVV and thus to all fully consolidated companies [Page 189](#). For various disclosures, we additionally report on the companies we recognise at equity. We are co-shareholders in the large power plant in Mannheim (Grosskraftwerk Mannheim – GKM) and the joint power plant in Kiel (Gemeinschaftskraftwerk Kiel – GKK). As these plants generate energy using conventional means, we would like to provide transparency as to their implications. When we focus on our three main locations of Mannheim, Offenbach and Kiel for select topics in our reporting we indicate this accordingly in the text.

For topics identified as material pursuant to GRI [Page 22](#), we present the targets and management approaches, as well as current activities in the year under report, and supplement this with relevant background information on the respective topic. To enhance comprehension, the information provided in order to meet the reporting requirements pursuant to § 315b and § 315c in conjunction with § 289c to e of the German Commercial Code (HGB) is presented in blue.

SYSTEM CHANGE

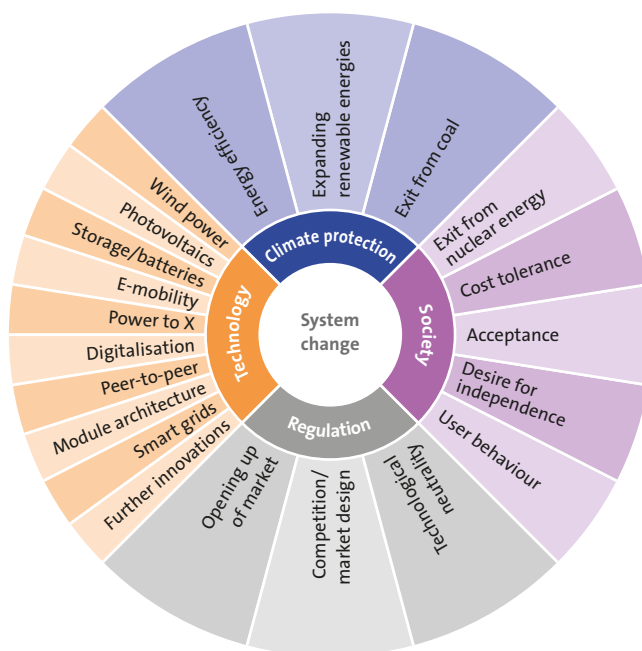
Our management approach for system change

Energy companies play a key role in the energy system transformation. They do this by investing in the energy infrastructure in order to decarbonise this and make it fit for the future. At the same time, they perform what is for society the crucial task of ensuring a reliable and stable supply of electricity, gas, heating energy and water in Germany. The advancing energy turnaround involves challenges, as the volume of electricity fed in from renewable energies such as wind turbines or photovoltaics systems fluctuates in line with weather conditions and the time of day. As an energy company and distribution grid operator, we ensure that we provide our customers with a secure and reliable supply of energy at all times throughout the transformation in the energy system. We achieve this on the one hand by smartly linking renewable energies with highly efficient, flexible conventional power plants and high-performance grids. On the other hand, we are promoting this process by investing in our plants and grids, as well as in energy storage systems and renewable energies. Both approaches are integral components of the corporate strategy adopted by our Executive Board [Page 65](#).

We set ourselves the following sustainability target:

The energy system of the future will remain our main investment focus. In the years ahead, we will be investing a further total of Euro 3 billion in the energy turnaround.

MATERIAL ASPECTS OF SYSTEM CHANGE



In the following section, we present our approaches and results for the specific disclosure of “Secure energy supply” defined by GRI as being material. We have also identified this topic as being material for the “Social concerns” aspect in our Non-Financial Report. In addition, we address further important specific disclosures concerning the topic of “System change”, which is defined by GRI as being material. This also comprises market developments of relevance to society as a whole, developments to which we as an innovative company contribute. These include, for example, sector coupling – i.e. the use of electricity generated in environmentally-friendly ways in the heating and transport sectors as well in order to meet the climate protection targets set by the Federal Government. We are pressing ahead with this topic within the given regulatory framework. In terms of the heating energy supply, our current focus is on making conventional generation more flexible,

for example by working with power-to-heat solutions such as heating energy storage facilities [Page 30](#) as well as on electro-mobility. We also have to prepare for changes in energy demand, as these impact on the strategic planning for all business fields and on our decisions concerning future growth investments. [GRI 103-2](#) [GRI 103-3](#)

tion portfolio enables us to contribute towards maintaining a secure energy supply. The portfolio comprises proprietary combined heat and power plants, plants powered by waste and biomass and our shareholdings in the GKM and GKK power plants. Furthermore, at the end of the year under report we had electricity, district heating, gas and water grids with a total length of around 19,000 kilometres.

Secure energy supply

Gradual conversion of our generation portfolio

As we shape our course towards the energy system of the future along social, ecological and economic lines, we are working to an increasing extent with renewable and to a decreasing extent with conventional energies and relying here on a variety of energy sources and technologies. This broad-based genera-

Alongside the generation volumes for our fully consolidated companies, the table also shows the volumes resulting when companies recognised at equity are added on a prorated basis. The at-equity companies [Page 196](#) particularly include the jointly owned power plants in Mannheim and Kiel. Further information about our electricity and heating energy generation volumes in the 2018 financial year can also be found in the chapter Non-Financial Performance Indicators [Page 84](#).

Electricity generation volumes



kWh million	Fully consolidated companies			Fully consolidated companies and companies recognised at equity		
	FY 2018	FY 2017	% change	FY 2018	FY 2017	% change
Biomass and biogas plants	498	432	+15	529	468	+13
Biogenic share of waste/RDF ¹	274	307	-11	274	307	-11
Wind power ¹	367	322	+14	383	336	+14
Hydroelectricity	6	4	+50	6	4	+50
Photovoltaics	3	3	0	4	3	+33
Electricity generation from renewable energies	1,148	1,068	+7	1,196	1,118	+7
Electricity from CHP ¹	501	548	-9	1,260	1,348	-7
Other electricity generation ¹	187	286	-35	1,422	1,731	-18
Total	1,836	1,902	-4	3,878	4,197	-8

¹ Previous year's figures adjusted

[MVV-1](#)

Heating energy generation volumes

kWh million	Fully consolidated companies			Fully consolidated companies and companies recognised at equity		
	FY 2018	FY 2017	% change	FY 2018	FY 2017	% change
Biomass and biogas plants	202	267	-24	202	267	-24
Biogenic share of waste/RDF	1,851	1,754	+6	1,851	1,754	+6
Heating energy generation from renewable energies	2,053	2,021	+2	2,053	2,021	+2
Other heating energy generation	1,837	2,083	-12	4,827	5,276	-9
Total	3,890	4,104	-5	6,880	7,297	-6

Our investments  **Page 93** help to minimise grid downtime as far as possible and thus to uphold a secure energy supply. We invest in our existing plants, in expanding and maintaining our grid infrastructure, in developing smart grids and in energy storage systems. Renewable energies are a further key investment focus. We have a constantly growing portfolio of renewable energies plants. These mainly involve onshore wind turbines and biomass plants to generate electricity, heating energy and biomethane. We invested a total of Euro 290 million in the 2018 financial year.  **GRI 203-1**

Limiting grid downtime despite growing load on grids

One way to assess the reliability of the energy supply involves measuring the frequency and duration of grid downtime. Our three large fully consolidated grid companies, namely MVV Netze GmbH, Energienetze Offenbach GmbH, and SWKiel Netz GmbH have set themselves the goal of avoiding grid downtime and remedying any such downtime as quickly as possible. Having said that, short-term comparison with the previous year is not especially meaningful as grid downtime is often dominated by one-off events. What counts most is the medium to long-term trend and the level of interruption, as replacement and modernisation measures can only be implemented gradually and then take long-term effect.

The key performance figure referred to in our industry is the system average interruption duration index (SAIDI), which presents the average interruption to the supply in minutes per year and customer. The index only accounts for unplanned downtimes lasting longer than three minutes and not due to force majeure. In the 2017 calendar year, we managed to achieve a largely interruption-free supply of electricity to our customers, as is shown in the SAIDI figures presented below. Having said this, the SAIDI figures for the 2016 and 2017 calendar years were both influenced by one-off factors: In Offenbach, a fire at the substation in Seligenstadt led to an interruption that significantly increased the SAIDI figure for the 2016 calendar year. The year-on-year increase in SAIDI figure for the Mannheim grid in the 2017 calendar year was due to an increase in the number of technical disruptions on

medium-voltage level. The figure for SWKiel Netze was exceptionally low in the 2016 calendar year and returned to a normal long-term level in the 2017 calendar year.

Supply interruptions (SAIDI)

Minutes/year	2017 ¹	2016 ¹
Grid regions		
MVV Netze Mannheim	18.5	12.0
Energienetze Offenbach	8.0	32.4
SWKiel Netz ²	12.2	8.2
Germany ³	15.1	12.8


1 Calendar year

2 Correction in previous year's figure

3 Sources: Federal Network Agency (BNetzA)


Sector coupling


Smartly linking electricity, heating energy and mobility

We are an innovative company and are actively shaping future requirements. Among the major changes in the energy market, sector coupling is also playing an increasingly important role. This way, the electricity turnaround seen to date is being turned into a genuine energy turnaround. Here, it is primarily about enabling electricity generated from renewable energies to be used in the heating and transport sectors and networking the entire system. One sub-target involves distributing and storing surplus electricity from fluctuating renewable energies in ways that make sense. Energy storage facilities can also be used outside the electricity sector – for example in innovative power-to-heat solutions. Making intelligent use of electricity in ways like this is one of the key challenges in the heating energy turnaround. Electro-mobility is also a core component of the transformation in the energy system and of a conscious, resource-efficient lifestyle. MVV already offers various solutions in this area  www.mvv.de/intelligent-energy. Coupling the sectors will also have repercussions in terms of the need for energy generated from renewable sources and the burden placed on grids and their expansion. Sector coupling is therefore of strategic significance for us, and especially for our project development, generation, grids and sales activities.

Promoting heating energy storage facilities and decentralised energy management

We are pressing ahead with sector coupling and are currently focusing on increasing flexibility with energy storage facilities and the topic of power-to-heat. One important area of application for us is urban district and quarter development, as this enables us to smartly combine decentralised generation, for example from photovoltaics systems, and the measures to cover heating energy requirements, for example by working with heat pumps and other technologies. We are testing these kinds of technical and business management concepts at the FRANKLIN conversion space in Mannheim.

In this newly designed quarter, residential and commercial buildings are currently being created for around 9,000 people. FRANKLIN is unique in terms of its interconnected heating energy, electricity and mobility and its energy flow transparency. For this reason, it has been included in the nationwide initiative “Smart Energy Showcase – Digital Agenda for the Energy Transition” as part of the “C/sells” project  **Page 69**. Together with partners, what we are creating there is a networked, interactive energy system of the future, one that will actively involve the residents of the quarter and facilitate smart energy use. We are reviewing further potential future technologies, such as power-to-gas and power-to-hydrogen; their specific implementation will depend on further technological developments and the regulatory framework.

Our Beegy and MVV Enamic subsidiaries are also concentrating on sector coupling. Beegy acts as a one-stop provider to commercial and retail customers of the services and products they need for smart, decentralised energy management. Its services range from the planning, construction and operation of sustainably working standalone plants – such as photovoltaics, thermal storage facilities, heat pumps, storage heating systems, charging options for electro-mobility and battery storage facilities – through to their energy-optimised use as overall stationary systems. MVV Enamic targets its portfolio of products and services at customers in the industrial, retail and real estate sectors.  **MVV-2**

Changed energy demand

Structural changes accounted for in our strategic planning

Demand for energy will change significantly in the years ahead. That applies both to the energy sources used to generate heating energy and to electricity. On the one hand, we expect to see a gradual reduction in demand for heating energy across the overall economy, with this being driven in particular by the increasing energy efficiency of buildings. By 2050, these will require around 40% to 50% less heating energy. In parallel to this trend, the energy mix used for heating energy will also change – away from fossil fuels such as heating oil and natural gas. On the other hand, demand for electricity will also continue to change, with this being mainly due to the regulatory framework. The shift towards renewable energies in the electricity mix and reduction in end energy consumption are backed up with ambitious political targets. At the same time, customers are showing ever greater interest in covering their electricity requirements with their own generation plants.


Even though the specific developments in energy demand involve uncertainties, we already have to account for these in our planning. Alongside the increased provision of renewable energies, two factors that are particularly due to gain in significance are enhanced flexibility and energy storage. We account for foreseeable changes in demand in the strategic planning for all of our business fields and adapt our business in line with actual market developments. These factors also play an especially important role in planning for our growth investments. While the changes in demand for electricity – whether due to efficiency or due to sector coupling – tend to represent external factors for MVV, we can play a more active role in shaping the changes relating to the energy sources used to generate heating energy.

District heating with key role in heating energy turnaround

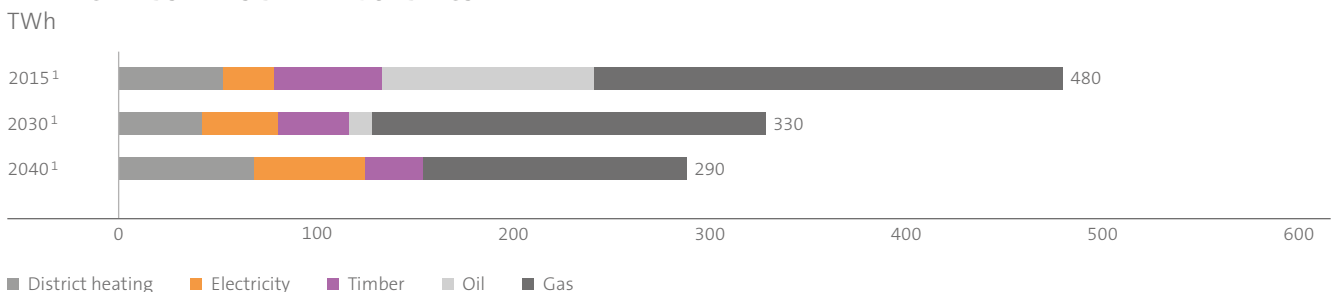
In 2017, we compiled a study together with Prof. Dr. Kai Hufen-diek from the University of Stuttgart in which a selection of scenarios were simulated to model long-term developments in the German heating energy market. One key finding of this study was that political climate targets for buildings were not only feasible in technical terms but could also be achieved in fair competition between the various fuels and technologies on the market. Furthermore, the study established that a central grid-based supply of heating energy would remain a key component in the heating energy turnaround, and that across the scenarios addressed. The challenge for the decades ahead will involve finding a balance between the specific factors of decarbonisation, supply reliability and affordability. We contributed the findings of our study to discussions both within our industry and in the political arena and also published them.

As well as industrial district steam grids, in Mannheim, Kiel and Offenbach we also operate integrated district heating systems and provide hundreds of thousands of people in the relevant regions with a supply of environmentally-friendly, centrally generated heating energy. Alongside the expected long-term reduction in heating energy demand, we aim to further decarbonise this heating energy supply for which we are responsible – not least in view of the climate protection targets for the building sector. The 2050 Climate Protection Plan adopted by the Federal Government provides for a 40% reduction in emissions in this sector by 2030 already compared

with 2014. The building heating energy turnaround can be realised in three areas: energy efficiency, low-CO₂ heating energy grids and renewable energies located close to the respective properties. The task for us will be to reduce CO₂ emissions in our district heating energy supply, which is already operated using highly efficient CHP, to enable us to meet future customer requirements. We are therefore working consistently on concepts to further reduce CO₂ intensity. Today already, specific CO₂ emissions for our three integrated grids in Germany fall short of the specific figure of 274 g CO₂/kWh for decentralised gas heating systems: We have been certified with a value of 201 g CO₂/kWh for our district heating grid in Mannheim, while specific CO₂ emissions at our district heating grids in Kiel and Offenbach amount to 218 g CO₂/kWh and 257 g CO₂/kWh respectively. These figures are newly certified at intervals of around three years when changes in the generation structures have arisen. The next change is therefore set to arise in the Kiel district heating grid once the new Küstenkraftwerk power plant is connected.

Alongside these three integrated district heating grids, we also operate several smaller district heating, district steam, local heating, and property-specific grids in Germany, the Czech Republic and the UK. In the Czech Republic alone we operate heating energy grids at 15 locations, in this case via our MVV Energie CZ subgroup. There too, our activities focus on measures intended to enhance energy efficiency and move to low-CO₂ fuels. 

HEATING NEEDS IN RESIDENTIAL BUILDINGS



¹ Calendar year

Source: MVV/TGZ InEnergy 2017

DECARBONISATION AND ENERGY TURNAROUND

Our management approach for decarbonisation and energy turnaround

At the UN Climate Summit held in Paris in 2015, the international community of states agreed a binding international framework for climate protection. Global warming is to be limited to significantly less than 2 degrees Celsius. With its “2050 Climate Protection Plan”, the Federal Government has set out the path to make Germany climate-neutral by 2050. This plan includes climate targets and CO₂ budgets for individual branches of the economy. Electricity generation should be almost entirely CO₂-neutral, i.e. decarbonised, by 2050 at the latest. Against this political backdrop, we are tackling decarbonisation and the energy turnaround as a core topic for our company. This factor is of great importance both to our business and to our stakeholders. The target of achieving a “2-degree Celsius society” is the standard underpinning our own climate protection targets.

Our investment programme is an important component of our corporate strategy  **Page 65**. We are particularly investing in climate-efficient technologies, with a key focus on renewable energies and efficiency technologies.

In what follows, we present our approaches and results for the topic of decarbonisation and the energy turnaround, defined by the GRI as being material, by reference to specific disclosures on climate protection and renewable energies. We have identified these topics as also being material for the environmental concerns aspect of our Non-Financial Report. Scope 1 greenhouse gases, which are emitted upon the generation of electricity and heating energy, are the factor most decisively influencing our climate balance sheet. The medium to long-term development in our Scope 1 emissions will be determined on the one hand by the decommissioning dates for existing power and heating energy plants and on the other hand by potential additional sources of emissions resulting from growth investments. When implementing our ambitious climate

protection targets, we therefore aim to avoid or reduce CO₂ emissions in the overall energy system. To this end, we are increasing our generation capacities at renewable energies plants and at plants with highly efficient combined heat and power (CHP) generation. The figures achieved and progress made are evaluated each year on Executive Board level and further measures are planned. Moreover, we also address energy efficiency, a further important specific disclosure in respect of the GRI's material topic of decarbonisation and the energy turnaround. Increasing energy efficiency is a significant factor both in our own business and at our customers.

 **GRI 103-2**  **GRI 103-3**

Climate protection

Ambitious targets for climate-effective CO₂ savings

With regard to climate protection, we set ourselves the following sustainability target:


Over the next ten years, we will triple our annual CO₂ savings at our fully consolidated companies and at our companies recognised at equity to 1 million tonnes a year.

To calculate the figures here, we account for climate-effective CO₂ savings which we ourselves can directly influence – in our own business or resulting from our own investments. Monitoring the level of target achievement and checking the data collected is the responsibility of the sustainability programme and the Group Strategy department. Net CO₂ savings in the previous year came to 482,000 tonnes CO₂ eq. In the year under report, we generated savings of 485,000 tonnes CO₂ eq  **table on Page 35**. By 2026, we will increase this net savings figure to at least 1 million tonnes a year. However, the path towards reaching that target will not follow a linear trajectory. It will depend both on the market and on the regulatory environment, as these factors influence the attractiveness of investments and emissions-cutting projects and the speed at which these can be implemented.

Medium-term stagnation in direct emissions

In the short term, the development in direct CO₂ emissions at our power plants (Scope 1) chiefly depends on the relevant volume of demand for energy. In the longer term, structural considerations mean that our Scope 1 climate balance sheet will mainly be influenced by economic circumstances. Ours is a comparatively up-to-date and new power plant portfolio. For as long as our existing power plants have not reached their decommissioning dates, their emissions will remain at a certain level and prevent any rapid reduction in absolute emissions within our climate balance sheet. Not only that, growth investments may lead to additional emissions, for example at new CHP plants powered by natural gas or waste. In absolute terms, emissions can therefore be expected to remain at their current levels for several years to come. Based on the strategic decisions taken for new and replacement plants in our energy generation activities, however, we have ensured that our direct greenhouse gas emissions will gradually decrease in the long term and do not contradict the long-term greenhouse gas targets to be reached by 2050.

The coal-powered joint power plant in Kiel (Gemeinschaftskraftwerk Kiel – GKK) is scheduled for decommissioning in 2019. To date, we have held a 50% shareholding in GKK. Based on the relevant supply agreements, around half of the emissions at this power plant are attributable to us. We are currently building Küstenkraftwerk K.I.E.L. – a new, highly efficient and highly flexible power plant that will act as a model of innovative sector coupling. Due to its modular structure with 20 gas-powered motors, the plant will not only be extremely reliable but also highly flexible, enabling fluctuations in the electricity grid to be offset at short notice. In future, we will own 100% of the generation capacities at the plant and will therefore recognise all of its CO₂ emissions. Even though emissions at the Kiel location will drop by around 67% in absolute terms compared with previously, the fact we will be operating the gas-powered CHP plant on our own means that the absolute emissions we recognise (companies fully consolidated and companies recognised at equity) will fall only slightly.

The direction in which our actions to reduce climate-effective emissions are progressing is therefore only reflected to a limited extent in our own climate balance sheet prepared in accordance with the Greenhouse Gas Protocol. For example, we generate climate-effective CO₂ reductions in the energy system with our growing generation capacities at renewable energies plants, at plants working with highly efficient combined heat and power generation (CHP) and by implementing energy efficiency enhancement measures at our own company and at our customers. We measure this success with our “net CO₂ savings” indicator  **table on Page 35.**

Indirect emissions depend on sales success

Compared with the direct CO₂ emissions at our generation plants, the share of emissions resulting from our other business activities, for example our vehicle pool or our buildings, is very low. At present, our indirect energy-related CO₂ emissions in Scope 2 make up less than 1% of our total emissions. Scope 3 CO₂ emissions are dominated by sales volumes for commodities, i.e. the resale of electricity and natural gas we do not ourselves produce. Here, we act exclusively as a sales company and cannot directly influence the CO₂ balance sheet of these commodities. The development in our indirect emissions in absolute terms does not permit any direct conclusions to be drawn about our efforts to protect the climate. If our commodities sales activities enable us to gain additional market share in what is a stagnating or slightly contracting market, this will increase our own Scope 3 emissions without leading to any increase in greenhouse gas emissions in the energy system as a whole. At the same time, this factor is countered by opposing effects. The rising share of renewable energies and forecast reduction in electricity consumption in Germany will lead to lower specific CO₂ emissions for electricity and natural gas and thus also to a reduction in Scope 3 emissions.

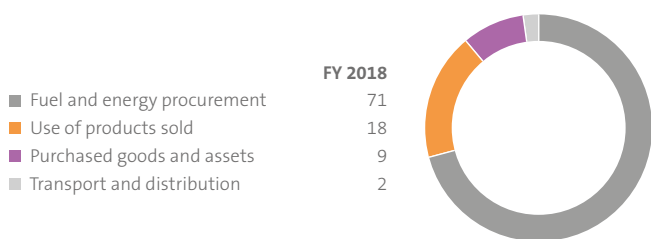
In the following overview, we have published the CO₂ emissions at our fully consolidated companies [Page 189](#) and the emissions figures resulting when companies recognised at equity are added.

CO₂ emissions

1,000 tonnes CO ₂ eq	Fully consolidated companies			Fully consolidated companies and companies recognised at equity		
	FY 2018	FY 2017	% change	FY 2018	FY 2017	% change
Direct CO ₂ emissions (Scope 1) GRI 305-1	1,547	1,646	-6	3,869	4,189	-8
Indirect CO ₂ emissions (Scope 2) ^{1,2} GRI 305-2	8	8	0	8	8	0
Indirect CO ₂ emissions (Scope 3) ^{3,4} GRI 305-3	8,385	8,317	+1	6,924	6,687	+4
of which from purchased goods and assets (GHG category 1)	730	314	>+100	730	314	>+100
of which from fuel and energy procurement (GHG category 3)	5,928	6,206	-5	4,304	4,434	-3
of which from transport and distribution (GHG category 9)	195	193	+1	217	217	0
of which from use of products sold (GHG category 11)	1,533	1,582	-3	1,673	1,722	-3

- 1 Data for respective calendar years
- 2 Scope 2 emissions (location-based) include GHG emissions from building-related utility energy for the central business locations of MVV Energie AG (Mannheim), Stadtwerke Kiel (Kiel) and Energieversorgung Offenbach (Offenbach). Due to materiality considerations, we have not broken down the data in greater detail by further location and emissions source.
- 3 Previous year's figures adjusted
- 4 For fuel-related emissions factors we refer to industry-typical factors from GEMIS/Öko-Institut, for the electricity mix to the Federal Environment Agency (UBA) and for district heating to proprietary certification.

INDIRECT CO₂ EMISSIONS (SCOPE 3)
Shares (%)



Reducing emissions in overall system

Because we as a company are continuing to grow, our own absolute CO₂ emissions figures are only meaningful to a limited extent when assessing our commitment to climate protection. Comparisons of future and historic direct emissions can be problematic; our generation portfolio, for example, has changed significantly in recent years, and that both in qualitative and above all in quantitative terms. Even rising absolute CO₂ emissions may be compatible with the 2-degree climate target if other more CO₂-intensive emitters are simultaneously removed from the market, leading to a reduction in the CO₂ intensity of the overall system.

As our stakeholders expect us to provide them with valid and meaningful statements about climate-effective CO₂ savings, we present net CO₂ avoidance. In 2013, we worked together with the Institute of Applied Ecology (Öko-Institut) in Freiburg to develop a calculation method and reviewed this in 2017. The net CO₂ avoidance figure includes the emissions avoided throughout the value chain. This figure reflects the genuine savings actually taking effect in the climate system. We assess how all new strategic activities, projects and investments at our group of companies impact on their direct and indirect greenhouse gas emissions. In this, all additional emissions (charge) and CO₂ reductions (credit) are netted within and outside our accounting entity. This means that, alongside electricity, account is also taken of heating energy, services and efficiency measures for third parties. We record all CO₂ emissions avoided for a maximum of ten years from the beginning of the respective measure. No account is taken of historic reduction projects and financial transactions.

Reduction in greenhouse gas emissions

	Fully consolidated companies			Fully consolidated companies and companies recognised at equity		
	FY 2018	FY 2017	% change	FY 2018	FY 2017	% change
1,000 tonnes CO ₂ eq						
Net CO ₂ savings due to strategic measures	485	482	+1	438	429	+2

GRI 305-5

Alongside absolute CO₂ savings, the CO₂ intensity of our business activities may also indicate whether, and to what extent, MVV is succeeding in decarbonising its activities. For this reason, we use CO₂ intensity key figures to offer visibility concerning the success of our decarbonisation measures on the level of our reporting segments as well. Compared with the group-wide presentation of CO₂ intensity, this has the added advantage that potentially opposing items in various business fields can be identified more easily.

We use value added as the reference figure here, as the total value of the company's output provides a better indication for the development in business volumes than sales or EBIT, for example. In the following table, we have for the first time presented the CO₂ intensities for MVV and for our reporting segments. Due to the new alignment of the reporting structures in the current year, no retrospective calculation is possible.

CO₂ intensity

	For direct emissions		For direct and indirect emissions	
	FY 2018	FY 2017	FY 2018	FY 2017
Kg CO ₂ per Euro of value added				
Customer Solutions	1	N/A	11	N/A
New Energies	3	N/A	5	N/A
Supply Reliability	9	N/A	11	N/A
Strategic Investments	5	N/A	12	N/A
Total	4	N/A	10	N/A

Renewable energies**Decisive expansion in renewable energies**

The share of electricity generation in Germany attributable to renewable energies is set to rise to more than 80% by 2050. This will make a decisive contribution to the achievement of climate protection targets. Expanding renewable energies is a matter important to our stakeholders. For our company, that opens up growth potential. Not least for this reason, renewable energies are a key focus of our strategic alignment. By expanding renewable energies, we are also making a measurable contribution to the success of the energy turnaround and the achievement of climate protection targets in the interests of society as a whole.

We set ourselves the following two sustainability targets:

We will double our proprietary electricity generation from renewable energies at our fully consolidated companies and our companies recognised at equity over the next ten years.

This doubling will lead to capacities of around 800 MW, more or less equivalent to one large power plant. To achieve this, we are consistently investing in expanding renewable energies. One primary focus here involves onshore wind turbines.

Over the same period, we will connect 10,000 MW of renewable energies to the grid.

Due in particular to our subsidiaries Juwi and Windwärts, we have all-round expertise when it comes to developing, building and launching operations with renewable energies plants. The figure of 10,000 MW formulated in the target is roughly equivalent to the installed capacity of ten large power plants. We aim to reach the target by way of onshore wind turbines and photovoltaics systems both in Germany and abroad. Bio-mass plants will contribute smaller amounts.

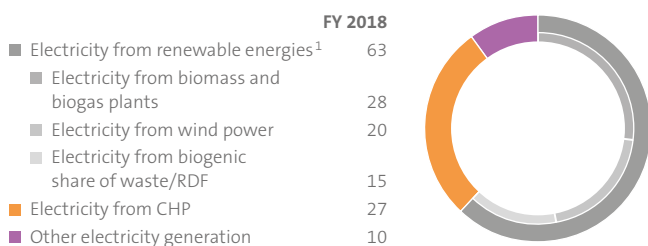
Forward-looking generation portfolio based on renewable energies

Since the 2010 financial year, we have raised our renewable energies generation capacities by more than 100% – from around 200 MW_e to 467 MW_e. In the 2018 financial year, electricity generation at renewable energies plants (including biomass CHP and the biogenic share of waste/refuse-derived fuels) accounted for a 62% share of our total electricity generation volumes (previous year: 56%).

Disclosures on our electricity generation volumes in the 2018 financial year can be found under System change [Page 27](#) and Non-Financial Performance Indicators [Page 84](#).

ELECTRICITY GENERATION

Shares (%)



¹ Due to their immaterial shares, electricity generation volumes from hydroelectricity and photovoltaics have not been presented in this overview.

In the following table, we provide a breakdown of installed renewable energies capacity both for our consolidated companies and when companies recognised at equity are added [Page 196](#).

Installed capacity for renewable energies and biogenic share of waste/refuse-derived fuels (RDF)

MW _e	Fully consolidated companies			Fully consolidated companies and companies recognised at equity		
	FY 2018	FY 2017	% change	FY 2018	FY 2017	% change
Biomass and biogas plants ¹	104	103	+1	109	108	+1
Biogenic share of waste/RDF	161	151	+7	161	151	+7
Wind power	196	196	0	203	203	0
Hydroelectricity	2	2	0	2	2	0
Photovoltaics	4	3 ²	+33	4	4	0
Total	467	455	+3	479	468	+2

¹ Including biomethane plants (previous year's figures adjusted)

² Previous year's figure adjusted

In the year under report, we generated 1,148 million kWh of climate-neutral electricity at our renewable energies plants. Due to displacement effects, we thus reduced CO₂ emissions by a gross arithmetic total of 793,000 tonnes (previous year: CO₂ emissions of 742,000 tonnes).

Wind power

As of 30 September 2018, the wind power portfolio at MVV comprised a total of 95 wind turbines with total installed capacity of 196 MW_e. We regularly review our own turbines, as well as those operated by customers, to ascertain whether they would be suitable for repowering, i.e. for replacing older turbines with newer higher-performance models. This way, the wind at established locations can be put to even better use and the output can be increased several times over – and that although repowering often leads to a reduction in the number of wind turbines at a given windfarm.

Biomass and biogas plants

We have several plants which incinerate solid biomass, especially waste timber, residual forest timber and green cuttings, as well as organic waste.

In Germany, our MVV Umwelt subsidiary operates two biomass power plants, namely Mannheim (20 MW_e) and Königs Wusterhausen (20 MW_e). We are also co-owners of the biomass power plant in Flörsheim-Wicker (14 MW_e). In the UK, our biomass power plant at Ridham Dock has a net electricity capacity of around 23 MW_e. These plants are supplemented by a large number of smaller biomass and biomass CHP plants, as well as four biogas plants, all of which are operated via subsidiaries.

We have four biomethane plants in Saxony-Anhalt, giving rise to a biomethane cluster in the region. Each plant is able to generate around 63 million kWh of biomethane a year [table on Page 85](#) and feed this into the public natural gas grid. These plants mainly work with agricultural substrates.

At the University Hospital in Tübingen, we operate two boilers that we planned and built, as well as the associated local heating network for the hospital, which we also modernised. These plants are fired with wood chips.

In the year under report, we took over an organic waste fermentation plant in Dresden. The procedure used by this plant, which is the first of its kind in our portfolio, harbours great potential for energy generation. It reduces emissions of the greenhouse gases methane and CO₂ into the environment and acts as substitute for fossil-based natural gas. With a capacity of 31,000 tonnes a year, the plant processes organic waste from Dresden and the neighbouring special purpose waste association Abfallwirtschaft Oberes Elbtal and produces biogas. This is then used to generate electricity in two CHP plants.

MVV is currently planning an organic waste fermentation plant in Bernburg, Saxony-Anhalt. Construction work is due to begin in 2019. From 2020, the plant should process around 33,000 tonnes of organic waste a year from Bernburg and the surrounding area. Compared with the previous usual practice of open-air organic waste composting, the bio-fermentation plant will avoid the emission of gases harmful to the climate, saving around 7,900 tonnes of CO₂ a year.

Waste and refuse-derived fuels

Waste contains a high share of materials of biogenic origin and that makes it an important source of energy and a key pillar of any resource-efficient recycling-based economy. Using combined heat and power (CHP) generation, our energy from waste plants in Mannheim, Offenbach and Leuna can generate 341 million kWh of electricity and 1,302 million kWh of heating energy a year from around 1.5 million tonnes of waste. Our waste-fired CHP plant in Plymouth, UK, incinerates around 245,000 tonnes of household, commercial and industrial waste a year. Using CHP, this plant can generate 23 MW_e of electricity and 23 MW_t of heating energy. The CHP plant in Dundee, where we took over a waste treatment plant at the end of November 2017, represents our third project in the UK. In parallel to the existing plant, we are now building a state-of-the-art and highly efficient heat and power plant with a throughput of 110,000 tonnes of waste a year [Page 39](#). In the Czech Republic, MVV Energie CZ operates a waste-powered CHP plant in Liberec via its subsidiary TERMIZO a.s. This plant incinerates around 95,000 tonnes of municipal waste a year using the CHP process. MVV Enamic operates two industrial power plants based on refuse-derived fuels (RDF) at the industrial parks in Gersthofen and Korbach. These use CHP to generate electricity and steam, with annual capacities of around 90,000 tonnes in Gersthofen and of 75,500 tonnes in Korbach.

Photovoltaics

MVV works with photovoltaics systems to generate electricity at several locations. In the year under report, our Energieversorgung Offenbach subsidiary installed and launched operations with a new 7,000 m² photovoltaics system on a landfill site in Main-Kinzig district. Even though photovoltaics has played a subordinate role in our electricity generation mix to date, it is nevertheless gaining in significance at MVV as well, not least in the range of products and services we offer to private and business customers. Solar power has played a major role in our project development business field from the very outset, and we will continue to expand this area.

Renewable heating energy supply

At the end of the 2018 financial year, the heating energy generation capacity [table on Page 38](#) at our plants working with renewable energies or incinerating waste and refuse-derived fuels amounted to 801 MW_t.

In the following table, we provide a breakdown of heating energy generation capacities from renewable energies for our fully consolidated companies [Page 189](#) and when the companies recognised at equity are added.

Heating energy generation capacity						
MW _t	Fully consolidated companies			Fully consolidated companies and companies consolidated at equity		
	FY 2018	FY 2017	% change	FY 2018	FY 2017	% change
Biomass and biogas plants	119	135	-12	119	135	-12
Biogenic share of waste/RDF	682	682	0	682	682	0
Heating energy generation capacity from renewable energies	801	817	-2	801	817	-2
Other plants	1,806	1,891	-4	3,632	3,719	-2
Total	2,607	2,708	-4	4,433	4,536	-2

Project development business field gaining significance

Our subsidiaries Juwi and Windwärts specialise in developing and operating renewable energies plants. Juwi offers one-stop project development and services relating to the planning, construction and operations management of plants. Its main focus in Germany is on onshore wind turbines, while in its international business it primarily works with open-space photovoltaics systems. Windwärts focuses on project development, construction and operations management for onshore wind turbines, especially in northern Germany.

In the year under report, Juwi implemented numerous international photovoltaics projects: two projects in Turkey with a total capacity of 19.7 MW_e, one project in India with a total capacity of 135 MW_e and three projects in Greece with a total capacity of 8.6 MW_e. In South Africa, Juwi has laid foundations to implement three major projects with a total capacity of 250 MW_e. Windwärts had operations management for renewable energies plants with managed capacity of 413 MW_e under contract at the end of the year under report. The windfarm Düste II is currently under construction. The five turbines there have nominal capacity of 11.4 MW_e.

In Germany, the compensation paid for onshore wind turbines has since 1 May 2017 been determined in tenders managed by the Federal Network Agency. In the rounds held in 2018, Juwi and Windwärts were awarded several tenders. Further information about this can be found under Business Framework [Page 76](#). The project development business is by its very nature volatile. The volume of new renewable energies plants at which operations are launched each year depends, among other factors, on individual major projects and can therefore fluctuate significantly from year to year.

Concluded development of new renewable energies plants

MW _e	FY 2018	FY 2017
Wind power	336	190
Photovoltaics	675	221
Total	1,011	411

MVV-5


Operations management for renewable energies plants

MW _e	FY 2018	FY 2017
Wind power	1,295	1,428
Photovoltaics ¹	1,768	1,581
Total	3,063	3,009

1 Previous year's figure adjusted

Energy efficiency

Great economic significance

Enhancing energy efficiency is an important matter for MVV and its stakeholders alike. It is very high up on the political agenda. The term energy efficiency refers both to reducing end energy consumption, i.e. at the consumer, and to reducing primary fuel use at energy generators. Raising our energy efficiency is also important to us from an economic perspective. Starting points here for us as an energy company with its own electricity and heating energy generation include measures to increase the fuel efficiency of our plants and measures to minimise grid losses in the operation of electricity and heating energy grids. At our plants, we achieve a high average fuel utilisation rate of 57%  **table on Page 45.**

Within our ambitious investment programme, we are enhancing the generation efficiency of our proprietary power plants, for example, by working with combined heat and power generation, and are continually investing in modernising our plants and grids. With our products and services, we are also supporting our customers in reducing the energy used at their own plants and in optimising their energy management.

Increasing the efficiency of our own generation

We assess the increase in energy efficiency at our generation plants due to modernisation measures on a project-by-project basis. The listed projects show that rising energy efficiency at the plants also leads to lower CO₂ emissions. In the following section, we present a selection of efficiency projects.

In the Scottish city of Dundee, we have taken over an existing waste incineration plant on the basis of a municipal partnership for environmentally-friendly waste management. We will be building a highly efficient heat and power plant in the direct vicinity to replace the older plant and will achieve CO₂ savings of 10,000 tonnes a year as a result. We began work on building the plant in spring 2018 and operations are scheduled to be launched in 2020. Overall, we are investing around Euro 135 million.


One important project to boost the energy efficiency of our district heating is the planned link-up of our waste-fired CHP plant on Friesenheimer Insel in Mannheim to our existing district heating grid. Once the necessary work is completed in 2020, the CHP plant will be able to feed in district heating throughout the year and will then on average provide a quarter of the district heating needed in the Mannheim region. This connection will increase the efficiency of our heating energy portfolio. We expect this to result in total net savings of 61,000 tonnes of CO₂ eq a year from 2021. On the other hand, we are extending the CHP plant to include a facility that involves a further component of a sustainable recycling-based economy. Here, we will be incinerating municipal sewage and simultaneously facilitating the recovery of phosphorous, a valuable material used in the production of manure.

A major contribution to protecting the environment is in the planning stage at Energieversorgung Offenbach (EVO). The waste-fired CHP plant at this subsidiary will in future also be using raw sewage after a drying process. Incineration is a prerequisite for recycling the phosphorous contained in sewage.

At our non-recyclable waste incineration plant in Leuna, we pressed ahead with the project aimed at optimising turbine operation. With extensive data evaluation within a big data solution, we will refer to the heating energy yield to calculate how we can better coordinate the operation of the two turbines. We expect this to increase our energy yield. That in turn will save resources and enable around 1,500 tonnes of CO₂ emissions to be avoided each year.

We converted the flue gas cleaning process at our Leuna plant to the dry sorption process VapoLAB, a measure begun in the 2016 financial year and completed at the end of the 2018 financial year. As a result, the two incineration lines now also generate 5 MW of surplus flue gas heating energy each. We aim to extract this energy via two flue gas heat exchangers and feed this into the district heating grid of a local heating energy supplier. This will enable CO₂ emissions of more than 12,000 tonnes a year to be saved at our company and our customer. Operations with the heat exchanger on the first line are scheduled to begin in November 2019 and the second line is due to follow in November 2020.

Efficiency projects are also being consistently promoted at power plants in which we hold shareholdings, such as at the large power plant in Mannheim (Grosskraftwerk Mannheim – GKM). In spring 2018, the waste heat potential in the flue gases in Block 8 was tapped. By lowering the flue gas temperature, a further 7 MW_t are now available for district heating, and that without incurring any additional CO₂ emissions.

 **GRI 302-5**

Securing the efficiency of our infrastructure


We are able to exploit extensive energy efficiency potential both in our own infrastructure projects and in joint projects with customers. In what follows, we present the focus of these activities and current projects.

Primary energy

For our major district heating supply systems in Mannheim, Offenbach and Kiel we calculate the primary energy factor (PEF), which indicates the efficiency of the infrastructure. The lower the PEF is, the more environmentally-friendly and efficient the energy use is. This factor, which presents the ratio of primary energy used to the volume of end energy yielded, is relevant for meeting legal requirements in terms of heating insulation and building facility technology. Under the German Energy Saving Ordinance (EnEV), decentralised natural gas or oil-fired heating systems are currently assessed with a PEF of 1.1, while district heating from combined heat and power has a PEF of 0.7. For fuels such as natural gas or electricity, the PEF is determined by the EnEV irrespective of the individual company. The assessments show that several of our district heating supply systems have already achieved a very high level of efficiency.

In view of the link up of our CHP plant to the district heating grid, our district heating supply system in Mannheim has been certified with a PEF of 0.42, with the certification valid until 2024. For the district heating supply system in Offenbach, the certification valid until 2021 attests a PEF of 0.47. For Kiel, the certification valid until 2024 already accounts for the K.I.E.L. gas-powered CHP plant currently being built. Based on the planning data for the 2019 calendar year, the PEF will come to 0.0 and primary energy use will exceed 90%.

Fuel use at our conventional power plants is managed on the basis of economic criteria. In absolute terms, our primary energy consumption is determined by demand levels on the wholesale markets, i.e. by wholesale electricity prices and the

generation margin (clean dark spread). Moreover, weather-dependent electricity and heating energy demand has a major influence on capacity utilisation rates at our CHP plants. We only have limited ability to control this factor. We report on the fuels used at our power plants on  **table on Page 44.**


Grid losses

Limiting grid losses is an important task for us, and one that also benefits our energy efficiency. Grid losses arise when electrical energy is transported in electricity grids. They are mainly due to electrical resistance in the transmission cables and transformation losses between various voltage levels. Grid losses in heating energy grids are due to technical factors and mainly relate to the transport route between the source of the heating energy and the heat sink. The scale of grid losses depends on how well insulated the transport pipes are. The most important factors determining the scale of losses nevertheless involve natural circumstances, such as the temperature and weather conditions.

Grid losses at MVV		
kWh million	2017 ¹	2016 ¹
Electricity	141	153
Heating energy ²	551	508

1 Calendar year
2 Correction in previous year's figure

Grid losses can be reduced with long-term infrastructure measures, such as improved insulation and other technical methods. One such long-term measure is the conversion of the district heating supply at Stadtwerke Kiel from heating steam technology to more energy-efficient heating water technology, a process that was begun in 2002 and completed in the year under report. The steam was fed into the grid at 180 degrees Celsius, while the heating water grid only needs temperatures of up to 130 degrees Celsius. The lower temperatures and more advanced insulation materials reduce the heating energy losses.

A further measure aimed at reducing grid losses in the district heating grid was implemented at SWKiel Netz in the year under report. By adding dye to the water it was possible to detect and thus significantly reduce the number of leaks in the system. This measure did not have any health or water-biological implications and, thanks to wide media coverage, was also widely supported by the population.  **MVV-6**

Increasing energy efficiency at customers

We support our customers in the industrial, commercial and real estate sectors in reducing energy input in their systems and optimising their energy management. Our portfolio includes, for example, transparent electricity and gas procurement, solutions for sustainable energy generation, digital energy data management, billing services, contracting, smart metering, e-mobility and LED solutions for lighting concepts.

We build efficiency partnerships with our customers in which we combine modern measurement technology, software and services. This way, we can make all energy and process costs and all consumption visible to our customers, automate their monitoring and reporting and compile and implement plans to optimise all these factors. The prices of fuels and emissions increased in the 2018 financial year  **Business Framework on Page 82.** If this development continues, the economic benefit of efficiency projects will also increase. In the next section we describe several examples from the year under report.

MVV will take over the supply at Ludwigshafen-South Industrial Park until 2028. We have provided the chemicals companies at this location with a secure and reliable supply of steam, electricity, gas, compressed air and water for their production processes for many years now. As their energy partner, we will be investing around Euro 4.3 million in a forward-looking supply and in measures to enhance energy efficiency, including a modern electricity distribution substation and a further, highly efficient steam boiler.

We have maintained an energy partnership with Roche Diagnostics GmbH for more than ten years. Roche has now largely discontinued its own, fossil fuel-based heating energy generation and will be relying on heating energy from our waste incineration on Friesenheimer Insel for its production, building heating and cooling energy generation at its Mannheim location. We are transporting the hot steam needed for that under the Old Rhine to Roche. Not only that, Roche is now only procuring electricity from MVV that comes from 100 % regenerative sources. This will generate CO₂ savings of around 65,000 tonnes a year. Furthermore, the arrangement will also lead to greater energy efficiency at MVV: On the one hand, the heat extraction at our CHP plant will rise by around 27 %, on the other hand, our energy yield will improve by 10 %.

A longstanding customer of ours in the timber processing industry had already modernised its lighting systems with our “Smart Light Efficiency” LED contracting scheme. Now, this customer is drawing on a further forward-looking solution. Together with Enerix, our partner for decentralised energy systems, we have implemented a photovoltaics system for the company and are drawing on our SMA Spot product for the direct marketing of the solar power. With its system, which has a capacity of 200 kWp, our customer has now achieved a self-supply rate of more than 50 %. As a result, it is also saving half of its previous electricity costs and has protected itself against rising electricity costs for the next 25 years. For the electricity it feeds into the grid, the customer receives compensation under the market premium model. At the same time, it saves around 100 tonnes of CO₂ a year.

A retail customer at our Econ Solutions subsidiary set itself three goals for its new energy concept: cutting its energy consumption by 20 %, building up proprietary energy generation and integrating both features into a concept that could be transferred at least in part to all its self-service supermarkets in Germany. The energy management concept is based on the one hand on measurement technology and on the other on data analysis and evaluation. For the data analysis, the customer installed the energy management software econ 3 and was thus able to generate the reports and key figures needed to initiate suitable measures.

A beverages manufacturer also drew on the energy management solution offered by Econ Solutions to monitor its energy consumption, identify cost drivers and further improve its sustainability performance. This company also received extensive documentation of its energy-related measures. It began in 2014 with 18 measuring points and now has 84 measuring points on most of its machines and systems. These help to enhance the company’s cost and process efficiency and to reduce its CO₂ emissions. Furthermore, data monitoring also enables it to react quickly. When system consumption volumes suddenly surged by 30 %, for example, the system immediately reported this limit violation. Based on measurements, the company could look for the source of the error in a targeted manner and then replace a broken control valve.

RESOURCE EFFICIENCY AND LOCAL ENVIRONMENTAL PROTECTION

Our management approach for resource efficiency and local environmental protection

In the following section, we present our approaches and results for the specific disclosures on resource efficiency and local environmental protection defined by GRI as material.

We use natural resources to generate energy and therefore see ourselves as bearing a particular obligation to protect the environment. Our thermal power plants also use resources such as natural gas and hard coal as fuels. These are finite and we aim to use them as efficiently as possible. One key indicator of efficient use involves high fuel efficiency rates resulting from optimised use of the energy contained in the fuel. This means we minimise the energy losses arising when the fuels are converted into end energy, such as electricity or heating energy. This way, we also help to reduce primary energy consumption, an indispensable factor if the energy turnaround is to succeed. One priority for us is to reduce our use of finite resources in the long term and ensure that they are used in environmentally-compatible ways. We are therefore investing consistently in enhancing energy efficiency at our generation plants and expanding district heating in conjunction with highly efficient combined heat and power generation.

Furthermore, one matter that is just as important to our stakeholders as it is to us as a company involves increasing the share of renewable resources used and thus cutting back our primary energy use. We describe this focus in detail in our chapter Decarbonisation and Energy Turnaround [Page 32](#).

Local environmental protection is a fixed component of our management systems, into which quality and compliance aspects are also integrated. Our subsidiaries and shareholdings are responsible for the operative management of all environmental concerns on a decentralised basis. As they work with different technologies and our stakeholders in the regions have a variety of concerns, these companies set their own accents within the framework provided by our group-wide guidelines. We work with decentralised environmental and energy management systems for the control and operative implementation of environmental protection measures.

We avoid other harmful environmental effects resulting from the generation and provision of our products and services where possible or reduce these to a minimum. We accord priority, for example, to cutting emissions of other air pollutants. Large combustion plants produce pollutants such as nitrogen oxide, sulphur oxide and dust. While CO₂ emissions have a global impact in terms of climate change, other air pollutants can have negative implications on local ecosystems and the health of people living in the regions affected. We treat the pollutants thereby incurred very carefully. In the interests of recycling, unavoidable waste from energy generation and waste incineration, such as ash and slag – so-called by-products – is turned wherever possible into products for other companies. Where this is not possible, the waste is disposed of correctly.

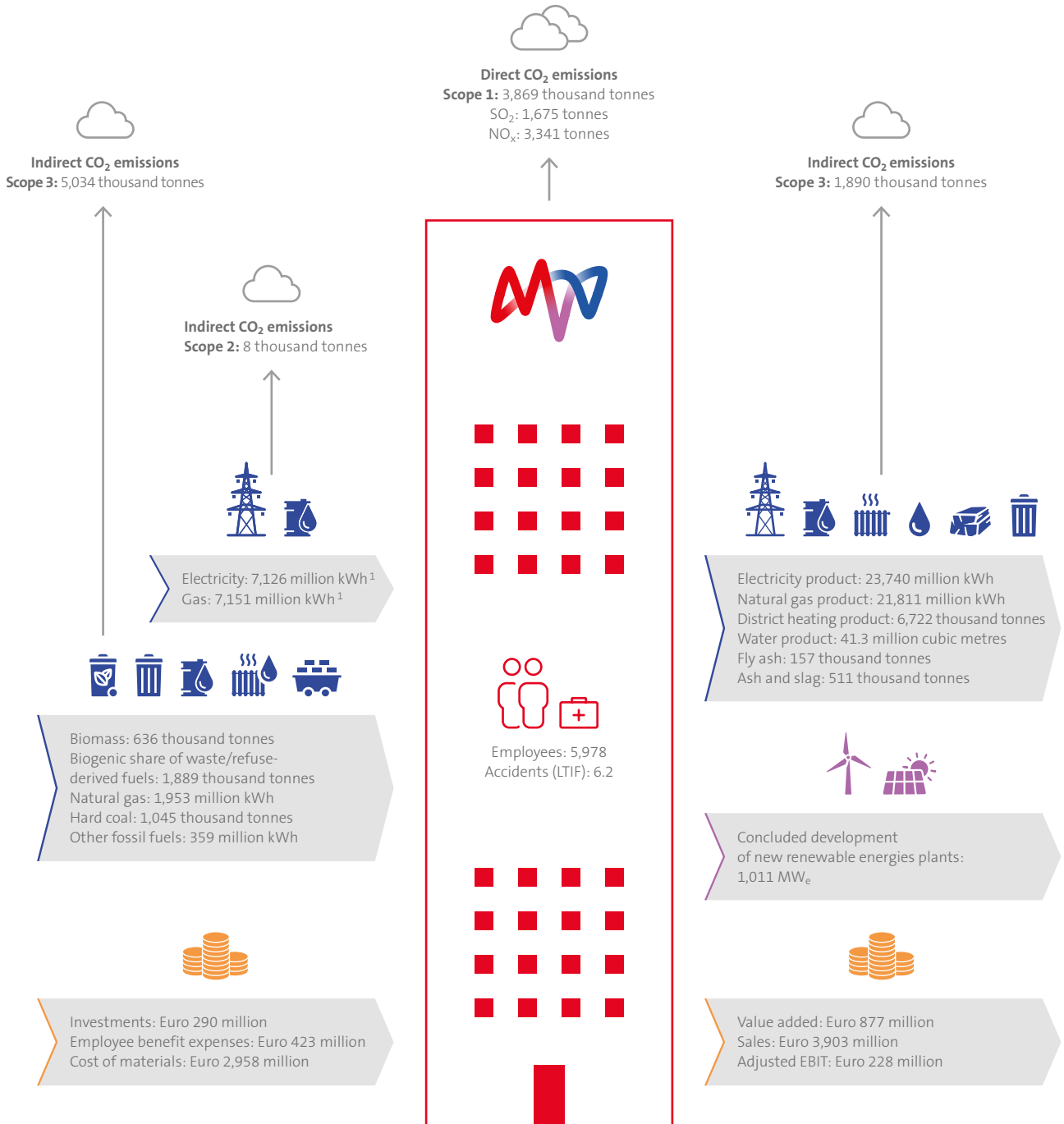
 [GRI 103-2](#)  [GRI 103-3](#)

Environmental impact in our input/output balance sheet

We have compiled an input/output balance sheet for our fully consolidated companies, including companies recognised at equity, for several years now [Page 196](#). This balance sheet succinctly compares our environmental impact with our value added. The input/output balance sheet goes beyond a mere consideration of environmental concerns; as these concerns nevertheless account for a significant share of the information provided, the balance sheet offers transparency on key environmental implications.

We record the inputs we use in the form of natural resources, capital and employees. Most of the natural resources we use involve the fuels of natural gas, hard coal and waste, as well as renewable energies sources. This way, we generate value added in the form of electricity, heating energy and gas, as well as by-products, most of which are reused. The largest intervention in the ecosphere takes the form of outputs such as CO₂ emissions, air pollutants and ash and slag. For us, a large share of the resource input for electricity and gas is a transit item. We act as an intermediary by purchasing this energy on the wholesale market and then refining this for or selling it on to our customers. That is also the reason for the high volume of indirect emissions on the upstream and downstream stages of the value chain.

MVV'S INPUT/OUTPUT BALANCE SHEET
Fully consolidated and at-equity companies



1 Excluding sales volumes from trading transactions

Recent years have not seen any significant changes in terms of our emissions and by-products. Over the same period, we generated growth above all with renewable energies and thus developed lower-CO₂ forms of generation. That shows that, based on a similar volume of input, we have managed to increase our business volumes, and thus the productivity of our natural resource, capital and employee factors.

Resource efficiency

To generate electricity and heating energy, power plants use fossil fuels, and here especially natural gas and hard coal, as well as regenerative fuels. These include both solid biomass and so-called refuse-derived fuels, which are produced from waste and have a biogenic share of around one half. We describe our value chain in greater detail on [Page 25](#).

One way we help to protect resources is by reducing primary energy use with high fuel efficiency rates. The fuel efficiency rate presents the volume of end energy generated (electricity and heating energy) as a ratio of the energy input (primary energy) and thus quantifies the efficiency of generation.

If the fuel efficiency rate increases, a given generation portfolio has a higher energy yield. This way, we are also making what is an important contribution to cutting emissions. Our plants achieve an average fuel efficiency rate of 57%. This puts our energy yield ahead of the German average for generation activities, which the Federal Environment Agency has quantified at an average of 48% for all energy sources (based on gross electricity generation; for the 2016 calendar year).

We make targeted investments in highly efficient combined heat and power (CHP) generation – after all, the fuel efficiency rate for CHP is significantly higher than when electricity and heating energy are generated separately. With a fuel efficiency rate of more than 90%, the gas-powered CHP plant currently under construction in Kiel will significantly reduce primary energy input. Furthermore, our waste-powered CHP plant in Mannheim will in future be decoupling not only electricity and district steam, but also district heating for use in our regional district heating grid. This will reduce the fossil fuel input in our heating energy generation portfolio.

Fuels used at power plants

	Fully consolidated companies			Fully consolidated companies and companies recognised at equity		
	FY 2018	FY 2017	% change	FY 2018	FY 2017	% change
Biomass (tonnes 000s)	602	514	+17	636	555	+15
Biogenic share of waste/refuse-derived fuels (tonnes 000s)	1,889	1,810	+4	1,889	1,810	+4
Natural gas (kWh million)	1,931	2,315	-17	1,953	2,342	-17
Hard coal (tonnes 000s)	78	88	-11	1,045	1,147	-9
Other fossil fuels (kWh million)	359	399	-10	360	400	-10

 GRI 301-1

Average fuel efficiency rate¹


%	Fully consolidated companies			Fully consolidated companies and companies recognised at equity		
	FY 2018	FY 2017	+/- change	FY 2018	FY 2017	+/- change
	57	60	-3	61	63	-2

¹ Previous year's figures adjusted

The volume of fuel that has to be used in individual financial years largely depends on developments in weather conditions and market prices, as well as on the properties of the fuel in question. By-products, primarily ash and slag, arise in our waste incineration and our CHP plants. In the 2017 calendar year, combustion processes at our fully consolidated companies and our companies recognised at equity led to around 157,000 tonnes of fly ash and around 511,000 tonnes of ash and slag.

Ash and slag volumes are due to technological factors and do not lie within our control. We put these by-products to further use wherever this is technologically possible and economically viable. Consistent with the cascade use principle, we prepare them so that they can be returned to the economic cycle, for example as products for the construction industry. Residual volumes that are not recyclable have to be sent for landfilling in line with legal requirements. Other by-products and toxic or hazardous substances, such as polychlorinated biphenyls (PBC), play no role, or only a subordinate role, in our business activities. The rules for handling such substances and relevant control mechanisms are set out in our management systems for work safety and for quality and the environment.

Local environmental protection

A major share of our environmental protection activities on local level involves investments to modernise our plants. By enhancing their efficiency, we can save resources and protect the environment  **Investments Page 93.**

For us, environmental protection on both national and local levels is also closely based on legal requirements. Approval requirements and strict threshold values form the basis for our activities, and that both when we build new plants and in our day-to-day operations. Compliance with these values is monitored by the relevant authorities. Certain aspects of our operations, such as plant-specific emissions at large combustion plants, are subject to reporting requirements.

The plants at our fully consolidated companies and at the companies we recognise at equity emitted 3,441 tonnes of nitrogen oxide (NO_x), 1,675 tonnes of sulphur dioxide (SO₂) and 91 tonnes of dust in the 2017 calendar year. Moreover, our generation plants emitted around 3.9 million tonnes of climate-neutral biogenic CO₂ in the year under report. This results from the direct use of timber, other biogenic waste and other regenerative materials deployed as fuels at our plants.

 **GRI 305-7**

In our operating business, the use of natural resources in our energy generation has the largest environmental impact. Compared to this, other business processes at our plants, buildings and business operations, such as administration, have a notably smaller impact. As a result, the environmental protection measures we take to improve our own direct electricity and water consumption and our use of other materials or to reduce our own waste volumes only have a relatively limited effect in terms of their environmental benefits. We are nevertheless promoting several aspects in our decentralised environmental management systems. As a general rule, for example, we make sure that materials are put to careful and efficient use and switch to green alternatives when these are available. In the office materials used in our administration, for example, we work almost exclusively with recycled paper.

Further environmental protection aspects form part of the environmental management systems at our local companies, which are responsible for these on a decentralised basis. These companies also set their own accents. MVV Energie and Stadtwerke Kiel, for example, play an active role in protecting ground water and water surfaces. As they are responsible for the supply of drinking water in their regions, their supply systems have to be regularly analysed and checked. Here, the production, treatment and distribution of drinking water is not only of economic significance; the public supply mandates serve the common good. As the most important source of life, drinking water is governed by strict quality standards which are laid down in the German Drinking Water Ordinance (TrinkwV) and in DIN 2000. The most important objectives for the water supply involve complying with quality standards and minimising those contents for which threshold limits or guideline values are laid down in the ordinance. We have published our targets and management approach for our drinking water supply in our Water Policy [mvv.de/water-policy](https://www.mvv.de/water-policy).

Stadtwerke Kiel is playing an active part in the climate protection plans drawn up by Kiel, the state capital. With its “100% Climate Protection Masterplan”, the City of Kiel has set itself the target of reducing emissions of greenhouse gases harmful to the climate by at least 95% compared with 1990 and of halving its end energy consumption by 2050. Stadtwerke Kiel accompanied the design phase through to the end of 2017 and is now a key cooperation partner in the implementation phase launched in 2018.

DIGITAL TRANSFORMATION

Our management approach for digital transformation



Traditionally a demand-driven market, energy generation is already characterised by interactive relationships between supply and demand. This process is set to intensify further in future. One major future trend for us is the digitalisation, networking and automation of business processes, an approach partly described by the catchword “Industry 4.0”. We provide our customers with individual solutions enabling them to align their processes even more holistically and enhance their efficiency – this way we are also helping to reduce the long-term impact of energy consumption on the environment.

As we head for the energy system of the future, renewable energies will have to be smartly linked with highly efficient conventional energies and energy storage facilities. Not only that, flexible sources of demand will also have to be integrated. For us as company, that means we are making sure our customers themselves can play an active role in the energy turnaround. We are helping them to make increasing use of decentralised, renewable energies. In the following sections, we state our specific targets and associated activities.

At MVV, implementing the megatrend digitalisation – both in terms of processes and of products and services – will be a key driver to secure our future success. As well as securing sustainability at the company in economic terms, digital solutions also offer opportunities to reach ecological and social targets. At MVV, the cross-divisional topic of digitalisation is being implemented across all business fields. We coordinate key aspects of this process in our digitalisation programme and also ensure this is closely dovetailed with our sustainability programme.

We are also committed to protecting information and data with a wide range of technical and organisational security measures. These apply in particular to personal data, which we collect in connection with the solutions and service products we offer to our customers and for employment and other contractual relationships with employees and suppliers. Working with an information security management system based on the international norm DIN ISO 27001 and a data protection management system, the employees entrusted with this task manage and monitor the security of business processes in


terms of IT and data protection law on a decentralised basis and ensure that the information is protected against unauthorised viewing, loss or manipulation. All measures we implement in terms of information security and data protection are intended to detect and manage any potential risks. Our goal here is to maintain existing relationships of trust with our customers, shareholders, suppliers, service providers and employees and, where possible, to extend this trust even further.

In the year under report, we met our objective of protecting information and data with extensive technical and organisational security measures. The same applies to the data we collect from our customers in connection with our solutions and service products.  **GRI 103-2**  **GRI 103-3**


Industry 4.0: changed patterns of consumption and customer relationships

For the energy system of the future, we need a decentralised communications infrastructure that networks generators, marketers and consumers with each other. This will give rise to consistent end-to-end processes. As the industrial transformation already underway – Industry 4.0 – progresses further, all industrial equipment and tools down to end points will in future be connected both to each other and to the internet. This way, they will form the “Internet of Things”. The aim then will be for end consumers to use large quantities of electricity when this is available in large quantities and inexpensive. At times when less electricity is available due to more significant fluctuations at renewable energies plants, electricity demand will also have to fall. The electricity price will thus fluctuate in the course of the day. In summary: In the past, power plant production was aligned towards electricity demand. In the future, the electricity supply will be influenced by wind and sun conditions, meaning that electricity demand will have to adapt in line with these. This process, which involves demand side management, will lead to changes both in patterns of consumption and in customer relationships.

Combining digitalisation, automation and networking should make it possible to coordinate generation and consumption in real time. This will create further benefits, as data aggregation and analysis will enable business processes to be structured more efficiently, thus reducing CO₂ emissions. Early warning indicators will also make it possible for plant maintenance processes to be planned more effectively. Not only that, the avoidance of peak loads means the investment costs needed to expand Germany’s grids can be expected to turn out lower.

Digitalisation on end customer level and Industry 4.0 on B2B level – both form part of the energy system of the future. In view of this, we are systematically evaluating technological options resulting from these trends and extending the range of solutions for our customers.  **MVV-7**

Individual customer solutions

Digitalisation is not the only trend that will contribute towards the energy system transformation. The degree of networking between energy sources and with other industries is also set to increase in connection with sector coupling  **Page 29**. These factors will be accompanied by the trend towards end customers increasing their proprietary electricity and heating energy generation from renewable energies – a trend that is applicable both to business and to retail customers. On the one hand, we have to record our customers’ energy data in real time and network this with applications intended, for example, to optimise energy consumption or enhance energy efficiency. On the other hand, we must enable our customers to supply themselves and to integrate, and thus secure, this supply in ways that make best sense.

As an energy service provider, we have a key role to play here. Our customers will require individual advice accompanied by increasingly automated solutions. This is clearly relevant for our business and commercial customers, but we also expect to see the same developments in our relationships with retail customers. Here, automation will affect all interfaces from customers right up to the energy system as a whole.

Our new business models are based on a consistent focus on service, smart networking and maximum flexibility. In the previous year, we forged strategic partnerships and acquired shareholdings in the field of energy management with the aim of further expanding our digital competencies and thus our leading role in the successful transformation of the energy system. Specifically, we extended our portfolio to include Qivalo, Econ, Recognizer and Datacenter-Group. The challenge here is that, compared with other segments in the energy industry value chain, these areas are very fast-moving, with both innovation and product lifecycles being measured in months and years. The high pace of adaptation and change has implications for in-company processes, plannability and interactions with customers.

In view of this, we aim to build long-term cooperations with our customers and draw on comprehensive efficiency solutions that extend beyond individual products that may turn out to be short-lived. Long-term partnerships are the structure that best enable us to support our customers in mastering the complex energy-related challenges they face, taking part in the energy turnaround and meeting their own individual decarbonisation targets. Our aim is to satisfy our customers, as this will give rise to sustainable customers partnerships. We have set ourselves the following sustainability target:


As a competent partner, we offer all customers – from private households to industrial players – the products and services they need to implement their own energy turnarounds.

 **MVV-8**

Information security and data protection

Information security and data protection are indispensable foundations for any successful business activity. Due not least to the advance of digitalisation in all areas, we continuously review, question and optimise our processes to protect personal data and information.

We act on the basis of applicable legal requirements. In an extensive project conducted in the year under report, we implemented the stricter requirements resulting from the European General Data Protection Regulation (GDPR) and the new version of the German Federal Data Protection Act (BDSG) concerning the treatment of personal data, and that across all areas of the company and in all business processes. Here, we supplemented the existing information security management system by setting up a data protection management system in order to ensure that data protection risks are sustainably addressed. We have established central points of contact at group companies to deal with all internal and external enquiries and issues relating to data protection.

We regularly inform and train our employees about the steadily rising standards applicable to information security and data protection and work to raise their awareness both of existing risks and threats and of the need to treat personal data and information with due care.  **MVV-9**

EMPLOYEE CONCERNS


Our management approach for employee concerns


Motivated, healthy and well-qualified employees are a crucial success factor for MVV. Viewed in the long term, demographic trends and changes in the population structure will create additional challenges when it comes to finding and retaining suitable employees. We are meeting these challenges with the personnel strategy adopted by the Executive Board:

- » Leadership: We attach great value to systematically and continually improving the quality of management at the company and adapting this in line with changing market and employee requirements.
- » Demographics, work-life balance, compensation management: Our aim is to remain an attractive employer. That is why we are committed to helping our employees combine their work with their family or nursing care commitments. We have implemented systematic recruiting procedures, with a particular focus on promoting women and expanding diversity at the company. This way, we aim to counter the effects of demographic change in a targeted manner. We are committed to modern compensation management.
- » Ongoing change management: We are continually working to develop our company and corporate culture further and aim to retain and enhance our employees' skills. To this end, we invest in training our workforce and enhancing its willingness to embrace change. After all, we need highly trained, flexible and innovative specialists and managers to make their contribution to the new energy system.
- » Talent management: We deliberately identify, support and develop upcoming talent – and that among our trainees and new recruits and among our managers.

The personnel strategy is structured and implemented on a decentralised basis and is the responsibility of the companies on location. This way, the companies can set targeted focuses in line with circumstances on location.

We attach great value to taking account of our employees' concerns. MVV has a Group Works council and numerous works council bodies and committees. MVV works together with these bodies on a basis of trust in matters involving works constitution law, meaning that the company's concerns and those of its workforce are accounted for in all decisions. The Supervisory Board of MVV Energie AG includes equal numbers of shareholder and employee representatives. Employee representatives are thus involved at a decisive stage of important company decisions.

One important matter for us involves protecting the physical and mental wellbeing of our own employees and of those employees who work on our behalf. We continually work to improve work safety at the Group. In our integrated safety management system, we lay down organisational and technical framework requirements for occupational safety and fire safety as well as for plant and environmental safety. Our work safety committees formed pursuant to § 11 of the German Occupational Safety Act (ArbSicherG) are established by the companies on location. They include employee and employer representatives and meet at least once a quarter. Around 120 individuals across the Group are active as members of work safety-related committees at the various companies. We agree our occupational safety and accident prevention strategies and measures with professional associations and employee representatives and maintain close links with these. When it comes to reintegrating employees, we work with a clearly structured operative integration management system which also involves employee representatives and occupational health professionals.  **GRI 403-1**

In the following section, we deal with the employee concerns topic defined by GRI as material and present our approaches and results for the specific disclosures of training and development, promoting women and occupational health and safety. We have also identified these topics as being material for the employee concerns aspect of our Non-Financial Report. Moreover, we deal with further important specific disclosures relating to this topic defined by GRI as being material. Among others, these include employees' ability to combine work and family commitments and our corporate culture.  **GRI 103-2**

 **GRI 103-3**

Key figures for our employees

A total of 5,978 individuals worked at MVV as of the balance sheet date on 30 September 2018, 84 fewer than one year earlier. The decrease in the number of employees was due in particular to staff reductions at Juwi companies in Germany and abroad.

Employee key figures		
	FY 2018	FY 2017
Number of employees	5,978	6,062
of which		
Women	1,701	1,740
Men	4,277	4,322
of which trainees¹		
Women	79	93
Men	233	231
Total	312	324
of which in part-time employment (%)		
Women	10	10
Men	4	3
Total	14	13
of which in permanent employment		
Women	1,507	1,525
Men	3,823	3,824
Total	5,330	5,349
Average age (years)		
Women	42.2	41.7
Men	44.7	44.1
Total	44.0	43.4
Average length of service (years)		
Women	12.1	11.9
Men	13.8	13.7
Total	13.3	13.2
Number of employees on childcare leave²		
Women	125	146
Men	97	128
Total	222	274
Staff turnover rate² (%)	9.6	10.8
Employees with severe disabilities² (%)	5.1	5.4

¹ Including students at Baden-Württemberg Cooperative State University (DHBW)

² In Germany

Further development of lived corporate culture

“Lived Energy” – the corporate culture we uphold together – is key to our employees’ sense of belonging and motivation. Four cultural values shape our mutual interactions at the company: Community, Appreciation, Responsibility and Courage. We learn from each other and cooperate to achieve our common goals. We are continually developing our company further. To this end, we implemented numerous measures at our large German locations in the year under report. Among other formats, we held dialogues with Executive Board members, managers and works council members, as well as cross-departmental workshops. Furthermore, we put a team in place to accompany the activities, instruments and standards relating to our corporate culture. At Stadtwerke Kiel, for example, a survey about the corporate culture was performed. Joint workshops were then held to discuss the findings and define measures. In its corporate culture project, Köthen Energie held a “Lived Energy” conference and various other employee events, including a work assignment at the local zoo.

One core event in Mannheim was the “Lived Energy” conference in February 2018. More than 150 participants, including managers, multipliers, the works council and representatives from the personnel development department, took part in a lively exchange of ideas. We have pooled the cultural topics discussed at the company in recent years and developed these into a shared spirit consistent with the new corporate culture. At an event titled “Is the energy turnaround possible without a change of culture?”, Executive Board members debated the significance of corporate culture for MVV’s future success with the Works Council Chairman and the Dean of the Lutheran church in Mannheim.

At the same time, we performed an anonymous employee survey at our Mannheim location. Employees assessed the status of our corporate culture and values and commented on our strategy, brand and cooperation, as well as on their own areas of work. The participation rate came to 61%. A majority of employees were positive in their assessment of numerous areas, such as the ability to combine work and family commitments, cooperation in their own area of work, and satisfaction with their direct manager and their own activities. Equality of opportunities for men and women was assessed positively, although women are slightly less satisfied overall. The survey enabled us to identify actions required to address the equal treatment of all employees and change management. At the subsequent workshops, numerous employees provided us with valuable suggestions as to how we can improve these points. We have initiated suitable activities to tackle these.

Family-oriented personnel policies

A further key plank of our personnel policy relates to employees' ability to combine their work and family commitments. Our aim here is for our employees to be able to successfully combine these commitments, and that on an ongoing basis.

We offer a variety of working hour models at the company, such as flexible working hours. Digitalisation and the use of modern communications appliances also facilitate teleworking in line with specific needs. Parents in Mannheim, Offenbach and Wörrstadt have the option of taking their children to care facilities at or close to company locations. In Mannheim, Kiel and Offenbach, we have set up parent and child rooms which can be used when any childcare difficulties arise at short notice. In Wörrstadt, parents can take their children to work with them in these situations. We also offer child supervision options for the holiday season. In Mannheim, for example, children can take part in the Deltakids holiday programme that is subsidised by MVV and other companies in the Rhine-Neckar region. As the relevant requirements are individual, our companies set their own accents in this respect for their employees on location.

Another area in which our employees will have greater needs in future relates to caring for relatives. We are also supporting them here. Employees caring for relatives can be granted leave from work. We also inform our staff about care options by holding information events, providing emergency folders with information about work and care and – like at Energieversorgung Offenbach, for example – by cooperating with a nursing care service.

Our family-oriented personnel policies are important to us and we intend to become ever better in this significant and rapidly developing area. That is why we have drawn for many years now on the momentum provided by the *berufundfamilie*® programme offered by the Hertie Foundation. This assists companies in their efforts to improve the compatibility of their employees' work and family commitments. In the audits, catalogues of measures are compiled and bindingly agreed for the respective locations. Checks are performed at a later date to ascertain whether and how these agreements have been implemented. Our Mannheim location has been audited and certified within this scheme since 2008 already. Audits have been performed in Offenbach since 2009 and in Kiel since 2012. In Wörrstadt, the audit was introduced in 2017. The certification at Stadtwerke Kiel was renewed in December 2017. In Mannheim, MVV successfully passed the certification process in March 2018; since May, the new certificate will be valid for a further three years. The relevant certificate in Wörrstadt was also confirmed in 2018.

Training and development

Numerous training and entry programmes

Training and further developing the skills of young employees is particularly close to our hearts. One of our key focuses is on promoting upcoming staff within the company. We aim to cover our specialist and management staff requirements with internal candidates wherever possible. We therefore act early to accompany the career of high-potential employees. In programmes for university graduates, for example, we cultivate our contacts to future specialists. University students can perform work placements and complete their bachelor's and master's theses at our company. These activities take place both at our Group's main location in Mannheim and at our subsidiaries.

We target future trainees with our extensive range of training programmes and arouse their interest with numerous actions, including taking part in training fairs, offering internships for school pupils, holding events at schools and project weeks in cooperation with schools. At the “Ready to Go, Mannheim” event held each year, we open up our training facilities and provide those interested with insights into various training vocations. The companies within our Group also take part in training fairs, offer internships for school pupils and work experience in parallel with training schemes and present our company and various vocations to school groups. Overall, we train more young people than we actually need, an approach we see as forming part of our responsibility towards society.


As of 30 September 2018, a total of 312 young people were in training at our companies. This total, which includes students at DHBW Baden-Württemberg Cooperative State University, corresponds to a training quota of around 5%. In Mannheim alone, we offer the next generation of employees training in 21 different commercial and technical vocations, as well as combined training and study programmes. In Mannheim, Offenbach and Kiel, we are among the largest trainers in the respective regions.

In Mannheim, we upheld our commitment to refugees within the “Refugees in Training” initiative and are currently enabling five young people to train. In Offenbach, Energieversorgung Offenbach has worked closely with JOBLINGE, a local group committed to helping people with an migration background, for years now.

Expansion in training and personnel development

One further focus of our personnel activities involves further developing the performance capacity of all our employees. To this end, we offer an extensive range of internal and external further training opportunities that meet current needs. With these further training measures, we aim to ensure a shared basis of knowledge on overriding strategic topics. Here, we hold in-house training sessions to address topics such as “Boosting Personal Change Skills and Agility”, “Effective Time and Self-Management” and “Cooperating at Interfaces”.

When selecting the right training programme, employees also have the option of choosing team development measures or individual measures such as coaching or mentoring. In personnel development meetings, we work together with our employees to identify their individual requirements and thus to enable us to offer targeted training in the next stage.

At our Mannheim location, we work with the management review system to record the skills and further training needs of our managers and plan their next career steps. Here, a competency model forms the basis for the personnel development meetings and individual development programmes. We use the management review system to manage our long-term succession and development planning. We repeatedly hold bottom-up appraisals and surveys at our main locations in Germany. These give employees the opportunity to provide honest feedback and enable us to enhance the quality of management at our company.  **GRI 404-2**

Promoting women

Targeted increase in share of women

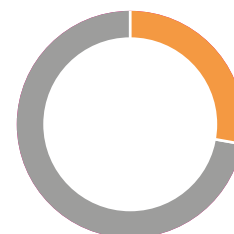
As a company, we are committed to promoting women and men to an equal extent and to assigning more responsibility to women. Our targets here are to gradually raise the female share of the Group’s workforce to 35% by 30 September 2021, compared with 27% on 30 June 2015, and to raise the female share of managers to 25% by the same date, having started at 14% on 30 June 2015.

WOMEN AND MEN

Shares (%)

	FY 2018
Women	28
Men	72

Status: 30 September 2018



Women have traditionally accounted for a comparatively low share of the overall workforce at companies operating in the energy industry – and our Group is no exception. We aim to offer targeted closer support to women. We are convinced that different skills and management styles impact positively on our business performance. We therefore see raising the share of women in our Group’s workforce on a long-term basis as providing a major key to MVV’s successful further development. We collect the key figures each year, analyse these and plan further measures. As of 30 September 2018, women accounted for 28% of our Group’s workforce and 14% of its managers. Having already reached 16% at the end of 2017 financial year, the share of female managers decreased due to restructuring measures at the Group.

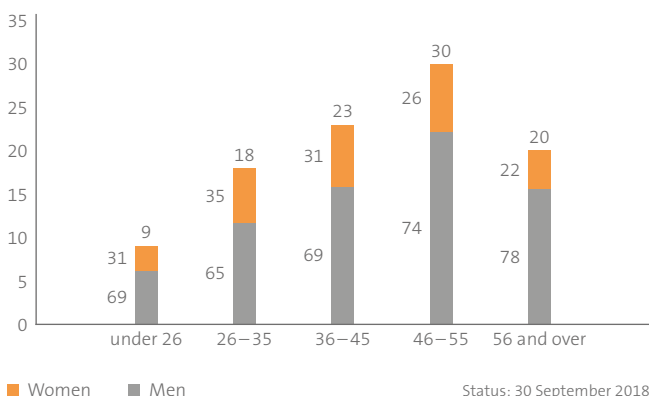
The age structure of our workforce will raise the share of female employees at the company in the years ahead. That is because women account for a higher share of employees in age groups up to 45 than in age groups from 46 upwards. Our personnel structure will therefore help us to meet our targets. Having said that, this effect will be insufficient to achieve the desired increase. We are adopting various approaches to reach our targets by 2021 and will further expand our measures and programmes to promote women in the years ahead.

One major package of measures involves offering targeted personnel development to women with suitable potential. One example is the individual support offered to women in mentoring schemes. In X-Company-Mentoring, a cross-company programme organised in cooperation with other well-known companies in the region, male and female mentors in the management tiers of participating companies pass on their skills and experience to talented female employees for a period of a year. This is intended to support the employees in their own personal development and enhance their management skills. A further focus is building networks between current participants and those who took part in the programme in previous years. This year too, MVV Energie participated in the X-Company-Mentoring programme in the Rhine-Neckar metropolitan region while Energieversorgung Offenbach took part in the Rhine-Main metropolitan region. Furthermore, as a corporate member of the “European Women’s Management Programme”, MVV Energie offers a contingent of places in career-building seminars to interested women.

Over and above this, we also address career-related matters in the context of our corporate culture. In the year under report, we launched an internal series of talks at our Mannheim location that were specifically targeted at women and attracted great interest. The series began with a stocktaking workshop to assess the current situation of women. Subsequent events included presentations on power games and body language. Another key focus is on recruiting. We receive significantly fewer applications from women than from men, particularly in technical vocations. We are therefore committed to promoting women in the so-called STEM subjects (science, technology, engineering and maths). Ideally, this support should already begin with career guidance at schools – an area in which the companies within our Group are actively involved.

AGE STRUCTURE OF EMPLOYEES

(%)



To this end, we offer internships in commercial and technical vocations for schoolgirls. In cooperation with four other large companies in the region, we implemented a new kind of STEM internship at our Mannheim location in 2017 and once again in spring 2018. Pupils from Year 9 upwards at all kinds of school spend 5 days at 5 companies getting to know 5 training vocations and 5 study programmes in STEM subjects. This innovative approach, which will be repeated in 2019, is making a key contribution to offering careers guidance for these vocations. To arouse interest in STEM vocations, we also regularly participate in actions mainly targeted at female applicants, such as the “Girl’s Days” held at various locations.



Occupational health and safety

Avoiding accidents

We attach great priority to occupational health and safety and actively involve our workforce. By raising awareness among our managers and employees for the risks and dangers of accidents, we aim to prevent accidents and health risks. In our instructions, we explain the interrelationships involved and stipulate work safety requirements. An electronic instruction system offers work safety training units specially tailored to individual workplaces. This way, employees can flexibly meet their obligation to complete the training and individually address a variety of work safety topics.

It is important to us that our employees should feel supported in their daily work. Here, our managers have a key role to play by creating the conditions necessary for effective occupational health and safety and promoting safety-aware and health-conscious behaviour among employees. As well-informed contact partners for occupational health and safety in their units, the safety officers also perform an important function. They are regularly trained by our occupational safety specialists and work safety coordinators, who communicate our company-specific safety requirements and prevention focuses.

We regularly inspect our plants and operating divisions to identify weak points. For this, we have devised an inspection concept to raise awareness of safety issues and reinforce this awareness on all levels. In our inspections, we aim to systematically identify optimisation potential, show presence and embody a prevention-based approach. Alongside scheduled safety inspections, internal and external audits also help to enhance occupational health and safety. In the context of TSM certification measures, external specialists regularly inspect our grid companies on a cross-utility basis in accordance with the requirements of the DVGW, AGFW and VDN specialist associations. Moreover, individual subsidiaries and company departments also have systems and certificates consistent with international norms for work safety management. In the year under report, we also began to fundamentally revise our hazard assessments. This way, we aim to detect any potential accident and health risks at the respective workplaces even more effectively and prematurely, thus enabling us to take preventative measures in good time.

We make every conceivable effort to prevent accidents. It is nevertheless not always possible to avoid them. We systematically evaluate accidents at the Group. Here, we consider all accidents at or on the way to work, including more minor injuries. The assessment and evaluation are performed on a gender-neutral basis and in line with data protection requirements. Based on the insights gained, we inform our managers and employees, not least via our electronic instruction system. Furthermore, we review which additional preventative measures would make sense. Our goal is to ensure that the number of accidents remains as low as possible.

Accident statistics

	2017 ¹	2016 ¹
Lost time injury frequency rate (LTIF) ^{2,3}	6.2	7.8 ⁴
Fatal accidents	0	0

- 1 Calendar year
- 2 Calculation based on work-related accidents from first day of absence per 1,000,000 working hours
- 3 Basis for calculating working hours performed:
Centrally recorded FTE figures:
2016: annual average
2017: FTE figure at reporting date on 30 June 2017
Non-centrally recorded FTE figures:
Data for 2016 and 2017 directly from companies
- 4 Previous year’s figure adjusted



Occupational health and safety is also an important topic for us when it comes to our suppliers and the subcontractors we commission. As is customary in our industry, a large portion of the upstream services we procure involves fuels in the form of commodities, while only a smaller share relates to services performed by companies we commission directly [Page 25](#). Most of these companies we commission are subject to German or European occupational health and safety standards. As a basis for our business relationships, we have laid down codes of conduct that contain ethical standards and basic employee rights. These are included in our procurement terms and work safety requirements and thus form the mandatory basis for our contractual relationships.

Protecting health and avoiding health-related problems

We have set ourselves the goal of boosting the health of our employees with a prevention-based approach and therefore support them with a variety of company health management measures. Alongside the extensive range of services available at our occupational health service, we also offer employees at our major locations in Germany further health promotion opportunities that go far beyond legal requirements. We make therapeutic devices available, for example, and experienced coaches guide participants in health-related courses, such as fascia training and Pilates. We offer a very wide range of sports groups and have cooperations with fitness centres. We also offer nutritional advice and wide-ranging prevention measures, such as flu vaccinations, skin cancer screening and laboratory diagnostics services to detect common metabolic illnesses at an early stage. By organising courses and holding presentations on topics such as nutrition or exercise, we help our employees to obtain the specific information they need. The key focuses and services on offer vary in line with the requirements and circumstances at our individual locations. Our employees have shown great interest in these services.

SOCIAL RESPONSIBILITY

Our management approach for social responsibility

As companies, we play an important role in society. Our responsibility goes beyond our core business and extends to those regions in which we operate. Given our resources, we believe that we can make a major contribution to society.

We generate substantial value added with our operating business and are a major economic factor at our locations. Our value added statement shows that we strengthen the towns, municipalities and regions at our locations. We make investments, award contracts to local businesses, secure jobs and pay taxes and duties. For us, it goes without saying that we do not use any questionable measures to avoid taxes or move profits across borders.

We have the responsibility to use our resources to promote the conversion in the energy system so as to provide a more sustainable and efficient energy supply. We see this as an integrative task that involves all players within society. We support our customers in being able to implement their own energy turnarounds. We work with a very wide variety of stakeholders in our regions to implement the transformation process. After all, acceptance by local populations is crucial for many projects aimed at expanding renewable energies and the necessary infrastructure. Within our social responsibility, we are therefore committed to planning and implementing projects together with citizens and their representatives on location. Our job is to promote acceptance for these projects on the basis of dialogue and to reach decisions that also convince third parties.


We contribute to the common good in those regions in which we operate. The ways we deal with and exchange information with all relevant groups within society shape the relationship between us as a company and local populations. As a general rule, our social commitment is project-based and supports the fields of social welfare, education, culture and sports. We set our focuses here in line with the specific context.

Where possible, the companies within our Group support local projects in the framework of partnerships, many of which have been in place for several years. Responsibility for our social commitment lies with the individual companies.

 **GRI 103-2**  **GRI 103-3**

Economic output

Creating value

In our input/output balance sheet, we present all significant flows of materials, energy, goods and money associated with our business activities  **Page 43**. Our adjusted EBIT and ROCE key figures show how successful MVV was in economic terms in the past financial year. Consistent with the logic of business administration, at base these and other key figures chiefly refer to the economic capital committed or created. The value added statement we compile each year supplements the perspectives provided in the input/output balance sheet, as well as those in the annual financial statements, by presenting all “added values” created by MVV and measured at market prices. Value added reflects the output generated at market prices and resulting from the efficient deployment of all resources – capital, employees and natural resources. It represents MVV’s contribution to gross domestic product.

Our value added statement calculates the net value creation of our operations. This figure comprises our production value, from which our input costs and capital consumption are deducted. This measurement nevertheless only approximates to the value we actually create. After all, measuring net value creation on the basis of market prices does not account for non-monetary output such as intellectual capital and other external costs like environmental damages. Environmental scientists criticise the fact that the actual contribution to social prosperity is lower than value added or the contribution to gross domestic product. One indisputable fact, for example, is that global biodiversity is shrinking due to the consumption of natural resources and unavoidable environmental pollution. This is known to have negative long-term ecological and economic implications, such as those due to falling natural yields. Given that no robust and systematic possibilities of quantifying these and other so-called external effects are yet available, however, these factors are not accounted for in monetary accounting. The only option available to us as a company is therefore to minimise any such implications for society, people and the natural world.

Generation of value added

Euro million	FY 2018	FY 2017	% change
Company performance ¹	4,221	4,320	-2
Input costs ²	-3,130	-3,266	-4
Depreciation	-214	-183	+17
Value added	877	871	+1

1 Mainly sales

2 Cost of materials/energy and fuel procurement, other expenses, other taxes

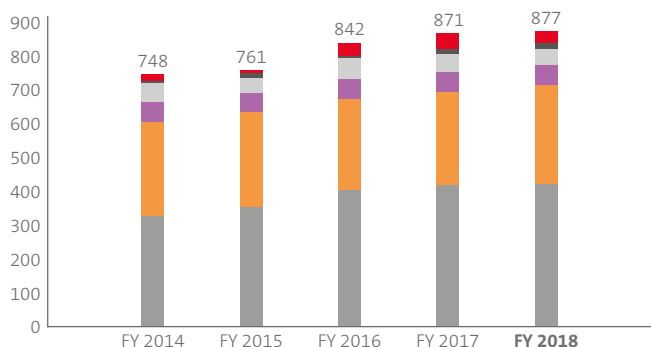
Utilisation of value added

Euro million		FY 2018	FY 2017	% change
Recipient	Utilisation			
Employees	Wages, salaries and social security payments	422	418	+1
State authorities	Taxes on income, other taxes, concession duties and levies	294	277	+6
Shareholders	Dividend	59	59	0
Lenders	Interest expenses	50	55	-9
Other shareholders	Share of group earnings attributable to non-controlling interests	17	14	+21
MVV	Retention of earnings	35	48	-27
		877	871	+1

 **GRI 201-1**

ALLOCATION OF VALUE ADDED

Euro million



	FY 2018 Shares (%)
■ MVV (retention of earnings)	4
■ Minority interests (share of group earnings attributable to non-controlling interests)	2
■ Lenders (interest expenses)	6
■ Shareholders (dividend)	7
■ State authorities (taxes on income, other taxes, concession duties and levies)	33
■ Employees (wages, salaries and social security payments)	48

GRI 201-1

The figures presented in the value added statement reflect fundamental trends. The value added statement for the 2018 financial year shows we were able to increase our net value added despite a slight reduction in sales – a result of our diversified business portfolio.

We also present the uses to which this value added is put. We enabled our shareholders to participate stably in the value added we created, and that although the trend towards low returns on capital seen in recent years has persisted. Around one third of our value added benefits state authorities in forms including taxes and concession duties – in the year under report, this amount rose year-on-year by Euro 17 million to Euro 294 million. Part of this sum is paid to the City of Mannheim on top of the dividend payments it receives as majority shareholder. The largest share of our value added is attributable to our employees. This share has remained relatively constant despite falling workforce totals. This in turn reflects the growing importance of our service and sales-oriented business fields, which generally involve higher value.

Local communities

Promoting acceptance

The energy turnaround requires fundamental transformation of our energy systems. Constructing new generation plants, extensively converting and expanding the electricity grid and implementing far-reaching modernisation projects for existing plants – all these measures change the local environment and often involve restrictions for local residents.

We already give systematic and comprehensive consideration to these challenges when selecting suitable locations. Our companies weigh up the conservation, economic and social aspects on a decentralised basis on location for each individual case. In the project planning stage, they perform environmental compatibility audits in accordance with approval requirements. These deal, for example, with emissions loads, conservation requirements and immission protection. Not only that, they also look into the potential implications of the projects for the surrounding countryside or for architectural and natural monuments. The results of these analyses are mostly published.

Various authorities and project partners are formally involved in the approval process. We actively involve residents, local clubs, associations and citizen's initiatives, and that to an extent that goes beyond minimum legal requirements. Our companies provide information about projects, for example in their general press work and on their respective homepages. Representatives of our companies attend information events, at which they inform the public about the planned projects and are on hand to answer any questions. These activities are important for ensuring the necessary degree of acceptance among local residents. Particularly for infrastructure projects, such as onshore wind turbines, we have observed growing resistance to the associated interventions in the natural world and changes to the appearance of the countryside. The best way to counter concerns and reservations is to enter into face-to-face dialogue.

By involving local stakeholders, we can turn affected parties into project participants, for example by introducing financial participation schemes for local residents in select projects. One reason we attach great importance to involving local communities in our activities is that we will only be able to maintain the success of our project development business in future if there is sufficient acceptance for renewable energies projects, and that not only on in general, but also in specific local contexts. We do not collect any quantitative data on the measures we take to involve local stakeholders, the evaluation of implications or the subsidy programmes implemented.

A further general matter of concern to local residents refers to plant safety. All our existing generation plants continually benefit from technical supervision in accordance with legal requirements. Should any interruption to operations arise that could affect local populations, we proactively and quickly inform all affected parties. Here, all companies have routine processes in place to protect the safety of local communities.

 **GRI 413-1**

Social commitment

Regional focuses

In our more closely defined commitment to society, we focus on the regions surrounding our locations. We promote select projects in the fields of social welfare, education, culture and sports, with a key focus on supporting young people. In most cases, the support we provide is financial and takes the form of donations or sponsoring. Our companies manage their donations and sponsoring activities on an independent basis in their own regions. They are familiar with local needs, have contacts to local projects and determine their individual focuses. This decentralised approach to social commitment activities has proven its worth in recent years. At present, we do not centrally collect any aggregate data on these activities. In what follows, we present select projects at our Mannheim location and at our largest individual companies in Germany.

One major aspect of the commitment shown by **MVV Energie** is its Sponsoring Fund. Twice a year, the company provides financial support to clubs, organisations and institutions in Mannheim and the Rhine-Neckar metropolitan region. This way, we demonstrate our commitment to the people who get involved in our region. Our fund has a substantial widespread impact. Around 20 projects are selected in each sponsoring round and then benefit from our financial support. A total of eight projects convinced us in the 27th round. One of these was the training body Mannheimer Abendakademie, which will now be able to acquire virtually reality glasses, tablets, smart-phones and other accessories enabling it to implement new digital course formats. In addition, we hold a further donation action each year for clubs in the Rhine-Neckar metropolitan region and award two amounts of Euro 5,000 each. This scheme is open to clubs with projects promoting young people and focusing on sustainability. We publish the projects submitted by clubs on our “mein Quadrat” app and invite the public to choose their favourite project and vote for it. The two clubs winning the most votes receive the donations.

One longstanding component of our commitment is closely linked to our core business. It has always been the case that people find themselves in situations of financial distress and are at times unable to pay their electricity and water bills. In a well-established cooperation with the largest independent welfare associations and the City of Mannheim, MVV Energie offers assistance here. For more than ten years now, the Emergency Fund has provided rapid and uncomplicated assistance to retail customers who through no fault of their own are in situations of need. The fund intervenes to settle outstanding energy and water bills and this way helps the beneficiaries to avoid a spiralling debt situation.


One focus of our cultural sponsorship is our commitment to regional beacon projects. One such project is the art gallery Kunsthalle Mannheim, which was newly opened in June 2018. As a supporter and strong partner, we aim to make an active contribution to the Kunsthalle as a vibrant part of public life in Mannheim. One such forum is provided by the MVV Art Evenings. On the first Wednesday each month, Kunsthalle Mannheim opens its doors free of charge from 6 to 10 p.m. Each MVV Art Evening is unique and receives its own singular focus due to the special actions we organise in cooperation with the gallery.

Moreover, MVV Energie also supports numerous innovative projects for children and young people on location in the Rhine-Neckar metropolitan region. MVV Energie has acted as sponsor to the ice hockey team Adler Mannheim and the footballers at TSG 1899 Hoffenheim for many years now.

Energieversorgung Offenbach (EVO) is also deeply rooted in its region. For many years now, it has assumed responsibility for socially relevant matters in the city and district of Offenbach – with donations and sponsorship for sports and cultural activities and with support for clubs and innovative projects in the region. One beacon project is the “Heart and Soul for Your Project!” sponsorship competition, in which a total of 51 clubs and organisations applied to EVO in 2018. Ten projects, all of which making a special contribution to the Offenbach region, were selected. These included the Rodgauer Kulturakademie for young people in the “Together with People Living with Disabilities” association, which can now expand its range of activities thanks to the sponsorship from EVO. Another beneficiary of the competition is the water sports club 1923 Offenbach, which helps children to learn to swim properly regardless of school tuition and will be using the money to expand its offerings. EVO is also committed to supporting local sport. For ten years now, EVO’s jersey sponsoring has helped clubs to kit their competitive teams with subsidised gear. A total of 150 clubs benefited from this programme in 2018. As energy supplier to the region, EVO has been principal sponsor to the traditional football club Offenbacher Kickers for 17 years

now. EVO also promotes culture with the support it provides to the “Alte Schlosserei”. At this event location, which holds a firm place in the town’s cultural life, EVO hosts events for up to 400 guests together with cultural players from the region.

Stadtwerke Kiel (SWK) has supported social, ecological and sports projects for many years now – and has a particular focus on projects for children and young people. SWK has acted as partner to the Camp 24/7 sailing project since 2002 already. In this, the only project of its kind in Germany, more than 7,300 children and young people a year learn how to sail. Not only that, for more than 18 years SWK has invited people in Kiel to the Ice Festival held directly on Kiel Fjord during the cold months of the year. SWK also supports popular sports in Kiel by sponsoring jerseys for sports clubs in the region. Stadtwerke Kiel has a particular regional focus on ecological commitment. The SWK Environment Prize introduced in 2016 promotes projects in the fields of environmental education, climate protection, conservation and energy saving. The underlying concept enables all interested parties to vote online to decide which project is worthy of the prize. After qualifying and voting phases, five projects a year receive an audience prize. A jury awards three further sponsorship prizes.

Juwi has been supporting cultural, welfare and sports projects in the Rheinessen region for years now. One example is the “Rock-N-Pop-Youngsters” youth band competition, in which young musicians from Rheinessen can compete either as bands or as solo artists. The projects supported in 2018 also include the Symphonic Young People’s Brass Orchestra with Choir at the music school in Alzey-Worms district. In what is now its well-established “Donations not Presents” Christmas campaign, Juwi made donations to two projects in the year under report. As has been the case for many years, Juwi provided support to “Feed the Hungry”, a charity which assists people in need around the world. Moreover, financial assistance was provided to the organisation “Schlupfwinkel”, which takes care of children and young people living on the streets in Stuttgart. Juwi also supports a selection of regional sports clubs.  **MVV-11**

Explanatory Comments about Combined Separate Non-Financial Report of MVV and MVV Energie AG

CSR reporting

The CSR Directive Implementing Act (CSR-RUG), which was implemented in particular in the German Commercial Code (HGB), gave rise to new reporting obligations for MVV and MVV Energie AG for the first time in the year under report. This 2018 Annual Report includes the combined separate Non-Financial Report (NFR) of MVV and MVV Energie AG pursuant to § 315b (3) and § 315c in conjunction with § 289b et seq. HGB. The guidelines and management approaches of MVV and MVV Energie AG do not differ; no non-financial objectives solely apply to MVV Energie AG.

NFR contents indicated

To avoid redundancies and offer a comprehensive overview, we have opted for the form of a separate Non-Financial Report and integrated the disclosures required by § 315b and § 315c HGB into this Annual Report. All statutory components of the NFR are presented in blue in this Annual Report and can thus be identified as such; external references do not form part of the NFR. MVV's Sustainability Report [Pages 16–59](#), also a component of this Annual Report, contains extensive information and important key figures about our corporate responsibility that do not require inclusion in the NFR but are significant for MVV and its stakeholders.

Reporting standards and identification of material topics

We have compiled our Sustainability Report in accordance with the international GRI Standards (core option) of the Global Reporting Initiative and also based our materiality analysis on this framework [Page 21](#). This produces an alignment to GRI Standards within the combined separate Non-Financial Report. We allocated the GRI-based material topics identified in the materiality analysis to the aspects listed in § 289c HGB, namely environmental concerns, employee concerns, social concerns, respect for human rights and combating corruption and bribery, to the extent that such allocation was correct. We also reviewed which disclosures were needed for these aspects to provide an understanding of the course of business, business results, situation of the company and the Group and the implications of our business activities for these aspects.

The index table on the following page provides an overview of the pages on which the specific information can be found. In the respective chapters we describe our concepts, targets and results. The reporting refers to MVV and thus to all fully consolidated companies. For various disclosures, we also report on companies recognised at equity. We are co-shareholders in the large power plant in Mannheim (Grosskraftwerk Mannheim – GKM) and the joint power plant in Kiel (Gemeinschaftskraftwerk Kiel – GKK). As we procure most of our conventionally generated energy from these plants, we would like to provide transparency as to the implications. If, for select reporting topics, we focus on our three large locations in Mannheim, Offenbach and Kiel, we indicate this accordingly in the text.

All data for our material non-financial information has been collected upon the preparation of sustainability reporting in accordance with the GRI Standards of the Global Reporting Initiative (GRI) [Page 218](#) and/or in the regular processes performed for our consolidated financial statements.

Review of non-financial risks performed



We report on the non-financial risks involved in our business activities and business relationships [Page 115](#). Where non-financial risks are material and could also have a severe negative impact on our company's business performance, we record and assess them in our existing risk management system, making due application of the net method. This system is presented in the Opportunity and Risk Report forming part of the Management Report [Page 115](#). The review processes performed on non-financial risks in the 2018 financial year pursuant to § 289c (3) No. 3 HGB concluded that there were no risks requiring report that were associated with the company's proprietary business activities, business relationships, products or services and that were highly likely, whether now or in future, to have severe negative implications for the material aspects.

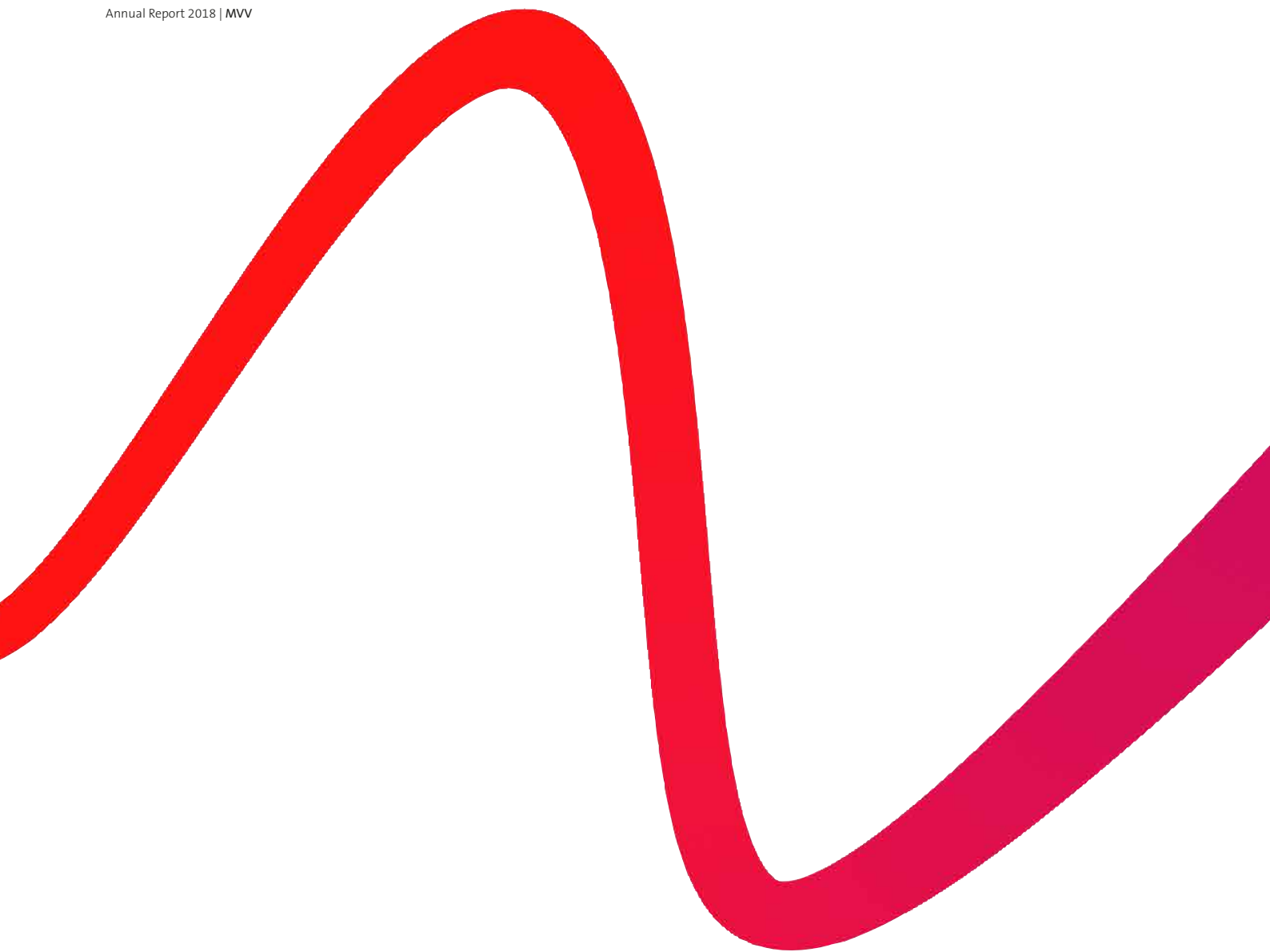
Independent audit pursuant to ISAE 3000 (revised)

Consistent with § 317 (2) Sentence 4 HGB, when performing its audit of the annual financial statements our auditor PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft (PwC), Frankfurt am Main, checked that MVV

had submitted the Non-Financial Report. Moreover, PwC was commissioned to subject our separate Non-Financial Report to a limited assurance audit in accordance with ISAE 3000 (revised)  **Page 223.**

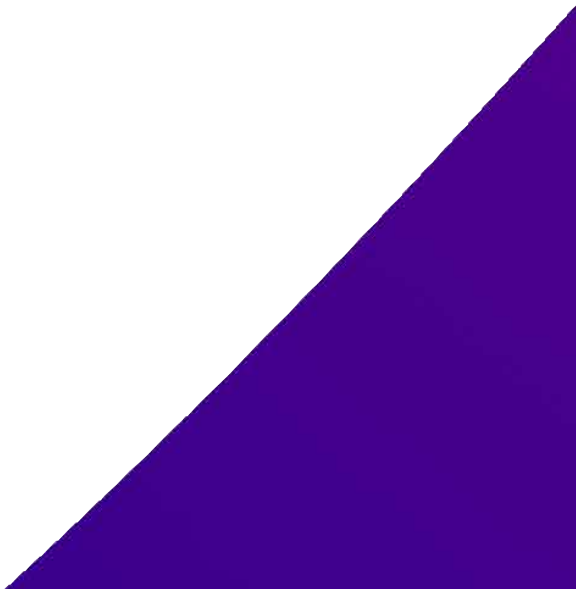
Contents of combined separate non-financial report

Aspects	MVV area of action	Disclosures on management approach, targets, measures, results, due diligence processes and non-financial key figures in chapter	Page
Environmental concerns	Decarbonisation and energy turnaround	Corporate Strategy	65
		Decarbonisation and Energy Turnaround	32
		Non-Financial Performance Indicators	84
Employee concerns	Employee concerns	Employee Concerns	49
Social concerns	System change	Corporate Strategy	65
		System Change	27
		Net Asset Position	92
Respect for human rights	Value chain	Sustainability Strategy	17
Combating corruption and bribery	Compliance	Corporate Governance Report	100
Further disclosures			
Business model	We explain our business model in the Combined Management Report on  Page 64.		
Supplier management	We explain our supplier management in the chapter Sustainability – Value Chain on  Page 25.		



Combined Management Report About Us

- 63 Group Structure**
- 64 Business Model**
- 65 Corporate Strategy**
- 68 Value-Based Corporate Management**
- 69 Technology and Innovation**



GROUP STRUCTURE

Company structure and shareholdings

The listed company MVV Energie AG has its legal domicile in Mannheim and is the parent company of MVV. On the one hand, MVV Energie AG has its own operations. On the other hand, it directly or indirectly owns shares in those companies which form part of the Group. Including MVV Energie AG, a total of 172 companies are fully consolidated in the consolidated financial statements **Page 189**. For 37 companies, we apply the equity method. Our largest locations are in Mannheim, Kiel, Offenbach and Wörrstadt. Our group of companies is represented in 19 countries. As well as Germany, these include the United Kingdom and the Czech Republic.

- 🌐 **GRI 102-1** 🌐 **GRI 102-3** 🌐 **GRI 102-4**
- 🌐 **GRI 102-5** 🌐 **GRI 102-7**

Organisational structure

We adjusted our reporting structure at the beginning of the 2018 financial year. The adjustment ensures that our consistent focus on our customers' needs is adequately accounted for – and that both in our sales activities and in our reporting. Moreover, the new structure reflects the growing importance of renewable energies and energy efficiency.

Finally, it takes account of our focus on consistently and sustainably ensuring supply reliability. We continue to manage MVV in five segments and also base our external reporting on these. Various business fields are allocated to the reporting segments:

The **Customer Solutions** reporting segment is subdivided into the business fields of Commodities, Retail and Business.

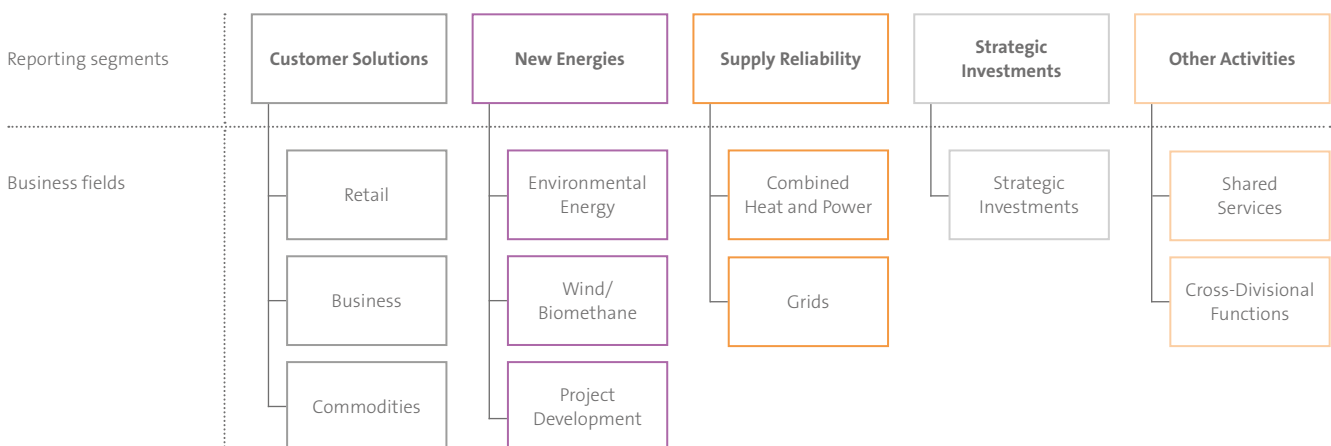
The **New Energies** reporting segment comprises the Environmental Energy, Wind/Biomethane and Project Development business fields.

As well as Combined Heat and Power, the **Supply Reliability** reporting segment also includes the Grids business field.


The **Strategic Investments** reporting segment mainly consists of Köthen Energie, MVV Energie CZ and the at-equity result of Stadtwerke Ingolstadt.

The **Other Activities** reporting segment includes our shared service companies and cross-divisional functions. Our shared service companies perform metering, billing and IT services for the Group, thus generating the necessary benefits of scale and ensuring high process quality. 🌐 **GRI 102-2**

REPORTING SEGMENTS AND BUSINESS FIELDS



BUSINESS MODEL

With around 6,000 employees, MVV is one of Germany's leading energy companies. We focus our activities on providing a reliable, economical and environmentally-friendly supply of energy to our industrial, commercial and private household customers. Their individual needs and expectations motivate us in developing innovative products and business models. Here, we cover all stages of the energy value chain: from generating electricity, heating energy, biomethane and biogas and producing water to energy trading to distributing energy and water via proprietary distribution grids through to our sales activities and environmental energy and energy-related service businesses. We are also active in developing renewable energies projects and managing operations at windfarms, solar parks and biomass plants.  **GRI 102-6**

Customer Solutions segment

The Customer Solutions reporting segment on the one hand includes the retail business for electricity, gas, heating energy and water with all customer groups. Over and above that, it also includes our range of solutions relating to self-generated solar power for our private and business customers. They can individually compile their own energy packages – from roof-based photovoltaics systems to battery storage facilities to charging points for electric vehicles. The services offered by our subsidiary Beegy range from planning, building and operating sustainable appliances – such as photovoltaics collectors, thermal storage, heat pumps, storage heating and battery storage – through to their energy-optimised use. As a competent and experienced efficiency partner, MVV Enamic develops smart energy products and innovative solutions for industrial, retail and real estate customers. Its services include transparent electricity and gas procurement, as well as sustainable energy generation, energy data management, billing services and contracting solutions. Its supplements these with smart metering, e-mobility and LED services and solutions. Drawing on the broad range of products and services offered by Beegy and MVV Enamic, we enable all our customers to participate in the energy turnaround and, together with us, to make their own active contributions. The Customer Solutions segment also includes the service and trading business at MVV Trading.

This company pools the energy procurement and energy product trading activities within our group of companies. It procures and markets all customary trading commodities, such as electricity, natural gas, emission and green electricity rights and financial coal and oil products, and that both on the exchange and in over-the-counter (OTC) trading. Moreover, it also secures MVV's generation and sales positions on a long-term basis. This hedging enables risks to be centrally managed and minimised. MVV Trading is also responsible for the direct marketing business and offers its whole range of services, also to third-party customers, on the market.

New Energies segment

The New Energies reporting segment contains our plants fired by waste and biomass in Mannheim, Offenbach, Leuna, Königs Wusterhausen, Flörsheim-Wicker, Dundee, Plymouth and Ridham Dock. At our plants, we rely on highly efficient combined heat and power (CHP) generation. These plants are supplemented by our renewable energies plants – and here especially onshore wind turbines. Moreover, we also use a wide range of biomass to generate electricity, heating energy, biomethane and biogas. With Juwi and Windwärts, we are active in developing renewable energies projects and managing operations at windfarms and solar parks. In Germany, Juwi focuses above all on onshore wind turbines, while its international business mainly deals with photovoltaics projects. Windwärts concentrates on onshore wind turbines, especially in northern Germany, and also operates in France.

Supply Reliability segment

The Supply Reliability reporting segment comprises our conventional energies generation portfolio based on combined heat and power (CHP) generation. These include our CHP plants in Mannheim, Kiel and Offenbach. To provide a reliable supply of electricity, heating energy, gas and water, high-performing grids are crucial. For this reason, this segment also includes the grid businesses at our distribution grid operators MVV Netze, Energienetze Offenbach and SWKiel Netz. We are continually investing in modernising and expanding our grid infrastructure in those regions in which we operate. Overall, at MVV we have electricity, district heating, gas and water grids with a total length of around 19,000 kilometres.

CORPORATE STRATEGY

We are creating the energy system of the future

The energy industry is undergoing a process of fundamental transformation. The energy of the future will be environmentally and climate-friendly, reliable and economical. We acted early to align MVV towards this future and are continually working to develop our company further. We are consistently investing in renewable energies, energy efficiency and supply reliability. We are actively shaping this transformation. We are enabling our customers to implement their own energy turnarounds – with renewable energies, energy efficiency and innovative products and services. To this end, we draw on our competence, our experience and our power of innovation. In all our activities, we accord great value to high service quality and customer satisfaction.

Three key developments will shape the new energy world: the decarbonisation of the energy supply, with further growth in renewable energies, the ongoing associated process of decentralisation and the digitalisation of the energy industry – a technological transformation that will affect all stages of the value chain and make new solutions possible.

We are continually developing our strategy further and adapting it to current and future changes in the market, the competitive climate and the energy policy framework. This way, we are creating a basis to secure and extend our head start within the sector in future as well.

Energy of the future

By successfully implementing our strategy, we are creating the energy system of the future. Based on a clear and permanently enhanced strategy, a strong brand and a vibrant corporate culture. And always focusing on our customers.

We inspire with energy.

Renewable energies

Energy efficiency

Innovative products and services

We will be making large-scale investments once again in the years ahead and will be focusing here on further expanding renewable energies, boosting energy efficiency and developing innovative services and products for smart, decentralised energy management. In consistently implementing our strategic alignment, we aim to achieve a balanced structure of opportunities and risks. Continuous optimisation and value focus enable us initially to create a basis on which to generate further growth. We maintain a balance between regulated and unregulated business, between business fields and between business in Germany and abroad. We carefully weigh up each investment project. Alongside sustainability, future viability and customer focus, the criteria we consider also include economic viability and conformity with our strategy.

We are expanding renewable energies

When it comes to renewable energies, we cover the entire value chain from project development to plant operations through to marketing the electricity. Our activities here include onshore wind power, where we intend to further expand our portfolio, as well as using biomass and biogas. In generating energy from waste timber, non-recyclable timber and fresh timber, we are already one of the German market leaders. We also draw on market potential for biogas-based electricity and heating energy generation. To supplement our existing biomethane cluster in the Magdeburger Börde region, in the 2018 financial year we included an organic waste fermentation plant in our portfolio for the first time. A second plant also using organic waste to generate biogas has already been planned. In its international project development business, Juwi mainly focuses on photovoltaics projects. Over and above this, we are reviewing the economic potential which photovoltaics-based electricity generation harbours for our group of companies. Overall, the consistent implementation of our investment targets will further transform our generation portfolio, which is set to become far greener and more broadly diversified.

Our “Heating Vision” forms the basis for a forward-looking supply

Another firm component of our corporate strategy involves using combined heat and power generation in conjunction with environmentally-friendly district heating, which we will be expanding further. With our highly efficient CHP plants, we are already making a major contribution towards reducing

CO₂ emissions. Our heating energy concept is structured in such a way as to remain modern, innovative and reliable in future and, over and above that, to make significant progress towards climate-neutrality. In the 2018 financial year, we produced 27 % of our electricity and 85 % of our heating energy using combined heat and power generation.

On Kiel Fjord, the new gas-powered CHP plant “Küstenkraftwerk K.I.E.L.” will replace the coal-fired joint power plant. By drawing on CHP technology, this plant will simultaneously generate electricity and heating energy, leading to a high level of efficiency. In combination with a heating energy storage facility and a power-to-heat system, this plant will be able to react with the utmost flexibility to the changing needs of the energy market. The plant will thus not only secure the supply of district heating in Kiel, but will also emit more than 70 % less CO₂ than its predecessor.

Producing electricity and heating energy from waste is a key pillar of a modern, resource-efficient, recycling-based economy. We are one of Germany’s leading operators of energy from waste and biomass plants. Not only that, we have been active in the UK market for several years with our waste-fired CHP plant in Plymouth and our biomass plant at Ridham Dock. In the 2018 financial year, we further expanded our involvement in the UK and took over an energy from waste plant in Dundee in Scotland. We will initially continue to operate this plant while we build a highly efficient heat and power plant in the direct vicinity. This is due to be completed in 2020.

We are developing our Friesenheimer Insel location in Mannheim into an even more valuable component of the energy turnaround and a sustainable recycling-based economy for Mannheim and the Rhine-Main metropolitan region. On the one hand, we are connecting our CHP plant to Mannheim’s existing district heating grid. This will enable us in future to use the heating energy produced from waste incineration not only to supply steam to neighbouring industry, but also in our supply of district heating in Mannheim and the metropolitan region. On the other hand, we intend to extend the CHP plant and will use municipal sewage to generate environmentally-friendly electricity while facilitating the recovery of phosphorous – a valuable raw material in the production of manure.


We are investing in expanding and optimising our grids

The ability to smartly combine highly efficient conventional generation with generation from renewable energies will be absolutely crucial for the energy system of the future. The reliability, intelligence and performance capacity of our grids will play a key role in this respect. We are therefore continually investing in maintaining, expanding and optimising our grids and plants.

Innovative products and services for our customers

We are developing innovative products and services for smart and decentralised energy management and tailoring these to the needs of our industrial, retail, commercial and private customers. In this, we are drawing on our proven competencies and decades of experience. Over and above this, we are supplementing our range of products and services by forging strategic partnerships with companies that have new ideas, or acquiring shareholdings in such companies. Our customers also benefit from this combination of energy industry know how, software intelligence, great experience and expertise. Together with our subsidiary Econ Solutions, for example, we already offer one-stop energy monitoring and efficiency solutions for medium-sized industrial businesses, large commercial businesses and chain operators. For our customers in the housing industry, we work with our joint venture Qivalo to offer new, all-round solutions meeting the requirements they have in a modern metering services provider. By acquiring a stake in Data Center Group in the 2018 financial year, we also boosted our range of services, particularly in the field of digitalisation. Additional focuses include further expanding electro-mobility – in terms both of the charging infrastructure for industrial and business customers and of suitable combined solutions comprising electric vehicles, PV systems and charging points for private customers – and further developing the forward-looking “Smart Cities” concept in our capacity as a partner to local authorities and innovative municipal utility companies.

The future has already begun. With us.

Consistently implementing our corporate strategy will enable us to secure and expand our position as a pioneer of the energy turnaround in future as well. After all, we assume our economic, ecological and social responsibility not just from one financial year to the next, but also on a long-term basis with a clear view to the future. That is why sustainability forms the basis for our entrepreneurial responsibility. We underlined this at the beginning of the 2017 financial year with our strategic sustainability targets  **Page 18** which we intend to meet by the end of the 2026 financial year:

- » **We assume responsibility for climate protection.**
 - We will triple annual CO₂ savings at our fully consolidated companies and the companies we recognise at equity to 1 million tonnes a year.
- » **We make the energy turnaround happen.**
 - We will double our proprietary electricity generation from renewable energies at our fully consolidated companies and the companies we recognise at equity.
 - We will connect 10,000 MW of renewable energies to the grid.
 - The energy system of the future will remain our key investment focus. We will invest a further total of Euro 3 billion. The main focuses of our growth investments will be on wind power, biomass and biomethane, our environmental energy business and our business customers. We are therefore investing in plants that fit in with our company and will advance the energy system of the future.
- » **We make the energy turnaround possible for all our customers.**
 - As a competent partner, we will offer all customers – from private households to industrial players – the products and services they need to implement their own energy turnarounds.

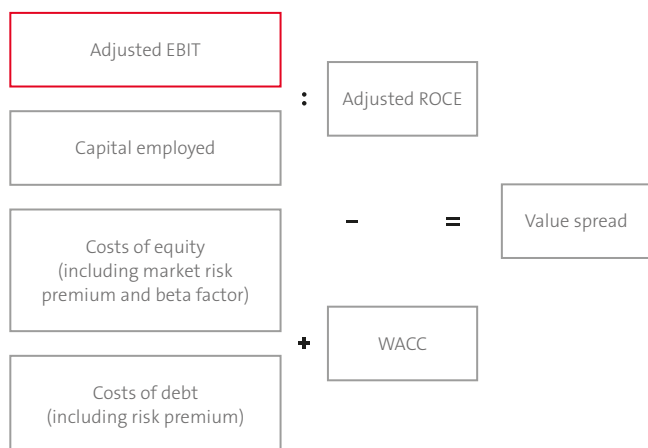
As we advance towards the new energy world, we have combined our strategy, brand and culture to form a powerful unity – open, energetic, reliable and self-confident. **We inspire with energy.**

VALUE-BASED CORPORATE MANAGEMENT

The aim of our corporate management is to sustainably increase MVV’s value and to offer an attractive dividend to our shareholders. We achieve this by generating a positive value spread, i.e. when the return on average capital employed (adjusted ROCE) is higher than the costs of capital (WACC).

The most important key figure we refer to in our value-based corporate management is adjusted operating earnings before interest and taxes (adjusted EBIT). We use this to assess the medium and long-term success of our business activities. To calculate this key figure, we eliminate the earnings items resulting from measurement of financial derivatives pursuant to IAS 39 as of the reporting date, items resulting from the structural adjustment for part-time early retirement and – where applicable – restructuring expenses. We add interest income from finance leases reported below EBIT in the income statement to our adjusted EBIT. This income results from our contracting projects and therefore forms part of our operating business.

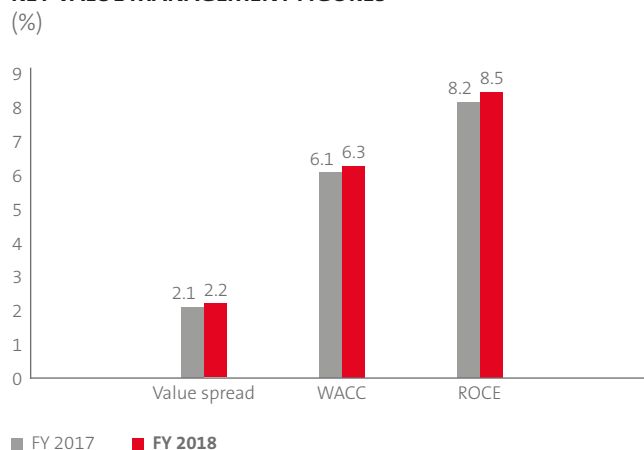
CALCULATION OF VALUE SPREAD (simplified presentation)



We have reviewed the individual parameters used to calculate MVV’s WACC figure for the year under report and updated these in line with changes in the market.

On this basis, we calculated equity costs of 6.5% (previous year: 6.7%) after taxes and debt costs of 2.0% (previous year: 1.9%) after taxes. The capital structure of MVV’s peer group amounts to 54.1% for equity (previous year: 50.0%) and to 45.9% for debt (previous year: 50.0%). The Group tax rate is 30% (previous year: 30%). The WACC after taxes for the 2018 financial year calculated on the basis of this data amounted to 4.4% (previous year: 4.3%) and 6.3% before taxes (previous year: 6.1%).

KEY VALUE MANAGEMENT FIGURES (%)



The ROCE for the 2018 financial year amounted to 8.5%, as against 8.2% in the previous year. The higher ROCE was due to the increase in adjusted EBIT and lower average volume of capital employed compared with the previous year.

By subtracting the WACC before taxes of 6.3% (previous year: 6.1%) from the ROCE of 8.5% (previous year: 8.2%), it can be seen that value spread for the year under report amounted to 2.2% (previous year: 2.1%).

TECHNOLOGY AND INNOVATION

Germany's energy system is undergoing rapid transformation. It is becoming ever more decentralised and digitalisation is progressing apace. These developments harbour both challenges and opportunities for our industry. Rapid advances in technology are impacting on virtually all processes in the energy industry. Structuring the new system is a task that is both complex and highly promising. In view of this, we are closely monitoring and tracking the latest trends and promising technological advances. After all, we have set ourselves the goal of developing innovative products and services that are aligned to customers' needs – and then bringing these quickly and efficiently to market. We pressed ahead with the following projects, among others, in the 2018 financial year:

RealValue EU project: successfully networking decentralised generation and consumers

The energy system of the future will live off communication. Large numbers of electricity consumers are facing ever higher numbers of decentralised electricity generation plants, such as wind turbines and photovoltaics systems. This situation places ever new requirements in the electricity grid, as the energy supply has to be secure around the clock, also at night and when there is no wind. This requires electricity generation and electricity consumption to be smartly linked. One ever more important factor is how to deal with electricity that is not actually needed at the time of its generation. To address this, the "RealValue" project focused on solutions enabling energy from decentralised and renewable generation to be put to efficient use close to source. This power-to-heat project, which ended in June 2018, was promoted with funds from the EU's "Horizon 2020" subsidy programme. Together with our Beegy subsidiary and Glen Dimplex Deutschland, we played a key role in the German part of the project.

Within the project, a total of 750 households and commercial businesses in Germany, Ireland and Latvia were equipped with smart, networked energy systems comprising electric storage heating and heat pumps. This way, it was possible to adjust energy consumption to the respective solar and wind power generation volumes. More than 100 households in Mannheim took part in the field trials and had state-of-the-art storage heating systems, smart control systems for existing heating systems and smart meters installed.

The field trials demonstrated that it is technically possible to use the storage heaters as networked, decentralised electricity storage facilities. Depending on the level of supply available on the Electricity Exchange, the participants' heating systems stored electricity in the form of heating energy and emitted this in line with customers' requirements. By using an app, participants were able to set the room temperatures in line with the time of day and precisely monitor their electricity consumption via smart meters. The participants in customer surveys and focus groups expressed great interest in benefiting from increased convenience and lower electricity costs. For many participants, modern technology, such as the ability to manage heating in line with their needs on a remote basis via app, is important. This project offers one example of how the energy and heating energy sectors can be smartly interlinked in the energy system of the future.

C/sells cellular energy system

The energy turnaround project C/sells is intended to show the way towards a digital energy system. The Federal Ministry for Economic Affairs and Energy (BMWi) included the project in its nationwide "Smart Energy Showcase – Digital Agenda for the Energy Turnaround" initiative. A total of Euro 100 million is being invested in the model region in southern Germany, in which nearly 60 participants from industry, the energy sector and science are building an energy management system with a cellular structure and a new smart grid approach. A system of this kind consists of several small units – so-called cells – which may be properties, districts or towns. Each of these cells attempts to balance its proprietary electricity generation and electricity requirements directly on location. Energy is only exchanged with a connected cell when local production is insufficient to cover current demand. This way, each cell assumes responsibility for the equilibrium of the overall energy system. FRANKLIN, the conversion space in Mannheim, provides the opportunity to form just this sort of cell. In FRANKLIN District, MVV is simulating and trying out the energy system of the future by interconnecting the electricity, heating energy and mobility sectors. Digitalisation provides the necessary tools – an IoT (Internet of Things) platform is being implemented to interlink the diverse infrastructure components, such as energy plants, smart meters and applications.

One basis for optimising the district is comprehensive smart metering performed in real time with high resolution. This provides metering transparency virtually in real time and thus enables potential flexibilities to be detected while also facilitating smart monitoring. Not only that, the energy flows are also made visible for end customers. MVV is creating the basis for a modern, forward-looking district by offering added-value and other innovative services.

In order to investigate potential flexibilities, we are installing a state-of-the-art charging infrastructure for electric vehicles and creating a smart heating energy cell. This cell is intended to show how heating energy from regenerative sources can be integrated and used on location in ways that make sense. Examples here include a power-to-heat plant coupled to a photovoltaics system or situation-adjusted control of heating energy input into buffer storage systems.

In the year under report, we simulated decentralised heating energy input and charging processes for heating storage systems. These simulations showed that, by using power-to-heat solutions to feed heating energy into the local heating grid on location, we can efficiently offset heating energy losses. By aggregating the decentralised heating storage facilities in the Officers' Quarters and controlling these in a targeted manner, we can reduce heating energy losses and ensure a constant flow in the heating energy grid.

E-mobility solutions tailored to specific target groups

Electro-mobility is set to become one of the core components of the future energy world. Since 2009, we have therefore worked consistently to expand our e-mobility innovation field. Having built up internal expertise and networks, we took part in the South-West Electro-Mobility Cluster, and supplemented this with R&D projects directly relevant to our core business (Future Fleet, Smart Grid Integration) and application-based development work in the C/sells showcase project. These preliminary activities were intended to provide MVV with access to a new business field.

By introducing commercial offers for private, commercial and business customers, we rapidly rolled out our capabilities to our market units in the year under report. "Charge & Motion", a unit at our MVV Enamic subsidiary, is dealing closely with our customers' growing needs in terms of e-mobility solutions with a view to developing and offering integrated solutions. To help our business customers get started with e-mobility, we offer target group-specific solutions for the hospitality and real estate sectors, as well as for companies that wish to electrify their car pools or enable their employees to charge their electric vehicles during working hours.

Furthermore, in a first stage starting in October 2018 we are expanding the public charging infrastructure in Mannheim to include a further total of around 27 locations. In implementing this, we are drawing on the subsidy programme provided by the Federal Ministry of Transport and Digital Infrastructure (BMVI). In a second stage, this expansion programme will be extended to the Rhine-Main metropolitan region. E-mobility also forms a key strategic focus in the measures taken by Stadtwerke Kiel AG to address the end customer market. The company is making rapid progress, for example, in expanding the public charging infrastructure. In the medium term, it aims to build more than 100 charging points, also with support from the BMVI. The basic technical requirements for end customer access have been provided by "StromFahre", an app which has handled the billing for electricity charging at the charging points since July 2018. Stadtwerke Kiel has included mobility solutions for private and business customers in its product range and already implemented its first business customer projects. A beacon project at a major partner in the field of car sharing is currently in the planning stage and is due to be rolled out in spring 2019.

Cooperation with start-ups

To gain access to new technologies and solutions, we also cooperate with start-up companies and work with accelerator programmes to this end. Based on a multistage process, we first select the start-ups with which we wish to work. In the subsequent period, we coach these companies, perform joint demonstration projects and accompany them for around five months. The benefits for the start-ups are the opportunities to rapidly gain experience and access to industry expertise and networks. In the long term, this may also lead to the acquisition of shareholdings in the start-up companies. In our first accelerator programme, launched in Berlin last year, we successfully completed two demonstration projects. Together with prosumery, we developed a digital solution to implement tenant electricity, while the project with Datalyze Solutions focused on the digitalised presentation and analysis of data with a location reference. We launched a second accelerator programme in September 2018, in this case with a focus on solutions for smart cities. Within this programme as well, we opted to cooperate with two start-up companies. The object of the cooperation with Breeze Technologies is a concept that shows how environment data can be measured as effectively as possible and put to efficient use. And with S O Nah the aim is to develop a parking management system.

Ready for Take-Off

Innovations are crucial to MVV's future operating capacity. Here, we are also drawing on the expertise, creativity and wealth of ideas available among our employees. In "Take-Off", an internal innovation process we launched in April 2018, employees at our Mannheim location have the opportunity to devise and pursue ideas for new products, technologies and business models. At "Inno-Day" in June 2018, 16 innovators presented their ideas and formed teams with interested colleagues from across different departments and hierarchical levels. All in all, 145 ideas were submitted. The teams, which were selected by a jury, had the opportunity over several stages to get to know new working methods and further develop their ideas in workshops.

Over a three-month trial period, ideas that subsequently prove to be promising are then developed further by the teams, prepared for implementation and tested. In January 2019, we will be deciding how to take these ideas further.

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Group Business Performance

- » Slight reduction in sales from Euro 4,010 million to Euro 3,903 million
- » Adjusted EBIT improves from Euro 224 million to Euro 228 million
- » Investments in future energy system

MAJOR DEVELOPMENTS AND EXECUTIVE BOARD SUMMARY

Investments ensure we are fit for the future

With our corporate strategy, we have successfully aligned MVV to the energy system of the future. We have invested for many years now in expanding renewable energies, energy efficiency and innovative, forward-looking products and services. In the 2018 financial year, we consistently maintained this course and invested a total of Euro 290 million, with Euro 124 million of this sum involving investments in our growth. Our strong financing structure and solid adjusted equity ratio of 37.3% will enable us to maintain this high pace of investment in future as well.

In November 2017, we agreed a new municipal partnership in the field of environmentally-friendly waste management and took over an existing energy from waste plant in Dundee/Scotland. We are currently building a highly efficient new heat and power plant in the direct vicinity that is due to launch operations in 2020. Overall, we are investing around Euro 135 million. The new plant is dimensioned for an annual throughput of 110,000 tonnes of waste. The waste volumes will mostly come from municipal partners, with the basis being provided by a long-term disposal contract with the City of Dundee and Angus Council.

We are expanding our Friesenheimer Insel location in Mannheim and will be investing around Euro 100 million here in the years ahead. On the one hand, we are connecting our CHP plant to the existing district heating grid in Mannheim. This will enable us to make optimal use of the energy generated from waste incineration. The ground-breaking ceremony took place in March 2018. On the other hand, we are extending the CHP plant to include a sewage incineration facility enabling the phosphorous contained in the sewage to be recovered. This way, the location will become an even more important component of the energy turnaround and of a sustainable recycling-based economy for the City of Mannheim and the Rhine-Neckar metropolitan region.

In April 2018, we took over an organic waste fermentation plant in Dresden. With a capacity of 31,000 tonnes a year, the plant ferments organic waste and produces biogas. This is then used to generate electricity in two CHP plants. We are planning a second plant also using organic waste to generate biogas, in this case in Bernburg in Saxony-Anhalt.

As well as investing in new generation plants and expanding existing plants, we are also expanding our portfolio of products and services, and here in particular by acquiring targeted shareholdings in innovative companies or forging strategic partnerships with such companies. In February 2018, for example, we acquired a 25.1% stake in Bonn-based Recognizer Group. Together with Recognizer, we aim to draw on the possibilities offered by artificial intelligence in the field of energy efficiency and integrate products and services for business customers. Recognizer's applications have a key focus on energy savings at buildings and on safeguarding high levels of plant availability.

Efficiency measures enhance our competitiveness

In view of the fundamental transformation in the energy industry framework, we are continually reviewing our processes and organisational structures. After all, sustainably enhancing competitiveness is a factor of crucial importance to MVV's successful further development. In the 2017 financial year, for example, we already launched a project to compile a forward-looking concept for shared services at MVV, Stadtwerke Kiel and Energieversorgung Offenbach. The aim here is to raise competitiveness, increase flexibility and boost IT and digitalisation competence in the specialist divisions. All of the processes involved in shared services were analysed in the previous year and this was followed in the year under report by the identification of actions needed to improve the processes. The first measures are already being implemented.

Slight increase in adjusted EBIT with decline in sales

MVV's sales for the 2018 financial year fell by Euro 107 million to Euro 3,903 million. This development was due above all to lower electricity and gas trading volumes. Our adjusted EBIT, by contrast, improved by Euro 4 million to Euro 228 million. Positive factors contributing to our earnings performance on an operating level particularly included the environmental energy business, higher revenues from our wind turbines and improved availability levels at our UK plants. Furthermore, adjusted EBIT benefited from the sale of assets relating to multi-utility contracts at MVV ImmoSolutions and the disposal of the fibre optic network at MVV Energie AG. Operating earnings were adversely affected, on the other hand, by impairment losses recognised for Juwi and at MVV Enamic.

Thanks to the financial result, which also improved, earnings before taxes (adjusted EBT) rose year-on-year by Euro 10 million to Euro 179 million. Adjusted annual net income after minority interests rose less substantially. At Euro 94 million, this was only Euro 1 million higher than the previous year's figure. This in turn was due to higher taxes on income and the increase in minority interests. Adjusted earnings per share came to Euro 1.43, as against Euro 1.41 in the previous year.

Executive Board summary of business performance and economic position

Our energy system is undergoing a fundamental conversion that will result in far-reaching change. By making targeted investments, introducing and maintaining programmes to sustainably enhance our efficiency and developing innovative products and services, we laid key foundations once again in the 2018 financial year to enable us to continue generating sustainable and profitable growth.

We met our adjusted EBIT target. We forecast a slight increase in earnings compared with the previous year's figure of Euro 224 million. At Euro 228 million, our adjusted EBIT improved by 2%. Sales totalled Euro 3,903 million and thus fell slightly short of the previous year's figure and our forecast.

Looking at our operating performance, it is clear that MVV has adopted the right strategy in what is a challenging climate. One aspect of the new climate is that our earnings performance has become more volatile overall – and that not only in our renewable energies project development business. That is something we have to be aware of. It makes it all the more important for us to keep developing our corporate strategy, i.e. adapting it to current and future changes in markets, the competitive climate and the energy policy framework.

Comparison of actual and expected business performance and outlook for 2019 financial year

	Forecast FY 2018	Results FY 2018	Outlook FY 2019
Sales performance	Forecast adjusted after end of 1 st half of 2018: at around previous year's level (Euro 4.0 billion)	Sales of Euro 3.9 billion	At around previous year's level
Adjusted EBIT	Slight increase on previous year's figure (Euro 224 million)	Adjusted EBIT of Euro 228 million	At around previous year's level; depending on weather and wind conditions, the specific operations launch date at our new gas-powered CHP plant in Kiel, electricity and fuel prices, the development in waste and biomass prices, the CDS and CSS, interest rate and currency effects, the development in the competitive climate and the availability of our plants. High level of volatility in renewable energies project development business.
Adjusted equity ratio	Target > 30%	Adjusted equity ratio of 37.3%	High share of debt-financed growth programme continues to impact on equity ratio: target > 30%
Adjusted ROCE	At around previous year's level (8.2%)	Adjusted ROCE reaches 8.5%	Slightly below previous year's level
Investments	Total planned investments of around Euro 300 million	Total investments of Euro 290 million	Significant increase
Employees	Increase in personnel totals in growth fields; further efficiency measures in existing business	Reduction in personnel totals to 5,978 employees as of 30 September 2018 (previous year: 6,062)	Increase in personnel totals in growth fields; further efficiency measures in existing business

 GRI 102-7

BUSINESS FRAMEWORK

Energy policy changes

Key energy policy factors

Energy policy in the 2018 financial year was affected by the protracted negotiations held to form a coalition government in the wake of the Federal Election on 24 September 2017. This process lasted until 24 March 2018, when the Chancellor was elected and the Grand Coalition relaunched. The negotiations preceding the coalition agreement reached between the SPD and CDU/CSU parties were one of the main political topics in Germany, as were the first efforts to implement the agreement. For MVV's future business performance, three topics in particular are highly relevant: the further expansion in renewable energies, the further development in combined heat and power generation and district heating and the work of the newly established Commission on Growth, Structural Change and Employment.

Coalition agreement approved by SPD and CDU/CSU

The coalition agreement was concluded on 14 March 2018. At core, the Federal Ministry for Economic Affairs and Energy basically intends to continue with the energy policy pursued in the previous legislative period. Alongside a focus on the electricity industry, the coalition also stresses sector coupling.

In the coalition agreement, the governing parties underlined their commitment to the 2030 and 2050 climate targets. By contrast, they abandoned the target of cutting CO₂ emissions by 40% by 2020 compared with the 1990 reference year. The shortfall in actions needed to meet the 2020 climate target should nevertheless be further remedied in the near future.

Increased expansion of renewable energies

One specific target set by the coalition involves accelerating the expansion of renewable energies in Germany to 65% by 2030. That represents an increase of around 15 percentage points compared with the expansion course previously provided for in the German Renewable Energies Act (EEG). To achieve

this target, special tender rounds for capacities of 4 gigawatts each are to be held for onshore wind power and photovoltaics in 2019 and 2020. Furthermore, renewable energies are to be expanded on an even basis throughout Germany by determining a minimum capacity addition threshold for southern Germany.

The targets set by the Federal Government are consistent with our strategic alignment and positive for our project development business field. Raising the renewable energies expansion targets is the right step to enable Germany to meet its climate protection targets even if electricity demand rises due to sector coupling. We have called for the establishment of a new "South" capacity addition zone for onshore wind power for many years now. This way, it will be possible to generate renewable electricity closer to where the load is, make optimal use of grid capacities and thus reduce nationwide grid expansion requirements.

Onshore wind power: Excessive privileges suspended

Upon completion of the parliamentary proceedings at the beginning of June 2018, the privileges previously granted to certain types of projects were curtailed, also for future onshore wind tenders, for the period from August 2018 to June 2020. That means all participants require approval under the Federal Immissions Protection Act (BImSchG) to be permitted to participate in tenders.

We welcome this decision by lawmakers, as it will promote competition for onshore wind turbine construction by ensuring equality of opportunity for all market participants.

Results of tenders in Germany

Excessive privileging in the first three onshore wind power tender rounds led to a politically unintended distortion of the market in 2017, with citizens' energy projects being awarded virtually all of the tenders. Following the suspension of these privileges in February 2018, their share of project tenders has reduced compared with the previous year.

The onshore wind power tender round held with a bidding deadline on 1 February 2018 awarded tenders to 83 bids with a total volume of 709 MW. The auction was 1.4 times oversubscribed. The average acceptance value amounted to 4.73 ct/kWh. In the second auction at the beginning of May 2018, the volume of 670 MW thereby tendered was for the first time under-subscribed: The Federal Network Agency received 111 bids with a total volume of 604 MW. The average acceptance value amounted to 5.73 ct/kWh. In the tender round held as of 1 August 2018, the Federal Network Agency called for bids for onshore wind capacity totalling 670 MW. The volume of permissible bids amounted to 667 MW while the average acceptance price came to 6.16 ct/kWh.

In the 2018 financial year, a total of 13 onshore wind projects at our Juwi and Windwärts subsidiaries were awarded tenders in the various tender rounds. Not only that, with the awarding of tenders for five open-space photovoltaics systems Juwi has successfully re-entered the German solar business. These results show that, when competitive conditions are fair, we can succeed and be competitive in the new renewable energies tendering system.

CHP and district heating remain key components of energy policy

Combined heat and power generation and district heating will both retain key roles in the energy turnaround. Accordingly, the coalition agreement provides for further developing and modernising the German Combined Heat and Power Generation Act (KWKG) during the current legislative period. Specifically, it is planned to expand CHP plants and the district heating infrastructure and to enhance their efficiency.

For MVV, the signal sent out by the Federal Government in this respect is positive. After all, district heating forms a major component of our core business. If the energy turnaround is to succeed, then accelerating the heating energy turnaround will be crucial. This is because more than half of end energy consumption in Germany is attributable to heating applications – such as warm water, room heating and other process heating. A fair playing field for different technologies and competition provide the best conditions for meeting climate protection targets in the heating energy sector as well, and that both reliably and cost-effectively.

Commission on Growth, Structural Change and Employment established

Based on the coalition agreement, the newly established Commission on Growth, Structural Change and Employment met for the first time in June 2018. The Commission is charged with specifying details for the phasing-out of coal use, including setting a date by which this process should be completed. It is also expected to compile further structural decarbonisation measures for the energy industry by 2020 and 2030 and propose potential ways to finance structural change in the lignite-producing regions thereby affected.

The Commission is jointly managed by the Federal Ministry for Economic Affairs and Energy (BMWi), the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), the Federal Ministry of the Interior, Building and Community (BMI) and the Federal Ministry of Labour and Social Affairs (BMAS). Alongside politicians, the members of the Commission also include representatives of trade unions, environmental protection and business associations and scientists. As well as in the full Commission, various topics are also being addressed in the “Economic Development and Jobs in the Regions” and “Energy Industry and Climate Targets” workgroups. The Commission should present an action plan by the end of 2018, while the measures are scheduled to be enacted in law in 2019. It is not yet clear how relevant the results of the Commission’s work will be for our Supply Reliability reporting segment.

Cabinet approves promotion for electric cars

In early August 2018, the Federal Government began the process of introducing tax relief for company cars with electric drive systems. To date, employees using their company cars for private purposes have been required to tax 1% of the list price a month as a benefit in kind. For electric and hybrid vehicles, this rate is to be halved in future to 0.5%. The new regulation should apply to electric and hybrid vehicles purchased or leased in the period from 1 January 2019 to 31 December 2021. This support is intended to boost sales of company cars with electric drive systems.

Reform of European emissions trading completed

The reform of European emissions trading for the trading period from 2021 onwards was completed in early 2018. In future, the volume of available rights will be reduced more significantly each year. Furthermore, the market stability reserve has been strengthened, thus effectively reducing the excess supply of CO₂ rights. Should power plants be decommissioned due to national measures, member states may simultaneously reduce their number of auctioned rights. This will help prevent emissions being relocated to neighbouring states and to other sectors in connection with national CO₂ savings measures.

We welcome these measures to boost European emissions trading, which serves as a core European climate protection instrument. CO₂ prices have risen significantly as the year has progressed. We see this as a sign of growing trust in emissions trading once again thanks to the reform.

EU Winter Package on the final straight

The European Commission presented the “Winter Package” – an extensive bundle of energy policy legislation – in November 2016 already. The tripartite negotiations between the Commission, Parliament and Council will last into winter 2018/2019. Having said this, significant results were already achieved in summer 2018 in respect of updating the Building Directive, the Energy Efficiency Directive, the Governance Regulation and the Renewable Energy Directive. It has been agreed, for example, to raise the 2030 targets for renewable energies to 32% and for energy efficiency to 32.5%. Each member state will be required to implement the directives contained in the Winter Package in its own national laws within 18 months of the package taking effect. Given the existing latitude, also in terms of national implementation, the extent to which the Winter Package will impact on our operating business is still unclear.

Application of new regulations in German Banking Act (KWG)

The German Banking Act (KWG) was substantially amended as of 3 January 2018 to account for the revised MiFID II Directive (Markets in Financial Instruments Directive, MiFID II). The new regulations chiefly apply to companies in the financial sector

and are intended to avert future financial crises by enhancing the transparency and integrity of markets and investor protection. Energy supply companies were not the key focus of the Directive, but are nevertheless affected by the new regulations. Numerous services and products offered by energy suppliers to their customers or marketed on the wholesale energy market count as financial instruments and are thus within the scope of the amended regulations. Not only that, these products are traded both on the exchange and in bilateral agreements or via specialist energy trading platforms. Finally, emissions trading rights are also within the scope of the new capital market regulations. In particular, our trading company MVV Trading is affected by the new regulations. For its trading activities, this company has declared to the Federal Financial Supervisory Authority (BaFIN) that it will draw on the ancillary activity exemption and is thus required to meet additional follow-up obligations. These include compliance with specified limits in its corporate activities. Trading activities at MVV Trading may not exceed specified limits in relation to the market (market share test) and they have to represent the smaller share of activities on the level of the MVV Group (main activity test). Moreover, new transparency obligations have to be complied with. These involve regular reporting to the supervisory authorities on the financial instruments traded. Furthermore, position limits set by the supervisory authorities also have to be adhered to.

Decision on equity returns still outstanding

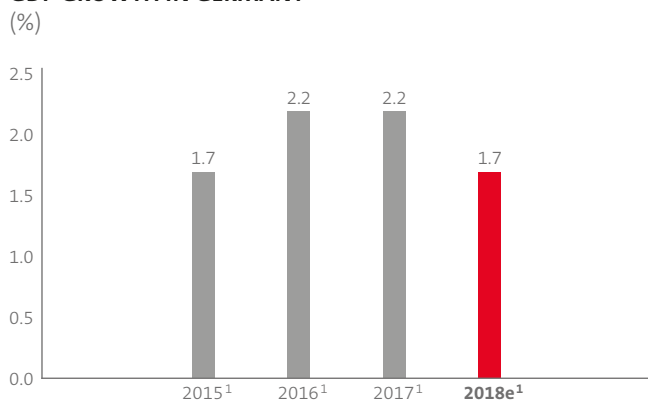
In April 2018, the Federal Network Agency (BNetzA) filed an appeal at the Federal Supreme Court (BGH) against the decision taken by the Higher Regional Court (OLG) in Dusseldorf concerning equity returns. Within the complaints procedure, the OLG previously overruled decisions taken by the BNetzA concerning the rates of equity return for electricity/gas in the 3rd regulatory period. These are the rates of return that operators of electricity and gas grids are permitted to generate on the equity they invest in grids. The OLG believed the BNetzA had failed to take adequate account of current market risks when determining the level of the market risk premium. The BNetzA had therefore been called on by the OLG to set new rates that accounted for the legal opinion of the court. MVV's grid companies were and are involved in the court proceedings.

Market climate and competition

German economy continues to grow

In their autumn survey, experts at Germany’s leading economic research institutes forecast GDP growth of 1.7% for the 2018 calendar year. The pace of growth has thus slowed compared with the previous year. Growth in 2018 is being driven above all by the domestic economy, which has been stimulated by the sharp rise in employment totals and low interest rates.

GDP GROWTH IN GERMANY



¹ Calendar year

Source: Forecast in autumn survey of leading German economic research institutes (September 2018)

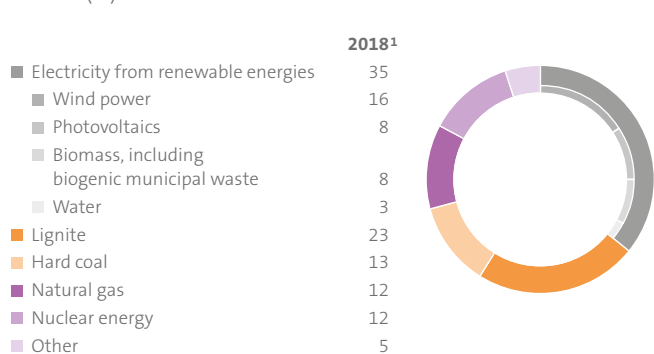
Increase in electricity generation in Germany

In November 2018, the Association of the German Energy and Water Industries (BDEW) published its estimates of gross electricity generation in Germany. A total of 479.8 billion kWh of electricity was generated in the 1st nine months of 2018, corresponding to an increase of around 5% on the previous year’s period (455.2 billion kWh).

Renewables share of German electricity generation rises to 35%

According to BDEW estimates, the share of gross electricity generation in Germany accounted for by renewable energies totalled 35% in the 1st nine months of 2018 calendar year – up from 34% in the previous year’s period. This growth was particularly due to onshore wind turbines, which increased their electricity generation volumes by 13%. Generation volumes at offshore wind turbines rose by 10%. Electricity generation volumes at photovoltaics systems grew year-on-year by 16%. Biomass and biogenic municipal waste were used to generate 1% more electricity than one year earlier. In total, around 169 billion kWh of electricity was generated from renewable energies.

GROSS ELECTRICITY GENERATION IN GERMANY



¹ January to September 2018

Ongoing strong expansion in wind power

In March 2018, the German Wind Energy Association (BWE) published its “Wind Energy Fact Sheet Germany” for the 2017 calendar year. Overall, 6,584 MW of wind power capacity was newly installed in Germany, of which 5,334 MW onshore. Total installed wind power capacities therefore amounted to 56,154 MW, 13% up on the previous year’s figure.

Gross onshore wind power capacity totalling 1,626 MW was added in Germany in the 1st half of the 2018 calendar year, 29% less than in the previous year’s period. This calculation includes capacities of 297 MW added by repowering turbines.

Positive market expectations for our growth fields

Turning the electricity turnaround into an energy turnaround will require fundamental changes to be made in the heating energy and transport sectors. In this context, the dena study “Integrated Energy Transition” published in 2018 concludes that a cross-sectoral approach to reaching climate protection targets with a broad technological mix leads to lower transformation costs than a decarbonisation course based on full electrification. The interaction between efficient, decentralised generation, smart consumption and storage of energy in ways that make sense, and that across all sectors, will play an ever more significant role. Against this backdrop, one ever more major focus is the cost-effective and customer-friendly provision of digital products and services.

In BP’s “Energy Outlook 2018”, the experts forecast that global energy needs will rise by around a third by 2040, with the limiting effect resulting from growing energy efficiency already factored into the calculation. According to the BP study, renewable energies generation will show the highest growth rates worldwide. Its share of total generation volumes is expected to quintuple by 2040. This development is benefiting in particular from the continuing improvement in the competitiveness of wind and solar power.

A study published by the International Energy Agency in November 2017 reaches similar conclusions. According to this, global energy demand will rise by 30% by 2040. Renewable energies are set to show by far the fastest growth worldwide. Here too, the rising competitiveness of renewable energies compared with conventional energy forms is referred to. In the previous year’s “World Energy Outlook 2016”, which focused on renewable energies, experts at the International Energy Agency forecast that average costs of photovoltaics would fall by a further 40% to 70% by 2040, with the costs of onshore wind turbines falling by a further 10% to 25%.

Almost 55,000 electric and plug-in hybrid vehicles were newly registered in 2017, more than twice the previous year’s figure. The total number of registered vehicles has therefore risen to nearly 100,000. According to a current forecast issued by the Center of Automotive Management, this trend will continue and the share of new car registrations with electric drive systems should rise to 5% by 2020 and to 16% by 2025. In parallel, the total number of charging points is rising across Germany. By the end of the 1st half of 2018, the Charging Point Register maintained by the Federal Network Agency included 5,100 public charging points, of which more than 600 with fast charging capability.

In the long term, these trends will benefit our growth fields: our energy generation from renewable energies, our national and international project development and operations management for renewable energies plants, our direct marketing of these plants, our decentralised heating and local heating supply systems and our innovative, smart energy efficiency solutions and service offerings for landlords and tenants, commercial businesses and industrial and private customers.

Increase in wholesale prices for fuels and electricity

Wholesale prices for fuels and electricity rose in the course of our year under report.

Listed prices for Brent crude oil for supply in the following month (front month) ranged from US\$ 55.62 to US\$ 82.72 per barrel in the 2018 financial year. At US\$ 69.93, the average barrel price in the year under report was US\$ 17.76 up on the previous year’s figure of US\$ 52.17. Production cuts by OPEC and Russia took due effect from autumn 2017 and led to a sharp rise in oil prices. Additional upward price momentum resulted from a breakdown in the Forties pipeline system at the end of 2017. In spring and summer 2018, the oil price was exposed to at times intense fluctuations. These began with the announcement of US sanctions against Iran and production bottlenecks in Venezuela, which led prices to surge to the US\$ 80 per barrel mark. As the year progressed, the planned increase in production by OPEC and Russia led prices to fall, as did the US tariff and trade disputes, particularly with China. Since then, the oil price has fluctuated around the US\$ 80 per barrel mark, most recently with an upward trend.

Natural gas prices for the front-year product in the NetConnect Germany (NCG) market region were listed at an average of Euro 19.42/MWh in the year under report, Euro 2.40/MWh higher than in the previous year. Gas prices already tracked the rise in oil prices in the 4th quarter of 2017 and were also supported by slightly colder weather conditions and breakdowns in Norway's Upstream system. January, which was notably too mild, eased the situation at the beginning of 2018. As the year progressed, however, the gas price received strong new upward momentum from factors such as rising oil prices, lower production volumes at the Dutch gas field in Groningen and a late cold spell at the end of February and in early March. This resulted in very low storage levels and correspondingly high refilling rates, a factor which has kept prices high overall since spring 2018. In the late summer, a marked rise in CO₂ prices in particular and further maintenance work and breakdowns in Norway's Upstream system led prices to rise sharply, a development that only slowed with the mild temperature forecasts issued at the beginning of autumn.

Coal prices maintained their upward trend in the 2018 financial year. Compared with the previous year, average front-year prices per tonne for hard coal in the ARA region (Amsterdam, Rotterdam, Antwerp) rose by US\$ 16.43 to US\$ 84.24. The key drivers of this rise were firmer oil prices and robust demand in Asia. Additional reasons for the worldwide increase in coal prices included the positive performance of the global economy, which involved strong demand for coal, and restrictions and delivery difficulties on the supply side.

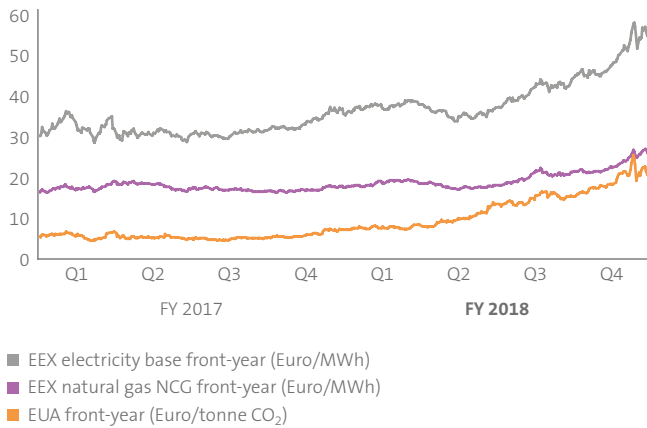
In the year under report, prices for base load electricity for supply in the following year were driven both by fuel market trends and by political developments. With an average price of Euro 39.55/MWh, the front-year price rose by Euro 9.20/MWh in the year under report. Due to the talks held to explore the possibility of a coalition being formed between conservative, liberal and green parties, one of whose topics was the exit from coal in Germany, the contract was volatile at the beginning of the year under report. The front-year contract then tended slightly downwards in the 2nd quarter of our 2018 financial year. The dip in prices in mid-February 2018 was due to weak coal prices. As the year progressed, the cold spell in Europe and sharp rise in fuel and emissions prices led the front-year contract to rise further.

The contract reached a temporary high in July and then briefly moved sideways before rising significantly. It reached a new high at Euro 56.65/MWh on 11 September 2018. The electricity market was driven by hot and dry weather conditions in the summer, as well as by strong fuel markets, and here in particular the emissions and coal markets.

Emission right prices per tonne of CO₂ for supply in the following year averaged Euro 12.85 in the 2018 financial year, Euro 7.46 higher than in the previous year. In November 2017, the EU Commission, the European Council and the European Parliament reached agreement on the post-2020 reform of emissions trading. This provided positive momentum in the market and drove prices upwards. Prices on the emissions market more than tripled since the beginning of the 2018 financial year, reaching a ten-year high of Euro 25.57 per tonne on 9 September 2018. This was then followed by a sharp correction, with the price per tonne settling at between Euro 20 and Euro 23. Emissions prices continue to be supported by increased buying interest, some of which speculative, as well as by positive market sentiment.

The clean dark spread (CDS), i.e. the margin achieved from generating electricity from hard coal, initially showed positive developments in the 1st quarter of our year under report. After this, the spread lost ground and slid further into negative territory, reaching its lowest price at Euro -3.67/MWh on 1 June 2018. These losses in the CDS were due to coal and emissions prices increasing more rapidly than electricity prices. From early June 2018, the CDS began to rise once more and regained positive territory in September. This in turn was due to what in relative terms was a sharper increase in electricity prices than in coal and emissions prices.

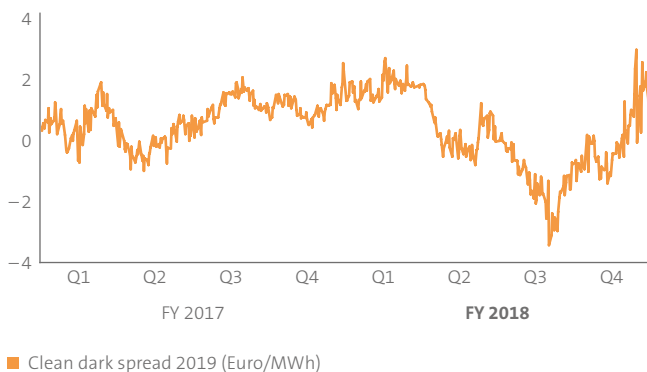
DEVELOPMENT IN WHOLESALE MARKET PRICES FOR ELECTRICITY, GAS AND CO₂ RIGHTS



DEVELOPMENT IN WHOLESALE PRICES FOR OIL AND COAL



DEVELOPMENT IN CLEAN DARK SPREAD FOR 2019



MVV's market position

- 67% of all the electricity we generated in Germany in the 2018 financial year was based on renewable energies. For Germany as a whole, renewable energies accounted for 35% of gross electricity generation in the 1st nine months of the 2018 calendar year.
- With our subsidiaries Juwi and Windwärts, we are one of Germany's leading renewable energies project developers.
- Directly marketing electricity from renewable energies in the market premium model also forms part of our portfolio. At the end of the year under report, we had renewable energies plants with total capacities of 4,266 MW under contract in Germany. This makes us one of the country's largest direct marketers.
- We are also one of the German market leaders when it comes to generating energy from biomass: In the 2018 financial year, we operated 18 biomass and biogas plants in Germany. By acquiring the organic waste fermentation plant in Dresden we extended our portfolio and expanded our market position. Overall, these plants generated 315 million kWh of electricity and 163 million kWh of heating energy. Furthermore, we generated 254 million kWh of biomethane at four biomethane plants.
- Our grid companies in Germany have district heating grids with a total length of 1,154 kilometres. In the year under report, we generated district heating turnover of 5.9 billion kWh in Germany, making us the country's second-largest district heating provider.
- We are one of Germany's top three operators of energy from waste and biomass plants. Our German locations accepted a total of 1.7 million tonnes of waste and refuse-derived fuels for incineration in the 2018 financial year.
- In the Czech heating energy market, our subsidiary MVV Energie CZ a.s. operates at 15 locations, making us one of the market leaders there.

Impact of weather conditions

Unusually mild weather in 2nd half of year

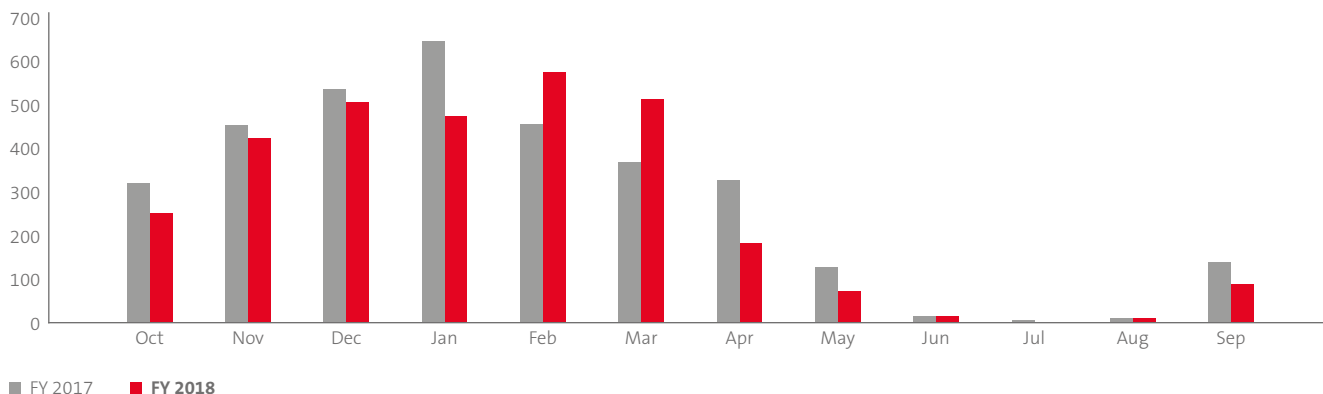
Lower outdoor temperatures lead to rising heating energy requirements at our customers. This is also reflected in higher degree day figures, which are referred to as an indicator of temperature-based heating energy use. Temperatures in the 2nd half of our 2018 financial year were higher, at times significantly so, than in the previous year. This led degree day figures at MVV to fall around 9% short of the previous year.

Higher wind volumes than in previous year

Just like our customers' heating energy needs, electricity generation volumes at our renewable energies plants are also influenced by weather conditions. Wind volumes, which play a significant role in determining the volume of electricity generated by our turbines, are particularly important in this respect.

Compared with the long-term average, the volume of usable wind power was higher in the 2018 financial year in Germany, and especially in regions relevant to our business. At 104%, the usable wind yield was ahead of the previous year's figure of 91%. For this comparison, we draw on the "EMD-ConWx Mesoscale Wind Index" with a reference period (20-year average). The 2018 series comprises the months from October 2017 to August 2018. As the data for September was not yet available upon preparation of this report, we have assumed a variance to the reference period of 0% for September.

DEGREE DAY FIGURES



NON-FINANCIAL PERFORMANCE INDICATORS

MVV's success as an energy supplier is measured not only in terms of its financial key figures. Non-financial performance indicators also play an important role in the sustainable development of our company.

The comments in this section refer to all fully consolidated companies. At the same time, however, we also assume responsibility for the companies we recognise at equity and intend to report transparently on their non-financial performance statistics as well. The corresponding information can be found in the Sustainability chapter.

Reduction in workforce

MVV had a total of 5,978 employees as of 30 September 2018 and thus 84 fewer than at the previous year's balance sheet date. This development was chiefly due to a reduction in staff totals at Juwi.

Personnel figures (headcount) at balance sheet date

	30 Sep 2018	30 Sep 2017	% change
MVV ¹	5,978	6,062	-1
of which in Germany	5,137	5,227	-2
of which abroad	841	835	+1

1 Including 312 trainees (previous year: 324)

A total of 5,137 individuals worked for us in Germany, while our foreign subsidiaries had 841 employees. Of these, 502 worked at our Czech subgroup, 199 at Juwi's international shareholdings and 126 at the British subsidiaries of our environmental energy subsidiary MVV Umwelt.

Adjusted employee benefit expenses rose year-on-year by 1% to Euro 422 million. This increase principally resulted from UK staff expansion at the beginning of the year under report due to the takeover of an energy from waste plant, as well from the first-time full consolidation of subsidiaries. By contrast, the reduction in staff totals mostly took place in the 2nd half of the past financial year.

Expansion in renewable energies generation portfolio progresses apace

We further expanded our electricity generation capacity from renewable energies including the biogenic share of waste/refuse-derived fuels (RDF) in the year under report and now have installed capacities of 467 MW_e. The new capacities added were due to the takeover of an energy from waste plant in Dundee/Scotland and the acquisition of an organic waste fermentation plant in Dresden. Moreover, Energieversorgung Offenbach launched operations with smaller-scale photovoltaics systems.

Installed capacity for renewable energies and biogenic share of waste/RDF

MW _e	FY 2018	FY 2017	% change
Biomass and biogas plants ¹	104	103	+1
Biogenic share of waste/RDF	161	151	+7
Wind power	196	196	0
Hydroelectricity	2	2	0
Photovoltaics ²	4	3	+33
Total	467	455	+3

1 Including biomethane plants (previous year's figure adjusted)

2 Previous year's figure adjusted

Our electricity generation volumes from renewable energies including the biogenic share of waste/RDF grew year-on-year by 80 million kWh to 1,148 million kWh. As well as the additions to our generation capacities listed above, this increase was also due to high availability levels at our biomass power plant at Ridham Dock.

Electricity generation volumes from renewable energies and biogenic share of waste/RDF

kWh million	FY 2018	FY 2017	% change
Biomass and biogas plants	498	432	+15
Biogenic share of waste/RDF ¹	274	307	-11
Wind power ¹	367	322	+14
Hydroelectricity	6	4	+50
Photovoltaics	3	3	0
Total	1,148	1,068	+7

1 Previous year's figure adjusted

Our wind turbines benefited from favourable wind conditions in the year under report and produced 45 million kWh more electricity than in the 2017 financial year.

Due to inspections and scheduled maintenance measures, electricity generation volumes at our plants powered by waste and refuse-derived fuels (biogenic share) fell by 33 million kWh compared with the previous year.

Increase in renewables share of our electricity generation

Overall, our total electricity generation volumes of 1,836 million kWh in the year under report fell 66 million kWh short of the previous year's figure.

Electricity generation volumes

kWh million	FY 2018	FY 2017	% change
Electricity from renewable energies and biogenic share of waste/RDF ¹	1,148	1,068	+7
Electricity from CHP ¹	501	548	-9
Other electricity generation ¹	187	286	-35
Total	1,836	1,902	-3

1 Previous year's figures adjusted

We witnessed a significant reduction in other electricity generation, which fell by 99 million kWh in the year under report, a development mainly resulting from inspections and scheduled maintenance measures. Due above all to weather conditions, the volumes of electricity generated using combined heat and power (CHP) decreased by 47 million kWh. Overall, 63% of our electricity generation volumes in the year under report were already attributable to renewable energies and the biogenic share of waste/RDF. In the previous year, this share amounted to 56%.

Heating energy generation down on previous year

Due to minor portfolio adjustments, our heating energy generation capacity fell year-on-year by 101 MW_t to 2,607 MW_t.

Heating energy generation capacity

MW _t	FY 2018	FY 2017	% change
Biomass and biogas plants	119	135	-12
Biogenic share of waste/RDF	682	682	0
Heating energy generation capacity from renewable energies	801	817	-2
Other plants	1,806	1,891	-4
Total	2,607	2,708	-4

Our heating energy volumes generated from the incineration of waste and refuse-derived fuels (biogenic share) were 97 million kWh higher than in the previous year. This was because the lower volume of electricity coupled out at our non-recyclable waste incineration and energy generation plant in Leuna led to a higher volume of process steam being coupled out.

Minor portfolio adjustments and mild weather conditions in particular nevertheless led the volume of heating energy generated to decrease by 214 million kWh to 3,890 million kWh.

Heating energy generation volumes

kWh million	FY 2018	FY 2017	% change
Biomass and biogas plants	202	267	-24
Biogenic share of waste/RDF	1,851	1,754	+6
Heating energy generation from renewable energies	2,053	2,021	+2
Other plants	1,837	2,083	-12
Total	3,890	4,104	-5

Biomethane generation at around previous year's level

At 30 MW_{h_s}, our biomethane generation capacity remained unchanged on the previous year. The volume of biomethane generated came to 254 million kWh in the year under report.

Biomethane generation volumes

kWh million	FY 2018	FY 2017	% change
Biomethane plants	254	261	-3

Lower input of fossil fuels

Protecting fossil resources is an important aspect of our corporate responsibility. To provide modern energy generation, we therefore work not only with fossil fuels, but also with waste and biomass.

Fuels used at power plants

	FY 2018	FY 2017	% change
Biomass (tonnes 000s)	602	514	+17
Biogenic share of waste/RDF (tonnes 000s)	1,889	1,810	+4
Natural gas (kWh million)	1,931	2,315	-17
Hard coal (tonnes 000s)	78	88	-11
Other fossil fuels (kWh million)	359	399	-10

Due to the higher volumes of electricity and heating energy generated at our biomass power plants and our energy from waste plants respectively, the volume of fuels used at these plants also increased. By contrast, the year-on-year reduction in gas, hard coal and other fossil fuels reflects the lower volume of generation at our conventional power plants compared with the previous year.

CO₂ emissions down on previous year

The CO₂ emissions at our fully consolidated generation plants totalled 1,547,000 tonnes in the year under report, as against 1,646,000 tonnes in the previous year. This fall in CO₂ emissions was due to the reduction in our conventional electricity and heating energy generation.

Compared with the 2017 financial year, expenses for emission rights fell to Euro 203 thousand (previous year: Euro 6 million). Income from emission rights rose to Euro 3 million in the year under report (previous year: Euro 58 thousand).

PRESENTATION OF EARNINGS PERFORMANCE

The period under report is the 2018 financial year – starting on 1 October 2017 and ending on 30 September 2018. Unless otherwise indicated, the comments below refer to the MVV Energie Group (“MVV”), i.e. to all fully consolidated companies.

MVV

MVV

Euro million	FY 2018	FY 2017	+/- change	% change
Development in turnover				
Electricity (kWh million)	23,556	26,293	-2,737	-10
Heating energy (kWh million)	6,598	6,917	-319	-5
Gas (kWh million)	21,209	25,190	-3,981	-16
Water (m ³ million)	41.3	40.2	+1.1	+3
Combustible waste delivered (tonnes 000s)	2,328	2,291	+37	+2
Sales excluding energy taxes	3,903	4,010	-107	-3
of which electricity sales	2,095	2,147	-52	-2
of which heating energy sales	359	371	-12	-3
of which gas sales	548	648	-100	-15
of which water sales	87	87	0	0
Adjusted EBIT	228	224	+4	+2

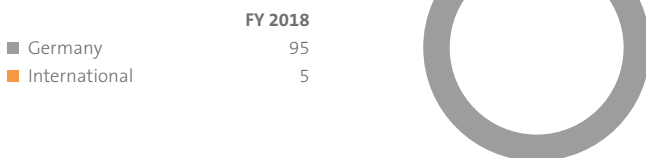
The reduction in sales was primarily attributable to lower electricity and gas trading volumes. As a result, we were not quite able to meet our forecast of generating sales at around the same level as in the previous year.

Our adjusted EBIT performance in the past financial year was shaped by opposing extraordinary one-off items. On the one hand, the sales of the fibre optic networks at MVV Energie AG, which were not required for the energy supply, and of assets relating to multi-utility contracts at MVV ImmoSolutions generated positive earnings contributions. On the other hand, earnings were adversely affected by impairment losses recognised on goodwill for Juwi and at MVV Enamic. These four one-off items virtually cancelled each other out.

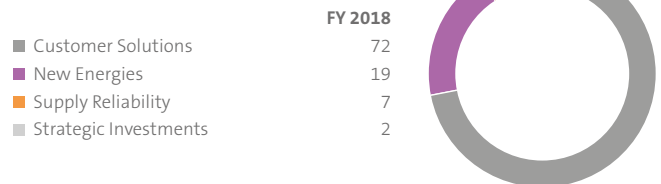
Furthermore, the subsequent measurement of a company recognised at equity and resultant year-on-year reduction in income from companies recognised at equity impacted negatively on earnings. That we nevertheless managed to meet our earnings target and slightly increase our adjusted EBIT to Euro 228 million was chiefly due to the positive performance of the environmental energy business, improved availability levels at our UK plants, higher revenues from wind turbines and the success of our measures to enhance cost efficiency.

In the 2018 financial year, MVV generated 95 % of its consolidated sales in Germany (previous year: 94%), while 5 % of sales were generated abroad (previous year: 6%).

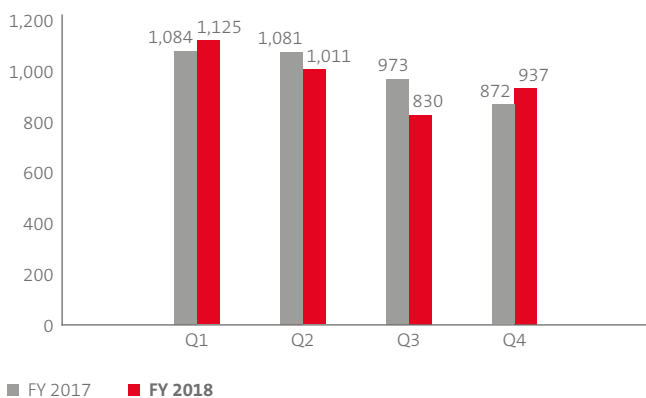
SALES EXCLUDING ENERGY TAXES BY REGION
Shares (%)



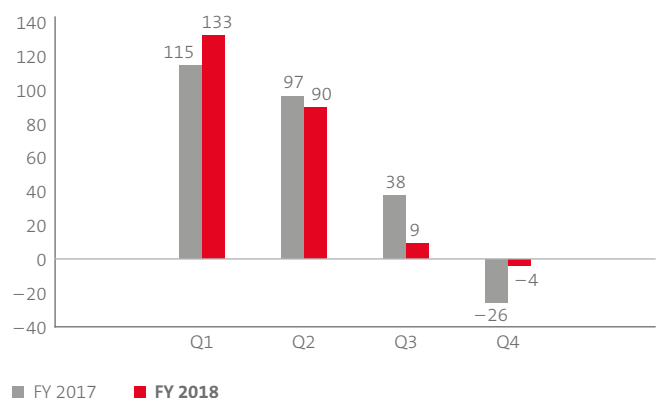
SALES EXCLUDING ENERGY TAXES BY REPORTING SEGMENT
Shares (%)



SALES EXCLUDING ENERGY TAXES BY QUARTER
Euro million



ADJUSTED EBIT BY QUARTER
Euro million



Customer Solutions reporting segment

Customer Solutions				
Euro million	FY 2018	FY 2017 ¹	+/- change	% change
Development in turnover				
Electricity (kWh million)	22,958	25,564	-2,606	-10
Heating energy (kWh million)	4,742	5,106	-364	-7
Gas (kWh million)	20,838	24,731	-3,893	-16
Water (m ³ million)	40.4	39.3	+1.1	+3
Combustible waste delivered (tonnes 000s)	160	212	-52	-25
Sales excluding energy taxes	2,819	2,965	-146	-5
Adjusted EBIT	47	43	+4	+9

1 Pro forma statement; unaudited

Mainly as result of lower trading volumes, electricity and gas turnover fell short of the previous year. The reduction in the electricity commodity was due to lower portfolio volumes, a decline in direct marketing volumes and lower balancing energy volumes. The downturn in gas trading volumes was largely due to more liquid markets and the associated lower level of portfolio turnover. The reduction in heating energy turnover was due on the one hand to weather conditions. On the other hand, it resulted from the sale of assets relating to multi-utility contracts at MVV ImmoSolutions and the termination of customer contracts.

The reduction in sales volumes is also reflected in lower sales.

The earnings performance of the Customer Solutions reporting segment was chiefly shaped by the positive one-off item resulting from the sale of assets relating to multi-utility contracts. By contrast, adjusted EBIT was held back by mild weather, whereas the previous year's earnings had benefited from cold weather conditions. Earnings were also adversely affected by an impairment loss recognised on goodwill at MVV Enamic in the 4th quarter of the year under report.

New Energies reporting segment

New Energies				
Euro million	FY 2018	FY 2017 ¹	+/- change	% change
Development in turnover				
Electricity (kWh million)	416	454	-38	-8
Heating energy (kWh million)	1,151	1,037	+114	+11
Gas (kWh million)	254	260	-6	-2
Combustible waste delivered (tonnes 000s)	2,064	1,963	+101	+5
Sales excluding energy taxes	738	671	+67	+10
Adjusted EBIT	90	87	+3	+3

1 Pro forma statement; unaudited

Our wind turbines benefited from favourable wind conditions and generated more electricity than in the 2017 financial year. This growth was nevertheless insufficient to compensate for the downturn in volumes in our environmental energy business in Germany, where electricity generation fell due to inspections and scheduled maintenance measures. Moreover, our non-recyclable waste incineration and energy generation plant in Leuna generated less electricity to enable a higher volume of process steam to be coupled out. That is also the main reason for the increase in heating energy turnover. The higher volume of combustible waste delivered was due above all to the take-over of the energy from waste plant in Dundee/Scotland in the 1st quarter of the 2018 financial year.

The increase in sales was primarily due to the renewable energies project development business and to our environmental energy business.

Segment earnings benefited from the positive performance of the environmental energy business, better availability levels at our UK plants and higher revenues from our wind turbines. Earnings were held back by the impairment loss recognised on goodwill for Juwi AG in the 2nd quarter of the year under report.

Supply Reliability reporting segment

Supply Reliability				
Euro million	FY 2018	FY 2017 ¹	+/- change	% change
Sales excluding energy taxes	256	267	-11	-4
Adjusted EBIT	62	68	-6	-9

1 Pro forma statement; unaudited

The reduction in sales was primarily due to the settlement of volume surpluses and shortfalls, which are balanced at the grids. The income is offset by reimbursements of the same amount to grid operators. These are recognised under cost of materials.

The sale at the beginning of the 2018 financial year of fibre optic networks not required for the energy supply at MVV Energie AG impacted positively on segment earnings. On the other hand, the subsequent measurement of a joint venture recognised at equity and resultant year-on-year reduction in income from companies recognised at equity led to an overall reduction in adjusted EBIT in the Supply Reliability reporting segment.

Strategic Investments reporting segment

Strategic Investments				
Euro million	FY 2018	FY 2017	+/- change	% change
Development in turnover				
Electricity (kWh million)	181	275	-94	-34
Heating energy (kWh million)	705	774	-69	-9
Gas (kWh million)	117	199	-82	-41
Water (m ³ million)	0.9	0.9	0	0
Combustible waste delivered (tonnes 000s)	104	116	-12	-10
Sales excluding energy taxes	87	104	-17	-16
Adjusted EBIT	25	24	+1	+4

Notwithstanding a reduction in sales, adjusted EBIT at Strategic Investments remained almost unchanged on the previous year. This was due to the fact that weather-related charges on earnings were more than offset by reversals of provisions.

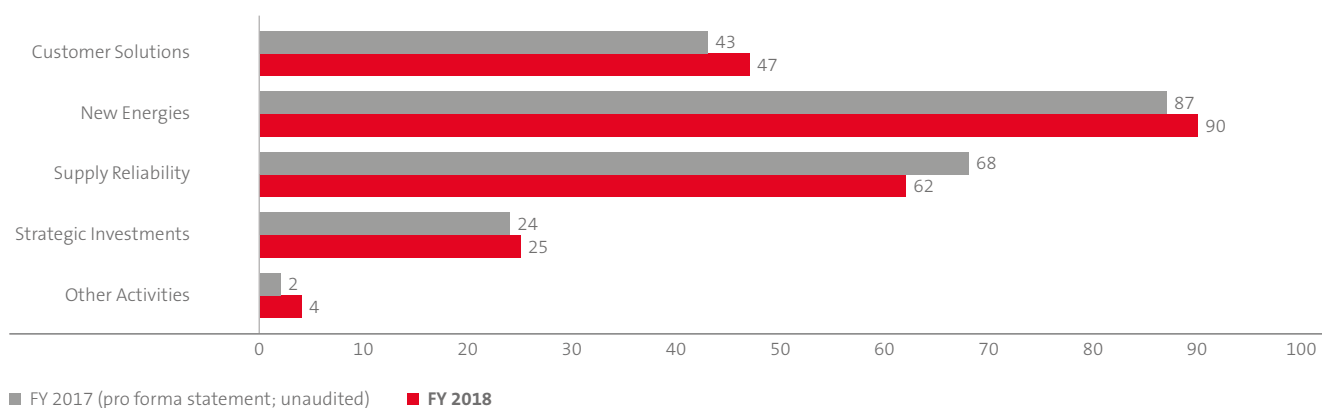
Other Activities reporting segment

Other Activities				
Euro million	FY 2018	FY 2017	+/- change	% change
Sales excluding energy taxes	2	3	-1	-33
Adjusted EBIT	4	2	+2	+100

Adjusted EBIT amounted to Euro 4 million in the year under report.

ADJUSTED EBIT BY REPORTING SEGMENT

Euro million

**Reconciliation with adjusted EBIT**

In the following table, we show how we reconcile the EBIT reported in the income statement for the 2018 financial year with the adjusted EBIT relevant for management purposes.

Reconciliation of EBIT (income statement) with adjusted EBIT from 1 October to 30 September

Euro million	FY 2018	FY 2017	+/- change
EBIT as reported in income statement	257	259	-2
Financial derivatives measurement item	-31	-39	+8
Structural adjustment for part-time early retirement	0	+1	-1
Restructuring result	-1	-	-1
Interest income from finance leases	+3	+3	0
Adjusted EBIT	228	224	+4

Development in key income statement items

The **cost of materials** [Notes to Income Statement \(Note 5\), Page 142](#) fell virtually in line with sales, decreasing by Euro 121 million to Euro 2,958 million.

Adjusted employee benefit expenses rose by Euro 4 million to Euro 422 million. This was due above all to an expansion in UK staff totals upon the takeover of an energy from waste plant at the beginning of the year under report, as well as to the first-time full consolidation of subsidiaries. By contrast, the reduction in staff totals mainly took place in the 2nd half of the past financial year.

Excluding IAS 39 measurement items, **adjusted other operating income** [Notes to Income Statement \(Note 4\), Page 141](#) increased by Euro 39 million to Euro 154 million, with this being due above all to the sales of fibre optic networks at MVV Energie AG and of assets relating to multi-utility contracts at MVV ImmoSolutions.

Also excluding IAS 39 measurement items, **adjusted other operating expenses** [Notes to Income Statement \(Note 7\), Page 142](#) fell by Euro 15 million to Euro 227 million. As well as lower additions to write-downs and receivables defaults, this development was due lower expenses for emission rights.

In the **Income Statement** [Page 125](#), IAS 39 measurement items are included under other operating income and other operating expenses. Their net balance resulted in a positive item of around Euro 31 million in the 2018 financial year. At Euro 39 million, this measurement item was also positive in the previous year. IAS 39 items reflect developments in market prices on the commodities and energy markets. IAS 39 measurement has no impact on payments, neither does it affect our operating business or dividend.

At Euro 181 million, depreciation was approximately at the previous year's level.

The goodwill writedowns [Notes to Income Statement \(Note 14\), Page 145](#) of Euro 34 million mainly relate to impairment losses recognised on goodwill for Juwi and at MVV Enamic in the 2nd and 4th quarters of the year under report respectively.

The **adjusted financial result**, which benefited in particular from lower loan interest expenses, improved by Euro 7 million to Euro – 49 million.

Net of the adjusted financial result, the **adjusted EBT** of Euro 179 million for the 2018 financial year was higher than in the previous year (Euro 169 million).

Adjusted annual net income only reflects the improvement in adjusted EBT to a limited extent. This key figure showed a proportionately lower increase of Euro 4 million and came to Euro 111 million in the year under report. This resulted from an increase in adjusted taxes on income to Euro 68 million (previous year: Euro 62 million), a development due to a discrepancy between tax-effective earnings growth and one-off items with no tax effect. Overall, this produced a higher tax rate. The one-off items related in particular to impairment losses recognised on goodwill.

Adjusted minority interests rose year-on-year by Euro 2 million to Euro 16 million. **Adjusted annual net income after minority interests** showed a slight increase to Euro 94 million (previous year: Euro 93 million). On this basis, adjusted earnings per share amounted to Euro 1.43 (previous year: Euro 1.41). The number of shares was unchanged at 65.9 million.

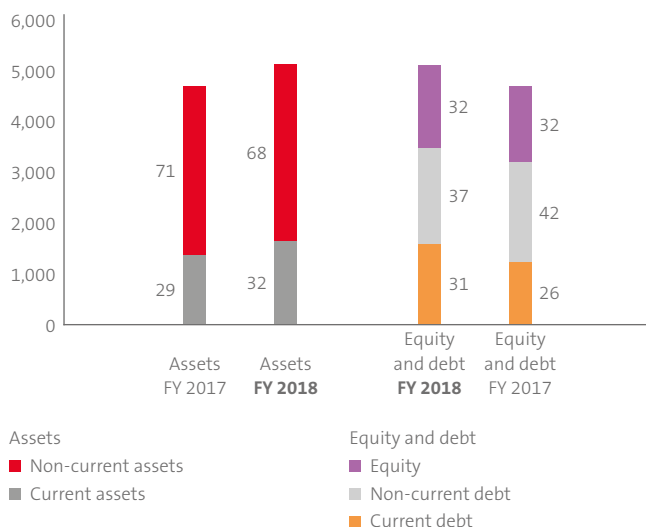
PRESENTATION OF NET ASSET POSITION

Balance sheet structure

Euro 000s	30 Sep 2018	30 Sep 2017	% change
Assets			
Non-current assets	3,493,137	3,326,098	+5
Current assets	1,646,844	1,386,790	+19
Total assets	5,139,981	4,712,888	+9
Equity and debt			
Equity	1,625,214	1,521,102	+7
Non-current debt	1,922,200	1,976,154	-3
Current debt	1,592,567	1,215,632	+31
Total assets	5,139,981	4,712,888	+9

BALANCE SHEET STRUCTURE

Euro million, shares (%)



Balance sheet development

Total assets came to Euro 5,140 million at the balance sheet date and were thus Euro 427 million higher than the figure reported as of 30 September 2017 [Balance Sheet, Page 126](#).

On the asset side, **non-current assets** rose by Euro 167 million to Euro 3,493 million. Significant changes chiefly arose in non-current other receivables and assets [Notes to Balance Sheet \(Note 21\), Page 155](#). Mainly as a result of measurement items for energy trading transactions, this line item rose by Euro 120 million to Euro 309 million. Furthermore, property, plant and equipment increased by Euro 69 million to Euro 2,588 million, with this mainly being due to advance payments and construction in progress. Alongside the construction of the gas-powered CHP plant in Kiel and a new energy from waste plant in Dundee/Scotland, these also included the linking up of our waste-powered CHP plant in Mannheim to the city's district heating grid. This increase was countered by intangible assets which, at Euro 316 million, fell Euro 29 million short of the previous year's figure. This reduction was mainly due to impairment losses recognised on goodwill for Juwi and at MVV Enamic.

Current assets grew by Euro 260 million to Euro 1,647 million. The increase in current other receivables and assets [Notes to Balance Sheet \(Note 21\), Page 155](#) by Euro 423 million (previous year: Euro 343 million) was chiefly due to measurement items for energy trading transactions. Inventories decreased by Euro 121 million to Euro 161 million, a development due above all to lower advance payments and a reduction in finished and unfinished products and services (project rights). Cash and cash equivalents [Notes to Balance Sheet \(Note 25\), Page 157](#) also decreased, in this case to Euro 311 million as of the balance sheet date (previous year: Euro 370 million). This was due above all to the outflow of funds for major projects and loan repayments.

We further strengthened our **equity** in the year under report [Notes to Balance Sheet \(Note 27\), Page 158](#). This increased by Euro 104 million and, including non-controlling interests, amounted to Euro 1,625 million at the balance sheet date.

For Group management purposes, we adjust our consolidated balance sheet as of 30 September 2018 to eliminate cumulative IAS 39 measurement items. On the asset side, we eliminate positive fair values of derivatives and allocable deferred taxes, which amounted to Euro 988 million (30 September 2017: Euro 465 million). On the equity and debt side, we eliminate negative fair values and allocable deferred taxes, here Euro 912 million, from debt (30 September 2017: Euro 434 million). In equity, we eliminate the net balance of Euro 76 million (30 September 2017: Euro 31 million). This led to adjusted equity of Euro 1,550 million as of 30 September 2018 (30 September 2017: Euro 1,490 million). As a percentage of the adjusted total assets of Euro 4,153 million (30 September 2017: Euro 4,248 million), the adjusted equity ratio came to 37.3% as of 30 September 2018 as against 35.1% as of 30 September 2017.

Non-current debt decreased to Euro 1,922 million, down Euro 54 million compared with the previous year's balance sheet date. Due above all to loan repayments, **non-current financial debt** [Notes to Balance Sheet \(Note 30\), Page 164](#) fell by Euro 136 million to Euro 1,163 million. By contrast, **non-current other liabilities** [Notes to Balance Sheet \(Note 31\), Page 165](#) rose by Euro 94 million to Euro 404 million. This development chiefly resulted from the year-on-year increase in the value of derivative financial instruments. This value rose due to realisation and the higher level of market prices, which increased the fair values of energy trading transactions recognised under IAS 39.

Current debt rose by Euro 377 million to Euro 1,593 million. This development was significantly influenced by **current other liabilities** [Notes to Balance Sheet \(Note 31\), Page 165](#) which, due above all to IAS 39 measurement items, grew by Euro 287 million to Euro 835 million. There was a reduction, by contrast, in advance payments received. Primarily as a result of higher liabilities to banks, **current financial debt** [Notes to Balance Sheet \(Note 30\), Page 164](#) rose by Euro 74 million to Euro 223 million.

Investments

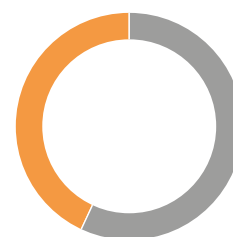
We invested a total of Euro 290 million in the 2018 financial year (previous year: Euro 194 million). We invested Euro 166 million (57%) in our existing plants and grids and channelled Euro 124 million (43%) into growth investments.

Investments				
Euro million	FY 2018	FY 2017	+/- change	% change
Customer Solutions	30	25	+5	+20
New Energies	81	21	+60	>+100
Supply Reliability	157	129	+28	+22
Strategic Investments	11	7	+4	+57
Other Activities	11	12	-1	-8
Total	290	194	+96	+50
of which growth investments	124	64	+60	+94
of which investments in existing business	166	130	+36	+28

INVESTMENTS

Shares (%)

	FY 2018
Investments in existing business	57
Growth investments	43



Our largest investment projects in the 2018 financial year included:

- Takeover of an energy from waste plant and construction of a new CHP plant in Dundee/Scotland
- Construction of the gas-powered CHP plant in Kiel
- Takeover of an organic waste fermentation plant in Dresden
- Connection of the CHP plant in Mannheim to the city's district heating grid
- Measures to maintain and renew our distribution grids
- Measures to expand and increase the density of our district heating grids.

PRESENTATION OF FINANCIAL POSITION

By repaying liabilities to banks and other lenders, we reduced our **current and non-current financial debt** by Euro 62 million in the year under report. As of 30 September 2018, these items totalled Euro 1,386 million as against Euro 1,448 million at the previous year's balance sheet date. **Net financial debt** (current and non-current financial debt less cash and cash equivalents) fell by Euro 2 million to Euro 1,075 million.

After the elimination of non-cash income and expenses, as well as of the non-operating result, the slight increase in earnings before taxes on income (EBT) led to a **cash flow before working capital and taxes** of Euro 450 million.

The year-on-year reduction in the **cash flow from operating activities** by Euro 142 million was due to lower inflows of funds from changes in other asset and liability items. The largest items related to a more marked increase in receivables, the

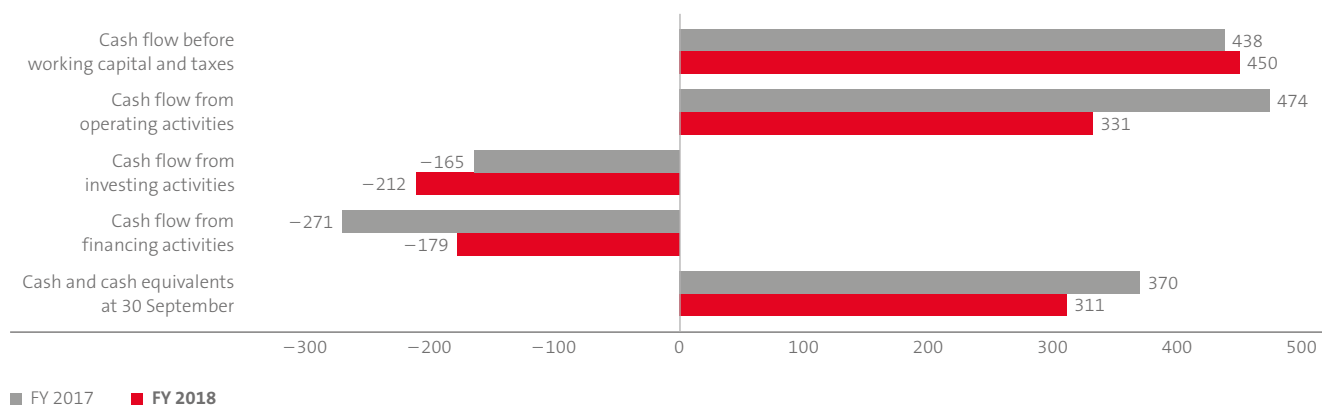
change in prepayments received on orders for projects to be implemented and the sharp reduction in inventories.

The development in the **cash flow from investing activities** was shaped by the higher outflow of funds for investments – and in particular for the construction of the new heat and power plant in Dundee/Scotland in conjunction with the takeover of an existing energy from waste plant and for the new Küstenkraftwerk K.I.E.L. power plant. The high inflow of funds from sales of other financial assets in the previous year, which was not matched by any equivalent items in the current financial year, also reduced the cash flow from investing activities when compared with the previous year's figure. This factor was mainly countered by the inflow of funds from sales of non-current assets. Overall, the cash flow from investing activities fell year-on-year by Euro 47 million.

The **cash flow from financing activities** increased by Euro 92 million compared with the 2017 financial year, a development chiefly due to higher net borrowing.

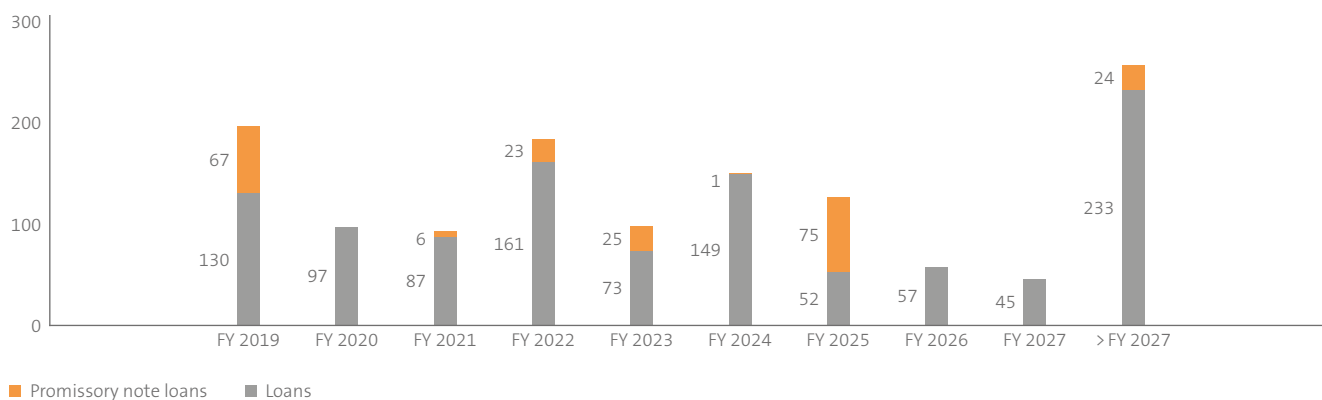
CASH FLOW STATEMENT

Euro million



REPAYMENT PROFILE

Euro million



Professional financial management

Our good access to the capital markets means that we have no difficulty in covering MVV's liquidity requirements. We benefit in this respect from our strong creditworthiness, our diversified business portfolio and our corporate strategy, which focuses on generating sustainable and profitable growth. MVV has very strong liquidity resources in the form of cash and cash equivalents and credit lines at banks, the volumes and terms of which we further expanded in the past financial year.

Our repayment profile still does not show any significant spikes in the years ahead.

MVV Energie AG manages a cash pool for itself and 33 other companies within our Group. In this capacity, it manages, procures and secures both its own short-term liquidity and that of the subsidiaries connected to the pool. Long-term financing required for investments is provided to the subsidiaries in the form of shareholder loans.

Rating

MVV is not assessed by any rating agencies. In the rating talks we hold with our core banks, however, we regularly receive feedback concerning our creditworthiness. Based on this information, we assume that MVV continues to be classified at stable investment grade level.

Business Performance of MVV Energie AG

Notes to Annual Financial Statements of MVV Energie AG (HGB)

As the publicly listed parent company of the MVV Energie Group ("MVV"), MVV Energie AG prepares its annual financial statements in accordance with the requirements of the German Commercial Code (HGB) and the supplementary requirements of the German Stock Corporation Act (AktG) and the German Energy Industry Act (EnWG). The consolidated financial statements of MVV Energie AG are prepared in accordance with International Financial Reporting Standards (IFRS) in the form requiring application in the EU. Unlike in the HGB separate financial statements, in the consolidated financial statements income and expenses at consolidated subsidiaries are included in individual income and expense items in the consolidated income statement. Further differences between the separate financial statements of MVV Energie AG and the consolidated financial statements relate in particular to differences between the requirements of commercial law and those of IFRS international accounting standards in terms of the recognition and measurement of individual items.

The annual financial statements of MVV Energie AG, MVV's consolidated financial statements and the combined management report for the 2018 financial year are published in the Federal Gazette (Bundesanzeiger). The complete 2018 annual financial statements of MVV Energie AG can be downloaded from our website www.mvv.de/investors, as can the consolidated financial statements and the combined management report.

Presentation of earnings performance of MVV Energie AG

Income statement of MVV Energie AG		
Euro 000s	FY 2018	FY 2017
Sales	2,246,218	2,315,791
less electricity and natural gas taxes	- 124,598	- 123,786
Sales less electricity and natural gas taxes	2,121,620	2,192,005
Increase or reduction in finished and unfinished products	0	- 2,582
Other own work capitalised	1,730	1,990
Other operating income	44,105	35,777
Cost of materials	1,880,426	1,953,231
Employee benefit expenses	75,398	78,823
Depreciation and amortisation	19,901	21,313
Other operating expenses	98,108	108,687
Financial result	66,901	57,627
Taxes on income	46,082	30,701
Earnings after taxes	114,441	92,062
Other taxes	456	446
Annual net income	113,985	91,616
Allocation to other revenue reserves	54,669	32,300
Unappropriated net profit	59,316	59,316

Due above all to lower electricity and gas turnover in the Commodities Solutions business field, sales excluding energy taxes at MVV Energie AG fell by Euro 70 million to Euro 2,122 million in the 2018 financial year. These sales were generated exclusively in Germany. As a result, MVV Energie AG was thus not quite able to meet its forecast of generating sales at the previous year's level. As in the previous year, the electricity business accounted for 75 % of total sales and thus remained the strongest division in terms of sales at MVV Energie AG.

At Euro 1,880 million, cost of materials was Euro 73 million lower than in the previous year. The change in this item largely reflected the development in sales. Furthermore, due to reinstatement requirements a write-up was recognised on raw materials and supplies.

Other operating income rose by Euro 8 million. This increase was chiefly due to the sale in the year under report of the fibre optic networks not required for the energy supply. This item was opposed by a lower volume of reversals of provisions compared with the previous year.

As of 30 September 2018, MVV Energie AG had 881 employees, 28 fewer than at the previous year's balance sheet date. Due to this reduction, as well as to lower allocation requirements for actuarial provisions, employee benefit expenses fell year-on-year by Euro 3 million to Euro 75 million.

At Euro 20 million, depreciation and amortisation was slightly lower than in the previous year. No impairment losses were recognised on non-current assets in the year under report or the previous year.

Other operating expenses decreased by Euro 11 million to Euro 98 million in the 2018 financial year. Material items here related to lower write-downs of receivables and a reduction in public relations expenses.

The financial result improved year-on-year by Euro 9 million to Euro 67 million. Items positively affecting this figure related above all to higher income from profit and loss transfer agreements and from shareholdings and lower expenses for the assumption of losses. By contrast, the financial result was reduced in particular by higher write-downs of financial assets.

Earnings after taxes improved by Euro 22 million to Euro 114 million. Net of other taxes, MVV Energie AG generated annual net income of Euro 114 million in the 2018 financial year (previous year: Euro 92 million). The development in annual net income was mainly influenced by one-off items: the sale of fibre optic networks, the write-up of raw materials and supplies due to reinstatement requirements and the write-down of goodwill at MVV Enamic. As a result, we exceeded our forecast of generating a significant increase in annual net income. Based on the profit utilisation resolution adopted by the Annual General Meeting on 9 March 2018, the unappropriated net profit of Euro 59.3 million was fully distributed to the shareholders of MVV Energie AG. The dividend amounted to Euro 0.90 per share.

Revenue reserves of Euro 54,669 thousand were formed from the annual net income for the year under report. As of 30 September 2018, MVV Energie AG reported unappropriated net profit of Euro 59 million. The Annual General Meeting will be held on 8 March 2019 and will decide on the dividend proposal adopted by the Executive and Supervisory Boards on 7 December 2018.

Presentation of net asset and financial position of MVV Energie AG

Balance sheet of MVV Energie AG

Euro 000s	30 Sep 2018	30 Sep 2017
Assets		
Non-current assets		
Intangible assets	612	634
Property, plant and equipment	387,552	368,073
Financial assets	1,461,449	1,439,688
	1,849,613	1,808,395
Current assets		
Inventories	30,252	14,191
Receivables and other assets	316,834	284,482
Cash and cash equivalents	79,048	193,379
	426,134	492,052
Deferred expenses and accrued income	595	569
	2,276,342	2,301,016
Equity and debt		
Equity		
Share capital	168,721	168,721
Capital reserve	458,946	458,946
Revenue reserves	434,591	379,922
Unappropriated net profit	59,316	59,316
	1,121,574	1,066,905
Income grants received	45,067	44,516
Provisions	109,803	97,250
Liabilities	999,898	1,092,345
	2,276,342	2,301,016

Total assets decreased year-on-year by Euro 25 million to Euro 2,276 million.

The asset side of the balance sheet is largely shaped by financial assets. As of September 2018, these totalled Euro 1,461 million, equivalent to a 64% share of total assets. The equivalent figures for the previous year were Euro 1,440 million and 63% respectively. The increase in financial assets by Euro 22 million was due above all to additions to the capital reserve at associates. This factor was countered by write-downs recognised at MVV Enamic and on loans. Property, plant and equipment rose year-on-year by Euro 19 million to Euro 388 million. This was chiefly due to investments made in connection with linking the CHP plant on Friesenheimer Insel to Mannheim's district heating grid.

Current assets decreased to Euro 426 million, down Euro 66 million compared with 30 September 2017, with this being primarily due to a Euro 114 million reduction in cash and cash equivalents. The decrease in cash and cash equivalents was in turn mainly due to the reduction in financial debt and to the fact that MVV Energie AG expanded its financing function for group companies in the year under report. By contrast, chiefly as a result of higher receivables due from associates trade receivables and other assets rose by Euro 32 million.

The company increased its equity by Euro 55 million in the year under report. Equity thus amounted to Euro 1,122 million at the balance sheet date. At 49.3%, the equity ratio as of 30 September 2018 was slightly higher than the previous year's figure of 46.4% and reflected the solid equity resources available at MVV Energie AG.

Mainly as a result of higher tax provisions, the provisions line item rose by Euro 13 million to Euro 110 million, while liabilities fell by Euro 92 million to Euro 1,000 million. This reduction was attributable in particular to lower liabilities to banks, lower advance payments received for orders and lower trade payables.

MVV Energie AG performs the financing function for MVV's associates. In this capacity, it safeguards the operating liquidity of numerous companies and supplies these with the long-term capital necessary for investments in the form of shareholder loans. An adequate volume of committed credit lines is available to secure liquidity.

2018 activity statements

With its 2018 activity statements, MVV Energie AG has met its reporting obligations pursuant to § 6b of the German Electricity and Gas Supply Act (German Energy Industry Act – EnWG). Consistent with § 6b of this act, in our internal financial reporting we maintain separate accounts for the activities of electricity and gas distribution, for other activities within the electricity and gas sectors and for other activities outside the electricity and gas sectors. Furthermore, we also prepare balance sheets and income statements for our electricity and gas distribution activities.

Electricity distribution

The electricity distribution activity field reported sales of Euro 46 million in the year under report (previous year: Euro 47 million). At Euro 48 million, gross performance for the 2018 financial year was at the previous year's level. Measured in terms of total electricity sector sales of Euro 1.6 billion (previous year: Euro 1.7 billion), sales in the electricity distribution activity field are of subordinate significance. Alongside income from the leasing of its electricity grids to MVV Netze GmbH, earnings in the electricity distribution activity field also include income from concession duties. MVV Netze GmbH manages and operates the distribution facilities and grids at MVV Energie AG and is responsible for their maintenance. Other operating income resulting from the charging on of the concession duty to MVV Netze GmbH through to 30 September 2018 was opposed by corresponding other operating expenses. Electricity distribution generated annual net income of Euro –1 million in the 2018 financial year (previous year: annual net income of Euro –2 million).

As of 30 September 2018, total assets in the electricity distribution activity field came to Euro 126 million (previous year: Euro 130 million). This corresponds to a 37% share of total assets in the electricity sector at MVV Energie AG (previous year: 41%). Property, plant and equipment relating to electricity distribution hardly changed compared with the previous year's balance sheet date. At Euro 113 million (previous year: Euro 112 million), this item accounted for a 90% share of total electricity distribution assets (previous year: 86%). Receivables from associates mainly involve receivables due from MVV Netze GmbH. On the equity and liabilities side, electricity distribution liabilities fell from Euro 62 million to Euro 42 million.

Gas distribution

The gas distribution activity field reported sales of Euro 28 million in the year under report (previous year: Euro 31 million). Gross performance fell by Euro 3 million in the 2018 financial year. When compared with total gas sector sales of Euro 217 million (previous year: Euro 226 million), the gas distribution activity field is of subordinate significance. By analogy with electricity distribution, as well as income from the leasing of its grids to MVV Netze GmbH earnings in the gas distribution activity field also include income from concession duties. As of 30 September 2018, other operating income from charging on the concession duty to MVV Netze GmbH was opposed by corresponding other operating expenses. The gas distribution activity field generated annual net income of Euro 8 million in the year under report (previous year: Euro 12 million).

At the balance sheet date on 30 September 2018, total assets in the gas distribution activity field came to Euro 97 million (previous year: Euro 94 million) and accounted for some 74% of total assets in the gas sector at MVV Energie AG (previous year: 73%). At Euro 88 million, property, plant and equipment in gas distribution was Euro 4 million higher than in the previous year and corresponded to a 91% share of total assets in this activity field (previous year: 90%). Receivables from associates mainly involve receivables due from MVV Netze GmbH. On the equity and liabilities side, gas distribution liabilities increased from Euro 14 million to Euro 31 million.

Corporate Governance Declaration (§ 289f HGB)

Publicly listed companies are obliged under § 289f of the German Commercial Code (HGB) to submit a Corporate Governance Declaration. In this, they report on their latest Declaration of Conformity with the German Corporate Governance Code pursuant to § 161 of the German Stock Corporation Act (AktG) and on corporate governance practices applied over and above legal requirements. Furthermore, they report on the mode of operation of the Executive and Supervisory Boards, on the composition and mode of operation of the Supervisory Board committees and on the equal participation of women and men in management positions.

We published the Corporate Governance Declaration together with the Declaration of Conformity as one component of our Corporate Governance Report, which was published on our website www.mvv.de/corporate-governance on 5 November 2018 and is also presented on **Page 101**.

Declaration pursuant to § 312 AktG

The Executive Board has compiled a report on relationships with associates for the 2018 financial year (“dependent company report”) pursuant to § 312 AktG. In this report, it states: “MVV Energie AG received commensurate compensation for each of the transactions listed in its report on relationships with the City of Mannheim and associates based on the circumstances known to the Executive Board at the time at which the transactions were performed.”

Non-Financial Report (§ 315b and § 315c in conjunction with § 289c to e HGB)

MVV Energie AG is obliged for the first time to publish a non-financial declaration on company and Group level for the 2018 financial year. The non-financial declaration has been compiled jointly for MVV Energie AG and the MVV Energie Group (“MVV”) as a Combined Separate Non-Financial Report. This can be found in the Sustainability chapter of the 2018 Annual Report and has been disclosed together with the Combined Management Report.

Corporate Governance

For MVV, high-quality corporate governance, i.e. managing and supervising the company's activities in accordance with the principles of responsible and sustainable value creation, is an objective we pursue in all of its facets and across all areas of our company. Basic features of our corporate governance include trust-based cooperation between the Executive and Supervisory Boards and among the company's employees, consideration of the interests of all stakeholders, transparent reporting and corporate communications and compliance with all applicable laws. We view high-quality corporate governance as an indispensable basis for ensuring a relationship of trust with our shareholders, customers, business partners, employees and the general public.

In what follows, the Executive and Supervisory Boards report on corporate governance at MVV Energie AG in accordance with Point 3.10 of the German Corporate Governance Code. We combine this with our Corporate Governance Declaration pursuant to § 289f of the German Commercial Code (HGB); this contains disclosures on our corporate governance practices and the Declaration of Conformity with the German Corporate Governance Code required by § 161 of the German Stock Corporation Act (AktG).

REPORT OF EXECUTIVE AND SUPERVISORY BOARDS

The Executive and Supervisory Boards dealt extensively with corporate governance at our company once again in the 2018 financial year. Like in previous years, in the period under report MVV Energie AG complied with all of the Code's recommendations. The same applies with just one exception to the suggestions made in the Code. Point 2.3.3 of the Code suggests that shareholders should have the possibility of watching the entire Annual General Meeting via communication channels such as the internet. We merely broadcast the introductory words by the meeting chairman and the presentation by the CEO live on our website at www.mvv.de/investors, where we also publish a corresponding video subsequent to the Annual General Meeting.

Shareholders and Annual General Meeting

Shareholders in MVV Energie AG exercise their voting and control rights at the Annual General Meeting. Each shareholder is entitled to participate in the Annual General Meeting if he or she registers within the relevant deadline and satisfies the conditions for participating in the meeting and exercising voting rights. Shareholders may make statements on all agenda items at the meeting and submit relevant questions and motions. For voting purposes, each share entitles its holder to one vote. Shareholders may participate in the adoption of all resolutions by casting their votes before or during the meeting. In this respect, shareholders can draw on a range of options – they can vote in person or have their votes cast by a proxy of their choice. Alternatively, they may be represented by a voting proxy appointed by MVV Energie AG to act in line with their instructions, a bank or a shareholders' association. Furthermore, shareholders may also submit their votes by post in advance of the Annual General Meeting. To do so, they are required to register within a specified deadline.

In line with the requirements of stock corporation law, we publish all documents relating to the Annual General Meeting on our website at www.mvv.de/investors. These particularly include the invitation to the meeting and all reports and information necessary for the respective resolutions.

Transparent communications

We attach great priority to informing all stakeholders of MVV Energie AG about significant matters of current relevance and about the company's situation. This information, which is provided promptly, comprehensively and in a way which ensures equal treatment of all stakeholders, is published in our PR activities and on our websites – and here in particular www.mvv.de and www.mvv.de/investors. We always meet our reporting obligations under the German Stock Corporation Act (AktG), the German Commercial Code (HGB) and the German Securities Trading Act (WpHG).

Disclosures on auditor

The Annual General Meeting of MVV Energie AG on 9 March 2018 elected PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft (PwC) as auditor for the 2018 financial year. Prior to this, the Supervisory Board convinced itself of the auditor's independence. PwC has acted as auditor to MVV Energie AG and as group auditor for the consolidated financial statements since the 2009 financial year. We comply with the statutory requirements resulting from the Audit Regulation (Regulation (EU) No. 537/2014) and from § 316 et seq. HGB. These concern the selection, appointment and rotation of the auditor and of the individuals responsible for the actions of such, as well as the commissioning of non-audit services.

Reporting and audit of financial statements

The annual financial statements of MVV Energie AG are prepared on the basis of the German Commercial Code (HGB). The consolidated financial statements and interim financial statements are prepared in accordance with International Financial Reporting Standards (IFRS) in the form requiring application in the European Union. We present the situation of the MVV Energie Group and of MVV Energie AG in a combined management report.

The auditor audits the annual financial statements of MVV Energie AG as prepared by the Executive Board. Once they have been discussed by the Audit Committee, these financial statements are examined, approved and adopted by the Supervisory Board. The consolidated financial statements are also prepared by the Executive Board, audited by the auditor and discussed in detail by the Audit Committee before being submitted to the Supervisory Board for its own review and approval. In its audit of the financial statements, PwC also audits the combined management report and the early-warning risk identification system.

The quarterly statements for the 1st quarter and the 1st nine months are prepared by the Executive Board and discussed with the Audit Committee prior to publication, as is the half-year financial report. These publications are not subject to any audit review requirement.

CORPORATE GOVERNANCE DECLARATION WITH DECLARATION OF CONFORMITY

We published the following Corporate Governance Declaration on our website at www.mvv.de/investors on 5 November 2018 and thus satisfied the requirements of § 289f HGB.

Declaration of Conformity with the German Corporate Governance Code (§ 161 AktG)

The Executive and Supervisory Boards adopted the following Declaration of Conformity with the German Corporate Governance Code in September 2018:

The Executive and Supervisory Boards of MVV Energie AG hereby declare that the company has complied and continues to comply with the recommendations of the German Corporate Governance Code Government Commission in the version of the Code dated 7 February 2017, which was published in the Federal Gazette on 24 April 2017 and republished in corrected form in the Federal Gazette on 19 May 2017.

Compliance and risk management

We accord great priority to ensuring that our interactions with each individual stakeholder are characterised by transparency, trust, fairness and integrity. Our compliance management system (CMS) helps us to safeguard compliance with applicable laws, as well as with in-company guidelines and the ethical standards to which we are committed. The CMS is intended on the one hand to ensure that our managers and employees understand and adhere to these and on the other hand to monitor all relevant business activities and processes within our Group.

In our Compliance Management Handbook, we have summarised the most important requirements and all necessary organisational structures and processes, listed the relevant personnel responsibilities and presented the details of our reporting system. This handbook is binding for all of the limited liability companies at the Mannheim subgroup of MVV Energie AG and is permanently available for downloading to all of the employees at this subgroup.

The other subgroups have introduced equivalent compliance management systems. Our Compliance Management Handbook is also available in English, for example for our British and Czech subgroups.

We have structured our CMS in such a way as to ensure that breaches of compliance are basically avoided in advance – above all by working with preventative measures in the respective business processes (so-called systemic compliance). We already check relevant processes in sensitive areas during the respective operating process, for example, and act early to take corrective measures where necessary. Donations and payments to parties and political organisations are strictly prohibited. Payments to equity providers are made exclusively in the form of dividends.

The head of our group legal, compliance and materials division acts as MVV's Compliance Officer. Together with the various organisational units involved, the Compliance Officer compiles the relevant compliance regulations, documents them and sees to their implementation within business processes. He is responsible for ensuring that employee training measures are implemented and that due account is taken of all CMS processes. Furthermore, he also acts in an advisory and supportive capacity to accompany measures intended to prevent and, where necessary, investigate any violations of the law, corruption or deliberate acts harmful to the company. He reports to the Executive Board and the Audit Committee.

By actively implementing prevention measures within the relevant business processes themselves, we make every effort to avert all criminal or grossly incorrect actions or violations of the law. MVV has a zero-tolerance policy towards bribery and all other forms of corruption. To help prevent corruption, we therefore provide extensive training particularly to employees working in sales, related areas and procurement. Employees also receive precise instructions on how to deal with gratuities and invitations. We record and check any gratuities offered or invitations received. These measures enable us to minimise the risk of "soft bribery". We also continually monitor adherence to compliance requirements – and that in all business fields, specialist divisions, group departments and subsidiaries. Employees and third parties can contact the Compliance Officer or an external confidence lawyer directly. Via "Whistleblower Hotlines", they can provide anonymous tip-offs on potential misconduct. The telephone number of the confidence lawyer is also published on our website at www.mvv.de.

In the period under report, we received individual tip-offs about suspected compliance infringements both via our internal whistleblower hotline and directly by our Compliance Officer. Only one notification was provided on an anonymous basis. None of these involved cases of material significance.

To make sure that all of MVV's managers and all of its employees with contact to customers or suppliers are well informed of general compliance requirements and familiar with the legal requirements relevant to their respective business units, we also provide regular training. The topics covered by this training include the requirements of capital market, securities and stock market law, competition and cartel law and energy industry law. We provide extensive training to new management staff. For this, all newly appointed managing directors and all upcoming management staff take part in a seminar held over several days, with attendance obligatory for all management staff from section manager upwards.

In the 2018 financial year, 169 employees at the Mannheim subgroup and 65 employees at the other subgroups took part in this training. During this period, a further 418 individuals completed an online training programme provided by our Stadtwerke Kiel subsidiary. At the end of each financial year, all senior managers are required to submit a Compliance Management Declaration (CMD) in which they must state whether the relevant compliance regulations and legal requirements have been complied with. The matters covered by the CMD include an enquiry as to whether, as required, the employees of the respective manager have received instruction and suitable training for the CMS. Moreover, in the context of the CMD the managers also respond in detail to questions specifically tailored to circumstances at their respective business unit.

The energy industry supply chain is greatly influenced by fuel trading, which is handled on energy exchanges or in bilateral agreements. A significantly lower share of our total procurement volumes relate to other suppliers who provide us with goods or perform highly qualified services for us. We also attach great value to compliance in our cooperation with them. We work with supplier management systems and request information from our new suppliers, particularly with regard to anti-corruption measures, environmental protection and social responsibility. The basis for our cooperation with suppliers and service providers in Germany and the EU is provided by the applicable laws and regulations, as well as by those compliance regulations, forms of conduct and work practices relevant to us. These include, for example, the international conventions of the United Nations (UN), the International Labour Organization (ILO) and the Organisation for Economic Cooperation and Development (OECD), as well as the UN Global Compact.

Our risk management system and the internal control system in respect of the financial reporting process (IKS) are further major components of our corporate management.

Dual management system

As a listed stock corporation with its legal domicile in Mannheim, MVV Energie AG is governed by the requirements of German corporate law. One basic principle of this legislation involves the dual management system comprising the Executive and Supervisory Boards. These two boards are strictly separate in terms of their composition and function. The Executive Board is responsible for managing the company and conducting its business, while the Supervisory Board is entrusted with advising and monitoring the Executive Board. The Executive and Supervisory Boards of MVV Energie AG work together closely and on a basis of trust in the interests of the company.

Composition and mode of operation of Executive Board

The Executive Board manages the company under its own responsibility and with the aim of generating sustainable and profitable growth. It determines the company's strategic alignment and lays down its financial, investment and personnel planning. It assesses whether the strategy is being implemented in a targeted manner and whether the risk management system is fit for purpose. It also monitors risk controlling, the internal control system in respect of the financial reporting process (IKS) and the compliance management system. In its decisions, it takes due account of the interests of the company's stakeholders.

The Supervisory Board has imposed a Code of Procedure governing the activities of the Executive Board, in which it has laid down the divisional responsibilities as well as those duties and decisions incumbent on the overall Executive Board. Furthermore, it defines the responsibilities of the Chief Executive Officer (CEO), the ways in which Executive Board resolutions are adopted and those transactions which require Supervisory Board approval. The Executive Board must comprise at least two members and currently has three positions/divisions: CEO/Commercial Affairs, Sales and Technology. The CEO also performs the function of Labour Director.

The CEO coordinates the work within the Executive Board and also represents the Executive Board externally. Other than this, Executive Board members enjoy equal rights and are jointly responsible for managing the company. They manage their divisions under their own responsibility, but are nevertheless required to subordinate the specific interests of their divisions to the overriding interests of the company.

Diversity concept for composition of Executive Board

In 2018, the Supervisory Board compiled and adopted a diversity concept which formulates the targets and criteria underlying the composition of the Executive Board.

The composition of the Executive Board is consistent with MVV's entrepreneurial approach. The Executive Board of MVV Energie AG should be composed in such a way that qualified leadership, control and business management is guaranteed at all times for MVV Energie AG and the MVV Group. Candidates for the Executive Board of MVV Energie AG have to be able to correctly assess the economic situation and technical framework of a listed energy supplier with municipal roots and to successfully shape its sustainable development. Individual members of the Executive Board are not expected to have the full range of specific specialist skills, competencies and experience required. However, their individual skills, competencies and experience should complement each other and, where appropriate, overlap in such a way that the Executive Board as a whole has the necessary specialist skills and variety of experience. The members of the Executive Board bear joint responsibility for managing the company and the Group. They should therefore have sufficient expertise to be able to supervise each other's activities and represent each other.

To provide information about the experience, expertise and skills of our Executive Board members, we have published their CVs on our website at www.mvv.de/investors.

Furthermore, the diversity concept for the composition of the Executive Board also accounts for the following aspects:

Due account should be taken of the upper age limit of 65 years when concluding employment contracts. As a general rule, members should not be appointed for the maximum five-year term upon their first appointment. Furthermore, the Supervisory Board should work together with the Executive Board to find long-term succession solutions. The Supervisory Board aims to increase the share of women on the Executive Board. In 2017, it set a target of 25% for the period ending on 30 September 2021.

Composition and mode of operation of Supervisory Board and its committees

The Supervisory Board has the task of advising the Executive Board in its management of the company and of supervising its activities. Its responsibilities also include appointing and dismissing members of the Executive Board. The Supervisory Board is involved in decisions of fundamental significance for the company. In view of this, the Executive Board informs the Supervisory Board regularly, promptly and comprehensively of its intended strategy and other fundamental matters of corporate planning. Furthermore, the Executive Board reports to the Supervisory Board on the company's business performance and situation, as well as on its risk situation and risk management.

The Supervisory Board of MVV Energie AG consists of 20 members – of which ten shareholder representatives and ten employee representatives, with identical terms of office in each case. Eight of the shareholder representatives are elected by the Annual General Meeting, while two are directly delegated by the City of Mannheim, namely the Lord High Mayor and the relevant specialist head of department. This provision applies to the extent that the City of Mannheim is a shareholder and – directly or indirectly – holds shares corresponding to more than half of the company's share capital.

In accordance with the German Codetermination Act (MitbestG), ten Supervisory Board members are elected by employees to act as employee representatives. The Supervisory Board Chairman, i.e. the Lord High Mayor of the City of Mannheim, coordinates the work of the Supervisory Board, whose activities are governed by a Code of Procedure.

To structure its activities efficiently, the Supervisory Board of MVV Energie AG has formed five specially qualified permanent committees which prepare and supplement its activities. The Audit Committee meets several times a year, while the Personnel, Nomination, Mediation and New Authorised Capital Creation Committees are convened when necessary.

The **Audit Committee** is tasked with dealing with fundamental financial reporting issues. It is also responsible for preparing the selection of the auditor, performing an advance review of and discussing the annual and consolidated financial statements and the interim consolidated financial statements for the 1st half and the interim financial statements for the 1st quarter and 1st nine months. It is also required to deal with corporate planning, strategy and the performance of individual business fields, as well as with the development and structure of individual controlling systems. Furthermore, the committee monitors the effectiveness of the internal control system (IKS), internal audit and the risk management system and checks whether the organisational precautions taken to comply with legal requirements and internal company guidelines (compliance) are sufficiently effective. The Audit Committee also determines the key focuses of the audit and takes any decisions about commissioning non-audit services. The committee comprises three shareholder representatives and three employee representatives. Professor Heinz-Werner Ufer is the Chairman of this committee. As an independent and expert member, he meets the requirements of § 100 (5) and § 107 (4) of the German Stock Corporation Act (AktG) and of Point 5.3.2 Sentences 2 and 3 of the German Corporate Governance Code (DCGK). The Supervisory Board Chairman is a permanent guest in the committee. In the 2018 financial year, the Audit Committee implemented the selection procedure for assigning the audit of the annual and consolidated financial statements of MVV Energie AG from the 2019 financial year and prepared the corresponding election proposal to the 2019 Annual General Meeting. The selection procedure was necessary due to the Audit Regulation (Regulation (EU) No. 537/2014). This came into effect on 17 June 2016 and lays down specific requirements in auditing at companies of public interest as well as rescinding Decision 2005/909/EC of the Commission). Specifically, the selection procedure was necessary because, with its audit of the financial statements for the 2018 financial year, the current auditor has reached the maximum ten-year term for audit engagements.

Supervisory Board resolutions concerning the conclusion, amendment and rescission of employment contracts with Executive Board members are prepared by the **Personnel Committee**. Its tasks also include ensuring that the objectives

pursued in the diversity concept for the composition of the Executive Board are met. The committee proposes suitable candidates to the Supervisory Board for appointment to the Executive Board. In this, it also takes due account of legal requirements and of the recommendations and suggestions contained in the German Corporate Governance Code. Based on these preparatory measures performed by the Personnel Committee, the Supervisory Board is responsible for appointing new members to the Executive Board and extending existing employment contracts. When selecting new Executive Board members, the Supervisory Board develops and works with current requirements profiles based on the diversity concept for the composition of the Executive Board. The committee comprises the Supervisory Board Chairman, who is also Personnel Committee Chairman, his deputy and four Supervisory Board members, of which two shareholder and two employee members.

The **Nomination Committee** is charged with proposing suitable candidates to the Supervisory Board for its own proposals to the Annual General Meeting. In this, it takes particular account of legal requirements, the diversity concept and the recommendations and suggestions made by the German Corporate Governance Code. Moreover, it determines the targets for the composition of the Supervisory Board. The members of the committee include the Supervisory Board Chairman, who also chairs the committee, and further shareholder representative members.

Consistent with § 27 (3) of the German Codetermination Act (MitbestG), the **Mediation Committee** submits further personnel proposals to the Supervisory Board in cases where the two-third majority required to appoint and dismiss Executive Board members is not achieved in the first ballot.

The **New Authorised Capital Creation Committee** is responsible for preparing the Supervisory Board resolutions required to create new authorised capital. This committee comprises eight members: the Supervisory Board Chairman, who also chairs the committee, his deputy and six further Supervisory Board members, of which one employee representative and five shareholder representatives.

Diversity concept for composition of Supervisory Board

Based on the existing requirements profile for its members, in 2018 the Supervisory Board devised and adopted a diversity concept setting out the targets for and the criteria governing its composition.

The specialist and personal requirements set out in the profile – which the Supervisory Board of MVV Energie AG meets in its current composition – are intended to ensure a transparent and systematic selection process for new Supervisory Board members and a suitable and well-balanced composition for the Board as a whole. The aim is to ensure that the Supervisory Board of MVV Energie AG is composed in such a way that it can at all times provide qualified supervision and advice to the Executive Board in its activities on behalf of MVV. Candidates for the Supervisory Board of MVV Energie AG have to be able to correctly assess the economic situation and technical framework of a listed energy supplier with municipal roots and to successfully accompany its sustainable development. Individual Supervisory Board members are not expected to have the full range of specific specialist skills, competencies and experience required. However, their individual skills, competencies and experience should complement each other and, where appropriate, overlap in such a way that the full Board has the specialist skills and variety of experience necessary for it to perform the duties incumbent on the Supervisory Board and its committees.

Furthermore, the Board must include at least one financial expert with the qualifications called for by the German Stock Corporation Act (AktG) and the German Corporate Governance Code. The Supervisory Board should include an adequate number of independent members.

To provide information about the experience, expertise and skills of our Supervisory Board members, we have published their CVs on our website at www.mvv.de/investors.

Furthermore, the diversity concept for the composition of the Supervisory Board also accounts for the following aspects:

When proposing candidates, due account must be taken of the upper age limit of 70 years, which as a general rule should not be exceeded during the term in office. With regard to the length of membership, elected Supervisory Board members should, where possible, remain on the Board for no less than one and no more than three full terms in office.

Pursuant to § 96 (2) Sentence 1 AktG, the Supervisory Board of a listed company should comprise at least 30% women and at least 30% men. Under § 96 (2) Sentence 2 AktG, this requirement basically applies for the Supervisory Board as a whole. For the Supervisory Board of MVV Energie AG, however, both employee and shareholder representatives have drawn on the possibility provided for in § 96 (2) Sentence 3 AktG, namely of stipulating that these minimum shares should be met not only for the Supervisory Board as a whole, but also for employee and shareholder representatives respectively. Accordingly, of the positions allocable to shareholder and employee representatives at least three for each group must be held by women and at least three by men.

One task incumbent on the Nomination Committee involves implementing the diversity concept for the composition of the Supervisory Board. It proposes suitable candidates to the Supervisory Board for its election proposals to the Annual General Meeting. In this, it takes due account of legal requirements and of the recommendations and suggestions in the German Corporate Governance Code. Before nominating a proposed candidate, the Supervisory Board ascertains whether

the potential candidate has sufficient time to perform the duties associated with the position and whether he or she has any business and/or personal links to the group of companies or its competitors. The selection of employee representatives for the Supervisory Board is governed by the provisions of codetermination law.

The Supervisory Board witnessed one change in its composition in the 2018 financial year. Steffen Ratzel was appointed as a Supervisory Board member as of 1 January 2018 by order of Mannheim District Court dated 21 December 2017. He was subsequently elected to the Supervisory Board by the Annual General Meeting on 9 March 2018. He succeeded Carsten Südmersen, who retired from the Supervisory Board as of 31 December 2017. The election proposal was based on a recommendation made to the Supervisory Board by the Nomination Committee and accounted for the targets set by the Supervisory Board for its composition.

Conflicts of interest and independence of Supervisory Board members

In respect of Point 5.4.2 of the German Corporate Governance Code, we are of the opinion that all members of the Supervisory Board are independent in the spirit of the Code. There are no personal or business, i.e. commercial, links between the company and its management bodies. Any conflicts of interest arising on the part of Executive or Supervisory Board members are disclosed to the Supervisory Board immediately. We also view the Supervisory Board members delegated by the City of Mannheim as being independent in the sense of this recommendation. The City of Mannheim owns a majority of the shares in MVV Energie AG. Pursuant to the Municipalities Code of the State of Baden-Württemberg, the city council is the topmost political body representing the city. It is therefore consistent that the City of Mannheim, as principal shareholder in MVV Energie AG, should be represented on the company's Supervisory Board by members of the City Council. The decisive factor in determining independence is whether there are any material conflicts of interest. This is not the case for the members thereby delegated.

Report on equal participation of women and men

The Supervisory and Executive Boards of MVV Energie AG are convinced that the company can only generate sustainable business success when responsibility is assigned to both women and men on a basis of equality. Furthermore, due to both social and economic considerations it makes sense to promote all talents regardless of their gender. Among other benefits, this approach also actively counters the effects of any shortage of specialist and management staff due to demographic changes. To date, female employees have only made up a comparatively low share of the overall workforce at companies operating in the energy industry. The Supervisory and Executive Boards of MVV Energie AG therefore aim to increase the share of women working at the group of companies on a long-term basis, as this represents a major key to the company's successful further development. We aim to gradually raise the female share of our Group's workforce to 35% by 30 September 2021, up from the equivalent figure of 27% as of 30 June 2015. With a 28% share of female employees as of 30 September 2018, we came slightly closer to reaching this target. We also aim to raise the share of female managers, in this case to 25% compared with 14% as of 30 June 2015. By the end of the 2017 financial year, women already accounted for 16% of management staff. However, reorganisation measures at the Group led this figure to fall to 14% at the balance sheet date on 30 September 2018, thus returning to the level as of 30 June 2015. To enable us to meet our targets by 30 September 2021, we will consistently implement our range of promotional measures and programmes, and in particular our targeted personnel development for women with suitable potential, and will expand these measures and programmes in the years ahead.

For MVV Energie AG, we report on the share of women in both the first and second management tiers. In August 2017, the Executive Board set new targets, namely of achieving a 25% share in the first management tier and a 30% share in the second management tier. Both targets are to be achieved by 30 September 2021. At 11%, the share of female managers in the first management tier was unchanged as of 30 September 2018 (30 September 2017: 11%). In the second management tier, the share of female managers came to 22% as of 30 September 2018 (30 September 2017: 25%). By introducing suitable measures – over and above the measures already in place to promote female employees – we aim to attract more applications from promising external and internal candidates.

Compensation Report

In what follows, we explain the principles of our compensation system for the Executive Board of MVV Energie AG. We also provide information about the structure and level of compensation paid to members of our Executive Board and our Supervisory Board.

Executive Board Compensation

Compensation system

Our compensation system is structured in such a way as to incentivise the sustainable long-term development in the company's value and its economic success. We take due account of the requirements of the German Commercial Code (HGB) and the German Stock Corporation Act (AktG), as well as of the recommendations of the German Corporate Governance Code. The Supervisory Board regularly reviews the system and the level of compensation paid to members of our Executive Board and also determines both of these aspects. The necessary resolutions are prepared by the Supervisory Board's Personnel Committee.

Executive Board compensation comprises non-performance-related and performance-related components. Should an Executive Board member prematurely leave the company, the following requirements apply to any compensation agreement: Payments to a retiring Executive Board member may not exceed the value of two annual compensation packages and may also not exceed the compensation due for the remaining term of the employment contract. No transitional allowances are granted upon the premature termination or non-extension of the employment contract. No payments were either committed or made by third parties to Executive Board members in connection with their activities as such.

Non-performance-related compensation

The non-performance-related compensation components comprise fixed compensation, fringe benefits and pension commitments.

The fixed compensation is paid in prorated instalments in the form of a monthly salary. Furthermore, Executive Board members receive fringe benefits mainly consisting of contributions to insurance policies customary to the market and the non-cash benefit in kind resulting from company car use. Fringe benefits have to be taxed individually by the Executive Board members.

All Executive Board members of MVV Energie AG have been granted defined contribution pension commitments whose volume is based on the balances on virtual pension accounts at the time at which the benefits are claimed. The accounts are credited with annual pension contributions that bear annual interest. These commitments also include benefits to cover any permanent inability to work and provision for surviving dependants.

Performance-related compensation

The variable compensation paid to our Executive Board members is determined by two components, each of which is furnished with appropriate minimum thresholds and caps. These relate on the one hand to the annual bonus, which is based on the adjusted EBIT generated by MVV in the past financial year and on the other hand to the sustainability bonus, which is linked to the sustainable increase in the company's value.

The latter bonus is based on MVV's average ROCE (return on capital employed) before IAS 39 items, with the calculation including the figures both for the past financial year and for the two preceding financial years. The ROCE figure measures how effectively the company has used its capital employed. As the capital required for operations is determined above all by long-term strategic decisions, this figure is well suited to appraise the company's sustainability. The sustainability bonus is only paid when the ROCE calculated for a three-year period exceeds a specified minimum threshold.

Compared with the annual bonus, the sustainability bonus accounted for the predominant share of variable compensation paid to the members of MVV's Executive Board in the 2018 financial year. No further multiyear compensation is provided for, neither does the company have any stock option programmes or any comparable instruments.

Total compensation of Executive Board

Compensation totalling Euro 2,209 thousand was paid to the Executive Board of MVV Energie AG in the year under report (previous year: Euro 2,318 thousand).

In the tables opposite, we provide information about the benefits granted and the actual incomes paid in the year under report in accordance with the recommendations of the German Corporate Governance Code and total compensation pursuant to German Accounting Standard 17 (DRS 17). Given the structure of our compensation system, the benefits granted and actual incomes paid are identical.

Benefits of Euro 513 thousand were paid to former members of the Executive Board in the year under report. We stated provisions totalling Euro 16,532 thousand for pension obligations towards former Executive Board members and their surviving dependants (previous year: Euro 16,784 thousand). Of this total, an amount of Euro 336 thousand was added in the year under report (previous year: Euro 275 thousand).

Compensation of related parties

Management staff performing key functions count as related parties pursuant to IAS 24. Alongside the Executive Board members, at MVV we see this group of persons as also including the active division heads and authorised representatives of MVV Energie AG. Our division heads and authorised representatives receive their compensation exclusively from MVV Energie AG. In the year under report, the corresponding compensation came to Euro 2,439 thousand, with Euro 2,332 thousand of this total involving payments with current maturities. Unless they are insured via municipal supplementary pension companies (ZVKs), division heads and authorised representatives receive a defined contribution company pension of up to 8.6% of their fixed compensation. They themselves can select which biometric risks they would like to cover. The expenses incurred for this compensation totalled Euro 107 thousand in the 2018 financial year.

Benefits granted and incomes paid

Dr. Georg Müller CEO				
Euro 000s	FY 2018	Min FY 2018	Max FY 2018	FY 2017
Fixed compensation ¹	507	507	507	507
Fringe benefits ²	30	30	30	30
Other compensation ³	17	17	17	17
Total	554	554	554	554
Variable compensation	391	0	1,014	440
Total pay	945	554	1,568	994
Pension expenses ⁴	247	247	247	279
Total compensation	1,192	801	1,815	1,273

Ralf Klöpfer Sales Director				
Euro 000s	FY 2018	Min FY 2018	Max FY 2018	FY 2017
Fixed compensation ¹	303	303	303	303
Fringe benefits ²	73	73	73	72
Other activities ³	10	10	10	10
Total	386	386	386	385
Variable compensation	261	0	606	293
Total pay	647	386	992	678
Pension expenses ⁴	192	192	192	197
Total compensation	839	578	1,184	875

Dr. Hansjörg Roll Technology Director				
Euro 000s	FY 2018	Min FY 2018	Max FY 2018	FY 2017
Fixed compensation ¹	303	303	303	303
Fringe benefits ²	39	39	39	38
Other activities ³	14	14	14	12
Total	356	356	356	353
Variable compensation	261	0	606	293
Total pay	617	356	962	646
Pension expenses ⁴	227	227	227	261
Total compensation	844	583	1,189	907

1 Annual fixed compensation including CEO allowance of Euro 204 thousand for Dr. Georg Müller

2 Contributions to voluntary pension insurance, health insurance, nursing care insurance, voluntary contributions to employers' mutual insurance association, non-cash benefits/benefits in kind

3 Compensation for board activity at subsidiaries and shareholdings (entitlement in respective financial year)

4 Service cost from commitments of pensions and other benefits pursuant to IAS 19

Pension obligations

	Development in virtual pension accounts		Pension provision		Allocation to pension provision	
	Balance at 1 Oct 2017	Pension contribution	Balance at 30 Sep 2018 ¹	Balance at 30 Sep 2018 ²	Service cost	Interest expenses
Euro 000s						
Dr. Georg Müller	2,301	159	2,565	3,924	247	73
Ralf Klöpfer	489	121	630	973	192	16
Dr. Hansjörg Roll	380	138	534	857	227	12
Total	3,170	418	3,729	5,754	666	101

1 Including interest

2 Equivalent to present value of vested claims

Supervisory Board Compensation

Compensation system

The compensation of Supervisory Board members as adopted by the Annual General Meeting is laid down in the Articles of Incorporation of MVV Energie AG. The compensation paid to our Supervisory Board members is commensurate to the responsibility they bear and to the scope of their activities. Each Supervisory Board member received annual compensation of Euro 10 thousand in the 2018 financial year. The Supervisory Board Chairman received annual compensation of Euro 20 thousand and his deputy was paid Euro 15 thousand. Members joining or leaving the Supervisory Board during the financial year received prorated compensation. The Audit Committee Chairman received additional annual compensation of Euro 5 thousand, while the other members of the committee each received Euro 2.5 thousand. Furthermore, each Supervisory Board member received Euro 1 thousand for each meeting of the full Supervisory Board or committee meeting attended. The Supervisory Board Chairman receives twice this amount for each meeting of the Supervisory Board, as does the Audit Committee Chairman for each meeting of the Audit Committee.

Total compensation of Supervisory Board

Compensation totalling Euro 412 thousand was paid to Supervisory Board members in the year under report (previous year: Euro 410 thousand).

Supervisory Board compensation FY 2018

	Supervisory Board compensation	Meeting allowances
Euro		
Dr. Peter Kurz, Chairman	20,000	16,000
Johannes Böttcher	10,000	5,000
Timo Carstensen	10,000	5,000
Ralf Eisenhauer	10,000	8,000
Peter Erni	12,500	16,000
Detlef Falk	12,500	13,000
Dieter Hassel	10,000	5,000
Barbara Hoffmann	10,000	6,000
Prof. Dr. Heidrun Kämper	10,000	5,000
Heike Kamradt	17,500	17,000
Brigitte Kemmer	10,000	5,000
Dr. Antje Mohr	10,000	5,000
Dr. Lorenz Näger	12,500	11,000
Steffen Ratzel	9,375	9,000
Peter Sattler	10,000	5,000
Bernhard Schumacher	10,000	5,000
Christian Specht	10,000	4,000
Carsten Südmersen	3,125	5,000
Katja Udluft	10,000	4,000
Prof. Heinz-Werner Ufer	15,000	24,000
Jürgen Wiesner	10,000	6,000
Total	232,500	179,000

Takeover-Related Disclosures

The Combined Management Report includes takeover-related disclosures as per § 289a (1) and § 315a (1) of the German Commercial Code (HGB). The Executive Board examined these disclosures and offers the following explanatory comments:

Composition of share capital

At the balance sheet date on 30 September 2018, the company's share capital totalled Euro 168,721,397.76 and was divided into 65,906,796 individual non-par registered shares with a prorated amount in the share capital of Euro 2.56 per share. Each share entitles its holder to exercise one vote at the Annual General meeting of MVV Energie AG, as well as to the rights and obligations accruing to it by law and the Articles of Incorporation.

Restrictions on voting rights and transferability; shares with special rights

As far as we are aware, a consortium agreement including provisions for the exercising of voting rights and the transfer of shares is in place between the City of Mannheim, MKB Mannheimer Kommunalbeteiligungen GmbH (previously: MVV GmbH), MV Mannheimer Verkehr GmbH (previously: MVV Verkehr GmbH) and RheinEnergie AG. There are no shares with special rights conferring powers of control.

Direct or indirect shareholdings exceeding 10% of voting rights

The City of Mannheim indirectly held 50.1% of the shares in MVV Energie AG at the balance sheet date, while EnBW Energie Baden-Württemberg AG, Karlsruhe, held a direct stake of 28.8% and RheinEnergie AG, Cologne, directly held 16.3% of the shares.

Control of voting rights

There is no control of voting rights as defined in § 289 (4) No. 5 and § 315 (4) No. 5 HGB.

Regulations for appointing and dismissing Executive Board members and to amend Articles of Incorporation

The appointment and dismissal of Executive Board members is based on § 76 et seq. of the German Stock Corporation Act (AktG), and especially on § 84 f AktG and § 30 et seq. of the German Codetermination Act (MitbestG). In line with the Articles of Incorporation, the company's Executive Board consists of at least two members. The Supervisory Board is responsible for determining the number of members and for appointing and dismissing members. Members are appointed for a maximum five-year term, with repeated appointments possible.

Amendments to the Articles of Incorporation must be undertaken in accordance with § 133 and § 179 AktG in conjunction with § 19 of the company's Articles of Incorporation. Pursuant to § 19 (1) of the Articles of Incorporation, a simple majority of the share capital with voting entitlement participating in the adoption of a resolution is also sufficient to amend the Articles of Incorporation, unless mandatory legal provisions require a larger majority. Pursuant to § 11 (3) of the company's Articles of Incorporation, the Supervisory Board is authorised to adopt amendments to the Articles of Incorporation that only affect the respective wording.

Powers of Executive Board to issue and buy back shares

By resolution on 13 March 2015, the Annual General Meeting authorised the Executive Board until 12 March 2020 to acquire treasury stock up to an amount of 10% of existing share capital upon adoption of the resolution.

By resolution on 14 March 2014, the Annual General Meeting authorised the Executive Board until 13 March 2019, subject to approval by the Supervisory Board, to raise the share capital by a total of up to Euro 51.2 million by issuing up to 20 million new individual non-par registered shares on one or several occasions in return for cash and/or non-cash contributions.

The Executive Board of MVV Energie AG has not yet made use of these authorisations.

Compensation agreements and change of control clauses

There are no material agreements at MVV Energie AG that are subject to a change of control resulting from a takeover bid (change of control clauses). The company has also not concluded any compensation agreements with members of the Executive Board or employees for the event of a takeover bid.

Outlook, Opportunity and Risk Report

- » Energy policy and economic climate remain challenging
- » Sales and earnings expected at around previous year's levels
- » Investments set to remain high

OUTLOOK

Macroeconomic framework

According to the autumn survey of Germany's leading economic research institutes, the upturn in Germany continued in the 2018 calendar year, albeit at a slower pace than in previous years. For 2018 as a whole, the experts have predicted gross domestic product growth of 1.7%. Stimulated by fiscal policy, the German economy should then grow by 1.9% in the 2019 calendar year.

Energy policy framework

For MVV's future business performance, the following factors are particularly relevant: energy policy decisions concerning the expansion in renewable energies (both in Germany and abroad), the further development of the German Combined Heat and Power Generation Act (KWKG) and the recommendations made by the "Commission on Growth, Structural Change and Employment". Furthermore, the EU "Clean Energy Package" is expected to be agreed in the 2019 financial year and will then have to be implemented in member states. All these initiatives will create long-term momentum, but may also influence our business in the short term.

Energy industry developments

The spreads from conventional electricity generation have persisted at low levels for years now. We currently see no indications of any reversal in this trend. The sales business is still characterised by great competitive pressure, while grid divisions are adversely affected by the impact of regulation. The renewable energies project development business is becoming increasingly complex. This may lead to postponements in the realisation of projects and the respective earnings.

Executive Board summary of expected business performance

Given the energy policy and industry framework, we expect the market climate to remain highly challenging in the 2019 financial year as well. We will consistently continue to pursue our corporate strategy, which focuses on generating sustainable growth. We are continuing to counter charges on earnings potentially resulting from the ongoing conversion in the German energy system by making targeted investments in our growth and implementing measures to enhance efficiency and reduce costs.

Expected sales performance

We expect **MVV's** sales (excluding energy taxes) in the 2019 financial year to approximately match the previous year's level (Euro 3.9 billion). Our sales performance will depend above all on trading activities and commodity prices, project realisation in the renewable energies project development business and sales activities, as well as on weather conditions.

We expect sales in the **Customer Solutions** reporting segment to fall moderately short of the previous year's figure, with one key reason for this reduction being the first-time application of IFRS 15. In the **New Energies** reporting segment, we expect to see sharp sales growth driven in particular by the project development business. For the **Supply Reliability** reporting segment, we expect sales to show moderate growth.

Expected earnings performance

After four years of earnings growth, we expect our adjusted EBIT to move sideways in the 2019 financial year. From an operating perspective, we therefore expect **MVV's** adjusted EBIT to approximately match the previous year's figure (Euro 228 million). Due to our business model, our earnings performance will – as in previous years – chiefly depend on weather and wind conditions, electricity and fuel prices, the spreads from conventional generation, interest rate and currency items, developments in the competitive climate and targeted cost management. From a technical perspective, our earnings performance will also be affected by the availability of our plants and by fuel transport costs which may, for example, be influenced by water levels. By its very nature, the wind turbine and photovoltaics plant project development business is subject to greater volatility, and this has increased in recent years. The specific time at which operations are launched at our new gas-powered CHP plant in Kiel is also of particular significance for our earnings performance in the 2019 financial year.

In the **Customer Solutions** reporting segment, we expect to report a significant reduction in adjusted EBIT, mainly because earnings here for the 2018 financial year benefited from sales of non-current assets, i.e. one-off items. Apart from this, the earnings performance of the Customer Solutions segment is dependent on weather conditions, the development in taxes and duties and in the market and competitive climate.

Operating earnings in the **New Energies** reporting segment are influenced by the development in waste and biomass prices, the availability of our plants, and weather conditions and wind volumes. We expect to see rising electricity prices in the 2019 financial year, a development that will impact positively on segment earnings. Not only that, the 2018 financial year was characterised by the impairment losses recognised for Juwi. In general, the earnings performance is subject to greater volatility due to the activities in the renewable energies project development business. Overall, we expect the New Energies reporting segment to report a significant increase in its adjusted EBIT.

Earnings in the **Supply Reliability** reporting segment are influenced by, among other factors, developments in the clean dark spread (CDS) and the clean spark spread (CSS) – which are in turn affected by procurement costs for coal and for gas and CO₂ emission rights – as well as by the availability of our plants. Transport costs for fuel, for example, may increase when water levels on the Rhine are low. Segment earnings for the 2018 financial year were shaped by income generated from the sale of the fibre optic network at MVV Energie AG. Depending on the specific date on which operations are launched, we expect our new gas-powered CHP plant in Kiel to generate its first positive earnings contributions in the 2019 financial year. On this basis, we expect to see a slight increase in adjusted EBIT in the Supply Reliability reporting segment.

Expected performance of MVV Energie AG in separate financial statements

MVV Energie AG chiefly generates its operating earnings from its grid business, sales activities and income from interests held in group shareholdings. Overall, we expect annual net income after taxes for the 2019 financial year to fall significantly short of the previous year's figure (Euro 116 million), which was affected by one-off items.

In future, our customers in large industry, renewable energies generation and municipal utilities will be centrally managed by MVV Trading. For this reason, sales (excluding energy taxes) at MVV Energie AG will decline sharply. For the 2019 financial year, we expect to generate sales of between Euro 1.3 billion and Euro 1.5 billion. Particularly during the heating period, sales and sales volumes in the heating energy business are significantly influenced by weather conditions.

Stable dividend

With our continuity-based dividend policy, we aim to ensure a solid return for our shareholders. In view of this, the Executive Board has planned the distribution of a dividend of Euro 0.90 per share for the 2018 financial year, and thus at the same level as in the previous year. The dividend proposal to be submitted to the 2019 Annual General Meeting will be decided by the Executive and Supervisory Boards in December 2018.

Planned investments

Based on information currently available, we will be investing significantly higher sums in our growth and in modernising and maintaining our plants and grids in the 2019 financial year than in the previous year (Euro 290 million).

Capital resources and financing structure

We have excellent access to the financial market and therefore encounter no difficulties in covering MVV's liquidity requirements. Our adjusted equity ratio of 37% enables us to continue making a high volume of investments in the energy system of the future. We finance investments in our existing business primarily from depreciation. For our growth projects, we draw on retained earnings and on optimised project-based financing facilities, for which we pool projects with structural similarities and comparable terms. To this end, we work with the bank and promissory note loan market. By defining and complying with key figures as guidelines for debt-financed growth, we ensure an implicit rating on investment grade level for MVV.

Forward-looking statements and forecasts

Our Combined Management Report for MVV (IFRS) and MVV Energie AG (HGB) includes forward-looking statements that are based on current assumptions and estimates. Although the Executive Board is convinced that these assumptions and budgets are accurate, actual future developments and actual future earnings may deviate from these forecasts due to the high current levels of uncertainty and numerous internal and external factors.

OPPORTUNITY AND RISK REPORT

Opportunities and risks are an integral part of any business activity. One key task for our corporate management involves identifying both at an early stage of developments, exploiting opportunities and countering risks with suitable measures. We have installed suitable instruments and processes for this purpose. With our internal control system (IKS) in respect of the financial reporting process, we ensure correct, reliable and uniform company-wide financial reporting. In our risk management system (RMS), we particularly record competitive, regulatory and technological developments relevant to our company at an early stage. This enables us to systematically address the resultant opportunities and risks.

Explanation of internal control system (IKS)

MVV's financial reporting should be correct, complete, prompt and easily understandable. We achieve this by working with our internal control system (IKS) in respect of the financial reporting process, which comprises all principles, procedures, regulations and measures necessary for all business transactions to be promptly, completely and accurately recorded. Moreover, we also use the IKS system to monitor whether legal requirements and our internal regulations have been complied with. These include the principles of proper accounting, the requirements of the German Commercial Code (HGB) and the German Stock Corporation Act (AktG), international accounting requirements and the supplementary requirements of our Articles of Incorporation. Furthermore, the IKS system is intended to avoid any material misstatements that could arise as a result of errors or fraud.

Our IKS system covers the relevant accounting and financial reporting processes at all major locations. We regularly analyse all processes and interfaces involved in preparing MVV's consolidated financial statements and combined management report in order to identify any risks that would contravene our objective of ensuring correct, complete, prompt and easily understandable financial reporting. We have introduced suitable organisational safeguards and internal checks to minimise any such risks.

These measures also include providing training to employees involved. Furthermore, we work with detailed schedules governing the preparation of the quarterly statements, interim consolidated financial statements, half-year financial report, consolidated financial statements and combined management report.

A further key measure involves the members of the Executive Boards and managing directors of our subsidiaries and select division and group division heads being required to submit internal balance sheet oaths on a quarterly basis.

Basic principles and organisation of IKS system

Our consolidated financial statements are centrally prepared by the commercial division at MVV Energie AG in such a way as to comply with International Financial Reporting Standards (IFRS) as adopted by the EU as well as the supplementary requirements of commercial law set out in § 315a (1) HGB. Key accounting matters are dealt with by employees at the accounting and tax department, who are also available as contact partners to our subsidiaries.

The consolidated financial statements are prepared using a multistage process. In the first stage, individual subsidiaries prepare their financial statements, which are then audited by their respective auditors. Working with a special consolidation software, these financial statements are then aggregated into the consolidated financial statements at MVV Energie AG. Our consolidation process is based on written guidelines, compliance with which is checked upon preparation of the financial statements. The consolidated financial statements are reviewed by the Audit Committee and the full Supervisory Board. In the final stage, they are approved and adopted by the Supervisory Board and subsequently published in line with the relevant requirements.

Our IKS system requires consistent application of the dual control principle and the separation of critical functions for all processes involved in preparing the financial statements. Our guidelines, process instructions and approval processes are supported by an internal information and communications system. All companies included in our consolidated financial statements are subject to uniform accounting and reporting guidelines applicable to annual and interim financial statements. These guidelines include both accounting policies applicable in accordance with IFRS and the requirements as to how we have to meet other reporting obligations, such as

industry-specific or regulatory obligations. Further qualitative and quantitative information relevant to the preparation of the financial statements is aggregated within the respective processes and regularly discussed with representatives of the various specialist departments. We record this information within the framework of our quality assurance and thus ensure that all relevant data is fully documented. We have subdivided our day-to-day accounting and the preparation of the annual financial statements on the basis of functional perspectives and structured this in individual process steps performed on all hierarchical levels. All process steps involving risks are safeguarded by automatic or manual checks.

In our accounting, we also work with an integrated enterprise resource planning (ERP) system which enables numerous sources of error to be avoided. Only complete business transactions with valid data are processed. Not only that, a strict authorisation concept is in place for all users to prevent any unauthorised access to accounting data.

Uniform standards across all locations

The commercial division at MVV Energie AG is responsible for preparing the financial statements and for the Group's internal control system (IKS) in respect of the financial reporting process. This way, the IKS system is subject to uniform standards applicable throughout the Group. We ensure that our IKS system is documented and effective in terms of its structure and functionality.

IKS managers at all major group companies work together with the Group's IKS manager to ensure that local internal control systems are consistent with Group requirements. Based on the annual status reports received from the local IKS managers, the internal audit reports and proprietary information, the IKS manager at the Group compiles the Group IKS status report, which forms the basis for these comments.

The processes relevant to financial reporting are documented together with embedded internal checks in a special software and are available to all employees on MVV's intranet. Where need be, this process documentation has been supplemented to include regulations applicable to individual cases.

Regular reporting

Within its control process, the group controlling department monitors whether the targets set out in the business plan and approved by the Supervisory Board are actually met. Variances to planned developments and developments in the previous financial year are documented. This information is included in the quarterly financial reports provided to the Executive Board. These present the business performance in detail and include comments on all reporting segments and business fields. Based on the insights thereby gained, the reports propose measures on the basis of which the Executive Board manages MVV's business.

Explanation of risk management system (RMS)

We have structured our risk management system (RMS) in such a way as to enable us to identify opportunities and risks at an early stage. We define a situation in which a significant positive budget variance in company earnings is possible as an opportunity. Conversely, we refer to significant potential negative variances as risks. We assess opportunities at the Group based on in-depth market and competitive analyses. Where possible, we aim to reduce risks or pass them on to third parties. To achieve this, we develop suitable measures and monitor their implementation. Deliberately assuming risks may also form part of a successful strategy – provided that these risks are manageable and are offset by suitable opportunities.

Basic principles and organisation of RMS system

The Executive Board determines the company's risk policy and lays down all processes and responsibilities. Responsibility for operative risk management lies with the legal business units and business fields and, more specifically, with so-called risk bearers. These are the employees responsible for operating earnings at the respective business units. They regularly review the current business situation, identify material opportunities and risks and assess the potential implications of these for the budgeted level of adjusted EBIT. They report their assessments in standardised form to our central risk controlling function on a regular basis. Furthermore, the tasks incumbent on risk bearers include implementing measures enabling risks to be managed or reduced and opportunities to be exploited.

The risk situation at the Group is monitored by our central risk controlling function, which continually monitors those opportunities and risks which are basically relevant to our business and aggregates these into an opportunity/risk profile. This profile represents a net analysis, as it already accounts for all countermeasures taken to reduce risks. The opportunities and risks are aggregated using probability methods.

The Executive and Supervisory Boards are provided with a quarterly risk report presenting the Group’s opportunity/risk profile. Any cases of risk arising urgently are reported to the Executive Board immediately. This subsequently informs the Supervisory Board and Audit Committee as appropriate.

RISK MANAGEMENT SYSTEM



The largest single risks are listed separately. We combine the implications of risks materialising with their probability of occurrence and evaluate the risk situation. In our short and medium-term planning, we carefully weigh up opportunities and risks and account for these in our earnings forecast. If unexpected developments and events occur, it is nevertheless possible that our actual adjusted EBIT will exceed or fall short of the value budgeted.

Supervision of IKS and RMS systems

Both systems, the IKS and the RMS, are implemented, maintained and supervised by the Executive Boards and managing directors of consolidated subsidiaries. As part of a risk-based audit plan, our group internal audit department audits both systems regularly, detects any weaknesses and monitors whether any improvements introduced have produced the desired results.

The appropriateness of the structure and functionality of the two systems is checked each year by the Supervisory Board and/or Audit Committee of MVV Energie AG.

Presentation of expected risk situation

In what follows, we present the risk situation and material company risks for MVV. We allocate these risks into one of our total of six risk categories. We subsequently quantify the risk situation for each risk category and present the potential impact on earnings for each risk category in terms of the Group’s adjusted EBIT. We categorise the risk situation in three different risk classes: “low”, “medium” and “high”. This classification shows how high (in percent) the expected impact of the risk group is for the Group’s budgeted adjusted EBIT. We provide a detail explanation of material risks within the various risk categories. We present the potential implications for our reporting segments in line with the reporting structure used to manage and report on the business.

Price opportunities and risks

The price opportunities and risks category comprises price fluctuations in commodities on both procurement and sales markets, exchange rate movements and interest rate changes. We deploy financial instruments [Notes to Balance Sheet \(Note 35\), Page 169](#) to limit interest rate, exchange rate and commodity risks.

Fluctuations from marketing our generation positions

The clean dark spread (CDS) and the clean spark spread (CSS) are both calculated as the difference between electricity revenues on wholesale markets and the costs incurred to generate the electricity. For the CDS, the costs of electricity generation include coal costs, while the CSS includes gas costs. Both spreads include transport costs, currency translation differences and the costs of CO₂ emission rights. We monitor and record fluctuations in the spreads with a uniform systematic approach across the Group and take suitable measures to limit potentially negative implications for our generation portfolio management.

In the year under report, both the CDS and the CSS remained persistently low. Low electricity spreads impact negatively on adjusted EBIT in Supply Reliability, the reporting segment to which the marketing of our power plant capacities in the Combined Power and Heat business field is allocated.

Opportunities may arise when market prices recover.

Fluctuations in market procurement prices

We procure most of the energy volumes required by our sales departments for customer supplies at our various locations on the energy trading market. To this end, our energy trading subsidiary MVV Trading concludes futures transactions up to several calendar years in advance, taking due account of our applicable hedging regulations. This enables us to improve the consistency of our earnings and to act early to improve our planning reliability for subsequent financial years.

Fluctuations in waste and biomass prices

We monitor and evaluate the potential opportunities and risks resulting from fluctuations in waste prices, and that in both the German and the UK markets. We also observe the development in biomass prices across Europe. This enables us to identify any potential risks in our New Energies reporting segment at an early stage and to mitigate these with suitable measures.

Changes in exchange rates

In connection with fuel procurement, our involvement in the UK and the Czech Republic and our international project development business, exchange rate movements may create opportunities or risks should the respective rate fall. We limit these risks with natural hedges and futures transactions.

Changes in interest rates

The interest rate risks relevant to our business are continually monitored by our finance department. Where possible, we finance our investment projects with fixed interest rates for congruent terms. Our company planning already accounts for the potential impact of rising interest rates when projects are refinanced. Changes in interest rates also impact on our project development business. Demand for renewable energies projects may fall, for example, if interest rates rise and other forms of investment become more attractive for investors.

EXPECTED RISK SITUATION IN FY 2019

Risk category		Risk class
PRICE RISKS	<ul style="list-style-type: none"> » Market prices: <ul style="list-style-type: none"> • Clean dark spread • Clean spark spread » Fluctuations in procurement prices <ul style="list-style-type: none"> • Waste and biomass prices » Exchange rates » Interest rates 	MEDIUM
VOLUME RISKS	<ul style="list-style-type: none"> » Fluctuations in turnover: <ul style="list-style-type: none"> • Weather conditions and wind volumes • Economic climate » Competition and efficiency » Procurement uncertainties for waste volumes and biomass 	MEDIUM
OPERATING RISKS	<ul style="list-style-type: none"> » Renewable energies project development » Construction projects » Plant operation » Personnel » IT risks 	MEDIUM
LEGISLATIVE RISKS	<ul style="list-style-type: none"> » Regulation » Legal risks 	MEDIUM
FINANCING RISKS	<ul style="list-style-type: none"> » Receivables default » Refinancing » Liquidity » Countries 	LOW
STRATEGIC RISKS	<ul style="list-style-type: none"> » Strategic decisions (including investments) 	LOW

Risk¹ in % of operating earnings (adjusted EBIT) at Group:
 high: > 40% medium: 10% to 40% low: 0% to 10%

¹ Budget variance in earnings: likely average maximum damages in the financial year in which the resultant charge on earnings may arise

Volume opportunities and risks

Fluctuations in volumes may impact positively or negatively on our operating earnings, and that both on the procurement front or the generation and sales front.

Fluctuations in turnover due to weather conditions and wind volumes

Weather conditions and wind volumes are key factors which influence our business performance. Particularly during the heating period from October to April, weather conditions have a major effect on our turnover with district heating and gas. Wind volumes determine the volume of electricity our wind turbines generate. Opportunities arise for our business performance should it be cooler than planned during the heating period and/or should wind volumes exceed our expectations.

Fluctuations in volumes due to changes in economic conditions

MVV is only indirectly affected by macroeconomic developments. If our major industrial and commercial customers cut back their production due to the economic situation, then this may lead them to procure lower volumes of energy from us. Conversely, there are also opportunities to generate higher sales volumes should our customers step up their production due to economic developments.

Fluctuations in volumes due to competition or efficiency measures

Competitive pressure remains persistently high in the energy market. When customers decide to switch provider, this reduces our sales volumes. Not only that, efficiency measures at our customers, such as heat insulation, may also lead to volume losses. The same holds true when customers switch to generating and consuming their energy themselves. We exploit the opportunities arising in the liberalised market by developing innovative and competitive products and services with substantial customer benefits. We attach great value to working together with municipalities on a basis of partnership. This way, we create a basis for extending existing concessions and increase our chances of acquiring new concessions.

Procurement of waste volumes and biomass

With regard to incinerating commercial waste and biomass, our adjusted EBIT may be affected both by the total volumes available and by their quality. These two factors are in turn affected by the macroeconomic situation and legal requirements, plant capacities at competitors and weather-related events. We minimise volume risks for our plants by working with professional material and substrate flow management. We also pursue a substitute procurement strategy. In individual cases, lower calorific values for the waste may be offset with higher volumes.

With regard to the UK's decision to leave the European Union (Brexit), there is currently increased uncertainty concerning the potential implications for future developments in volumes and prices for waste and waste timber within the UK and EU market regions.

Operating opportunities and risks

The operating opportunities and risks MVV faces mainly arise in connection with its renewable energies project development business and with the construction and operation of energy generation plants and grids.

When it comes to energy from waste and biomass, we have extensive experience in building and operating such plants. Here, we see opportunities for our group of companies, especially in the UK. In the domestic market, we see potential for expanding biomass fermentation, one of our new activities, as well as for recovering resources when incinerating sewage.

Uncertainties in renewable energies project development business

Even though the projects in our project development business have significantly shorter planning and construction stages than large-scale generation plants, they nevertheless involve uncertainties. In general, market developments are dependent both on the further development in political regulations and on public acceptance levels. The key opportunity and risk factors we see in the onshore wind turbine project development business in Germany chiefly relate to the scope and structure of future project tenders and the development in market interest rates. Operational implementation may be adversely affected by any delay in obtaining building or operating permits, or failure to obtain such permits, and by related issues. In the international business, our financial success is increasingly

dependent on political and macroeconomic developments in our target markets. The possibility of disruptions arising in international trade relationships, with implications for market access (punitive tariffs) and competitiveness, is creating great uncertainty with regard to our success abroad, as is the possibility of further interventions in subsidy regimes. Alongside project development, in our renewable energies business we also have extensive expertise and great competence in operating renewable energies plants. We therefore see opportunities in this area.

Risks resulting from progress with construction projects

The long planning and construction stages involved in the construction of large-scale generation plants also harbour corresponding risks. Our expected adjusted EBIT could be negatively affected, for example, by any delays in the completion and launch of operations at our major projects, or if we incur unplanned costs to procure substitute electricity and heating energy or if new developments mean that the costs of the projects turn out higher. In view of this, we attach great importance to ensuring that projects are robustly designed and budgeted in the planning stage already. We make sure that the material opportunities and risks involved in projects are detected and evaluated at an early stage.


Any further delay in the construction of the new gas-powered CHP plant in Kiel could delay receipt of the relevant grants. Not only that, any construction cost overrun would negatively affect the profitability of the project. To the extent that they lie within our control, we counter these risks with professional project organisation and by commissioning suppliers with experience in the sector. Insofar that the respective contracts permit us to do so, we transfer project risks – especially cost increases and deadline overruns – to the contractual partners responsible for such.


Uncertainties resulting from plant operations

Plant operation involves substantial operating uncertainties for our Group. These relate to our Supply Reliability reporting segment, with its energy generation plants and grid facilities supplying our customers with energy and utilities. After all, unscheduled downtime at plants may not only lead to a loss of production or interruption of supplies, but may also result in additional financial expenses to repair the plant, procure substitute supplies for our customers or settle contractual penalties.

We therefore make every effort to minimise the resultant risks of potential downtime at our plants by performing regular maintenance and monitoring measures. We also do this to meet the standards we have set ourselves as a forward-looking supplier and to avoid any risks to our reputation. We can nevertheless not entirely exclude the possibility of downtime occurring. To counter this risk at source, we optimise scheduled inspection times within our maintenance strategy. This way, we work towards using capacity at our plants over and above the planned hours of use or to increase efficiency rates. This also serves to realise opportunities, which may arise due to higher generation volumes, and to avoid grid operation risks. We have agreed insurance policies to limit the financial implications of any potential damages. We also assess the risk and environmental protection aspects of potential clean-up projects on derelict land formerly occupied by our plants.

Personnel developments

Our success as a company is dependent on well-qualified and committed employees. We therefore work with numerous measures to attract the right employees for us and to retain them in the long term  **Employee Concerns Page 49**. Risks may nevertheless also arise with regard to our personnel. The companies within our Group may also be faced with capacity risks and risks resulting from ageing workforces due to forthcoming demographic changes. Depending on the attractiveness of the location, these risks may arise to a varying extent. We provide targeted training to our employees, enabling us to fill key positions with internal candidates in future as well.

The pension surveys we compile also account for the risks resulting from pension provisions. We have also factored these into our budgets  **Notes to Balance Sheet (Note 29), Page 161**.

IT risks

Secure data storage and interruption-free information technology form the basis for virtually all business processes. We therefore attach great value to systematically protecting our IT infrastructure and IT systems against potential attacks by third parties.

We are continually reducing our IT risks by implementing an extensive range of technical and organisational measures. As well as working with security systems, we increase security with a restrictive approach to granting access authorisations to systems and information. We have redundant copies for all our key hardware components and permanently reflect data between production systems and geographically separate backup systems. We also have a backup computer centre.



Legislative risks

This category pools those uncertainties existing in connection with regulation or with other changes in the legal basis for our business operations.

Regulatory risks

For companies operating in the energy industry, there is the basic risk that the authorities – such as the Federal Network Agency (BNetzA) or cartel offices – may intervene in price structures. In the past, this related for example to the grid fees set by the BNetzA. Energy policy decisions may also have implications for our business performance. Examples here include the development in the subsidies paid for electricity from renewable energies, which are set in tender processes, and the subsidies provided for CHP plants. We counter these risks by actively participating in political opinion-forming processes. We also publish up-to-date studies to contribute to the public debate.

Legal risks

MVV may also be exposed to legal risks in connection with court cases, product liability or onerous and unenforceable contracts. We therefore check, negotiate and draft contracts with the aim of limiting these risks. Our compliance management system  www.mvv.de/corporate-governance and  **Page 100** helps us to avoid any infringements of the law.

MVV's business performance is also exposed to risks which result from legal pronouncements on energy industry-related or other topics. These could, for example, restrict or extend our ability to structure contracts.

Financing opportunities and risks

At MVV, financing risks mainly take the form of receivables default, refinancing and liquidity risks.

Receivables default risks

We may be affected by receivables defaults if customers or business partners fail to settle our invoices, or settle them only in part. This risk may arise in our OTC trading activities in the Customer Solutions reporting segment, for example, or in our long-term supply relationships. In view of this, we select our business partners with due commercial prudence and check their creditworthiness in order to limit receivables default risks in all reporting segments. If necessary, we also agree deposits of securities and guarantees. By diversifying our portfolio, we avoid clusters of default risks.

Refinancing and liquidity risks

The possibility of being unable to obtain necessary liquid funds in future gives rise to a refinancing and liquidity risk. We have a variety of financing instruments at our disposal to cover our capital requirements. These include promissory note loans, bilateral loans and syndicated loans. We continually monitor the financing markets, regularly share information with our lenders and carefully monitor our liquidity. This way, we counter any refinancing and liquidity risks. Furthermore, our group-internal cash pool also serves to reduce this risk.


Country risks

MVV is exposed to country risks in the form of transfer risks and to the extent that states may become unable or unwilling to meet their payment obligations. The potential implications of country risks for our adjusted EBIT have risen in significance due to our international activities in the renewable energies project development business. We continually monitor any uncertainties relating to the terms of access to our target markets that may arise due to potential disruptions in international trade relationships. Before we enter new international markets, we perform detailed analyses of potential risks. For our existing activities, we observe the political and economic situation on location, monitor alternative courses of action


on an ongoing basis and, if circumstances deteriorate, decide to leave the given market. Our current expectations as to the impact of country risks on our earnings continue to involve uncertainties.

Strategic opportunities and risks

The right strategic decisions form the basis for any company's success. The energy policy and industry framework have been changing dynamically for years now. This transformation harbours strategic risks, but also creates new opportunities. We use our strategic planning process to identify potential new markets and technologies. We review our investment projects in great detail and decide in which markets, technologies, companies and projects we intend to invest, as well as the timing and scope of such investments. We reach these decisions based on in-depth market and competitive analyses and painstaking viability calculations. In close liaison with the Executive Board, our group strategy department continually monitors our strategic alignment and adjusts this to any new circumstances.

One major component of our corporate strategy  **Page 65** is an extensive investment programme. To enable us to achieve our budgeted level of adjusted EBIT, however, strategically important investments have to generate the expected level of earnings contributions. Despite careful reviews and planning, any erroneous assessments may reduce the adjusted EBIT planned for future financial years.

The ongoing transformation in the German energy system will continue to produce a high level of planning uncertainty for our company. We are also monitoring very closely to assess how the UK's decision to leave the European Union (Brexit) will impact on our business in the UK. A weaker British pound, for example, would reduce our earnings in euros. Moreover, this process could also impact on interest rates, commodities, demand levels and the regulatory framework. Precise developments will nevertheless depend on the specific structure of the exit agreement reached with the EU.

The energy turnaround and the changing market in Germany offer opportunities for innovations, new jobs and profitable growth. Key catchwords are renewable energies, decentralised energy supply, energy efficiency, digitalisation, building refurbishment and sustainable mobility concepts. Consistently implementing our corporate strategy  **Page 65** will enable us to seize these opportunities. We are increasing the energy efficiency of our CHP plant on Friesenheimer Insel in Mannheim, for example, with the planned connection of the plant to the existing district heating grid. Not only that, this will enhance the environmental friendliness of district heating due to the resultant reduction in the primary energy factor.

With regard to renewable energies, we still see sustainably attractive market potential. In the windfarm project development business, the competitive situation in Germany has nevertheless changed. Since 2017, the addition of onshore wind turbines has been determined by new market-based mechanisms involving tenders. Not only that, market volumes have been limited with maximum capacity caps. Furthermore, there is uncertainty as to whether the additional wind power tenders resolved by politicians will actually be implemented. In the German biomass market, we see expansion potential in the field of biomass fermentation. In the international business, we see growth potential – and thus opportunities for earnings growth – in areas such as photovoltaics. Having said that, there are also dependencies on local subsidy regimes, local clients and noticeable competition, especially in high-growth markets in Asia.

We are extending our decentralised energy management business model with new ranges of innovative solutions and products. By further expanding district heating based in conjunction with combined heat and power generation, we are seizing growth opportunities, particularly at our locations in Mannheim, Kiel and Offenbach. The new gas-powered CHP plant will help to ensure supply reliability in Kiel.

Executive Board summary

MVV's opportunity/risk profile has not changed materially since last year. On the one hand, competitive pressure is unrelentingly high. On the other hand, energy policy decisions still have the potential to impact substantially on our business performance, as is the case at all other companies in the energy industry. This remains a key source of uncertainty. There is great planning uncertainty, particularly for long-term investments in electricity generation plants, but also for the renewable energies project development business, which in Germany will depend on the structure of future tender rounds. Key risk factors in our international target markets for renewable energies also include local subsidy regimes and macroeconomic developments – as well as the development in political frameworks, including market access terms, and public acceptance levels. We expect our industry to be exposed to further far-reaching changes and an unstable underlying framework. Energy markets remain highly volatile. Moreover, depending on the specific structure of the exit from the EU the Brexit decision may also impact on our business.

We are monitoring these developments closely. Despite our well-balanced opportunity/risk profile, our business activities therefore remain subject to risks.

From the perspective of MVV's Executive Board, however, there were and are no indications that any risks, whether individual or aggregate, could have endangered the continued existence of the overall company, or of any material subgroup, in the period under report or which could do so in future.



Consolidated Financial Statements

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Income Statement

Income statement

Euro 000s	1 Oct 2017 to 30 Sep 2018	1 Oct 2016 to 30 Sep 2017	Notes
Sales	4,069,671	4,177,900	
less electricity and natural gas taxes	166,911	168,384	
Sales after electricity and natural gas taxes	3,902,760	4,009,516	1
Changes in inventories	-30,930	-15,053	2
Own work capitalised	19,076	19,152	3
Other operating income	418,258	320,598	4
Cost of materials	2,957,761	3,078,743	5
Employee benefit expenses	422,744	418,678	6
Other operating expenses	459,323	408,141	7
Income from companies recognised at equity	-110	11,942	8
Other income from shareholdings	1,133	1,666	8
Restructuring result	821	-	
EBITDA	471,180	442,259	
Depreciation	180,680	182,748	9
EBITA	290,500	259,511	
Goodwill amortisation	33,706	-	14
EBIT	256,794	259,511	
of which result of IAS 39 derivative measurement	31,591	38,900	
of which EBIT before result of IAS 39 derivative measurement	225,203	220,611	
Financing income	12,577	14,624	10
Financing expenses	59,669	68,515	11
EBT	209,702	205,620	
Taxes on income	77,289	73,135	12
Annual net income	132,413	132,485	
of which non-controlling interests	2,411	11,145	
of which earnings attributable to MVV Energie AG shareholders (annual net income after minority interests)	130,002	121,340	13
Basic and diluted earnings per share (Euro)	1.97	1.84	

Statement of Comprehensive Income

Statement of income and expenses recognised in group equity

Euro 000s	1 Oct 2017 to 30 Sep 2018	1 Oct 2016 to 30 Sep 2017
Annual net income	132,413	132,485
Cash flow hedges	24,195	32,266
Currency translation differences	1,376	2,814
Reclassifiable share of companies recognised at equity	166	-
Items that may subsequently be reclassified to profit or loss	25,737	35,080
Actuarial gains and losses	893	7,555
Non-reclassifiable share of companies recognised at equity	14,370	-11,439
Items that will not be reclassified to profit or loss	15,263	-3,884
Total comprehensive income	173,413	163,681
Non-controlling interests	7,369	17,644
Total comprehensive income attributable to MVV Energie AG shareholders	166,044	146,037

Balance Sheet

Balance sheet

Euro 000s	30 September 2018	30 September 2017	Notes
Assets			
Non-current assets			
Intangible assets	315,923	345,064	14
Property, plant and equipment	2,588,247	2,519,369	15
Investment properties	2,451	2,404	16
Interests in companies recognised at equity	189,414	180,015	17, 18
Other financial assets	57,662	56,541	20
Other receivables and assets	309,020	189,270	21
Deferred tax assets	30,420	33,435	33
	3,493,137	3,326,098	
Current assets			
Inventories	160,962	282,529	22
Trade receivables	381,729	351,104	23
Other receivables and assets	765,978	343,443	21
Tax receivables	27,586	18,908	24
Securities	–	7	
Cash and cash equivalents	310,589	370,301	25
Assets held for sale	–	20,498	26
	1,646,844	1,386,790	
	5,139,981	4,712,888	
Equity and debt			
Equity			27
Share capital	168,721	168,721	
Capital reserve	455,241	455,241	
Accumulated net income	777,222	705,028	
Accumulated other comprehensive income	–20,761	–56,772	
Capital of MVV	1,380,423	1,272,218	
Non-controlling interests	244,791	248,884	
	1,625,214	1,521,102	
Non-current debt			
Provisions	181,370	198,689	28, 29
Tax provisions	–	4,987	28
Financial debt	1,163,138	1,299,227	30
Other liabilities	403,883	310,268	31
Deferred tax liabilities	173,809	162,983	33
	1,922,200	1,976,154	
Current debt			
Other provisions	138,988	134,794	28, 29
Tax provisions	54,879	31,803	28
Financial debt	222,858	148,413	30
Trade payables	340,256	351,179	32
Other liabilities	835,147	548,369	31
Tax liabilities	439	1,074	33
	1,592,567	1,215,632	
	5,139,981	4,712,888	

Statement of Changes in Equity

Statement of changes in equity

	Equity contributed		Equity generated				Capital of MVV	Non-controlling interests	Total capital
	Share capital of MVV Energie AG	Capital reserve of MVV Energie AG	Accumulated net income	Accumulated other comprehensive income					
				Currency translation differences	Fair value measurement of financial instruments	Actuarial gains and losses			
Euro 000s									
Balance at 1 Oct 2016	168,721	455,241	640,654	14,780	-34,590	-61,659	1,183,147	243,208	1,426,355
Other income and expenses recognised directly in equity	–	–	–	2,717	27,627	-5,647	24,697	6,499	31,196
Result of business operations	–	–	121,340	–	–	–	121,340	11,145	132,485
Total comprehensive income	–	–	121,340	2,717	27,627	-5,647	146,037	17,644	163,681
Dividends paid	–	–	-59,316	–	–	–	-59,316	-13,422	-72,738
Change in scope of consolidation	–	–	-103	–	–	–	-103	21	-82
Other changes	–	–	2,453	–	–	–	2,453	1,433	3,886
Balance at 30 Sep 2017	168,721	455,241	705,028	17,497	-6,963	-67,306	1,272,218	248,884	1,521,102
Balance at 1 Oct 2017	168,721	455,241	705,028	17,497	-6,963	-67,306	1,272,218	248,884	1,521,102
Other income and expenses recognised in equity	–	–	–	1,089	19,909	15,044	36,042	4,958	41,000
Result of business operations	–	–	130,002	–	–	–	130,002	2,411	132,413
Total comprehensive income	–	–	130,002	1,089	19,909	15,044	166,044	7,369	173,413
Dividends paid	–	–	-59,316	–	–	–	-59,316	-17,753	-77,069
Capital increase/reduction at subsidiaries	–	–	–	–	–	–	–	8,634	8,634
Change in scope of consolidation	–	–	1,508	-31	–	–	1,477	-2,343	-866
Balance at 30 Sep 2018	168,721	455,241	777,222	18,555	12,946	-52,262	1,380,423	244,791	1,625,214

Cash Flow Statement

Cash flow statement¹

Euro 000s	1 Oct 2017 to 30 Sep 2018	1 Oct 2016 to 30 Sep 2017
Annual net income before taxes on income	209,702	205,620
Amortisation, depreciation and write-ups on intangible assets, property, plant and equipment and investment properties	214,386	175,612
Financial result	47,092	53,891
Interest received	7,550	7,490
Change in non-current provisions	126	11,566
Other non-cash income and expenses	-440	-17,307
Result of disposal of non-current assets	-28,512	668
Cash flow before working capital and taxes	449,904	437,540
Change in other assets ²	29,044	129,029
Change in other liabilities ²	-71,387	13,574
Change in current provisions	-12,545	-40,435
Income taxes paid	-63,528	-66,114
Cash flow from operating activities	331,488	473,594
Payments for investments in intangible assets, property, plant and equipment and investment properties	-269,376	-177,271
Proceeds from disposals of intangible assets, property, plant and equipment and investment properties	56,577	3,980
Proceeds from subsidy payments	14,808	14,472
Proceeds from sale of fully consolidated companies	-	150
Proceeds from sale of other financial assets	281	26,063
Payments for acquisition of fully consolidated companies and other business units	-4	-5,165
Payments for other financial assets	-14,073	-26,873
Cash flow from investing activities	-211,787	-164,644
Proceeds from taking up of loans	190,250	263,773
Payments for redemption of loans	-250,597	-407,561
Dividends paid	-59,316	-59,316
Dividends paid to non-controlling interests	-17,753	-13,422
Change due to changes in capital at minority interests	7,914	20
Interest paid	-49,703	-54,779
Cash flow from financing activities	-179,205	-271,285
Cash-effective changes in cash and cash equivalents	-59,504	37,665
Change in cash and cash equivalents due to currency translation	-208	-405
Cash and cash equivalents at 1 October 2017 (2016)	370,301	333,041
Cash and cash equivalents at 30 September 2018 (2017)	310,589	370,301
of which cash and cash equivalents at 30 September 2018 (2017) with restraints on disposal	1,226	1,218

1 Further information about cash flow statement in Note 37

2 Previous year's figures adjusted; further information about this in Note 37

Cash flow – aggregate presentation

Euro 000s	1 Oct 2017 to 30 Sep 2018	1 Oct 2016 to 30 Sep 2017
Cash and cash equivalents at 1 October 2017 (2016)	370,301	333,041
Cash flow from operating activities	331,488	473,594
Cash flow from investing activities	–211,787	–164,644
Cash flow from financing activities	–179,205	–271,285
Change in cash and cash equivalents due to currency translation	–208	–405
Cash and cash equivalents at 30 September 2018 (2017)	310,589	370,301

Notes to MVV's 2018 Consolidated Financial Statements

Information about the company

MVV Energie AG has its legal domicile in Mannheim, Germany. Its business address is at Luisenring 49, 68159 Mannheim. It is the parent company of the MVV Group, which acts as an energy generator, distributor and service provider. Its business is managed in the reporting segments of Customer Solutions, New Energies, Supply Reliability, Strategic Investments and Other Activities.

Basis of preparation

MVV's consolidated financial statements have been prepared pursuant to § 315e (1) of the German Commercial Code (HGB) in accordance with the International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB) and the interpretations (IFRIC) of the IFRS Interpretations Committee (IFRS IC). The consolidated financial statements thus fully conform with the IFRS and IFRIC published by the IASB and the IFRS IC to the extent that these had been adopted by the European Union at the end of the period under report and required mandatory application as of 30 September 2018.

The consolidated financial statements have been prepared as of the balance sheet date for the annual financial statements of MVV Energie AG and refer to the 2018 financial year (1 October 2017 to 30 September 2018). The consolidated financial statements are compiled in euros. Unless otherwise indicated, all amounts are stated in thousand euros (Euro 000s).

The income statement has been prepared using the total cost method. In the interests of clarity, individual items have been presented in summarised form in the income statement and balance sheet and listed and commented on separately in the notes.

The Executive Board of MVV Energie AG is responsible for the preparation, completeness and accuracy of the consolidated financial statements and the combined management report. The Executive Board prepared the consolidated financial statements and combined management report on 13 November 2018 and subsequently forwarded these to the Supervisory Board for approval.

Changes in accounting policies

The International Accounting Standards Board (IASB) and the IFRS Interpretations Committee (IFRS IC) have revised or newly adopted some standards and interpretations which require mandatory application for the first time in the 2018 financial year. None of the standards and interpretations not listed in the table below has any (material) implications for MVV:

Amended standards and interpretations

	EU endorsement	Effective date ¹	Implication
IAS 7 Disclosure Initiative	6 Nov 2017	1 Jan 2017	The amendments to IAS 7 require disclosures to be made on changes in those financial liabilities whose incoming and outgoing payments are presented in the cash flow from financing activities in the cash flow statement. Provided in the form of a table, this information will supplement the note disclosures on the cash flow statement.

1 Applicable in financial years beginning on or after the date stated

The IASB and the IFRS IC published standards and interpretations not yet requiring mandatory application in the 2018 financial year and of which no voluntary premature application has been made. None of the standards and interpretations not listed in the table below is expected to have any material implications for MVV:

Amended standards and interpretations

		EU endorsement	Effective date ¹
IFRS 9	Financial Instruments: Classification and Measurement of Financial Assets	22 Nov 2016	1 Jan 2018
IFRS 15	Revenue from Contracts with Customers	22 Sep 2016	1 Jan 2018
IFRS 15	Clarification to Revenue from Contracts with Customers	31 Oct 2017	1 Jan 2018
IFRS 16	Leases	31 Oct 2017	1 Jan 2019

1 Applicable in financial years beginning on or after the date stated

The IASB published the definitive version of IFRS 9 “Financial Instruments” in July 2014. The new standard replaces the existing provisions of IAS 39 “Financial Instruments: Recognition and Measurement” and requires mandatory application in financial years beginning on or after 1 January 2018. This standard was adopted into European law in November 2016. MVV Energie AG will make first-time application of the standard from the beginning of the 2019 financial year.

IFRS 9 includes revised provisions governing the classification and measurement of financial instruments, the impairment of financial assets and the recognition of hedge relationships.

In future, the classification of financial assets will be based on the business model and the contractual cash flow characteristics of the respective financial instrument. Where the requirements for the “hold” business model and the contractual cash flow characteristics of the respective debt instrument are met, these debt instruments will continue to be recognised at amortised cost. Where, in respect of the business model, only the conditions for “hold and sell” and simultaneously the conditions for the contractual cash flow characteristics of the respective debt instrument are met, fair value changes for these debt instruments will be recognised in other comprehensive income with the exception of changes resulting from amended loss allowances. All other debt instruments will be recognised in future at fair value, with changes in value being credited or charged to the income statement. Equity instruments will require recognition at fair value in future. Here, fair value adjustments may be recognised either in the income statement or in other comprehensive income. The previous exception allowing equity instruments to be recognised at cost in specific circumstances no longer applies. The requirements governing financial liabilities set out in IAS 39 have largely been retained. Apart from the exception relating to the classification of equity instruments, the new requirements for classifying financial instruments will not have any material quantitative implications for MVV. Due to the amended requirements for equity instruments, we expect the value of other shareholdings to appreciate by a medium single-digit million euro amount.

Unlike IAS 39 requirements, the new impairment model in IFRS 9 accounts not only for losses that have already materialised, but also for expected losses (expected loss model). This means that impairments of financial assets are recognised at an earlier point in time. Moreover, when determining loss allowances greater reference will have to be made to prospective information. This will mainly affect trade receivables. Loss allowances for trade receivables without significant financing components and for contract assets are calculated using the simplified approach set out in IFRS 9. First-time application of the new impairment model will lead to an increase no greater than Euro 2 million in loss allowances. This item will be recognised in equity in the 2019 opening balance sheet.

The revised hedge accounting requirements are intended to create a closer relationship between a company’s risk management strategy and the conclusion of a hedging relationship. Furthermore, IFRS 9 has extended the range of hedged items eligible for hedge accounting and simplified the effectiveness measurement and thus the conditions governing eligibility for hedge accounting. MVV will be able to maintain its existing hedging relationships under IFRS 9. Furthermore, under IFRS 9 the changes in the fair value of an option designated as a hedging instrument have to be recognised as hedging costs in other comprehensive income. The amounts recognised in other comprehensive income are subsequently reflected in the hedged item either on a transaction or on a period basis. This adjustment requires retrospective implementation. MVV’s existing hedging relationships are affected to a very minor extent by this amendment.

The IASB published the new standard IFRS 15 “Revenue from Contracts with Customers” in May 2014. This was adopted in European law in September 2016. It includes completely revised revenue recognition requirements and replaces the existing standards and interpretations IAS 11 “Construction Contracts”, IAS 18 “Revenue”, IFRIC 13 “Customer Loyalty Programmes”, IFRIC 15 “Agreements for the Construction of Real Estate”, IFRIC 18 “Transfers of Assets from Customers” and SIC-31 “Revenue – Barter Transactions Involving Advertising Services”. It lays down a framework to determine whether, when and at what amount revenues require recognition.

In future, the revenues requiring recognition will be determined by reference to a five-step model. Moreover, IFRS 15 includes extended note disclosure requirements. The standard requires first-time mandatory application in all financial years beginning after 1 January 2018. MVV will apply this standard for the first time at the beginning of the 2019 financial year. First-time application is basically required to be retrospective.

In April 2016, the IASB published clarifications to IFRS 15 relating in particular to the identification of separate performance obligations, the delineation of principals and agents and the recognition of licensing income. The EU adopted these clarifications in European law on 31 October 2017.

In a project addressing implementation of IFRS 15, MVV has assessed the potential implications of applying IFRS 15 for its consolidated financial statements. The following main implications were identified:

- For allocations in the renewable energies business, the clarifications relating to the constellation of principal or agent status will lead in future to a reduction in sales and an equivalent reduction in cost of materials. The level of netting will depend on future developments in the market premium and is expected to amount to between Euro 250 million and Euro 350 million.
- Balance sheet reclassifications will arise between the assets currently recognised and contractual assets and between the liabilities currently recognised and contractual liabilities.

These will result above all from building cost grants and advance payments received.

- The capitalisation of contract acquisition costs will result in a slight extension in the balance sheet. These costs will be amortised over the average contractual term. Contract acquisition costs for terms of less than one year will be directly expensed.

- Furthermore, in connection with the introduction of IFRS 15 we have also converted the period over which building cost grants are written back to 20 years. The resultant increase in equity amounts to around Euro 30 million.

MVV has selected the cumulative retrospective method for the initial application date.

The new standard IFRS 16 “Leasing” introduced new lease accounting requirements which will in future replace the existing requirements and definitions in IAS 17, IFRIC 4, SIC-15 and SIC-27. The previous classification of leases at the lessee as operating or finance leases has been abolished and replaced by a uniform right-of-use model. One exception relates to contracts with terms of less than twelve months and low-value assets. An accounting option is provided for these contracts. Implementation of the new standard will mean that in future operating leases will also trigger capital retention in the form of a right-of-use asset and a liability. This approach is largely comparable with that currently taken to recognise finance leases. For lessors, the accounting model does not differ to any significant extent from that in IAS 17 “Leases”.

The provisions of IFRS 16 will require mandatory application in financial years beginning on or after 1 January 2019. MVV will prematurely apply the new standard for the first time in its financial year beginning on 1 October 2018. This is because the company will also apply IFRS 15 for the first time from this date. One material implication identified is that the Group will recognise right-of-use assets for its operating leases and lease liabilities in the same amount. This is expected to extend the balance sheet by between Euro 65 million and Euro 95 million. In the income statement, the new accounting requirements will lead to an amendment in the recognition of lease expenses. This is because IFRS 16 replaces straight-line expenses for operating leases in adjusted EBIT with the amortisation of right-of-use assets and interest expenses for lease liabilities.

No material implications are expected for finance leases.

MVV will draw on the options provided for current and low-value leases. With regard to the transitional requirements, MVV will apply the modified retrospective approach.

Consolidation methods

The financial statements included in consolidation have been prepared on the basis of uniform accounting policies as of 30 September 2018.

Subsidiaries are fully consolidated upon acquisition, i.e. from the time when the Group gains control. Their inclusion in the consolidated financial statements ends when they are no longer controlled by the parent company. Capital consolidation is based on the purchase method. Non-controlling interests held in the earnings and net assets of fully consolidated companies are not attributable to the Group. In the consolidated balance sheet, they are recognised within equity, separately from the equity attributable to shareholders in the parent company. Subsidiaries that due to materiality considerations have not been fully consolidated in MVV's consolidated financial statements have been reported under other majority shareholdings.

Interests in associates and joint ventures are consolidated using the equity method.

Shareholdings in companies not included by way of full consolidation or by application of the equity method have been accounted for pursuant to IAS 39.

Receivables and liabilities between consolidated companies are offset against each other, as are income and expenses. Material intercompany results have also been eliminated.

Scope of consolidation and changes in scope of consolidation

In addition to MVV Energie AG, all material German and foreign subsidiaries in which MVV Energie AG directly or indirectly holds a majority of the voting rights have been included in MVV's consolidated statements. Furthermore, subsidiaries at which contractual provisions result in control by MVV are included in the consolidated financial statements irrespective of whether MVV holds a majority of voting rights.

Scope of consolidation		
Number of companies	Fully consolidated companies	Companies recognised at equity
30 September 2017	163	34
Additions	34	6
Disposals	25	3
30 September 2018	172	37

The acquired fully consolidated companies involve project companies acquired at the Juwi subgroup, the takeover of an existing energy from waste plant in Dundee/Scotland and a biogas plant in Dresden. The additions to fully consolidated companies also include newly founded companies – mainly project companies at the Juwi and Windwärts subgroups – and additions resulting from a change in the status of other majority shareholdings. The fully consolidated companies thereby added did not lead to any material changes in MVV's net asset, financial and earnings situation. Disposals of fully consolidated companies mostly relate to mergers at the Juwi and Energieversorgung Offenbach subgroups.

The changes in companies recognised at equity also mainly relate to the Juwi subgroup. These involve sales and additions resulting from changes of status due to sales of shares.

Currency translation

Foreign currency transactions are recognised at the spot rate applicable at the time the consolidated companies executed the transaction. Monetary assets and liabilities stated in foreign currencies are translated at each balance sheet date at the rate valid on the balance sheet date. Currency translation differences are recognised either within operating earnings or in the financial result in line with their respective allocation.

Annual financial statements of foreign group companies are translated into euros (the reporting currency of the Group) in accordance with the functional currency concept and using the modified reporting date method. MVV determines the functional currency for each of its companies.

Assets and liabilities are translated from their respective national currencies into euros at the mean exchange rate valid on the balance sheet date. Income and expense items are translated using annual average exchange rates. Currency differences resulting from the use of different exchange rates for the balance sheet and the income statement are recognised directly in equity under accumulated other comprehensive income (currency translation differences).

Currency translation has been based on the following main exchange rates:

Currency translation				
	Reporting date rate		Average rate	
	30 Sep 2018	30 Sep 2017	1 Oct 2017 to 30 Sep 2018	1 Oct 2016 to 30 Sep 2017
1 Euro				
Czech crown (CZK)	25.731	25.981	25.591	26.671
British pound (GBP)	0.887	0.882	0.885	0.872
US dollar (USD)	1.158	1.181	1.190	1.105
South African rand (ZAR)	16.445	15.944	15.570	14.783

Source: European Central Bank

Accounting policies

Assets and liabilities are measured at amortised cost in all cases with the exception of certain assets, liabilities and derivative financial instruments which IAS 39 and IFRS 13 require to be measured at fair value where this can be reliably determined. Non-current receivables and debt are recognised at fair value. Assets and liabilities are netted where the relevant requirements are met. Income and expenses derived from assets and liabilities are recognised under earnings from operations or in the financial result depending on the respective balance sheet item. Period deferrals are accounted for where necessary. Items are recognised directly in equity where International Accounting Standards so require and are presented separately in the statement of changes in equity.

The underlying principles of recognition and measurement applied when preparing MVV's consolidated financial statements are set out below.

Intangible assets

Intangible assets were mainly acquired in return for payment and are carried at cost, reduced where appropriate by subsidies received. They are subject to straight-line amortisation based on their pattern of consumption. Useful lives are based on economic aspects or contract terms and range between 1 and 50 years. With the exception of goodwill, there are no intangible assets with useful lives classified as indefinite. Where MVV has to purchase CO₂ emission rights with holding periods longer than one year, these are recognised as intangible assets at cost. Rights allocated free of charge are recognised at Euro 0. As the CO₂ emission rights constitute non-amortisable assets, they are not subject to amortisation, but nevertheless reduced by any impairment losses arising pursuant to IAS 36.

Property, plant and equipment

Property, plant and equipment is stated at cost, less proportionate depreciation to account for the decline in value of the assets. In the case of internally generated property, plant and equipment, the costs of manufacture are based on allocable direct costs and a commensurate share of directly allocable overhead expenses. Borrowing costs are recognised as a component of costs when they can be directly attributed to the acquisition or manufacture of a qualifying asset. Such costs are recognised as soon as the asset in question requires a significant period of time to be prepared for its intended use or sale. During the commissioning phase, the net balance of income and expenses incurred is capitalised. Income in excess of the expenses incurred is recognised not as a reduction to cost, but through profit or loss.

The cost of assets is reduced by public subsidies received (investment grants). Public subsidies are recognised when it is sufficiently certain that these will be granted and the relevant conditions have been met. Investment grants relate exclusively to asset-based subsidies. These grants are reported separately from investments in the non-current asset schedule.

Items of property, plant and equipment are subject to straight-line depreciation consistent with their pattern of consumption. Depreciation is undertaken pro rata temporis in the year of addition. Scheduled depreciation is based on the following useful lives:

Useful lives in years	
Buildings	3 – 100
Technical equipment and machinery	2 – 50
Transmission grids	2 – 69
Plant and operating equipment	1 – 50

MVV leases specific items of property, plant and equipment (leased items). Lease contracts for items of property, plant and equipment in which MVV bears the main risks and rewards resulting from ownership of the leased item are classified as finance leases. Assets in connection with finance leases are capitalised at the beginning of the lease term at the lower of the fair value of the leased item and the present value of the minimum leasing payments, with equivalent lease liabilities being recognised under non-current and current liabilities.

Each leasing instalment is divided into its respective interest and principal components in such a way that the lease liabilities charge consistent interest. The interest component of the leasing instalment is expensed in the income statement. Items of property, plant and equipment governed by finance leases are depreciated over the shorter of their economic useful life or the term of the lease.

Investment properties

Investment properties are measured at amortised cost. In the context of impairment tests, their fair values are regularly determined by way of independent surveys. As these do not constitute observable market prices, measurement is allocable to Level 3 of the IFRS 13 measurement hierarchy.

Impairment of intangible assets, property, plant and equipment and investment properties

The carrying amounts of intangible assets, property, plant and equipment and investment properties are assessed for indications of impairment at each balance sheet date. An impairment test pursuant to IAS 36 is performed if there are any such indications. Goodwill and intangible assets with indefinite useful lives are not subject to scheduled amortisation, but are rather tested for impairment at least once a year. This also applies when changes in circumstances or indications of impairment arise.

Where the carrying amount of an asset is higher than its recoverable amount (the higher of its fair value less disposal costs or its value in use), the carrying amount is written down to the recoverable amount. The fair value represents the best estimate of the recoverable amount. The recoverable amounts must be determined for each individual asset, unless the asset does not generate any largely independent cash flows. In this case, the amount should be stated for which an independent third party would acquire the cash generating unit at the balance sheet date. The fair values/values in use of the cash generating units are determined based on the cash flow forecasts approved by the management and supervisory bodies of MVV Energie AG. Such cash flow forecasts are based on experience and results in previous financial years, as well as on expectations as to future market developments. They refer to the expected development in key macroeconomic figures derived from economic and financial studies.

Key assumptions used in the forecasts concern the development in the price of crude oil, natural gas and coal on the global markets, the price of electricity and gas on wholesale and end consumer markets and the development in market shares and the relevant regulatory framework.

The cash flow forecasts cover a detailed budgeting period of three years. Figures for subsequent financial years are based on an extrapolation of the results of the final financial year in the detailed budget period. Reference is made to current estimates of growth rates. These growth rates correspond to the average long-term growth rates in the markets in which the companies operate and are consistent with external sources of information concerning market expectations. Impairment losses are recognised when the recoverable amount of the asset falls short of its carrying amount. Where the recoverable amount exceeds the carrying amount in subsequent periods, the assets are written up to a maximum of amortised cost.

Goodwill is not written up. Should the carrying amount of a cash generating unit to which goodwill has been allocated exceed its recoverable amount, then the goodwill thereby allocated is written down first. Any further write-down requirement is then accounted for by means of a prorated reduction in the carrying amounts of the other assets at the cash generating unit. However, assets are not written down below their respective present values.

Receivables and other assets

Receivables and other assets include trade receivables, other receivables and assets and tax receivables. Apart from derivative financial instruments, these are measured at amortised cost. Initial measurement is carried out as of the performance date. Any write-downs required are based on the expected level of default risk. The values of receivables are generally corrected by means of a write-down account.

Trade receivables include accruals/deferrals to cover energy and water sales not yet read or invoiced as of the balance sheet date. Part-payments made in the context of annual consumption invoicing are deducted from the receivables. Default risks existing at the balance sheet date are covered by adequate write-downs. Receivables are derecognised immediately upon becoming uncollectible. The carrying amounts reported are basically equivalent to their respective fair values.

CO₂ emission rights with remaining terms of less than a year and requiring purchase or exchange by MVV are recognised at cost as other assets, while rights allocated free of charge have been recognised at Euro 0.

Inventories

Inventories consist of raw materials and supplies, unfinished and finished products and services and project rights, advance payments made for such and commodity trading assets. They are measured at the lower of cost or net sale value. The commodity trading assets are measured at fair value less disposal costs. Cost of acquisition or manufacture for raw materials is calculated using the average cost method. The manufacturing costs of unfinished and finished products and services and project rights comprise production-related full costs. These consist of allocable direct costs and a commensurate share of the material and production overheads required based on normal capacity utilisation rates. Risks resulting from any impairment in utility are accounted for with suitable deductions.

Cash and cash equivalents

Cash and cash equivalents consist of cash on hand and credit balances at banks with original terms of less than three months.

Non-current assets and liabilities held for sale

Non-current assets which can be sold in their current state and whose sale is highly probable are recognised as non-current assets held for sale. Liabilities due to be dispensed with in a transaction together with assets are reported separately as liabilities held for sale.

Unless the relevant specific standards are applicable, non-current assets held for sale are no longer subject to scheduled depreciation and amortisation. Unless stipulated in another standard, they are measured at fair value less expected disposal costs, where this is lower than the carrying amount. Gains or losses resulting from the measurement of individual non-current assets held for sale or disposal groups are recognised under earnings from continuing operations until their ultimate disposal. Any losses resulting from the measurement of discontinued operations at fair value less disposal costs are recognised as earnings from discontinued operations.

Deferred taxes

Deferred taxes are stated for temporary differences between the tax balance sheets and IFRS balance sheets at individual companies arising from the measurement of assets and liabilities for tax purposes on the one hand and for external IFRS accounting on the other, as well as from consolidation processes impacting on earnings. Moreover, deferred tax assets are also recognised for tax reduction claims resulting from the expected utilisation in subsequent years of existing losses carried forward. Such claims are capitalised if the utilisation of these losses carried forward is certain within a five-year forecast horizon based on existing business plans. Deferred

taxes are calculated based on the tax rates valid or expected at the individual organisational units upon realisation. Account is taken of the tax regulations valid or already adopted at the balance sheet date.

Provisions

Provisions are recognised for all legal or constructive obligations to third parties at the balance sheet date as a result of past events, when it is probable that a future outflow of resources will be required to settle the obligations and the amounts can be reliably estimated. Provisions are recognised at their expected performance amounts and are not netted with refund claims. Provisions based on a large number of events of the same nature are recognised at the expected value of the potential results.

All non-current provisions are recognised at their expected performance amounts as of the balance sheet date. Non-current provisions are discounted.

Financial instruments

Primary financial instruments: Loans, securities, trade receivables, other cash receivables and cash and cash equivalents are measured at fair value upon addition, taking due account of transaction costs.

Upon subsequent measurement, financial assets are recognised either at fair value or at amortised cost. The subsequent measurement of financial assets in the “financial assets available for sale” category is generally based on their fair values.

Pursuant to IAS 39, changes in fair values are recognised directly in equity, taking due account of deferred taxes. Upon disposal, these changes are recognised through profit or loss. The asset is written down through profit or loss if there are any objective indications of impairment. Permanent recoveries in value are recognised with write-ups to amortised cost. Assets whose fair values cannot be reliably estimated are measured at amortised cost. The subsequent measurement of financial assets in the “loans and receivables” and “financial instruments held to maturity” categories is based on amortised cost, with application of the effective interest method where appropriate. The amortised cost of a financial asset is equivalent to the fair value of the consideration provided, adjusted to account for impairments, interest payments and principal repayments. Impairment losses are recognised for any identifiable risks, especially those resulting from expected payment defaults or reductions in expected cash flows. Impairment losses are charged directly to period earnings.

Purchases and sales of financial assets executed on customary market terms are recognised on the date of the transaction, i.e. on the date on which the company assumed the liability to purchase or sell the assets. Purchases and sales executed on customary market terms require transfer of the assets within a period determined by market regulations or conventions.

The fair values of financial instruments traded on organised markets are determined by reference to the bid prices listed on the stock market on the balance sheet date. The fair values of financial instruments for which there is no active market are estimated with due application of valuation techniques. These methods are based on recent transactions performed on customary market terms, on the current value of other instruments which are essentially the same instruments, on analysis of discounted cash flows or on option price models. Pursuant to IFRS 13, due account is also taken of market and credit risks when determining fair values.

Financial assets are retired when the contractual rights to cash flows from the asset expire or when the financial asset is transferred, provided that all principal risks and rewards relating to ownership of the asset are also transferred and the power to dispose over the asset has been ceded.

Financial debt, trade payables and other financial liabilities are measured at amortised cost, with application of the effective interest method where appropriate. In the case of financial debt, cost is equivalent to the amount disbursed. In the case of trade payables and other liabilities, cost is equivalent to the fair value of the consideration received.

Financial liabilities are retired when the underlying obligation has been met, terminated or has expired.

No use is made of the fair value option.

Derivative financial instruments: Derivative financial instruments particularly include interest rate and currency derivatives, as well as commodity derivatives, in this case mainly for electricity, gas, coal and CO₂. Derivative financial instruments are measured at fair value both upon initial recognition and in subsequent periods and are reported under other assets or other liabilities. The amounts recognised are derived from market values or using recognised valuation methods (present value method or option pricing models based on current market parameters). In particular, certain long-term energy contracts and interest rate derivatives are, where no market prices are available, measured using recognised valuation methods based on internal fundamentals. Changes in the value of interest rate and currency derivatives relating to operations are recognised as income or expenses under earnings from operations or in the financial result. Changes in the value of all other

derivative financial instruments are recognised as income or expenses under other operating income and expenses. Derivatives deployed in cash flow hedges have to be treated separately. Where they additionally meet IAS 39 hedge accounting requirements, changes in the fair value of the effective portion of the hedging instrument are recognised directly in equity under fair value measurement of financial instruments. When the underlying transaction is recognised in the income statement, the hedging instrument is also recognised through profit or loss and thus compensates for the impact of the underlying transaction. Alongside cash flow hedge accounting, risks may also be hedged with fair value hedges. Here, changes in the fair values of derivatives serving to hedge a fair value and eligible to be qualified as fair value hedges are recognised through profit or loss at the same time as the risk thereby hedged. For fair value hedges, changes in the value of primary financial instruments arising due to exchange rate movements may additionally be hedged by the currency-related changes in other primary financial instruments or currency derivatives.

Pending transactions intended to secure market prices in the field of energy trading fall within the scope of IAS 39 and are recognised as derivative financial instruments, while the hedged items (sales contracts) are generally not covered by IAS 39. The accounting treatment under IAS 39 relates in particular to commodities futures transactions. To limit volatility, application is made of the own use exemption or of cash flow hedge accounting, particularly in the electricity and gas businesses.

For closed foreign currency positions, fair value hedges are designated and recognised in accordance with fair value hedge accounting requirements.

Interest rate risks are limited by drawing in particular on interest swaps. These instruments secure the cash flow from financial liabilities with floating interest rates by means of cash flow hedges.

Discretionary decisions in the application of accounting policies

Discretionary decisions have to be made when applying the accounting policies. This has not had any material influence on the values of the assets and liabilities reported in the financial statements.

Measurement uncertainties

The preparation of consolidated financial statements in accordance with IFRS requires assets and liabilities to be measured. Here, it is also necessary to make assumptions and estimates which could impact on the values stated for the assets and liabilities, income and expenses thereby recognised and the disclosure of contingent liabilities.

The following section provides information on the most important forward-looking assumptions and other major sources of uncertainty involved in estimates made at the balance sheet date, as a result of which there is a risk that a material adjustment will be required in the carrying amounts of assets and liabilities in the next financial year.

The fair values of assets and liabilities and the useful lives of assets have been determined on the basis of management assessment. The same applies to the calculation of any impairments of assets.

The impairment test performed on goodwill and assets requires an estimation of the recoverable amount of the cash generating unit to which the goodwill or asset is allocated. The recoverable amount is primarily calculated on the basis of the value in use of the cash generating unit. In special individual cases, it is calculated based on the fair value of the cash generating unit. For the impairment test, reference is made to the higher of the two values. To estimate the value in use, MVV has to estimate the cash flow surpluses expected to be generated by the cash generating unit in future and furthermore to select an appropriate discount rate to calculate the present value of the cash flow. All assumptions and estimates are based on circumstances and assessments at the balance sheet date or at the date during the financial year on which event-specific impairment becomes necessary. Any deviation in underlying conditions could result in differences arising between such estimates and actual values. Appropriate amendments are made in such cases to the assumptions and if need be to the carrying amount of the goodwill and assets.

Moreover, assumptions also have to be made when calculating actual and deferred taxes. In particular, the possibility of generating corresponding future taxable income plays a key role in the assessment as to whether it will be possible to use deferred taxes.

The uncertainties arising when measuring the provisions to be recognised are countered with the best possible estimates. Among other methods, the calculations have also been based on probability considerations.

The measurement of sales and cost of materials is dependent on estimates to the extent that consumption deferrals have been undertaken as of the balance sheet date for trade receivables and payables already incurred but not yet invoiced.

Compensation liabilities for partnerships are recognised at prorated fair value. This is determined by compiling a company valuation, taking due account of current budgets and the yield curve.

When assessing measurement uncertainties, reference is always made to the best information available concerning circumstances at the balance sheet date. Actual amounts may differ from estimates. The carrying amounts recognised in the financial statements which are subject to these uncertainties have been stated in the balance sheet and the accompanying information provided in the notes.

The amendments made to estimates in the 2018 financial year due to IAS 8 did not lead to any notable adjustments in the relevant income, expenses, assets or liabilities.

NOTES TO INCOME STATEMENT

1. Sales after electricity and natural gas taxes

Sales include all revenues generated by the typical business activities of the Group. They are recognised upon the transfer of significant risks and rewards to customers or upon performance of the respective services, provided that receipt of the payment can reliably be expected. The composition of sales broken down into individual segments can be found in Segment Reporting in Note 36.

MVV's main products are electricity, heating energy, gas, water and waste incineration and disposal. Furthermore, the Group generates substantial sales from services and from solar and wind power project development services.

External sales by products are structured as follows:

Sales by product group		
Euro 000s	FY 2018	FY 2017
Electricity	2,094,628	2,147,090
Heating energy	359,409	371,210
Gas	547,945	647,841
Water	86,988	87,405
Other sales	813,790	755,970
	3,902,760	4,009,516

Other sales mainly include sales from project development services and customer-specific construction contracts.

In group currency, sales at our foreign subsidiaries amounted to Euro 206,095 thousand (previous year: Euro 230,122 thousand). The reduction in this share of sales is chiefly due to the lower number of projects realised abroad.

Customer-specific construction contracts are recognised at percentage of completion. This means that prorated sales and the cost of sales incurred are recognised at the percentage of completion, based on the contractual arrangements with the customers, reached by the balance sheet date and as soon as the results of the construction contract can be reliably estimated.

Percentage of completion is calculated on the basis of the project costs incurred by the balance sheet date as a proportion of the total costs of the project. In the balance sheet, the sales posted in line with percentage of completion are reduced by advance payments received and recognised under trade receivables. As soon as the result of a construction contract cannot be reliably estimated, the revenues from the contract are only recognised at the level of contract costs incurred and probably collectible. Losses on contracts are immediately expensed in full as soon as they are expected.

Mainly due to the lower number of projects realised, sales from customer-specific construction contracts fell to Euro 56,629 thousand (previous year: Euro 110,562 thousand).

2. Changes in inventories

Changes in inventories mainly relate to unfinished projects and project rights.

3. Own work capitalised

Own work capitalised relates above all to the construction and expansion of distribution grids.

4. Other operating income

Other operating income		
Euro 000s	FY 2018	FY 2017
Income from IAS 39 derivatives	264,399	205,514
Reversal of provisions	42,851	45,490
Income from sales of assets held for sale	30,802	–
Reversal of write-downs and receipts of receivables already retired	13,058	10,149
Exchange rate gains	5,428	4,035
Reimbursements of damages claims	5,400	7,692
Agency agreements and personnel supplies	4,836	4,952
Benefits to employees	4,185	3,815
Rental income	3,667	3,864
Income from emission rights	2,996	58
Credits and refunds	2,756	3,946
Income from sales of assets and write-ups	1,734	10,398
Miscellaneous	36,146	20,685
	418,258	320,598

Other operating income particularly relates to positive measurement items for energy trading transactions requiring measurement under IAS 39. Measurement items relating to energy transactions are reported on a gross basis. This valuation-dependent income is offset by corresponding expenses.

The income from sales of assets held for sale resulted from the sale of the fibre optic network at MVV Energie AG and of assets relating to multi-utility contracts at MVV ImmoSolutions GmbH.

5. Cost of materials

Cost of materials		
Euro 000s	FY 2018	FY 2017
Raw materials, supplies and purchased goods	2,115,723	2,270,860
Procurement of wind turbines and solar power systems	285,650	253,461
Purchased services	556,388	554,422
	2,957,761	3,078,743

Expenses for purchased services mainly relate to expenses for grid utilisation fees, concession duties, maintenance and repair expenses, disposal costs for residual waste and other third-party services.

6. Employee benefit expenses

Employee benefit expenses		
Euro 000s	FY 2018	FY 2017
Wages and salaries	345,592	341,935
Social security expenses and welfare expenses	57,838	57,307
Pension expenses	19,314	19,436
	422,744	418,678

MVV had an annual average of 6,006 employees (previous year: 6,057). This total includes 10 executives (previous year: 10), 5,680 employees (previous year: 5,727), 281 trainees (previous year: 292) and 35 interns/students (previous year: 38).

The executives are members of the management in key functions, i.e. authorised representatives and division heads at MVV Energie AG.

7. Other operating expenses

Other operating expenses		
Euro 000s	FY 2018	FY 2017
Expenses for IAS 39 derivatives	232,808	166,614
Expenses for advisory services	32,634	24,886
Contributions, fees and duties	31,990	33,685
Rental, leasehold and leasing expenses	22,759	21,523
Maintenance, repair and IT service expenses	21,844	19,083
Additions to write-downs and receivables defaults	14,511	21,217
Operating taxes (including energy taxes)	12,819	11,535
Employee benefit and welfare expenses	12,312	11,618
Public relations expenses	11,411	12,460
Personnel supplies	10,008	10,620
Facility management	7,344	7,048
Exchange rate losses	7,169	4,320
Service contracts	5,397	6,012
Losses incurred on sales of assets	4,025	3,930
Hospitality expenses	2,186	1,952
Office materials and specialist literature	1,744	2,261
Expenses for emission rights	203	6,099
Miscellaneous	28,159	43,278
	459,323	408,141

Other operating expenses include negative measurement items for energy trading transactions requiring measurement under IAS 39. Measurement items relating to energy trading transactions are reported on a gross basis. These valuation-dependent expenses are countered by other operating income offsetting this item.

8. Income from companies recognised at equity and other income from shareholdings

Interests in associates and joint ventures are recognised initially at cost and subsequently at the amortised value of the prorated net assets. The carrying amounts are increased or reduced annually to account for prorated earnings, dividends paid and other changes in equity. Any goodwill thereby recognised is included in the value of the shareholding, rather than being reported separately. Impairment losses are recognised on the at-equity carrying amount when the recoverable amount falls short of the carrying amount. When the reasons for impairment losses previously recognised on the at-equity carrying amount no longer apply, the carrying amount is correspondingly written up through profit or loss. This does not apply to any goodwill previously written down.

Income from companies recognised at equity and other income from shareholdings		
Euro 000s	FY 2018	FY 2017
Income from companies recognised at equity	-110	11,942
Income from other shareholdings	1,144	1,873
Expenses/income from sales of financial assets	-11	-207
	1,023	13,608

The changes in the income from companies recognised at equity were mainly due to the amended inclusion of Beegy GmbH and the subsequent measurement of those companies on which MVV exercises significant influence.

9. Depreciation and amortisation

Depreciation and amortisation		
Euro 000s	FY 2018	FY 2017
Depreciation	180,680	182,748
of which impairment losses	-	2,565

10. Financing income

Financing income		
Euro 000s	FY 2018	FY 2017
Income from currency translation in connection with financing activities	3,547	4,591
Interest income from finance leases	3,240	3,238
Interest income from current account, overnight and fixed-term deposits	774	1,122
Income from IAS 39 measurement	625	1,008
Other interest and similar income	4,391	4,665
	12,577	14,624

11. Financing expenses

Financing expenses		
Euro 000s	FY 2018	FY 2017
Interest expenses from current account, non-current and current loans	35,627	40,239
Expenses from currency translation in connection with financing activities	3,654	6,380
Compounding of provisions	2,826	2,113
Expenses for IAS 39 measurement	1,705	2,521
Other interest and similar expenses	15,857	17,262
	59,669	68,515

The other interest and similar expenses were reduced by Euro 3,127 thousand due to the capitalisation of borrowing interest (previous year: Euro 1,489 thousand). The assumed financing cost rate ranged from 1.4% to 1.9% in the financial year under report and amounted to 1.4% in the previous year.

12. Taxes on income

Taxes on income		
Euro 000s	FY 2018	FY 2017
Actual taxes	72,163	54,168
Deferred taxes	5,126	18,967
	77,289	73,135

Current tax expenses include trade tax and corporate income tax, including the solidarity surcharge, as well as foreign taxes on income.

The calculation of deferred taxes in Germany is based on tax rates applicable at individual companies. This tax rate results from the unchanged corporate income tax rate of 15%, the unchanged solidarity surcharge of 5.5% and the respectively applicable trade tax rate (currently 12% to 16%). The equivalent calculations for foreign companies are based on the respective national tax rates. Where the requirements of IAS 12 are met, deferred tax assets and liabilities are stated on a net basis for each company or fiscal unit.

The deferred tax expenses result from tax expenses of Euro 6,673 thousand (previous year: Euro 10,048 thousand) that are attributable to the change in the write-down on losses carried forward and to the recognition through profit or loss of losses carried forward, as well as from deferred tax income of Euro 1,547 thousand (previous year: expenses of Euro 8,919 thousand) attributable to the arising and/or reversal of temporary differences.

Actual tax expenses were reduced by Euro 1,348 thousand by using tax losses not previously recognised (previous year: Euro 3,172 thousand).

The following table presents the reconciliation of expected tax expenses with those actually reported. The tax rate applicable for the tax reconciliation amounts to 30.3% (previous year: 30.3%) and comprises the corporate income tax rate, the solidarity surcharge and an average trade tax rate of 14.5% (previous year: 14.5%).

Reconciliation of income tax expenses

Euro 000s	FY 2018	FY 2017
Earnings before taxes (EBT)	209,702	205,620
Expected tax expenses based on tax rate of 30.3% (previous year: 30.3%)	63,540	62,303
Deviations resulting from trade tax assessment base	1,851	1,759
Deviations from expected tax rate	-3,076	1,985
Utilisation of losses carried forward, change in write-downs for losses and losses for which no deferred taxes are recognised	6,590	10,066
Non-deductible expenses	3,300	5,336
Tax-exempt income	-6,939	-15,267
Income from shareholdings recognised at equity	4,725	991
Permanent differences	-7,220	3,635
Taxes for previous years	5,510	1,446
Goodwill impairments	10,212	
Miscellaneous	-1,204	881
Effective tax expenses	77,289	73,135
Effective tax rate (%)	36.9	35.6

13. Share of earnings attributable to MVV Energie AG shareholders and earnings per share

Share of earnings attributable to MVV Energie AG shareholders and earnings per share

	FY 2018	FY 2017
Share of earnings attributable to MVV Energie AG shareholders (Euro 000s)	130,002	121,340
Number of shares (weighted average in 000s)	65,907	65,907
Earnings per share (Euro)	1.97	1.84
Dividend per share (Euro)	0.90	0.90

The number of individual registered shares in MVV Energie AG amounts to 65,906,796.

The dividend for the 2018 financial year is consistent with the proposal made by the Executive and Supervisory Boards and requires approval by the Annual General Meeting on 8 March 2019. The proposal provides for the distribution of a dividend of Euro 59,316 thousand. The proposals for the amount of dividend and appropriation of earnings for the 2017 financial year were approved by the Annual General Meeting held on 9 March 2018. Accordingly, a dividend of Euro 59,316 thousand was distributed.

NOTES TO BALANCE SHEET

14. Intangible assets

Intangible assets includes concessions, industrial property rights, customer lists and similar rights and values, goodwill and advance payments. Concessions, industrial property rights and similar rights and values chiefly consist of software, rights eligible for capitalisation and customer lists. Intangible assets of Euro 0 thousand are subject to restrictions on disposal (previous year: Euro 5,631 thousand).

MVV Energie AG only performs a low volume of research and development. The amount of research and development expenses qualifying under IFRS came to Euro 714 thousand in the 2018 financial year (previous year: Euro 401 thousand). The development expenses capitalised under IAS 38 came to Euro 228 thousand in the year under report (previous year: Euro 730 thousand). These relate to the development of a global project database for solar and wind power projects at the Juwi subgroup.

In connection with the assumption of a disposal contract, which accounts for the major share of additions to intangible assets in the current financial year, the company acquired an energy from waste plant in Dundee/Scotland.

The impairment tests performed in the 2018 financial year were based on determining the recoverable amount/value in use. This involves discounting expected cash flows at the shareholdings with discount rates (weighted costs of capital) of 5.9% to 12.8% before taxes. The discount rates are determined on the basis of available market data. The budget period for the underlying cash flows generally amounts to three years. Growth rates of up to 0.5% were assumed for perpetuity in the impairment tests performed in the 2018 financial year.

Within a sensitivity analysis, the impairments resulting from any increase/reduction in the capitalisation discount rate by 0.5% were calculated. Apart from impairment losses recognised at the Juwi and MVV Enamic subgroups, this did not result in any notable changes in the ongoing values.

The carrying amounts stated for goodwill are structured as follows:

Goodwill carrying amounts		
Euro 000s	30 Sep 2018	30 Sep 2017
Juwi subgroup	74,970	98,970
Energieversorgung Offenbach subgroup	75,894	75,894
MVV Enamic subgroup	27,417	35,416
Windwärts subgroup	6,073	6,073
MVV Energie CZ subgroup	6,280	6,211
MVV Umwelt subgroup	5,583	5,583
Other subgroups	552	2,259
	196,769	230,406

For the purposes of performing impairment tests, goodwill was allocated to cash generating units. These correspond to the legal subgroups.

Goodwill amortisation chiefly refers to the write-down as of 31 March 2018 of goodwill arising upon the initial consolidation of the Juwi subgroup as well as to the write-down of goodwill at the MVV Enamic subgroup.

Current market changes both in Germany and abroad necessitated a strategic realignment at the Juwi subgroup and, associated with this, a new budget which was adopted in February 2018. These factors were the triggering events for impairment tests. As the fair value less costs to sell exceeds the value in use, this was taken as the recoverable amount in an impairment test and compared with the carrying amount of this unit. One component of the carrying amount is the goodwill of Euro 99 million allocated to the New Energies reporting segment. As no binding sales transactions or market prices are available for the unit, the fair value was determined using discounted cash flow methods (fair value Level 3). The measurements were based on medium-term budgets adopted in February 2018. A discount rate of 10.1% before taxes was used for the measurement date as of 31 March 2018.

The goodwill write-down at the MVV Enamic subgroup was chiefly due to reduced earnings prospects following the sale of the GSW contract portfolio at this cash generating unit. Within the impairment test, the value in use was taken as the

recoverable amount and compared with the carrying amount of the MVV Enamic subgroup, which is allocated to the Customer Solutions reporting segment. The future value in use was determined using a discount rate of 6.4% before taxes.

Intangible assets

	Concessions, industrial property rights and similar rights and values	Goodwill	Advance payments	Total
Euro 000s				
Gross value at 1 October 2016	323,536	242,847	7,955	574,338
Change in scope of consolidation	2,193	4,919	128	7,240
Currency adjustments	55	363	–	418
Additions	5,733	–	2,869	8,602
Subsidy payments received	–78	–	–	–78
Disposals	–1,168	–	–	–1,168
Reclassifications	8,364	–	–7,437	927
Reclassifications pursuant to IFRS 5	–4,318	–4,892	–	–9,210
Gross value at 30 September 2017	334,317	243,237	3,515	581,069
Amortisation at 1 October 2016	–210,419	–12,738	–	–223,157
Currency adjustments	–68	–93	–	–161
Scheduled amortisation	–15,237	–	–	–15,237
Impairment losses	–771	–	–	–771
Disposals	889	–	–	889
Reclassifications pursuant to IFRS 5	2,432	–	–	2,432
Amortisation at 30 September 2017	–223,174	–12,831	–	–236,005
Net value at 30 September 2017	111,143	230,406	3,515	345,064
Gross value at 1 October 2017	334,317	243,237	3,515	581,069
Currency adjustments	14	92	–	106
Additions	21,945	–	4,298	26,243
Disposals	–10,267	–	–34	–10,301
Reclassifications	1,640	–	–1,455	185
Gross value at 30 September 2018	347,649	243,329	6,324	597,302
Amortisation at 1 October 2017	–223,174	–12,831	–	–236,005
Currency adjustments	–15	–23	–	–38
Scheduled amortisation	–14,882	–	–	–14,882
Impairment losses	–	–33,706	–	–33,706
Disposals	3,252	–	–	3,252
Amortisation at 30 September 2018	–234,819	–46,560	–	–281,379
Net value at 30 September 2018	112,830	196,769	6,324	315,923

15. Property, plant and equipment

Property, plant and equipment					
	Land, leasehold rights and buildings, including buildings on third-party land	Technical equipment and machinery	Other assets, plant and operating equipment	Advance payments and construction in progress	Total
Euro 000s					
Gross value at 1 October 2016	914,923	4,445,541	212,066	159,978	5,732,508
Change in scope of consolidation	–	12	255	–	267
Currency adjustments	1,839	798	–9	113	2,741
Additions	2,201	44,779	6,832	114,858	168,670
Subsidy payments received	–77	–4,778	–102	–	–4,957
Disposals	–8,536	–61,927	–9,534	–633	–80,630
Reclassifications	4,105	77,855	1,024	–83,911	–927
Reclassifications pursuant to IFRS 5	–	–2	–29,467	–	–29,469
Gross value at 30 September 2017	914,455	4,502,278	181,065	190,405	5,788,203
Depreciation at 1 October 2016	–404,304	–2,634,815	–154,081	–	–3,193,200
Currency adjustments	–1,983	–4,043	–35	–	–6,061
Scheduled depreciation	–23,103	–130,322	–11,521	–	–164,946
Write-ups	–	–	7,136	–	7,136
Impairment losses	–	–1,794	–	–	–1,794
Disposals	5,035	60,129	9,117	–	74,281
Reclassifications	–	28	–28	–	–
Reclassifications pursuant to IFRS 5	–	2	15,748	–	15,750
Depreciation at 30 September 2017	–424,355	–2,710,815	–133,664	–	–3,268,834
Net value at 30 September 2017	490,100	1,791,463	47,401	190,405	2,519,369
Gross value at 1 October 2017	914,455	4,502,278	181,065	190,405	5,788,203
Change in scope of consolidation	–	500	154	–	654
Currency adjustments	483	236	–1	–46	672
Additions	10,528	47,829	7,714	182,691	248,762
Subsidy payments received	–10	–5,854	–81	–316	–6,261
Disposals	–1,423	–24,019	–10,310	–3,217	–38,969
Reclassifications	6,721	46,265	1,225	–54,396	–185
Gross value at 30 September 2018	930,754	4,567,235	179,766	315,121	5,992,876
Depreciation at 1 October 2017	–424,355	–2,710,815	–133,664	–	–3,268,834
Currency adjustments	–479	–944	–10	–	–1,433
Scheduled depreciation	–24,455	–131,105	–10,238	–	–165,798
Disposals	1,355	19,926	10,155	–	31,436
Reclassifications	245	–168	2	–79	–
Depreciation at 30 September 2018	–447,689	–2,823,106	–133,755	–79	–3,404,629
Net value at 30 September 2018	483,065	1,744,129	46,011	315,042	2,588,247

Property, plant and equipment up to an equivalent value of Euro 46 million (previous year: Euro 64 million) has been provided as security for financial debt. This involves land, buildings, technical equipment and machinery. Property, plant and equipment subject to restrictions on disposal amounts to Euro 119 million (previous year: Euro 128 million).

The reported subsidy payments received involve government grants received in the 2018 financial year chiefly in connection with urban planning measures for the distribution grid. There are no conditions that have not been met or other performance uncertainties in connection with these subsidy payments.

Apart from the construction of a gas-powered CHP plant in Kiel and an energy from waste plant in the UK, the largest additions to advance payments and construction in progress in the 2018 financial year also involved the connection of a CHP plant to the district heating grid in Mannheim.

16. Investment properties

Investment properties involve a piece of land let out in the USA. Rental income amounted to Euro 32 thousand in the financial year under report (previous year: Euro 34 thousand). Direct operating expenses came to Euro 0 thousand (previous year: Euro 0 thousand). The fair value of investment properties is at least equivalent to the carrying amount.

Investment properties		
Euro 000s	FY 2018	FY 2017
Gross value at 1 October	2,404	2,542
Currency adjustments	47	-138
Gross value at 30 September	2,451	2,404
Depreciation at 1 October	-	-
Depreciation at 30 September	-	-
Net value at 30 September	2,451	2,404

17. Joint ventures

MVV operates joint ventures with partners. In view of their size and influence on the Group, the following companies have been identified as material joint ventures:

Together with its shareholders, Uniper Kraftwerke GmbH and Stadtwerke Kiel AG, which is a subsidiary of MVV Energie AG, the company Gemeinschaftskraftwerk Kiel GmbH operates a hard coal-fired power plant in Kiel. Stadtwerke Kiel AG owns a 50% share of the capital. All significant decisions have to be reached jointly by the shareholders.

Stadtwerke Ingolstadt is responsible for the energy supply in the Ingolstadt region. MVV Energie AG owns a 48.4% share of the capital in Stadtwerke Ingolstadt Beteiligungen GmbH, which as the financial holding company pools several subsidiaries. All significant decisions have to be reached jointly by the shareholders.

The assets, liabilities, equity and sales, annual net income and other income and expenses at material joint ventures are presented in the following tables:

Statement of comprehensive income for material joint ventures

	Gemeinschaftskraftwerk Kiel GmbH, Kiel		Stadtwerke Ingolstadt Beteiligungen GmbH, Ingolstadt	
	Financial year	Previous year	Financial year	Previous year
Euro 000s				
Sales excluding energy taxes	83,649	78,060	186,060	197,794
Scheduled depreciation and amortisation	-1,346	-2,344	-13,851	-13,402
Interest income	2	10	99	106
Interest expenses	-4,936	-4,840	-1,112	-1,127
Income tax expenses/income	-1,850	2,545	-7,475	-8,441
Annual net income	2,637	7,639	17,854	19,328
Other income and expenses	-	-	-5	95
Total comprehensive income for period	2,637	7,639	17,849	19,423
Dividends received from material joint ventures	767	767	9,025	9,135

Further key financial figures for material joint ventures

	Gemeinschaftskraftwerk Kiel GmbH, Kiel		Stadtwerke Ingolstadt Beteiligungen GmbH, Ingolstadt	
	Financial year	Previous year	Financial year	Previous year
Euro 000s				
Assets	121,754	107,453	273,593	275,854
Non-current assets	6,804	8,136	231,451	223,500
Current assets	114,950	99,317	42,142	52,354
of which cash and cash equivalents	19,269	11,008	1,325	883
Equity and debt	121,754	107,453	273,593	275,903
Equity	24,081	22,978	65,787	66,584
Non-current provisions	57,794	56,301	5,232	5,053
Non-current debt and other liability items	-	-	99,462	121,474
of which non-current financial debt	-	-	26,366	43,168
Current provisions	30,414	25,981	301	58
Current debt and other liability items	9,465	2,193	102,811	82,734
of which current financial debt	-	-	72,128	58,928

Reconciliation of summarised key financial figures with carrying amounts of material joint ventures

	Gemeinschaftskraftwerk Kiel GmbH, Kiel		Stadtwerke Ingolstadt Beteiligungen GmbH, Ingolstadt	
	Financial year	Previous year	Financial year	Previous year
Euro 000s				
Net assets at 1 October	22,978	16,873	66,584	66,036
Profit/loss for period	2,637	7,639	17,854	19,328
Distribution	-1,534	-1,534	-18,646	-18,875
Other income and expenses	-	-	-5	95
Net assets at 30 September	24,081	22,978	65,787	66,584
Group share of net assets	12,041	11,489	31,841	32,227
Other items	322	322	-154	-154
Goodwill	-	-	53,759	53,759
Carrying amount of interest in joint ventures	12,363	11,811	85,446	85,832

The aggregate profit/loss, total comprehensive income and carrying amounts of non-material joint ventures are presented in the following table:

Summarised key financial figures for non-material joint ventures		
Euro 000s	Financial year	Previous year
Profit/loss for period	9,806	-4,657
Total comprehensive income for period	9,806	-4,657
Carrying amount of interest in non-material joint ventures	44,897	34,301

18. Associates

Given its size and its influence on the Group, Grosskraftwerk Mannheim AG has been identified as a material associate.

Grosskraftwerk Mannheim AG operates what is one of Europe's most efficient hard coal-fired power plants in Mannheim. Overall, MVV owns a 28% share of the capital in this company. Grosskraftwerk Mannheim AG is a power plant jointly owned by the following shareholders: RWE Generation SE, Essen, EnBW Energie Baden-Württemberg AG, Karlsruhe, and MVV RHE GmbH, Mannheim. Due to its positions on the supervisory board and its votes at the annual general meeting, MVV RHE GmbH exercises significant influence on this company.

The assets, liabilities, equity, sales, annual net income and other income and expenses of Grosskraftwerk Mannheim AG are as follows:

Statement of comprehensive income for material associates

Grosskraftwerk Mannheim AG, Mannheim		
Euro 000s	Financial year	Previous year
Sales excluding energy taxes	509,634	524,745
Scheduled depreciation and amortisation	-97,071	-97,105
Interest expenses	-64,709	-65,801
Income tax income	116	1
Annual net income	-62,574	-4,662
Other income and expenses	51,330	-41,019
Total comprehensive income for period	-11,244	-45,681
Dividends received from material associates	-	-

Further key financial figures for material associates

Grosskraftwerk Mannheim AG, Mannheim		
Euro 000s	Financial year	Previous year
Assets	1,985,979	2,081,990
Non-current assets	1,817,686	1,919,335
Current assets	168,293	162,655
of which cash and cash equivalents	1,879	216
Equity and debt	1,985,979	2,081,990
Equity	116,029	127,273
Non-current provisions	629,536	705,497
Non-current debt and other liability items	228,972	1,105,856
of which non-current financial debt	154,000	1,035,000
Current provisions	73,761	79,796
Current debt and other liability items	937,681	63,568
of which current financial debt	876,280	30,285

Reconciliation of summarised key financial figures with carrying amounts of material associates

Grosskraftwerk Mannheim AG, Mannheim		
Euro 000s	Financial year	Previous year
Net assets at 1 October	127,273	172,954
Profit/loss for period	-62,574	-4,662
Distribution	-	-
Other income and expenses	51,330	-41,019
Other Group adjustments	-	-
Net assets at 30 September	116,029	127,273
Group share of net assets	32,488	35,636
Other items	1,897	1,897
Carrying amount of investment in associates	34,385	37,533

The aggregate profits, total comprehensive income and carrying amounts of non-material associates are presented in the following table:

Summarised key financial figures for non-material associates		
Euro 000s	Financial year	Previous year
Profit/loss for period	1,992	4,333
Total comprehensive income for period	1,992	4,333
Carrying amount of investment in non-material associates	12,422	10,538

Other comprehensive income at material associates includes items resulting from the measurement of pension obligations and currency translation differences.

The income from shareholdings collected by MVV from associates amounted to Euro 4,852 thousand in the 2018 financial year (previous year: Euro 1,366 thousand).

MVV's share of the contingent liabilities of companies measured at equity amounted to Euro 1,568 thousand (previous year: Euro 1,042 thousand).

The joint venture Gemeinschaftskraftwerk Kiel GmbH and associate Grosskraftwerk Mannheim AG have financial years ending on 31 December, and thus deviating from MVV's financial year. Their results have been recognised at the Group accordingly. As both these companies involve power plants whose costs are fully reimbursed and whose annual net income and distributions remain constant, the deviating balance sheet date does not have implications for MVV. As in the previous year, no publicly listed market prices were available.

19. Subsidiaries with non-controlling interests of material significance to the Group

Given their size and their influence on the Group, the following companies have been identified as material subsidiaries: Stadtwerke Kiel AG, Kiel, Energieversorgung Offenbach AG, Offenbach am Main, and Juwi AG, Wörrstadt.

The statements of comprehensive income and further key financial information concerning the non-controlled interests in the companies are presented in the following tables.

The figures stated represent amounts prior to consolidation.

Statement of comprehensive income for non-controlled interests in Energieversorgung Offenbach AG

Euro 000s	1 Oct 2017 to 30 Sep 2018	1 Oct 2016 to 30 Sep 2017
Sales excluding energy taxes	312,318	344,982
Annual net income	17,573	13,637
Other income and expenses	451	2,364
Total comprehensive income for period	18,024	16,001
Total comprehensive income attributable to non-controlling interests	9,012	8,000
Dividends paid (to non-controlling shareholders)	5,468	5,288

Further key financial figures for non-controlled interests in Energieversorgung Offenbach AG

Euro 000s	30 Sep 2018	30 Sep 2017
Assets	366,392	345,315
Non-current assets	292,814	285,440
Current assets	73,578	59,875
of which cash and cash equivalents	12,597	14,418
Equity and debt	366,392	345,315
Equity	158,650	151,563
Non-current provisions	33,151	33,466
Non-current debt and other liability items	95,588	107,213
of which non-current financial debt	59,974	72,707
Current provisions	7,759	7,523
Current debt and other liability items	71,244	45,550
of which current financial debt	21,983	1,483

**Statement of comprehensive income for non-controlled interests
in Stadtwerke Kiel AG**

Euro 000s	1 Oct 2017 to 30 Sep 2018	1 Oct 2016 to 30 Sep 2017
Sales excluding energy taxes	650,892	715,580
Annual net income	29,235	16,035
Other income and expenses	53	2,002
Total comprehensive income for period	29,288	18,037
Total comprehensive income attributable to non-controlling interests	14,351	8,838
Dividends paid (to non-controlling shareholders)	9,629	4,802

**Statement of comprehensive income for non-controlled interests
in Juwi AG**

Euro 000s	1 Oct 2017 to 30 Sep 2018	18 Dec 2016 to 30 Sep 2017
Sales excluding energy taxes	248,826	33,990
Annual net income	14,863	-27,345
Other income and expenses	-66	92
Total comprehensive income for period	14,797	-27,253
Total comprehensive income attributable to non-controlling interests	5,457	-10,051
Dividends paid (to non-controlling shareholders)	-	-

**Further key financial figures for non-controlled interests
in Stadtwerke Kiel AG**

Euro 000s	30 Sep 2018	30 Sep 2017
Assets	780,949	647,105
Non-current assets	635,817	571,760
Current assets	145,132	75,345
of which cash and cash equivalents	48,201	17,426
Equity and debt	780,949	647,105
Equity	240,718	215,424
Non-current provisions	24,082	29,626
Non-current debt and other liability items	350,483	295,253
of which non-current financial debt	305,664	253,585
Current provisions	10,617	11,464
Current debt and other liability items	155,049	95,338
of which current financial debt	36,136	28,910

**Further key financial figures for non-controlled interests
in Juwi AG**

Euro 000s	30 Sep 2018	30 Sep 2017
Assets	314,893	249,118
Non-current assets	103,602	82,937
Current assets	211,291	166,181
of which cash and cash equivalents	27,234	26,375
Equity and debt	314,893	249,118
Equity	138,875	96,904
Non-current provisions	4,695	597
Non-current debt and other liability items	36,753	84,030
of which non-current financial debt	36,614	83,801
Current provisions	37,306	5,071
Current debt and other liability items	97,264	62,516
of which current financial debt	60,462	58,379

Total non-controlled interests in subsidiaries amounted to Euro 244,787 thousand in the period under report, of which Euro 117,867 thousand related to Stadtwerke Kiel AG, Kiel, Euro 60,710 thousand to Energieversorgung Offenbach AG, Offenbach am Main, Euro 38,927 thousand to Juwi AG, Wörrstadt, and Euro 27,286 thousand to non-material subsidiaries.

20. Other financial assets

Write-downs and the development in other financial assets are reported in the following table, as well as under income from companies recognised at equity and other income from shareholdings (Note 8), financing income (Note 10) and financing expenses (Note 11).

Other financial assets					
Euro 000s	Other majority shareholdings	Other shareholdings	Loans in connection with finance leases	General loans and securities	Total
Gross value at 1 October 2016	1,347	7,240	42,458	7,305	58,350
Change in scope of consolidation	–	–	–	6,595	6,595
Currency adjustments	16	–1	–	–	15
Additions	90	528	4,109	10,107	14,834
Disposals	–68	–495	–	–17,847	–18,410
Reclassifications	–	–	–3,052	–390	–3,442
Gross value at 30 September 2017	1,385	7,272	43,515	5,770	57,942
Amortisation at 1 October 2016	–492	–845	–33	–	–1,370
Currency adjustments	–18	–	–	–	–18
Impairment losses	–5	–8	–	–	–13
Amortisation at 30 September 2017	–515	–853	–33	–	–1,401
Net value at 30 September 2017	870	6,419	43,482	5,770	56,541
Gross value at 1 October 2017	1,385	7,272	43,515	5,770	57,942
Currency adjustments	6	2	–	–	8
Additions	242	67	229	1,073	1,611
Disposals	–212	–870	–	–79	–1,161
Reclassifications	–	7	–379	156	–216
Gross value at 30 September 2018	1,421	6,478	43,365	6,920	58,184
Amortisation at 1 October 2017	–515	–853	–33	–	–1,401
Currency adjustments	–4	–	–	–	–4
Disposals	30	853	–	–	883
Amortisation at 30 September 2018	–489	–	–33	–	–522
Net value at 30 September 2018	932	6,478	43,332	6,920	57,662

Other financial assets comprise other majority shareholdings, other shareholdings, receivables in connection with finance leases and loans. These items are measured and categorised as follows:

Other majority shareholdings and other shareholdings are measured at amortised cost, corrected where necessary to account for impairments due to cash flows falling short of expectations or default risks materialising. The other shareholdings recognised under other financial assets involve minority shareholdings, associates and joint ventures not included in MVV's consolidated financial statements due to materiality considerations.

The loans included in this line item are classified under loans and receivables, and the respective values are recognised at amortised cost, while leasing receivables are classified under leases. Finance leases are recognised as receivables in the amount of the present value of the minimum leasing payments (net investment value). Loans and leasing receivables have fixed interest rates, with an average interest rate of 4.4% (previous year: 4.2%). The average period for which interest rates remain fixed amounts to 5.7 years in the case of fixed-interest loans (previous year: 6.7 years) and to 6.6 years in the case of finance leases (previous year: 6 years). Reclassifications mainly involve reclassifications of the aforementioned items to current financial assets in line with their respective maturities.

Default risks identifiable for financial assets are accounted for with write-downs recognised under income from shareholdings or in the financial result.

Further information about financial instruments can be found in Note 35.

As in the previous year, there were no restrictions on disposal or other encumbrances.

Other financial assets also include the non-current share of finance leases. In several contracting projects, MVV acts as lessor in the context of finance lease agreements. The reconciliation of the present value of minimum leasing payments with gross investments in leases is as follows:

Reconciliation		
Euro 000s	30 Sep 2018	30 Sep 2017
Present value of minimum leasing payments with maturities < 1 year	7,260	6,842
Present value of minimum leasing payments with maturities > 1 year		
1 to 5 years	23,928	22,677
longer than 5 years	19,455	22,076
Present value of minimum leasing payments with maturities > 1 year	43,383	44,753
Total present value of minimum leasing payments	50,643	51,595
Financing income not yet realised	14,294	13,803
Gross investments in finance leases	64,937	65,398

21. Other receivables and assets

Other receivables and assets have been broken down into their respective contents and counterparties in the following tables. The hedging relationship has also been stated in the case of derivative financial instruments.

Financial and non-financial receivables and assets

Euro 000s	30 September 2018			30 September 2017		
	Non-current	Current	Total	Non-current	Current	Total
Financial receivables and assets						
Derivative financial instruments	292,690	664,541	957,231	174,259	257,310	431,569
Receivables from security deposits for energy trading transactions	–	194	194	–	126	126
Receivables in connection with finance leases	–	6,916	6,916	–	6,430	6,430
Suppliers with debit balances	–	6,484	6,484	–	4,312	4,312
Loans	–	3,244	3,244	–	6,496	6,496
Receivables from employees	–	352	352	–	207	207
Escrow accounts	–	–	–	–	48	48
Miscellaneous other assets	2,931	33,645	36,576	9,437	36,398	45,835
Non-financial receivables and assets						
Other tax receivables	–	33,306	33,306	–	22,936	22,936
Deferred expenses and accrued income	5,172	9,202	14,374	5,574	8,946	14,520
Emission rights	–	5,475	5,475	–	234	234
Miscellaneous other non-financial assets	8,227	2,619	10,846	–	–	–
	309,020	765,978	1,074,998	189,270	343,443	532,713

Derivative financial instruments (financial receivables and assets)

Euro 000s	30 September 2018			30 September 2017		
	Non-current	Current	Total	Non-current	Current	Total
Derivative financial instruments	292,690	664,541	957,231	174,259	257,310	431,569
of which without IAS 39 hedges	234,909	643,908	878,817	148,499	248,636	397,135
of which cash flow hedges	57,781	20,633	78,414	25,760	8,674	34,434

Derivative financial instruments rose in value compared with the previous year. This was due to higher market prices and the resultant increase in the fair values of energy trading transactions recognised under IAS 39. These items relate to interest, currency and commodity derivatives for electricity, gas, coal, CO₂ and other certificates.

Further information about financial instruments can be found in Note 35.

Other tax receivables mainly include input tax and energy tax credits.

Non-financial miscellaneous other assets include expenses of Euro 6,818 thousand for the past extension and renewal of infrastructure assets at the two British power plants. These assets are not within MVV's control but are essential for the supply of electricity and steam. The outlays thereby incurred are being deferred over the corresponding contractual term.

Furthermore, this line item also includes input taxes that are not yet deductible.

The current portion of leasing receivables and loans is reported under current financial other assets. Measurement of these items is based on the same principles as for the non-current portions. These principles are outlined under other financial assets.

Furthermore, miscellaneous financial other assets mainly relate to receivables due from a former shareholder of a subsidiary, securities in connection with tender processes and receivables due from third parties for building cost grants.

Other receivables and assets

Euro 000s	30 September 2018			30 September 2017		
	Non-current	Current	Total	Non-current	Current	Total
Other receivables and assets						
from third parties	308,671	761,316	1,069,987	188,880	341,837	530,717
from other majority shareholdings	–	976	976	–	449	449
from companies recognised at equity	349	3,640	3,989	390	1,132	1,522
from other shareholdings	–	46	46	–	25	25
	309,020	765,978	1,074,998	189,270	343,443	532,713

The write-downs and maturity structures for other receivables and assets have been presented in Note 35.

To reduce the counterparty risk involved in highly fluctuating fair values of energy trading derivatives, security deposits are exchanged with external trading partners. These involve margins. To reduce these counterparty risks, payments are made both within the European Energy Exchange (EEX) and in some cases within the framework of bilateral agreements. These are reflected in the receivables from security deposits for energy trading transactions line item. Receivables from security deposits showed a slight year-on-year increase to Euro 194 thousand (previous year: Euro 126 thousand).

There were no indications of impairment requirements for non-impaired other receivables and assets. All write-downs undertaken were calculated following consideration of each case and were not based on any general allowance.

22. Inventories

Inventories

Euro 000s	30 Sep 2018	30 Sep 2017
Raw materials and supplies	40,771	38,868
Finished and unfinished products and services (project rights)	44,977	75,676
Finished and unfinished products, services (other) and merchandise	46,089	51,316
Advance payments	19,421	114,813
Commodity trading assets	9,704	1,856
	160,962	282,529

The change in inventories is mainly due to the reduction in the project business. Write-downs of Euro 745 thousand were recognised for inventories (previous year: Euro 150 thousand). Write-ups of Euro 3,725 thousand were included due to higher net disposal prices (previous year: Euro 312 thousand).

The commodity trading assets item includes inventories relating to special gas storage transactions. These items have been measured by reference to wholesale prices as of the balance sheet date and involve Level 2 measurement. The definitions of individual measurement levels can be found in Note 35.

23. Trade receivables

Trade receivables		
Euro 000s	30 Sep 2018	30 Sep 2017
Trade receivables	381,729	351,104
of which due from other majority shareholdings	293	501
of which due from companies recognised at equity	16,497	14,545
of which due from other shareholdings	697	453

The above table exclusively shows those trade receivables with terms of under one year. Trade receivables with terms of more than one year are of immaterial significance at the Group and have been recognised under other receivables and assets.

The trade receivables recognised as of 30 September 2018 include receivables of Euro 18,272 thousand (previous year: Euro 4,826 thousand) for the settlement of construction contracts in line with their percentage of completion. Revenues of Euro 56,629 thousand were recognised for construction contracts in the year under report (previous year: Euro 110,562 thousand). Total costs incurred for construction contracts not yet complete as of the balance sheet date came to Euro 41,776 thousand (previous year: Euro 33,684 thousand). Construction contracts not yet complete resulted in a profit of Euro 2,812 thousand (previous year: profit of Euro 4,234 thousand). Advance payments received for construction contracts amounted to Euro 24,904 thousand at the balance sheet date (previous year: Euro 22,810 thousand).

Receivables with carrying amounts totalling Euro 499 thousand were sold within the framework of factoring agreements in the 2018 financial year (previous year: Euro 299 thousand). These receivables were fully retired.

The write-downs and maturity structures for trade receivables have been presented in Note 35. Receivables are written down on the basis of their actual age. Furthermore, large receivables are assessed individually to determine their specific write-down requirements. There were no indications of write-down requirements for non-impaired trade receivables.

24. Tax receivables

The tax receivables of Euro 27,586 thousand (previous year: Euro 18,908 thousand) mainly relate to corporate income tax and trade tax refund claims. These have been recognised at nominal value.

The increase in income tax receivables is mainly due to one-off capital gains tax receivables at Juwi AG as a result of a capital reduction at Juwi Energieprojekte GmbH.

25. Cash and cash equivalents

Cash and cash equivalents predominantly comprise credit balances at banks. The acquisition of fully consolidated companies and other business units resulted in the addition of cash and cash equivalents of Euro 824 thousand (previous year: Euro 992 thousand). The disposal of fully consolidated companies and other business units led to the retirement of cash and cash equivalents of Euro 1,269 thousand (previous year: Euro 5,946 thousand).

Within the framework of short-term liquidity management structures, credit balances are exclusively deposited at banks of impeccable creditworthiness. As in the previous year, such balances bear interest at interbank levels.

26. Assets held for sale

The assets classified in the previous year as held for sale were sold in the current financial year. These involved the fibre optic network at MVV Energie AG and multi-utility contracts at MVV ImmoSolutions GmbH.

27. Equity

The structure and development of equity have been presented in the statement of changes in equity.

Share capital: The share capital of MVV Energie AG amounts to Euro 168,721 thousand and is divided into 65,906,796 individual registered shares of Euro 2.56 each. All registered shares are paid up in full. The City of Mannheim directly and indirectly owned 50.1% of the shares as of 30 September 2018; EnBW Energie Baden-Württemberg AG held 28.8% and RheinEnergie AG 16.3% of the shares. The remaining 4.8% of the shares were in free float.

Authorised capital II: By resolution dated 14 March 2014, the Annual General Meeting of MVV Energie AG authorised the Executive Board until 13 March 2019 to increase the share capital on one or several occasions by a total of up to Euro 51,200 thousand. Shareholders must generally be granted subscription rights; however, the Executive Board may exclude such rights on one or several occasions, in full or in part, for a total of Euro 13,180 thousand. The Executive Board of MVV Energie AG has not yet made any use of this authorisation.

Authorisation to buy back treasury stock: By resolution dated 13 March 2015, the Annual General Meeting authorised the Executive Board until 12 March 2020 to acquire treasury stock up to 10% of existing share capital upon adoption of the resolution. The Executive Board of MVV Energie AG has not yet made any use of this authorisation.

Capital reserve: The capital reserve relates to MVV Energie AG. This reserve includes external flows of funds requiring inclusion under § 272 HGB. The variance of Euro 3,705 thousand to the capital reserve in the financial statements of MVV Energie AG is due to transaction costs for the capital increases executed in 2006 and 2007, which have been recognised as a reduction to the capital reserve.

Equity generated: In addition to the prorated revenue reserves and accumulated annual net income of MVV Energie AG and of other consolidated companies since the date of initial consolidation, equity generated also includes cumulative changes recognised directly in equity as a result of the fair value measurement of financial instruments, mainly relating to hedge relationships recognised under IAS 39, as well as currency translation differences arising upon the translation of foreign financial statements and actuarial gains and losses for defined benefit plans. Income of Euro 19,909 thousand was recognised directly in equity in the financial year under report in connection with the fair value measurement of financial instruments (previous year: income of Euro 27,627 thousand).

28. Provisions

Provisions									
	Balance at 1 Oct 2017	Change in scope of consolidation	Currency adjustments	Utilised	Reversed	Added	Reclassified	Interest component	Balance at 30 Sep 2018
Euro 000s									
Non-current provisions									
Pensions and similar obligations	77,818	–	–	–2,673	–	856	–	1,550	77,551
Tax provisions	4,987	–	–	–	4,987	–	–	–	–
Other provisions									
Personnel-related obligations	50,349	–	–3	–440	1,319	2,863	–11,376	999	41,073
Refurbishment, dismantling and warranty obligations	42,098	556	–10	–2,108	798	839	–4,756	91	35,912
Provisions for litigation and contract risks	3,538	–	–	–54	1,957	363	–411	1	1,480
Miscellaneous contingencies	24,886	–1	10	–118	3,013	3,885	–479	186	25,356
Total other provisions	120,871	555	–3	–2,720	7,087	7,950	–17,022	1,277	103,821
Total non-current provisions	203,676	555	–3	–5,393	12,074	8,806	–17,022	2,827	181,372
Current provisions									
Tax provisions	31,803	–	–8	–12,656	2,032	37,774	–	–	54,881
Other provisions									
Personnel-related obligations	43,125	–	1	–39,478	2,948	29,685	11,376	–	41,761
Services not yet invoiced	24,317	–	–134	–18,300	5,431	54,034	–	–	54,486
Restructuring obligations	3,845	–	–	–3,024	821	–	–	–	–
Refurbishment, dismantling and warranty obligations	11,234	–	14	–7,009	3,866	2,929	4,756	–	8,058
Provisions for litigation and contract risks	11,502	–	–3	–1,764	5,923	1,594	411	–	5,817
Miscellaneous contingencies	40,771	–57	–8	–18,745	17,521	23,943	479	–	28,862
Total other provisions	134,794	–57	–130	–88,320	36,510	112,185	17,022	–	138,984
Total current provisions	166,597	–57	–138	–100,976	38,542	149,959	17,022	–	193,865
Total provisions	370,273	498	–141	–106,369	50,616	158,765	–	2,827	375,237

Provisions broken down by maturity

Euro 000s	30 September 2018			30 September 2017		
	Non-current	Current	Total	Non-current	Current	Total
Provisions for pensions and similar obligations	77,551	–	77,551	77,818	–	77,818
Tax provisions	–	54,881	54,881	4,987	31,803	36,790
Personnel-related provisions	41,073	41,761	82,834	50,349	43,125	93,474
Services not yet invoiced	–	54,486	54,486	–	24,317	24,317
Restructuring obligations	–	–	–	–	3,845	3,845
Refurbishment, dismantling and warranty obligations	35,912	8,058	43,970	42,098	11,234	53,332
Provisions for litigation and contract risks	1,480	5,817	7,297	3,538	11,502	15,040
Miscellaneous contingencies	25,354	28,864	54,218	24,886	40,771	65,657
	181,370	193,867	375,237	203,676	166,597	370,273

Uncertain tax liabilities are recognised as tax provisions by reference to the best estimate of the anticipated tax payment or the expected amount to the extent that such payments are likely to arise. These items are only recognised as tax liabilities once the respective tax assessment notices are received. Tax provisions include provisions for taxes on income, such as corporate income tax, including the solidarity surcharge, and trade tax.

The provisions for personnel-related obligations category comprises provisions for early retirement expenses and for employee benefit expenses.

The provisions for early retirement expenses mainly relate to legal and constructive obligations towards employees as a result of part-time early retirement agreements. The actuarial assumptions correspond to those used in the measurement of pensions and similar obligations.

The provisions for employee benefit expenses mainly include collectively agreed obligations, such as allowances, compensation payments, bonus payments, employee working hour credits and anniversary bonuses. The provisions for employee benefit expenses include individual items for which utilisation depends on a specified degree of target achievement.

The services not yet invoiced category principally involves supplies and services from third parties which have already been provided but not yet invoiced. These have been measured on the basis of appropriate estimates.

The provisions for refurbishments, dismantling obligations and warranties category mainly includes dismantling obligations in connection with the construction of a gas storage facility and for wind turbines.

The provisions for warranties relate to solar and wind power projects already completed. These provisions have been recognised on the basis of contractual requirements. Recognition here has been based on assessments of individual cases and relevant factors.

The provisions for litigation and contract risks category includes provisions for the litigation risks relating to several individual risks for which the level of claim is uncertain. The value is based on the most likely outcome of the litigation expected on the basis of the information currently available. Furthermore, this category also includes provisions for onerous contracts.

Miscellaneous contingencies include provisions for risks relating to contractual obligations for completed projects and for the renewal of infrastructure assets, provisions for the risks associated with a price adjustment clause, provisions for risks resulting from the review of § 6a of the German Land Transfer Tax Act (GrEstG) by the European Court of Justice and for the risks resulting from a tax audit of interest expenses pursuant to § 233a of the German Tax Code (AO).

The provisions recognised are utilised in line with the terms to which they have been allocated.

29. Provisions for pensions and similar obligations

The company pension plans consist of defined contribution and defined benefit plans.

The pension scheme for MVV employees is largely arranged in line with collective wage and salary agreements specific to the respective companies. This results in indirect pension obligations to employees which are covered almost exclusively by municipal supplementary pension companies (ZVKs). This requires allocations to be made for retirement periods. The payments made in this context serve to finance current pension outlays. According to IFRS requirements, this type of pension plan represents a defined benefit plan, as the individual benefits provided by the ZVKs to former employees of member companies are not dependent on the level of contributions paid into the pension funds. Moreover, as the employees of several member companies are insured by the ZVKs, this type of pension plan is considered a multi-employer plan and thus requires the application of special regulations.

Given the redistribution of the benefits provided by ZVKs among member companies and the lack of adequate information about the age structures, personnel turnover rates and salaries of the employees thereby covered, no information is available on the proportion of future payment obligations (economic obligation) accruing to MVV. In view of this, IFRS does not permit recognition of provisions and the amounts therefore have to be treated by MVV as a defined contribution obligation, even though it is actually a defined benefit pension plan. Contributions to the pension plan are measured as a percentage of compensation subject to the additional pension premium and are borne by employees and employers. The percentage rate of contribution is determined by the ZVKs. MVV expects contributions in the 2019 financial year in the same amount as in the previous year. The contributions are used for the beneficiaries as a collective entity. Should the ZVKs have insufficient funds, then they could increase the mandatory contribution. Should MVV terminate its membership of the ZVKs, then they would be entitled to financial settlement. The amount of settlement is calculated as the present value of beneficiaries' existing entitlement and future claims on the part of their surviving dependants and existing pension entitlements for vested claims at the time at which membership is terminated.

The payments made to municipal supplementary pension companies (ZVKs) and the state pension system are viewed as payments to defined contribution plans. These contributions are recognised as expenses and reported under employee benefit expenses. An amount of Euro 31,165 thousand was paid into the state pension systems in the 2018 financial year (previous year: Euro 30,168 thousand). Moreover, an amount of Euro 15,169 thousand was paid into defined contribution pension schemes (previous year: Euro 15,273 thousand).

Furthermore, there are direct pension obligations resulting from former collectively agreed provisions (measured in terms of duration of company service and employee compensation), as well as individual commitments made to Executive Board members.

Provisions for pensions and similar obligations are recognised exclusively for defined benefit plans.

The principal estimates used when measuring provisions for pensions and similar obligations relate in particular to the discount factor, biometric probabilities and trend assumptions. Any deviations in the development in these estimates could result in differences between the amounts recognised and the obligations actually arising over time. Actuarial gains and losses are fully recognised in the period in which they arise. They are recognised outside the income statement in the statement of income and expenses recognised in group equity. This means that any amendments in estimates have direct implications for MVV.

Pursuant to IAS 19, the pension provisions are calculated using the projected unit credit method. As well as pensions and vested claims known of at the balance sheet date, this method also accounts for pay rises and pension increases expected in future. The calculation made application of the 2018 G Heubeck mortality tables.

The main parameters used to calculate the defined benefit plans as of 30 September 2018 are:

Parameters		
	30 Sep 2018	30 Sep 2017
Discount rate	2.1%	2.0%
Future pay rises	2.1–3.0%	2.0–3.0%
Future pension increases	1.6–2.0%	1.6–2.0%

The expenses for these pensions and similar obligations structured as defined benefit plans comprise the following items:

Pension provision expenses		
Euro 000s	FY 2018	FY 2017
Service cost	2,054	2,352
Interest expenses	1,550	1,201
	3,604	3,553

The interest expenses for vested pension claims are reported in the income statement under financing expenses (other interest and similar expenses). The other expenses are recognised as employee benefit expenses.

The present value of the defined benefit obligations developed as follows:

Development in pension claims

	30 September 2018			30 September 2017		
	Present value of defined benefit obligations	Fair value of plan assets	Total	Present value of defined benefit obligations	Fair value of plan assets	Total
Euro 000s						
Balance at 1 October	78,401	583	77,818	87,973	512	87,461
Current service cost	2,054	–	2,054	2,352	–	2,352
Interest expenses (interest income)	1,550	–	1,550	1,201	–	1,201
Remeasurement						
(i) Income from plan assets (excluding amounts included in interest income from plan assets)	–	12	–12	–	8	–8
(ii) Actuarial gains/losses	–1,133	–13	–1,120	–10,529	6	–10,535
Payments made to beneficiaries	–2,673	–	–2,673	–2,596	–	–2,596
Contributions to plan assets	–	66	–66	–	57	–57
Balance at 30 September	78,199	648	77,551	78,401	583	77,818

The defined benefit pension obligations at the Group are countered by a low volume of plan assets. The amount of provision recognised in the balance sheet is calculated as follows:

Calculation of provision		
Euro 000s	FY 2018	FY 2017
Present value of defined benefit obligation	78,199	78,401
Fair value of plan assets	648	583
Provision recognised at 30 September	77,551	77,818

The plan assets involve contractual trust arrangements (CTAs) managed as trust assets by the trustee Deutsche Pensflex Treuhand e.V. Furthermore, there are insurance contracts with private insurers and an investment fund organised by an international fund company and listed on the capital market.

The actuarial gains and losses recognised in group equity for defined benefit obligations developed as follows:

Accumulated actuarial gains and losses recognised in equity		
Euro 000s	FY 2018	FY 2017
Accumulated actuarial gains (+) and losses (-) recognised in equity at 1 October	-13,616	-19,408
Actuarial gains (+) and losses (-) recognised in equity	674	5,792
Accumulated actuarial gains (+) and losses (-) recognised in equity at 30 September	-12,942	-13,616

Experience adjustments to the present value of the pension claims (changes in assumptions) form part of the actuarial gains and losses attributable to the pension claims in the given year.

Pension payments of Euro 3,194 thousand are forecast for existing pension obligations for the 2019 financial year.

The weighted average duration of the defined benefit plans amounts to 15 years.

The expected maturity of undiscounted pension payments as of the balance sheet date was as follows:

Expected pension payments	
Euro 000s	
2019	3,194
2020	3,276
2021	3,286
2022	4,258
2023	3,330
>2023	79,618
	96,962

The sensitivity analysis is based on changes in one assumption while all other assumptions remain constant. That is unlikely to occur in reality. Furthermore, it is possible that changes in several assumptions will correlate with each other. The sensitivity of the defined benefit obligation to actuarial assumptions has been calculated using the same method used to calculate pension provisions in the balance sheet.

The methods and types of assumption used when preparing the sensitivity analysis have not changed compared with the previous year.

	Impact on obligation		
	Change in assumption by	Increase in assumption	Reduction in assumption
Discount rate	0.50%	Reduction by 6%	Increase by 6%
Future pay rises	0.50%	-	-
Future pension increases	0.50%	Increase by 4%	Reduction by 4%
Mortality	1 year	Increase by 4%	-

30. Financial debt

Financial debt

Euro 000s	30 September 2018			30 September 2017		
	Non-current	Current	Total	Non-current	Current	Total
Liabilities						
to banks	1,096,574	212,460	1,309,034	1,224,523	137,354	1,361,877
in connection with finance leases	42,320	2,917	45,237	42,755	3,147	45,902
to other majority shareholdings	–	722	722	–	766	766
to companies recognised at equity	–	1,581	1,581	–	1,581	1,581
to other shareholdings	–	650	650	–	460	460
Other financial debt	24,244	4,528	28,772	31,949	5,105	37,054
	1,163,138	222,858	1,385,996	1,299,227	148,413	1,447,640

Maturity in years

Euro 000s	30 September 2018			30 September 2017		
	< 1 year	1 – 5 years	> 5 years	< 1 year	1 – 5 years	> 5 years
Liabilities						
to banks	212,460	486,957	609,617	137,354	585,627	638,895
in connection with finance leases	2,917	11,594	30,726	3,147	9,556	33,199
to other majority shareholdings, companies recognised at equity and other shareholdings	2,953	–	–	2,807	–	–
Other financial debt	4,528	13,020	11,224	5,105	16,115	15,835
	222,858	511,571	651,567	148,413	611,298	687,929

The fixed-rate liabilities to banks of Euro 937 million (previous year: Euro 1,063 million) have an average interest rate of 2.6% (previous year: 3.1%), while the floating-rate liabilities to banks of Euro 372 million (previous year: Euro 299 million) have an average interest rate of 2.2% (previous year: 2%). The average remaining period for which the rate remains fixed in the case of fixed-rate liabilities comes to seven years (previous year: six years).

At 30 September 2018, MVV had undrawn committed credit lines of Euro 650 million (previous year: Euro 700 million).

Liabilities in connection with finance leases are recognised at the present value of future leasing payments. The fair values of other financial debt items are basically equivalent to the carrying amounts reported.

The liabilities in connection with finance lease contracts involve buildings, various items of technical equipment and plant and operating equipment. The contracts provide for extension options in some cases, but do not include purchase options or price adjustment clauses.

The transition from the present value of future minimum leasing payments to the liabilities reported is as follows:

Present value of minimum leasing payments		
Euro 000s	30 Sep 2018	30 Sep 2017
Present value of minimum leasing payments with maturities		
up to 1 year	5,441	6,026
1 to 5 years	19,066	2,856
longer than 5 years	40,499	61,513
Total	65,006	70,395
Financing costs not yet realised	2,818	1,062
Gross liabilities in connection with finance leases	67,824	71,457

31. Other liabilities

Other liabilities have been broken down into their respective contents and counterparties in the tables below. The hedging relationship has also been stated in the case of derivative

financial instruments. Following initial recognition, liabilities other than derivative financial instruments are measured at amortised cost using the effective interest method. This is basically consistent with their present values.

Other financial and non-financial liabilities

Euro 000s	30 September 2018			30 September 2017		
	Non-current	Current	Total	Non-current	Current	Total
Other financial liabilities						
Derivative financial instruments	235,604	613,421	849,025	143,028	243,666	386,694
Liabilities to employees	–	25,376	25,376	–	24,609	24,609
Customer credit balances	–	6,132	6,132	–	7,310	7,310
Interest liabilities	–	6,618	6,618	–	7,111	7,111
Liabilities for security deposits for energy trading transactions	–	77,258	77,258	–	3,304	3,304
Concession duties	–	2,160	2,160	–	2,000	2,000
Social security liabilities	–	736	736	–	703	703
Miscellaneous other financial liabilities	6,147	19,043	25,190	10,864	25,514	36,378
Other non-financial liabilities						
Advance payments received	7,178	23,959	31,137	–	173,405	173,405
Deferred income and accrued expenses	133,950	3,815	137,765	156,376	4,799	161,175
Liabilities for other taxes	–	44,846	44,846	–	55,948	55,948
Miscellaneous other non-financial liabilities	21,004	11,783	32,787	–	–	–
	403,883	835,147	1,239,030	310,268	548,369	858,637

Other liabilities

Euro 000s	30 September 2018			30 September 2017		
	Non-current	Current	Total	Non-current	Current	Total
Liabilities	403,883	811,188	1,215,071	310,268	374,964	685,232
of which to companies recognised at equity	6,129	11,749	17,878	3,925	1,561	5,486
Advance payments received for orders	–	23,959	23,959	–	173,405	173,405
	403,883	835,147	1,239,030	310,268	548,369	858,637

Derivative financial instruments involve interest rate derivatives, currency derivatives and commodity derivatives for electricity, gas, coal, CO₂ and other rights. Further details about financial instruments can be found in Note 35.

Derivative financial instruments (other financial liabilities)

Euro 000s	30 September 2018			30 September 2017		
	Non-current	Current	Total	Non-current	Current	Total
Derivative financial instruments	235,604	613,421	849,025	143,028	243,666	386,694
of which without IAS 39 hedges	194,700	602,313	797,013	112,623	233,861	346,484
of which cash flow hedges	40,904	11,108	52,012	30,405	9,805	40,210

To reduce the counterparty risk involved in highly fluctuating fair values of energy trading derivatives, security deposits (margins) are exchanged with the EEX. Moreover, the Group has entered into bilateral risk reduction agreements in some cases. Liabilities for security deposits for energy trading transactions rose year-on-year to Euro 77 million (previous year: Euro 3 million).

Financial miscellaneous other liabilities mainly relate to liabilities for concession duties and deferred liabilities.

Non-financial liabilities for other taxes chiefly include energy and value added tax liabilities.

Non-financial miscellaneous other liabilities primarily involve building cost grants for house connection costs.

32. Trade payables

Trade payables		
Euro 000s	30 Sep 2018	30 Sep 2017
Trade payables	340,256	351,179
to other majority shareholdings	101	30
to companies recognised at equity	16,483	14,338
to other shareholdings	24	–

Trade payables are measured at amortised cost. The above table exclusively shows trade payables with terms of under one year. Due to their immaterial significance for the Group, trade payables maturing in the medium to long term have been recognised under other liabilities.

33. Tax liabilities and deferred taxes

The tax liabilities of Euro 439 thousand (previous year: Euro 1,074 thousand) consist of income tax liabilities.

The deferred taxes reported for the 2018 financial year relate to the following items:

Deferred taxes

Euro 000s	30 September 2018		30 September 2017	
	Deferred tax assets	Deferred tax liabilities	Deferred tax assets	Deferred tax liabilities
Intangible assets	2,287	–14,235	1,372	–22,732
Property, plant and equipment, including investment properties	11,275	–169,013	10,640	–164,218
Inventories ¹	10,822	–5,237	2,531	–4,737
Special item	–	–1,604	–	–1,406
Other assets and positive fair values of derivatives	29,807	–487,427	19,168	–206,715
Provisions for pensions	12,352	–	11,433	–
Non-current other provisions ¹	21,603	–	20,344	–
Current other provisions ¹	4,988	–18,751	6,402	–18,268
Liabilities and negative fair values of derivatives ¹	466,179	–33,111	209,430	–21,286
Losses carried forward ¹	26,676	–	28,494	–
Deferred taxes (gross)	585,989	–729,378	309,814	–439,362
Netting	–555,569	555,569	–276,379	276,379
Deferred taxes (net)	30,420	–173,809	33,435	–162,983

¹ Previous year's figures adjusted to account for impairments recognised separately in 2017 financial year

Of the (net) deferred taxes presented above, Euro 11,568 thousand (previous year: Euro 17,672 thousand) relate to non-current deferred tax assets and Euro 85,387 thousand (previous year: Euro 111,101 thousand) to non-current deferred tax liabilities.

No deferred tax assets have been recognised for corporate income tax loss carryovers of Euro 100,046 thousand (previous year: Euro 84,779 thousand), trade tax loss carryovers of Euro 108,351 thousand (previous year: Euro 87,457 thousand) or for international loss carryovers of Euro 82,128 thousand (previous year: Euro 84,395 thousand).

For temporary differences of Euro 11,008 thousand at share-holdings (previous year: Euro 11,340 thousand), no deferred tax liabilities have been stated for an amount of Euro 3,336 thousand (previous year: Euro 3,436 thousand), as such differences are unlikely to be reversed by dividend distributions or disposal of the companies in the foreseeable future.

Deferred tax assets of Euro 11,390 thousand (previous year: Euro 8,443 thousand) have been recognised as of the balance sheet date for companies that generated a loss in the financial year under report or the previous year. The realisation of these assets is exclusively dependent on the generation of future profits. Based on the budget figures available, we expect these assets to be realised.

Deferred taxes of Euro 2,010 thousand were debited directly to other comprehensive income in group equity in the 2018 financial year (previous year: Euro 7,791 thousand).

The income tax items within other comprehensive income in group equity can be broken down into their components as follows:

Income tax items

Euro 000s	30 September 2018		30 September 2017	
	Income tax	Gross	Income tax	Gross
Actuarial gains and losses	-226	1,120	-2,979	10,534
Share of total comprehensive income attributable to companies recognised at equity	-	-14,370	-	-11,439
Items that will not be reclassified to profit or loss	-226	15,490	-2,979	-905
Cash flow hedges	-9,574	33,770	-12,335	44,601
Currency translation difference	-	1,376	-	2,814
Share of total comprehensive income attributable to companies recognised at equity	-	-166	-	-
Items that will be reclassified to profit or loss	-9,574	34,980	-12,335	47,415

34. Contingent claims, liabilities and financial obligations

The volume of obligations for contingent liabilities, claims and financial obligations listed below corresponds to the scope of liability pertaining at the balance sheet date. Contingent claims are treated by analogy with contingent liabilities.

Contingent liabilities involve potential obligations to third parties or existing obligations for which an outflow of resources is unlikely or whose amount cannot be reliably determined. Contingent liabilities are not recognised in the balance sheet.

The company has contingent liabilities of Euro 7 million for warranty agreements (previous year: Euro 7 million). It also has obligations of this nature in the form of guarantees amounting to Euro 1.1 million (previous year: Euro 1 million). As in the previous year, no collateral has been provided for third-party liabilities.

MVV's has purchase commitments of Euro 177.4 million in connection with investment orders placed and financial obligations (previous year: Euro 46.0 million). This substantial increase mainly relates to investments in a new power plant in Scotland.

The Group has a contingent claim from the State of Baden-Württemberg and the City of Mannheim in connection with a land decontamination measure. This claim has a present value of Euro 3.8 million.

The financial obligations relating to operating leases primarily involve water grids, vehicle pools, IT equipment, land leasehold payments and rental payments for buildings and storage facilities. The minimum leasing payments have the following maturity structure:

Financial obligations for operating leases		
Euro 000s	Nominal value	
	30 Sep 2018	30 Sep 2017
Operating leases		
up to 1 year	9,445	9,030
1 to 5 years	21,496	20,098
longer than 5 years	26,246	28,746
	57,187	57,874

In leases where economic ownership remains with the lessor (operating leases), the assets thereby leased are recognised at the lessor. The leasing expenses incurred are expensed over the term of the lease.

The contracts provide for extension options in some cases but do not include any purchase options. In some cases, rental contracts include price adjustment clauses linked to the consumer price index.

35. Financial instruments

For interest hedges, existing underlying transactions have been included in cash flow hedges with terms of up to ten years as of 30 September 2018 (previous year: nine years). For commodity hedges, the terms of planned hedged items amount to up to three years (previous year: up to five years). Both interest rate hedging instruments and commodity derivatives require net settlements to be paid at contractually fixed dates largely congruent with the hedged items. The hedging instruments mostly involve swaps which generate cash flows throughout their contractual terms.

Income of Euro 24,195 thousand was recognised directly in equity in the 2018 financial year (previous year: income of Euro 32,266 thousand).

The amount reclassified from equity and recognised through profit or loss in the income statement in connection with cash flow hedge accounting was as follows:

Amount reclassified		
Euro 000s	FY 2018	FY 2017
Included in EBIT	20,811	3,231
Included in financial and tax results	-8,540	-9,634
Total amounts withdrawn	12,271	-6,403

The amounts recognised directly in equity and attributable reclassification amounts are presented in the following table:

Amounts recognised in equity		
Euro 000s	30 Sep 2018	30 Sep 2017
Cash flow hedges	24,195	32,266
of which changes recognised in equity	36,466	25,863
of which changes recognised through profit or loss	-12,271	6,403

Income of Euro 18 thousand was recognised for the ineffective portion of cash flow hedges in the 2018 financial year (previous year: expenses of Euro 567 thousand). The results of ineffective portions of cash flow hedges are recognised as other operating income or expenses to the extent that they exceed the cumulative fair value change in the respective hedged items. For interest rate hedges, the results are recognised under other interest income and expenses.

Fair value hedges were designated for closed foreign currency positions in the 2018 financial year. The following amounts were recognised in the income statement in connection with these hedging relationships:

Gains and losses recognised in income statement for fair value hedges		
Euro	FY 2018	FY 2017
Gains/losses on hedged item	-1,580	-5,223
Gains/losses on hedging instrument	1,270	5,218

The carrying amounts and fair values of financial instruments and their allocation to IAS 39 measurement categories have been presented in the following tables. The classes presented are based on the balance sheet.

IAS 39 measurement categories for carrying amounts at 30 September 2018

Euro 000s	IAS 39 measurement category	Carrying amounts	of which not within scope of IFRS 7	Fair values
Assets				
Financial assets				
of which unconsolidated shareholdings	available for sale	7,410	–	7,410
of which loans excluding finance leases	loans and receivables	10,164	–	10,164
of which loans in connection with finance leases	not applicable	50,248	–	50,248
of which securities	held for trading	–	–	–
Trade receivables < 1 year	loans and receivables	381,729	–	381,729
Other assets				
of which derivatives outside hedge accounting	held for trading	878,817	–	878,817
of which derivatives within hedge accounting	not applicable	78,414	–	78,414
of which other operating assets	loans and receivables	96,761	53,507	96,761
Cash and cash equivalents	loans and receivables	310,589	–	310,589
		1,814,132	53,507	1,814,132
Liabilities				
Financial debt				
of which financial debt in connection with finance leases	not applicable	45,237	–	45,237
of which other financial debt	amortised cost	1,340,759	–	1,399,468
Trade payables < 1 year	amortised cost	340,256	–	340,256
Other liabilities				
of which derivatives outside hedge accounting	held for trading	797,014	–	797,014
of which derivatives within hedge accounting	not applicable	52,012	–	52,012
of which other operating liabilities	amortised cost	357,218	214,484	357,218
		2,932,496	214,484	2,991,205

IAS 39 measurement categories for carrying amounts at 30 September 2017

Euro 000s	IAS 39 measurement category	Carrying amounts	of which not within scope of IFRS 7	Fair values
Assets				
Financial assets				
of which unconsolidated shareholdings	available for sale	7,289	–	7,289
of which loans excluding finance leases	loans and receivables	12,266	–	12,266
of which loans in connection with finance leases	not applicable	49,912	–	49,912
of which securities	held for trading	7	–	7
Trade receivables < 1 year	loans and receivables	351,104	–	351,104
Other assets				
of which derivatives outside hedge accounting	held for trading	397,135	–	397,135
of which derivatives within hedge accounting	not applicable	34,434	–	34,434
of which other operating assets	loans and receivables	88,218	37,897	88,218
Cash and cash equivalents	loans and receivables	370,301	–	370,301
		1,310,666	37,897	1,310,666
Liabilities				
Financial debt				
of which financial debt in connection with finance leases	not applicable	45,902	–	45,902
of which other financial debt	amortised cost	1,401,738	–	1,474,771
Trade payables < 1 year	amortised cost	351,179	–	351,179
Other liabilities				
of which derivatives outside hedge accounting	held for trading	346,484	–	346,484
of which derivatives within hedge accounting	not applicable	40,210	–	40,210
of which other operating liabilities	amortised cost	471,943	391,231	471,943
		2,657,456	391,231	2,730,489

Given the predominantly short-term remaining terms of trade receivables and payables, other operating receivables and liabilities and cash and cash equivalents, their carrying amounts as of the balance sheet date are basically equivalent to their fair values.

The fair value of other financial debt items is determined as their present value, taking due account of future payments. These items are discounted using the rate valid as of the balance sheet date (Level 2).

With regard to the fair value measurement of financial instruments, reference is made to the information provided on financial instruments in the accounting policies section of these notes.

The following table presents the key parameters for financial instruments measured at fair value. Pursuant to IFRS 7, the individual levels are defined as follows:

Level 1: Measurement based on prices listed on active markets and taken over without amendment

Level 2: Measurement based on directly or indirectly observable factors other than those in Level 1

Level 3: Measurement based on factors not observable on the market.

Measurement at cost: This category includes those financial instruments which IAS 39 requires to be measured at cost. On their transaction dates, these instruments were not in liquid markets, as a result of which their current recognition at cost approximates to their fair value. These items mainly involve other shareholdings and other majority shareholdings.

Fair value hierarchy at 30 September 2018

Euro 000s	Level 1	Level 2	Level 3	At cost
Financial assets				
Unconsolidated shareholdings	–	–	–	7,410
Securities	–	–	–	–
Derivatives outside hedge accounting	235,679	642,309	829	–
Derivatives within hedge accounting	74,109	4,305	–	–
Financial liabilities				
Derivatives outside hedge accounting	202,363	594,401	250	–
Derivatives within hedge accounting	31,804	17,704	1,712	792

Fair value hierarchy at 30 September 2017

Euro 000s	Level 1	Level 2	Level 3	At cost
Financial assets				
Unconsolidated shareholdings	–	–	–	7,289
Securities	7	–	–	–
Derivatives outside hedge accounting	97,157	299,950	28	–
Derivatives within hedge accounting	34,141	293	–	–
Financial liabilities				
Derivatives outside hedge accounting	105,315	240,653	516	–
Derivatives within hedge accounting	13,677	25,519	1,014	–

The derivatives of Euro 1,712 thousand in Level 3 hedge accounting include interest swaps with floor (previous year: Euro 1,014 thousand). The fair value of these derivatives amounts to Euro 1,712 thousand. Any upward or downward change in the volatility factored into the calculation by an absolute figure of 1 would increase the fair value by Euro 143 thousand or reduce it by Euro 138 thousand.

The following reconciliation presents the development in financial instruments recognised in Level 3.

Development in financial instruments recognised in Level 3

Euro 000s	Balance at 1 Oct 2017	Gains/losses in income statement	Gains/losses in other comprehensive income	Balance at 30 Sep 2018
Financial assets				
Derivatives outside hedge accounting	28	801	–	829
Financial liabilities				
Derivatives outside hedge accounting	516	974	–	1,490
Derivatives within hedge accounting	1,014	698	–	1,712

Development in financial instruments recognised in Level 3

Euro 000s	Balance at 1 Oct 2016	Gains/losses in income statement	Gains/losses in other comprehensive income	Balance at 30 Sep 2017
Financial assets				
Derivatives outside hedge accounting	196	–168	–	28
Financial liabilities				
Derivatives outside hedge accounting	433	83	–	516
Derivatives within hedge accounting	–	1,454	–440	1,014

Gains and losses in income statement for Level 3 financial instruments FY 2018

Euro 000s	Total	of which still held at 30 Sep 2018
Other operating income	801	–
Other operating expenses	–974	–
Financing expenses	–698	–
	–871	–

Gains and losses in income statement for Level 3 financial instruments FY 2017

Euro 000s	Total	of which still held at 30 Sep 2017
Other operating income	–	–
Other operating expenses	–251	–
Financing expenses	–1,454	–
	–1,705	–

Impairments of financial assets

Euro 000s	Unconsolidated shareholdings	Loans	Trade receivables < 1 year	Other operating assets
Balance at 1 October 2016	1,337	1,766	35,642	1,998
Utilisations/disposals	–	–	11,638	201
Net additions	31	341	14,306	1,892
Reclassifications	–	–	–	–363
Balance at 30 September 2017	1,368	2,107	38,310	3,326
Balance at 1 October 2017	1,368	2,107	38,310	3,326
Utilisations/disposals	883	121	14,312	279
Net additions	4	285	11,260	301
Balance at 30 September 2018	489	2,271	35,258	3,348

Impairment losses recognised in the 2018 financial year for individual IFRS 7 categories amounted to Euro 0 thousand for unconsolidated shareholdings (previous year: Euro 13 thousand), Euro 13,796 thousand for trade receivables (previous year: Euro 18,619 thousand) and Euro 715 thousand for other operating assets (previous year: Euro 2,598 thousand).

Netting of financial assets and financial liabilities

The financial assets and financial liabilities listed below are subject to netting, enforceable master netting agreements or similar arrangements.

Netting of financial assets at 30 September 2018

	Gross amount of financial assets reported	Gross amount of financial liabilities reported that are netted in balance sheet	Net amount of financial assets reported in balance sheet	Related amounts not netted in balance sheet		Net amount
				Financial instruments	Cash collateral received	
Euro 000s						
Loans excluding finance leases	10,164	–	10,164	–	–	10,164
Trade receivables < 1 year	519,751	–138,022	381,729	–	–	381,729
Derivative financial instruments	957,231	–	957,231	–738,786	–104,659	113,786
Other operating assets	96,767	–6	96,761	–	–	96,761
Cash and cash equivalents	310,589	–	310,589	–13,982	–	296,607
	1,894,502	–138,028	1,756,474	–752,768	–104,659	899,047

Netting of financial liabilities at 30 September 2018

	Gross amount of financial liabilities reported	Gross amount of financial assets reported that are netted in balance sheet	Net amount of financial liabilities reported in balance sheet	Related amounts not netted in balance sheet		Net amount
				Financial instruments	Cash collateral received	
Euro 000s						
Financial debt	1,340,759	–	1,340,759	–5,210	–700	1,346,669
Trade payables < 1 year	460,230	–119,974	340,256	–	–	340,256
Derivative financial instruments	849,026	–	849,026	–738,786	–27,596	1,615,408
Other operating liabilities	375,272	–18,054	357,218	–	–	357,218
	3,025,287	–138,028	2,887,259	–743,996	–28,296	3,659,551

Netting of financial assets at 30 September 2017

	Gross amount of financial assets reported	Gross amount of financial liabilities reported that are netted in balance sheet	Net amount of financial assets reported in balance sheet	Related amounts not netted in balance sheet		Net amount
				Financial instruments	Cash collateral received	
Euro 000s						
Loans excluding finance leases	12,266	–	12,266	–	–	12,266
Securities	7	–	7	–	–	7
Trade receivables < 1 year	528,014	–190,140	337,874	–	–	337,874
Derivative financial instruments	431,569	–	431,569	–145,320	–16,534	269,715
Other operating assets	101,448	–	101,448	–	–	101,448
Cash and cash equivalents	370,301	–	370,301	–12,620	–	357,681
	1,443,605	–190,140	1,253,465	–157,940	–16,534	1,078,991

Netting of financial liabilities at 30 September 2017

	Gross amount of financial liabilities reported	Gross amount of financial assets reported that are netted in balance sheet	Net amount of financial liabilities reported in balance sheet	Related amounts not netted in balance sheet		Net amount
				Financial instruments	Cash collateral received	
Euro 000s						
Financial debt	1,401,738	–	1,401,738	–5,684	–594	1,408,016
Trade payables < 1 year	506,599	–155,420	351,179	–	–	351,179
Derivative financial instruments	386,694	–	386,694	–145,320	–13,356	545,370
Other operating liabilities	506,663	–34,720	471,943	–	–	471,943
	2,801,694	–190,140	2,611,554	–151,004	–13,950	2,776,508

Net results by measurement category

Financial instruments have been recognised in the income statement with the following net results pursuant to IFRS 7:

Net results (IFRS 7)		
Euro 000s	FY 2018	FY 2017
Financial assets and financial liabilities held for trading	33,468	41,954
Financial assets available for sale	868	1,433
Loans and receivables	-5,385	-14,887

The presentation of net results takes due account of stand-alone derivatives included in the “financial assets and financial liabilities held for trading” measurement category. The net result in the “financial assets and financial liabilities held for trading” category is largely attributable to fair value measurement pursuant to IAS 39.

The net result in the “financial assets available for sale” category chiefly involves income and distributions from shareholdings, as well as disposal gains.

The net results in the “loans and receivables” category predominantly relate to write-downs and additions.

The interest income and interest expenses in connection with financial assets and financial liabilities measured at cost chiefly result from the total interest income and expenses presented below.

Total interest income and expenses		
Euro 000s	FY 2018	FY 2017
Total interest income	8,392	8,980
Total interest expenses	41,735	47,222

The financial result also includes interest components for provisions not covered by IFRS 7 disclosure requirements, as a result of which the figures published here differ from the financial result. The interest income reported here mainly results from credit balances at banks, overnight and fixed-term deposits, and loans. The interest expenses largely relate to loan obligations. As in the previous year, total interest income does not include interest on financial assets already impaired.

Financing and price risks

General information about financing and price risks: Due to its business activities, MVV is exposed to various financial risks. These comprise receivables default and liquidity risks, interest and exchange rate risks and market price risks on both procurement and sales markets. MVV’s risk management pursues the objective of identifying developments on financial markets at an early stage and of countering any resultant negative implications. This is stipulated in internal guidelines, discretionary frameworks, responsibilities, separations of functions and checks.

Derivative financial instruments are used to cover against market price risk. For interest rate risks, these mainly involve interest swaps. Currency risks are hedged by concluding forward currency transactions. Commodity derivatives are deployed in the field of energy trading. The use of commodity derivatives for proprietary energy trading is only permitted within narrow limits and is monitored and managed with a separate limit system.

Receivables default risks: The risk of economic loss arising as a result of a business partner failing to meet its contractual payment obligations is referred to as receivables default risk. This encompasses both the risk of direct default and the risk of reduced creditworthiness. In its trading activities, MVV maintains its business relationships predominantly with banks and other trading partners of good credit standing.

Receivables default risks towards contractual partners are inspected upon conclusion of the contract and monitored continuously. This risk is limited by setting trading limits for transactions with business partners and, where appropriate, by demanding cash collateral. Where possible, default risk is already reduced in advance by means of suitable framework agreements with trading partners. Risk clusters only apply to an immaterial extent at various subsidiaries that have sales contracts with just one customer.

MVV is exposed to receivables default risks in its sales business, as customers may potentially fail to meet their payment obligations. This risk is limited by regularly inspecting the creditworthiness of major items in our customer portfolio.

In the carrying amounts recognised in the balance sheet for financial assets (receivables, derivatives and other assets, as well as cash and cash equivalents and assets held for sale), default risks have already been recognised in the form of impairments. The volume of receivables defaults was immaterial both in the year under report and the previous year.

As derivatives may be subject to substantial fluctuations in their fair values, the counterparty risk of derivative financial assets has been presented in the following overview. Only recognised accounts have been included. Where netting agreements are in place with a trading partner, the actual risk, i.e. the net risk, has been presented. No account has been taken of counterparties with negative balances, i.e. where there is no counterparty risk. In all other cases, the figures have not been netted against negative fair values.

Counterparty risk at 30 September 2018

Euro 000s	Total		of which < 1 year		of which 1 to 5 years	
	Nominal value	Counterparty risk	Nominal value	Counterparty risk	Nominal value	Counterparty risk
Counterparty rating as per Standard & Poor's and/or Moody's						
AAA and Aaa to AA– and Aa3	308,847	112,939	220,000	81,704	88,847	31,235
A+ and A1 to A– and A3	212,626	119,824	132,261	69,891	80,365	49,933
BBB+ and Baa1 to BBB– and Baa3	115,144	31,477	84,293	23,320	30,851	8,157
BB+ and Ba1 to BB– and Ba3	9,790	3,943	5,113	2,665	4,677	1,278
Other	1,744,237	759,176	1,204,832	552,393	539,405	206,783
	2,390,644	1,027,359	1,646,499	729,973	744,145	297,386

Counterparty risk at 30 September 2017

Euro 000s	Total		of which < 1 year		of which 1 to 5 years	
	Nominal value	Counterparty risk	Nominal value	Counterparty risk	Nominal value	Counterparty risk
Counterparty rating as per Standard & Poor's and/or Moody's						
AAA and Aaa to AA– and Aa3	318,607	69,106	86,958	33,162	231,649	35,944
A+ and A1 to A– and A3	44,951	9,338	14,207	4,038	30,744	5,300
BBB+ and Baa1 to BBB– and Baa3	274,579	60,773	108,450	33,786	166,129	26,987
BB+ and Ba1 to BB– and Ba3	–	–	–	–	–	–
Other	923,782	186,162	277,162	79,680	646,620	106,482
	1,561,919	325,379	486,777	150,666	1,075,142	174,713

As in the previous year, there are no receivables default risks with terms longer than five years. Major shares of the nominal derivative volumes in question involve trading partners for which external ratings are available. Internal ratings are available for the nominal derivative volumes reported under "Other".

For trading transactions concluded with stock exchanges, security payments are deposited in order to reduce any additional receivables default risks.

The receivables default risks involved in financial assets and their maturities broken down by category are structured as follows:

Receivables default risks and maturities at 30 September 2018

Euro 000s	Loans	Trade receivables < 1 year	Other operating assets
Neither overdue nor impaired	60,412	297,158	41,493
Overdue but not impaired			
≤ 6 months	–	34,001	197
> 6 months ≤ 1 year	–	4,500	–
> 1 year	–	8,809	50
Net value of assets written down	–	37,261	1,514
	60,412	381,729	43,254

Receivables default risks and maturities at 30 September 2017

Euro 000s	Loans	Trade receivables < 1 year	Other operating assets
Neither overdue nor impaired	62,178	264,245	45,949
Overdue but not impaired			
≤ 6 months	–	39,290	928
> 6 months ≤ 1 year	–	7,499	74
> 1 year	–	4,314	1,618
Net value of assets written down	–	35,756	1,752
	62,178	351,104	50,321

Liquidity risks: Liquidity risk involves the risk of a company being unable to meet its financial obligations adequately. MVV is subject to liquidity risks as a result of its obligation to meet its liabilities in full and on time, as well as its obligation to service security payments (margins) from energy trading partners. Cash and liquidity management at MVV is responsible for maintaining the company's solvency at all times. This involves calculating all cash requirements and all cash surpluses. The major subgroups have a cash pooling process which enables liquidity requirements and surpluses to be balanced at short notice, thus reducing bank transactions to a necessary minimum.

A financial budget is compiled for liquidity management purposes. Any financing requirements arising are covered by means of suitable liquidity management instruments. Alongside the liquidity available on a daily basis, MVV has further liquidity reserves in the form of committed credit lines. The volume of contractually committed credit lines is structured in such a way as to ensure that the Group has adequate liquidity reserves available at all times, even in a difficult market climate. In view of its available liquidity and existing credit lines, MVV does not see itself as being exposed to any material liquidity risks.

Covenants customary to the industry have been agreed with some of the financing banks. These entitle the banks to terminate the facilities in the event of any material deterioration in the company's asset, financial and earnings position. All covenants had been complied with as of the balance sheet date on 30 September 2018.

MVV's group companies are generally financed by banks and by MVV Energie AG.

Items of security have been provided to banks to limit their risks in connection with loans granted to MVV. These are subdivided into non-current assets, receivables and cash and cash equivalents with a total amount of Euro 11,576 thousand (previous year: Euro 9,776 thousand) and interests in subsidiaries amounting to Euro 3,337 thousand (previous year: Euro 14,045 thousand).

Contractually agreed outflows of funds for financial liabilities are presented in undiscounted form in the table below. The figures include the corresponding interest payments.

Undiscounted cash flows

Euro 000s	30 September 2018			30 September 2017		
	Maturities < 1 year	Maturities 1 – 5 years	Maturities > 5 years	Maturities < 1 year	Maturities 1 – 5 years	Maturities > 5 years
Non-derivative financial liabilities						
Liabilities to banks	244,899	564,047	678,077	169,907	677,853	697,408
Liabilities in connection with finance leases	5,571	21,295	40,958	5,970	19,844	45,643
Trade payables	340,256	816	2,796	351,179	421	26
Other financial debt	7,455	13,616	11,224	8,456	17,313	15,835
Other financial liabilities	148,460	7,569	15,629	69,792	4,369	6,063
Derivative financial liabilities	573,261	180,666	27	237,412	121,211	39
	1,319,902	788,009	748,711	842,716	841,011	765,014

Interest rate risk: Interest rate risks relate to credit balances at banks on the asset side and to floating-rate liabilities to banks on the liabilities side of the balance sheet.

The sensitivity analysis below presents the impact of changes in interest rates on annual earnings and equity. This analysis has been based on the assumption that there are no changes in any other parameters, such as exchange rates. The analysis only includes financial instruments where interest rate risk could impact on equity or annual earnings. For the calculation, we have assumed that interest rates are 10% higher or lower throughout the financial year.

Any upward or downward variance in the level of interest rates in the euro area by 10% as of the balance sheet date on 30 September 2018 would have led annual net income to deteriorate/improve by a total of Euro 0 thousand/Euro 0 thousand (previous year: Euro 0 thousand/Euro 0 thousand). This variance would have reduced/increased equity by a total of Euro 1,264 thousand/Euro 1,972 thousand (previous year: Euro 944 thousand/Euro 1,281 thousand).

Foreign currency risks: Foreign currency risks mainly relate to our UK projects. During the operating stage of the projects, cash flows are generated exclusively in British pounds. The resultant foreign currency risks are hedged by natural hedges in the form of currency-congruent financing and by using derivative financial instruments, which means that no material risk arises for MVV in this respect. In view of this, no disclosures of foreign currency risks have been provided.

Commodity price risks: Within the framework of our energy trading activities, energy trading contracts are concluded for the purposes of price risk management, adjustments to actual loads and margin optimisation. All transactions are governed by narrow, clearly defined limits which have to be adhered to at all times.

Price change risks chiefly arise in connection with the procurement and disposal of electricity and gas and the procurement of coal and emission rights. These price risks are hedged with suitable financial instruments by reference to the stipulated limits. Derivative hedging instruments were used in the year under report. The hedging instruments used mainly involved forwards, futures, swaps and options. We have set specific and differentiated limits and warning thresholds for the market risks associated with the commodities we trade. In this context, we also work with the value at risk (VaR) concept to calculate potential losses from commodities trading and use a confidence interval of 95 % for this purpose.

The sensitivity involved in the measurement of electricity, coal, gas and emission right derivatives is analysed in the following section. This analysis has been based on the assumption that there are no changes in all other parameters and that there is mutual dependency between the commodities. The analysis only includes derivatives for which fluctuations in market

values could impact on equity or annual earnings. These involve derivatives requiring mandatory recognition. The analysis does not include derivatives earmarked for the physical delivery of non-financial items in line with the company's expected procurement, sale or utilisation (own use). These do not require recognition under IAS 39.

If the market price at the balance sheet date on 30 September 2018 had been 10 % higher/lower, this would have increased/decreased annual net income by Euro 19,140 thousand/ Euro 19,724 thousand (previous year: Euro 8,808 thousand/ Euro 8,856 thousand). Equity as of the same reporting date would have increased/decreased by Euro 27,596 thousand/ Euro 27,770 thousand (previous year: Euro 15,753 thousand/ Euro 15,801 thousand).

The following table presents the nominal volumes and fair values of the derivatives used:

Nominal volumes and fair values

	30 September 2018			30 September 2017		
	Nominal volumes		Fair values	Nominal volumes		Fair values
	Total	of which with remaining terms of more than 1 year		Total	of which with remaining terms of more than 1 year	
Euro 000s						
Interest derivatives	535,831	510,228	-19,116	447,890	337,856	-29,764
Commodity derivatives	4,679,378	1,398,691	128,312	3,900,442	953,409	74,231
Currency derivatives	16,725	1,423	-990	20,954	57	408
	5,231,934	1,910,342	108,206	4,369,286	1,291,322	44,875

Interest derivatives relate almost exclusively to interest swaps. Currency derivatives are mainly intended to hedge foreign exchange risks.

Commodity derivatives can be subdivided as follows:

Commodity derivatives				
Euro 000s	30 September 2018		30 September 2017	
	Nominal volumes	Fair values	Nominal volumes	Fair values
Commodity derivatives				
Electricity	2,837,379	32,912	2,581,052	46,194
Coal	38,678	35,160	25,472	19,313
Gas	1,643,190	7,895	1,242,506	4,051
CO ₂ rights	160,014	51,766	50,675	5,083
Other	1,499	579	737	-411
	4,680,760	128,312	3,900,442	74,230
Commodity derivatives				
Futures	4,641,273	93,822	3,874,293	54,687
Swaps	39,487	34,490	25,472	19,313
Options	-	-	677	230
	4,680,760	128,312	3,900,442	74,230

The positive fair values amounting to Euro 957,231 thousand (previous year: Euro 431,569 thousand) are countered by margining liabilities of Euro 77,258 thousand (previous year: Euro 3,304 thousand). These are reported under other liabilities. The negative fair values of Euro 849,025 thousand (previous year: Euro 386,694 thousand) are countered by cash collateral of Euro 194 thousand (previous year: Euro 126 thousand).

Capital management

MVV Energie AG is not subject to any statutory minimum capital requirements, but pursues its internal objective of using effective financial management to maintain its equity ratio at a level necessary to attain a good implicit rating on the financial market and to boost the company's earnings strength.

The adjusted equity ratio referred to for management purposes represents adjusted consolidated equity as a proportion of adjusted total assets. Adjusted equity consists of all equity items reported in the consolidated financial statements, including non-controlling and minority interests, but excluding non-operating IAS 39 derivative measurement items and the associated impact on deferred taxes. It is intended to maintain an adjusted equity ratio of at least 30%.

Measures to comply with the targeted equity ratio initially take place within the business planning process and within the framework of investment budgeting in the case of major (unplanned) investment measures. By retaining earnings and issuing shares, the company can basically adjust its equity base to requirements.

The key figure used in our value-based corporate management and the capital management thereby required is the value spread. This key figure is calculated as the difference between the period-based adjusted return on capital employed (adjusted ROCE) and the weighted average cost of capital (WACC).

There were no changes in the underlying capital management requirements compared with the previous year.

36. Segment reporting

MVV adjusted its segment reporting as of 1 October 2017. The reporting now reflects the consistent alignment of our sales activities to the needs of our customers. The new structure also accounts for the growing importance of our business activities in the fields of renewable energies and energy efficiency, as

well as our consistent and sustainable focus on ensuring high supply reliability.

The following overview presents segment reporting based on the previous reporting structure for the period from 1 October 2016 to 30 September 2017:

Segment report from 1 October 2016 to 30 September 2017

Euro 000s	External sales excl. energy taxes	Intercompany sales excl. energy taxes	Scheduled depreciation	Impairment losses
Generation and Infrastructure	937,032	667,080	138,273	1,794
Trading and Portfolio Management	790,153	611,758	67	–
Sales and Services	2,175,306	447,619	15,937	771
Strategic Investments	103,937	3,646	11,207	–
Other Activities	3,088	25,632	14,699	–
Consolidation	–	–1,755,735	–	–
	4,009,516	–	180,183	2,565

Euro 000s	Material non-cash income and expenses	Adjusted EBIT	Income from companies recognised at equity	Investments
Generation and Infrastructure	3,654	183,246	7,074	149,608
Trading and Portfolio Management	2,781	–21,445	–862	–
Sales and Services	12,910	36,190	–4,668	24,786
Strategic Investments	1,110	24,192	9,842	6,983
Other Activities	4,063	2,158	556	12,087
Consolidation	–	51	–	–
	24,518	224,392	11,942	193,464

The segment reporting based on the new reporting structure is presented below for the current financial year and for the previous year:

Segment report from 1 October 2017 to 30 September 2018

Euro 000s	External sales excl. energy taxes	Intercompany sales excl. energy taxes	Scheduled depreciation	Impairment losses
Customer Solutions	2,819,400	148,373	14,812	9,364
New Energies	737,658	106,737	76,160	24,201
Supply Reliability	256,129	612,471	64,547	–
Strategic Investments	87,198	2,608	11,263	141
Other Activities	2,375	24,017	13,898	–
Consolidation	–	–894,206	–	–
	3,902,760	–	180,680	33,706
Euro 000s	Material non-cash income and expenses	Adjusted EBIT	Income from companies recognised at equity	Investments
Customer Solutions	6,488	46,657	–1,915	29,542
New Energies	3,040	89,596	4,159	81,244
Supply Reliability	14,213	62,545	–11,549	156,772
Strategic Investments	2,198	25,357	9,183	10,525
Other Activities	1,529	3,776	12	11,495
Consolidation	–	–	–	–
	27,468	227,931	–110	289,578

Segment report from 1 October 2016 to 30 September 2017 (previous year adjusted)

Euro 000s	External sales excl. energy taxes	Intercompany sales excl. energy taxes	Scheduled depreciation	Impairment losses
Customer Solutions	2,965,173	177,230	15,940	771
New Energies	670,245	94,897	72,237	1,794
Supply Reliability	267,073	672,085	66,100	–
Strategic Investments	103,937	3,646	11,207	–
Other Activities	3,088	25,632	14,699	–
Consolidation	–	–973,490	–	–
	4,009,516	–	180,183	2,565
Euro 000s	Material non-cash income and expenses	Adjusted EBIT	Income from companies recognised at equity	Investments
Customer Solutions	14,803	42,478	–4,668	24,786
New Energies	–241	87,047	3,420	20,952
Supply Reliability	3,067	68,466	2,792	128,656
Strategic Investments	–	24,192	9,842	6,983
Other Activities	6,889	2,158	556	12,087
Consolidation	–	51	–	–
	24,518	224,392	11,942	193,464

External reporting is based on the internal management structure, thus complying with the management approach pursuant to IFRS 8. Units are grouped in such a way that the pooling of suitable specialist competence under one roof forms the basis for stringent portfolio management at the Group. Business fields based on the respective energy industry value chain stages have been allocated to the reporting segments of Customer Solutions, New Energies, Supply Reliability, Strategic Investments and Other Activities. The characteristics used to identify and aggregate the segments relate to the type of products and services, the type of production processes, the asset and capital intensity, customer structures and needs, the sales methods used and, where applicable, the regulatory framework.

Analytically, the business fields can be further broken down by subgroup and individual company with their products.

- The **Customer Solutions** reporting segment is subdivided into the business fields of commodities, retail and business. It comprises the retail and secondary distribution business with electricity, heating energy, gas and water, the solutions business for corporate customers and the service and trading business at MVV Trading GmbH.

The key focus of aggregation for these business fields relates to the service business and to customer needs. The customer is the key focus of the business, use is made of comparable services methods, activities and marketing processes for the customers are pooled and almost exclusively target external customers (e.g. sales to third parties).

- The energy from waste plants, biomass power plants, wind turbines, biomethane and biogas plants are allocated to the **New Energies** reporting segment. This reporting segment also includes the renewable energies project development and operations management activities.

The business fields aggregated in this segment focus on providing services, solutions and products in connection with renewable energies. The activities within this reporting segment involve the planning, approval, development, construction and operation of technical plants to generate electricity and heating energy from sustainable/partly sustainable commodities such as wind, waste timber, non-recyclable forest timber, green cuttings, waste/RDF, biogas and sunshine. The processes are characterised by long planning, approval, construction and operating stages.

- In addition to conventional energy generation, the **Supply Reliability** reporting segment also includes grid facilities for electricity, heating energy, gas and water. It comprises combined heat and power generation, grid facilities and further facilities required to provide our customers with a secure supply of electricity, heating energy, gas and water.

The business fields aggregated in this segment serve to provide customers with a reliable and stable supply of various products. All facilities are characterised by high asset intensity, long technical lifecycles and long-term financing structures.

- The **Strategic Investments** reporting segment consists of the Köthen Energie and MVV Energie CZ subgroups and the at-equity results of select shareholdings in municipal utility companies.
- The **Other Activities** reporting segment consists in particular of the shared service companies and cross-divisional functions.
- Consolidation includes figures for transactions with other reporting segments that are eliminated for consolidation purposes.

Intercompany sales represent the volume of sales between segments. The transfer prices between segments correspond to customary market terms. Segment sales prior to consolidation are equivalent to the total of intercompany and external sales.

The segment reporting presented in accordance with IFRS 8 is based on the internal management structure. This is mainly reflected in segment earnings (adjusted EBIT) and investments. The reconciliation of EBIT with adjusted EBIT is presented in the table opposite. In the management perspective, the concept of investments includes both the additions apparent in the respective schedules and the change in non-current assets from first-time consolidation. By contrast, additions to securities and loans do not form part of the investment concept in the management perspective and have therefore been excluded.

Consistent with the management approach, the earnings stated for the reporting segments include internal transfer relationships between the reporting segments (charges and credits). The distribution of reporting segment earnings presented in the “adjusted EBIT” column corresponds to the distribution of earnings referred to in internal reporting. In some cases, this means that items are charged or credited to earnings in other business fields, and thus in other reporting segments, than the field or segment in which the item responsible for such charge or credit is located. This applies to business fields fully or partly managed on the basis of cost centre logic (shared services and cross-divisional functions). Furthermore, when it comes to the generation of district heating the primary costs are incurred in operative terms in the Supply Reliability and New Energies reporting segments. These are charged to Customer Solutions. The latter reporting segment reimburses Supply Reliability and New Energies with a prorated return on their capital employed.

Segmentation is performed in the same way for all segments through to adjusted EBIT. The table below presents the reconciliation of earnings before interest and taxes (EBIT) with adjusted EBIT:

Reconciliation of EBIT (income statement) with adjusted EBIT			
	1 Oct 2017 to 30 Sep 2018	1 Oct 2016 to 30 Sep 2017	+/- change
Euro 000s			
EBIT as per income statement	256,794	259,511	-2,717
Financial derivative measurement items	-31,591	-38,900	7,309
Structural adjustment for part-time early retirement	309	543	-234
Restructuring result	-821	-	-821
Interest income in connection with finance leases	3,240	3,238	2
Adjusted EBIT	227,931	224,392	3,539

Of segment sales with external customers, 94.7 % were generated in Germany (previous year: 94.3 %). The regional breakdown of sales is based on the geographical location of the respective companies.

No individual customers of MVV account for or exceed 10 % of total sales.

37. Cash flow statement

The cash flow statement shows the flow of funds from operating activities, investing activities and financing activities. The cash flows from investing and financing activities are calculated directly. The cash flow from operating activities, on the other hand, has been derived indirectly. The amount of cash and cash equivalents stated in the cash flow statement is consistent with the corresponding figure in the balance sheet.

Inflows and outflows of funds from the acquisition and disposal of consolidated companies are included in the cash flow from investing activities.

Following the elimination of non-cash income and expenses and the non-operating result, the slight increase in earnings before taxes (EBT) led to a **cash flow before working capital and taxes** of Euro 450 million.

The year-on-year reduction in the **cash flow from operating activities** by Euro 142 million was due to a lower inflow of funds from changes in other assets and other liabilities. The largest items related to a more marked increase in receivables, the change in prepayments received on orders for projects due to be implemented and the sharp fall in inventories. To enhance the presentation of the change in other assets and other liabilities, since the 2nd quarter of the 2018 financial year non-cash IAS 39 derivative measurement items have no longer been presented in the aforementioned line items. The previous year's figures have been adjusted accordingly.

The development in the **cash flow from investing activities** was shaped by higher payments for investments – in particular for the construction of a new heat and power plant in the Scottish city of Dundee in conjunction with the takeover of a disposal contract and for the new coastal power plant Küstenkraftwerk K.I.E.L. The high volume of proceeds from the sale of other financial assets in the previous year's period, which was not matched by any equivalent items in the current financial year, additionally reduced the cash flow from investing activities compared with the previous year's figure. These factors were opposed above all by the inflow of funds generated from sales of non-current assets. Overall, the cash flow from investing activities decreased year-on-year by Euro 47 million.

The **cash flow from financing activities** rose by Euro 92 million compared with the 2017 financial year, a development largely due to higher net borrowing.

MVV reported **cash and cash equivalents** of Euro 311 million as of 30 September 2018 (30 September 2017: Euro 370 million).

The reconciliation of liabilities in connection with financing activities, a new requirement of the IAS 7 Disclosure Initiative, is summarised in the following overview:

Liabilities in connection with financing activities

	30 Sep 2017	Cash-effective changes	Non-cash-effective changes			30 Sep 2018
			Change in scope of consolidation	Changes in exchange rates	Fair value changes	
Euro 000s						
Liabilities to banks	1,361,877	-51,434	-	-1,409	-	1,309,034
Liabilities in connection with finance leases	45,902	-665	-	-	-	45,237
Other financial debt	39,861	-8,248	115	-3	-	31,725
	1,447,640	-60,347	115	-1,412	-	1,385,996

38. Related party disclosures

Business transactions performed between the parent company and its consolidated subsidiaries, which constitute related parties, are not outlined in this section, as they were eliminated in the course of consolidation.

The City of Mannheim is the sole shareholder in MKB Mannheimer Kommunalbeteiligungen GmbH (previously: MVV GmbH). MKB Mannheimer Kommunalbeteiligungen GmbH owns 99.99% of the shares in MV Mannheimer Verkehr GmbH (previously: MVV Verkehr GmbH), which in turn has a 50.1% shareholding in MVV Energie AG. The City of Mannheim and the companies it controls therefore represent related parties as defined in IFRS.

Numerous contractually agreed legal relationships are in place between the MVV companies and the City of Mannheim and the companies it controls (electricity, gas, water and district heating supply agreements, rental, leasing and service agreements). Moreover, concession agreements are also in place between MVV Energie AG and the City of Mannheim.

The concession duties to the City of Mannheim amounted to Euro 18,314 thousand (previous year: Euro 19,040 thousand).

All business agreements have been concluded on customary market terms and are basically analogous to the supply and service agreements concluded with other companies.

Related party disclosures

	Goods and services provided				Receivables		Liabilities	
	Income		Expenses		30 Sep 2018	30 Sep 2017	30 Sep 2018	30 Sep 2017
	1 Oct 2017 to 30 Sep 2018	1 Oct 2016 to 30 Sep 2017	1 Oct 2017 to 30 Sep 2018	1 Oct 2016 to 30 Sep 2017				
Euro 000s								
City of Mannheim	14,910	13,956	23,599	23,518	938	331	5,276	9,857
Abfallwirtschaft Mannheim	7,593	6,385	1,617	877	1,243	1,297	403	149
GBG Mannheimer Wohnungsbau-gesellschaft mbH	12,625	13,473	166	145	841	117	–	12
m:con – mannheim: congress GmbH	4,022	3,952	419	425	6,540	6,764	–	1
MKB Mannheimer Kommunalbeteili-gungen GmbH (previously: MVV GmbH)	63	68	60	–	–	1	–	–
MV Mannheimer Verkehr GmbH (previously: MVV Verkehr GmbH)	29	34	6	5	–	5	–	–
Rhein-Neckar-Verkehr GmbH	6,532	6,324	1,371	76	1,208	2,735	1,552	1,724
Stadtentwässerung Mannheim	1,545	1,410	414	429	74	78	–	11
Companies recognised at equity	74,205	80,514	229,239	231,561	21,568	16,437	35,942	21,405
Other related parties	25,854	23,972	3,490	4,666	5,085	4,587	1,513	1,930
	147,378	150,088	260,381	261,702	37,497	32,352	44,686	35,089

The income and expenses with related parties include income of Euro 31 thousand (previous year: Euro 26 thousand) and expenses of Euro 374 thousand (previous year: Euro 395 thousand) for goods and services provided to management staff performing key functions.

Pursuant to IAS 24, related parties also include management staff performing key functions. Alongside the Executive Board, this group of persons at MVV also includes active heads of division and authorised company representatives of MVV Energie AG.

Customer contracts concerning the supply of electricity, gas, water and district heating have been concluded between MVV Energie AG and members of its Executive and Supervisory Boards and members of the management (division heads, authorised representatives). These have been concluded on customary market terms and do not differ from other customer contracts.

MVV has otherwise not concluded or performed any material related party transactions. In particular, as in the previous year no loans or advances had been granted to members of the Executive or Supervisory Boards as of 30 September 2018. As in the previous year, the company also did not issue any guarantees on behalf of Executive or Supervisory Board members.

MVV Energie AG has compiled a dependent company report in accordance with § 312 AktG for the financial year ending on 30 September 2018.

The disclosure requirements for the compensation of management staff performing key functions at the Group cover the compensation paid to active members of the Executive Board, the Supervisory Board, active division heads and authorised representatives.

Active members of the Executive Board members were compensated as follows:

Executive Board compensation		
Euro 000s	FY 2018	FY 2017
Short-term employee benefits	2,209	2,318
Post-employment benefits	–	737
Total	2,209	3,055

The Executive Board members of MVV Energie AG do not receive any share-based payments.

Post-employment benefits correspond to the service cost resulting from pension provisions for active members of the Executive Board.

The compensation paid to active division heads and authorised representatives came to Euro 2,439 thousand in the year under report (previous year: Euro 2,928 thousand). Of this total, Euro 2,332 thousand involved current benefits (previous year: Euro 2,801 thousand).

Unless they are insured via municipal supplementary pension companies (ZVKs), management staff performing key functions receive a defined contribution company pension of up to 8.6% of their fixed basic compensation. They can determine the biometric risks which should be covered. The expenses incurred for this amounted to Euro 107 thousand in the 2018 financial year (previous year: Euro 127 thousand).

Active members of the Supervisory Board were compensated as follows:

Supervisory Board compensation		
Euro 000s	FY 2018	FY 2017
Fixed compensation (including meeting allowances)	412	410

Individualised information and further details concerning the compensation of Executive and Supervisory Board members can be found in the audited Compensation Report, which forms part of the Combined Management Report.

Former members of the Executive Board received benefits of Euro 513 thousand in the year under report (previous year: Euro 468 thousand). Provisions totalling Euro 16,758 thousand have been stated for pension obligations towards former Executive Board members (previous year: Euro 16,784 thousand). A total of Euro 336 thousand was allocated to this item in the year under report (previous year: Euro 275 thousand).

39. MVV's shareholdings

List of MVV's shareholdings at 30 September 2018

	Town/city	Country	Share of capital ¹ %	Footnote
Fully consolidated subsidiaries				
Associates (Germany)				
ABeG Abwasserbetriebsgesellschaft mbH	Offenbach am Main	Germany	51.00	
AVA Abwasser- und Verwertungsanlagen GmbH	Mörfelden-Walldorf	Germany	100.00	4
BEEGY GmbH	Mannheim	Germany	100.00	
BEG Gernsbacher Höhe UG (haftungsbeschränkt) & Co. KG	Mainz	Germany	0.00	5
BEG Haunetal UG (haftungsbeschränkt) & Co. KG	Gundersheim	Germany	0.00	5
BFE Institut für Energie und Umwelt GmbH	Mühlhausen	Germany	100.00	4
Biokraft Naturbrennstoffe GmbH	Offenbach am Main	Germany	100.00	
Biomethananlage Barby GmbH	Mannheim	Germany	100.00	
Biomethananlage Klein Wanzleben GmbH	Mannheim	Germany	100.00	
Biomethananlage Kroppenstedt GmbH	Mannheim	Germany	100.00	
Biomethananlage Staßfurt GmbH	Mannheim	Germany	100.00	
Cerventus Naturenergie GmbH	Offenbach am Main	Germany	50.00	
Cerventus Naturenergie Verwaltungs GmbH	Offenbach am Main	Germany	100.00	
Dabit Grundstücksverwaltungsgesellschaft mbH & Co. Vermietungs KG	Mainz	Germany	94.00	
econ solutions GmbH	Germering (domicile: Mannheim)	Germany	100.00	
Energienetze Offenbach GmbH	Offenbach am Main	Germany	100.00	4
Energieversorgung Dietzenbach GmbH	Dietzenbach	Germany	50.00	
Energieversorgung Offenbach Aktiengesellschaft	Offenbach am Main	Germany	48.42	2
eternegy GmbH	Mannheim	Germany	100.00	
EVO Vertrieb GmbH	Offenbach am Main	Germany	100.00	
FRASSUR GmbH Umweltschutz-Dienstleistungen	Mörfelden-Walldorf	Germany	100.00	
Gasversorgung Offenbach GmbH	Offenbach am Main	Germany	74.90	
Götzfried + Pitzer Entsorgung GmbH	Ulm	Germany	100.00	
IGS Netze GmbH	Gersthofen	Germany	100.00	4
Infrastruktur Amöneburg-Roßdorf GmbH & Co. KG	Wörrstadt	Germany	28.56	6
Infrastruktur Callbach GmbH & Co. KG	Wörrstadt	Germany	71.40	
Infrastruktur Fahlenberg GmbH & Co. KG	Wörrstadt	Germany	50.00	
Infrastruktur Oberheimbach II GmbH & Co. KG	Wörrstadt	Germany	72.00	
Infrastruktur Waldweiler GmbH & Co. KG	Wörrstadt	Germany	60.40	
Infrastrukturgesellschaft Hungerberg GmbH & Co. KG	Offenbach am Main	Germany	100.00	
Infrastrukturgesellschaft Schmölln GmbH & Co. KG	Wörrstadt	Germany	41.32	
Infrastrukturgesellschaft Veldenz GmbH & Co. KG	Wörrstadt	Germany	61.86	
juwi AG	Wörrstadt	Germany	63.12	
juwi Bio Germany 19 GmbH & Co. KG	Wörrstadt	Germany	100.00	
juwi Bio Service & Betriebs GmbH	Wörrstadt	Germany	100.00	
juwi Green Energy GmbH	Wörrstadt	Germany	100.00	4
juwi Operations & Maintenance GmbH	Wörrstadt	Germany	100.00	4
juwi Verwaltungs GmbH	Wörrstadt	Germany	100.00	
juwi Wind Germany 135 GmbH & Co. KG	Wörrstadt	Germany	88.00	
juwi Wind Germany 162 GmbH & Co. KG	Wörrstadt	Germany	80.00	
juwi Wind Germany 33 GmbH & Co. KG	Wörrstadt	Germany	100.00	

List of MVV's shareholdings at 30 September 2018

	Town/city	Country	Share of capital ¹ %	Footnote
juwi Wind Germany 70 GmbH & Co. KG	Wörrstadt	Germany	100.00	
juwi Wind Germany Verwaltungs GmbH	Wörrstadt	Germany	100.00	
Köthen Energie GmbH	Köthen	Germany	100.00	
MDW Muldendienst West GmbH	Frankfurt am Main	Germany	100.00	
MVV Alpha fünfzehn GmbH	Mannheim	Germany	100.00	4
MVV Biogas Bernburg GmbH	Mannheim (domicile: Bernburg/Saale)	Germany	90.00	5
MVV Biogas Dresden GmbH (previously: KOMPOTEC Dresden GmbH)	Mannheim (domicile: Dresden)	Germany	100.00	5
MVV decon GmbH	Mannheim	Germany	100.00	
MVV Enamic GmbH	Mannheim	Germany	100.00	4
MVV Enamic Korbach GmbH	Korbach	Germany	100.00	4
MVV Enamic Ludwigshafen GmbH	Mannheim	Germany	100.00	
MVV Enamic Naturenergie GmbH	Mannheim	Germany	100.00	
MVV EnergySolutions GmbH	Mannheim	Germany	100.00	4
MVV Grünenergie GmbH	Mannheim	Germany	100.00	4
MVV ImmoSolutions GmbH	Berlin	Germany	100.00	4
MVV Industriepark Gersthofen GmbH	Gersthofen	Germany	100.00	4
MVV Netze GmbH	Mannheim	Germany	100.00	4
MVV RHE GmbH	Mannheim	Germany	100.00	4
MVV Trading GmbH	Mannheim	Germany	97.50	4
MVV Umwelt Asset GmbH	Mannheim	Germany	100.00	4
MVV Umwelt GmbH	Mannheim	Germany	100.00	4
MVV Umwelt Ressourcen GmbH	Mannheim	Germany	100.00	4
MVV Umwelt UK GmbH	Mannheim	Germany	100.00	4
MVV Windenergie Deutschland GmbH	Mannheim	Germany	100.00	
MVV Windenergie GmbH	Mannheim	Germany	100.00	4
MVV Windpark Freudenberg GmbH	Mannheim	Germany	100.00	
MVV Windpark Plauerhagen GmbH & Co. KG	Ostseebad Rerik	Germany	100.00	
Netzgesellschaft Köthen mbH	Köthen	Germany	100.00	4, 6
New Breeze GmbH	Wörrstadt	Germany	100.00	
New Breeze GmbH & Co. GreenPower 44 KG	Wörrstadt	Germany	100.00	
Soluvia Billing GmbH	Offenbach am Main	Germany	100.00	4
Soluvia GmbH	Mannheim	Germany	100.00	
Soluvia IT-Services GmbH	Kiel	Germany	100.00	4
Soluvia Metering GmbH	Offenbach am Main	Germany	100.00	4
Stadtwerke Kiel Aktiengesellschaft	Kiel	Germany	51.00	
SWKiel Netz GmbH	Kiel	Germany	100.00	4
SWKiel Speicher GmbH	Kiel	Germany	100.00	4
Umspannwerk Kirchberg 2 GmbH & Co. KG	Wörrstadt	Germany	51.60	
Windpark Albisheim GmbH & Co. KG	Offenbach am Main	Germany	100.00	
Windpark Dirlammen GmbH & Co. KG	Offenbach am Main	Germany	100.00	
Windpark Düste 2 GmbH & Co. KG	Hanover	Germany	100.00	
Windpark Düste Infrastruktur GmbH & Co. KG	Hanover	Germany	50.00	
Windpark Hungerberg I GmbH & Co. KG	Offenbach am Main	Germany	100.00	
Windpark Hungerberg II GmbH & Co. KG	Offenbach am Main	Germany	100.00	
Windpark Kirchberg GmbH & Co. KG	Offenbach am Main	Germany	100.00	
Windpark Siegfriedeiche GmbH & Co. KG	Hanover	Germany	100.00	5

List of MVV's shareholdings at 30 September 2018

	Town/city	Country	Share of capital ¹ %	Footnote
Windwärts Energie GmbH	Hanover	Germany	100.00	
Windwärts Photovoltaik GmbH	Hanover	Germany	100.00	⁵
WiWi Windkraft GmbH & Co. Herrnsheim KG	Wörrstadt	Germany	100.00	
WiWi Windkraft GmbH & Co. Worms KG	Wörrstadt	Germany	100.00	

Fully consolidated subsidiaries**Associates (international)**

Cactus Garden Solar LLC	Delaware	USA	100.00	
Českolipská teplárenská a.s.	Česká Lípa	Czech Republic	75.00	
Českolipské teplo a.s.	Česká Lípa (domicile: Prague)	Czech Republic	100.00	
Corsoleil EURL	Saint Florent	France	100.00	
CTZ s.r.o.	Uherské Hradiště	Czech Republic	50.96	
e.services s.r.o.	Děčín	Czech Republic	100.00	
Electaparc S.A.	Montevideo	Uruguay	100.00	
ENERGIE Holding a.s.	Prague	Czech Republic	100.00	
G-LINDE s.r.o.	Prague	Czech Republic	100.00	
G-RONN s.r.o.	Prague	Czech Republic	100.00	
IROMEZ s.r.o.	Pelhrimov	Czech Republic	100.00	
JSI 01 Srl	Verona	Italy	100.00	
JSI Construction Group LLC	Delaware	USA	100.00	
JSI Equipment Solutions LLC	Delaware	USA	100.00	
JSI Milford Realty Company LLC	Delaware	USA	100.00	
JSI O&M Group LLC	Delaware	USA	100.00	
juwi energias renovables de Chile S.R.L.	Santiago de Chile	Chile	100.00	
juwi energias renovables S.L.U.	Valencia	Spain	100.00	
juwi energie rinnovabili Srl	Verona	Italy	100.00	
juwi Energii Regenerabile S.R.L.	Bucharest	Romania	99.00	
juwi Energy Services (Pty) Ltd.	Cape Town	South Africa	80.00	
juwi Hellas renewable energy sources A.E.	Athens	Greece	100.00	
juwi Holding US LLC	Delaware	USA	100.00	
juwi Inc.	Delaware	USA	100.00	
juwi India Renewable Energies Private Limited	Bangalore	India	100.00	
juwi Philippines Inc.	Makati City	Philippines	99.99	
juwi Renewable Energies (Pty) Ltd.	Cape Town	South Africa	100.00	
juwi Renewable Energies Ltd.	London	UK	100.00	
juwi renewable Energies Malaysia SDN. BHD.	Kuala Lumpur	Malaysia	100.00	
juwi renewable energies Pvt. Ltd.	Singapore	Singapore	100.00	
juwi Renewable Energies Thai Co., Ltd.	Bangkok	Thailand	100.00	
juwi Renewable Energy Pty. Ltd.	Brisbane	Australia	93.61	
juwi Singapore Projects Pvt. Ltd.	Singapore	Singapore	100.00	
Juwi Solar ZA Construction 1 (Pty) Ltd.	Cape Town	South Africa	80.00	
Juwi Solar ZA Construction 2 (Pty) Ltd.	Cape Town	South Africa	92.00	
Juwi Solar ZA Construction 3 (Pty) Ltd.	Cape Town	South Africa	80.00	
juwi Solar ZA Construction 4 (Pty) Ltd. (previously: K2017516494 (Pty) Ltd.)	Cape Town	South Africa	60.00	⁵
Juwi Solar ZA O&M 1 (Pty) Ltd.	Cape Town	South Africa	76.00	
juwi Wind LLC	Delaware	USA	100.00	

List of MVV's shareholdings at 30 September 2018

	Town/city	Country	Share of capital ¹ %	Footnote
juwi Yenilenebilir Enerji A.S.	Istanbul	Turkey	100.00	
Kozilio Dio I.K.E. (Monoprosopi)	Athens	Greece	100.00	⁵
Kozilio Ena I.K.E. (Monoprosopi)	Athens	Greece	100.00	⁵
Las Torres Solar I.S.L.	Valencia	Spain	100.00	
mobheat Schweiz GmbH	Glattbrugg	Switzerland	100.00	
mobheat Österreich GmbH	Sankt Lorenz	Austria	100.00	⁵
MVV Energie CZ a.s.	Prague	Czech Republic	100.00	
MVV Environment Baldovie Ltd. (previously: Dundee Energy Recycling Ltd. (DERL))	Dundee	UK	100.00	⁵
MVV Environment Devonport Limited	Plymouth	UK	100.00	
MVV Environment Limited	London	UK	100.00	
MVV Environment Ridham Limited	Sittingbourne / Iwade	UK	100.00	
MVV Environment Services Limited	London	UK	100.00	
OPATHERM a.s.	Opava	Czech Republic	100.00	
POWGEN a.s.	Prague	Czech Republic	100.00	
Promosolar Juwi 4 S.L.U.	Valencia	Spain	100.00	
Rocky Mountain Solar LLC	Delaware	USA	100.00	
SE Chronus Solar Energy 10 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 11 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 12 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 13 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 14 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 15 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 16 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 17 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 18 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 19 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 2 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 3 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 4 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 5 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 6 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 7 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 8 E.P.E.	Athens	Greece	100.00	⁵
SE Chronus Solar Energy 9 E.P.E.	Athens	Greece	100.00	⁵
Teplárna Liberec a.s.	Liberec	Czech Republic	76.04	
TERMIZO a.s.	Liberec	Czech Republic	100.00	
TERMO Děčín a.s.	Děčín	Czech Republic	96.91	
Vents d'Oc Énergies Renouvelables SARL	Montpellier	France	100.00	
Zásobování teplem Vsetín a.s.	Vsetín	Czech Republic	100.00	

List of MVV's shareholdings at 30 September 2018

	Town/city	Country	Share of capital ¹ %	Footnote
Unconsolidated other shareholdings				
Associates (Germany)				
Blue Village FRANKLIN Mobil GmbH	Mannheim	Germany	70.00	5
Erschließungsträgersgesellschaft Weeze mbH	Weeze	Germany	75.00	
ivo Pellet Rhein-Main GmbH	Offenbach am Main	Germany	100.00	
juwi Bio Germany Verwaltungs GmbH	Wörrstadt	Germany	100.00	
juwi Solar Germany 13 GmbH & Co. KG	Wörrstadt	Germany	100.00	
juwi Solar Germany 3 GmbH & Co. KG	Wörrstadt	Germany	100.00	
juwi Solar Germany Verwaltungs GmbH	Wörrstadt	Germany	100.00	
juwi Wind Germany 126 GmbH & Co. KG	Wörrstadt	Germany	100.00	
juwi Wind Germany 127 GmbH & Co. KG	Wörrstadt	Germany	100.00	
juwi Wind Germany 128 GmbH & Co. KG	Wörrstadt	Germany	100.00	
juwi Wind Germany 134 GmbH & Co. KG	Wörrstadt	Germany	100.00	
juwi Wind Germany 170 GmbH & Co. KG	Wörrstadt	Germany	100.00	
juwi Wind Germany 171 GmbH & Co. KG	Wörrstadt	Germany	100.00	
juwi Wind Germany 177 GmbH & Co. KG	Wörrstadt	Germany	100.00	
juwi Wind Germany 178 GmbH & Co. KG	Wörrstadt	Germany	100.00	
juwi Wind Germany 180 GmbH & Co. KG	Wörrstadt	Germany	100.00	
juwi Wind Germany 183 GmbH & Co. KG	Wörrstadt	Germany	100.00	5
juwi Wind Germany 184 GmbH & Co. KG	Wörrstadt	Germany	100.00	5
juwi Wind Germany 186 GmbH & Co. KG	Wörrstadt	Germany	100.00	5
juwi Wind Germany 187 GmbH & Co. KG	Wörrstadt	Germany	100.00	5
juwi Wind Germany 188 GmbH & Co. KG	Wörrstadt	Germany	100.00	5
juwi Wind Germany 189 GmbH & Co. KG	Wörrstadt	Germany	100.00	5
juwi Wind Germany 190 GmbH & Co. KG	Wörrstadt	Germany	100.00	5
juwi Wind Germany 191 GmbH & Co. KG	Wörrstadt	Germany	100.00	5
juwi Wind Germany 192 GmbH & Co. KG	Wörrstadt	Germany	100.00	5
juwi Wind Germany 51 GmbH & Co. KG	Wörrstadt	Germany	100.00	
MVV Alpha zwei GmbH	Mannheim	Germany	100.00	4
MVV Insurance Services GmbH	Mannheim	Germany	100.00	
MVV Regioplan GmbH	Mannheim	Germany	100.00	4
MVV Windpark Verwaltungs GmbH	Mannheim	Germany	100.00	
Neu-Anspach Wind GmbH & Co. KG	Wörrstadt	Germany	100.00	
Windpark Hellenthal Wiesenhardt GmbH & Co. KG	Wörrstadt	Germany	100.00	
Windpark Lauda-Heckfeld GmbH & Co. KG	Wörrstadt	Germany	100.00	
Windpark Mußbach GmbH & Co. KG	Wörrstadt	Germany	100.00	
Windpark Schwegenheim II GmbH & Co. KG (previously: juwi Wind Germany 181 GmbH & Co. KG)	Wörrstadt	Germany	100.00	5
Windpark Wiebelsheim GmbH & Co. KG	Wörrstadt	Germany	100.00	
Windpark Windhübel GmbH & Co. KG (previously: juwi Wind Germany 172 GmbH & Co. KG)	Wörrstadt	Germany	100.00	
Windwärts erste Verwaltungsgesellschaft mbH	Hanover	Germany	100.00	
Windwärts Projektmanagement GmbH	Hanover	Germany	100.00	
WKA Schauerberg GmbH & Co. KG	Wörrstadt	Germany	100.00	

List of MVV's shareholdings at 30 September 2018

	Town/city	Country	Share of capital ¹ %	Footnote
Unconsolidated other shareholdings				
Associates (International)				
Abert Rim Solar LLC	Delaware	USA	100.00	
Achab Wind Farm (Pty) Ltd.	Cape Town	South Africa	100.00	
AL Solar I LLC	Delaware	USA	100.00	
Alachua Solar LLC	Delaware	USA	100.00	⁵
Apple Valley Solar LLC	Delaware	USA	100.00	
Archer Solar LLC	Delaware	USA	100.00	
Arizona Solar I LLC	Delaware	USA	100.00	
Ashdown Solar LLC	Delaware	USA	100.00	
Birch Creek Solar LLC	Delaware	USA	100.00	
Black Hollow Solar LLC	Delaware	USA	100.00	⁵
Blue Creek Solar LLC	Delaware	USA	100.00	⁵
Blue Earth Solar LLC	Delaware	USA	100.00	
Blue Grama Solar LLC	Delaware	USA	100.00	⁵
Blue Spruce Solar LLC	Delaware	USA	100.00	
Briscoe Solar LLC	Delaware	USA	100.00	
Buckeye South Solar LLC	Delaware	USA	100.00	
Buckskin Solar LLC	Delaware	USA	100.00	
Cache Valley Solar LLC	Delaware	USA	100.00	⁵
Cascade Solar LLC	Delaware	USA	100.00	
Castle Wind Farm (Pty) Ltd.	Cape Town	South Africa	100.00	
Cedar Canyon Solar LLC	Delaware	USA	100.00	⁵
Cedarwood Solar LLC	Delaware	USA	100.00	
Centrale Solair De Lafayette LLC	Delaware	USA	100.00	
Chewaucan Solar LLC	Delaware	USA	100.00	
Coolidge Solar LLC	Delaware	USA	100.00	
Curry Hill Solar LLC	Delaware	USA	100.00	
Daisy Canyon Solar LLC	Delaware	USA	100.00	⁵
Deer Creek Solar LLC	Delaware	USA	100.00	
Delareyville Solar Farm (Pty) Ltd.	Cape Town	South Africa	100.00	
Eureka Solar LLC	Delaware	USA	100.00	
Firelands Wind Farm LLC	Delaware	USA	100.00	
Fountain Solar LLC	Delaware	USA	100.00	
Front Range Solar LLC	Delaware	USA	100.00	
GA Solar I LLC	Delaware	USA	100.00	
Galloway Solar LLC	Delaware	USA	100.00	⁵
Grassland Solar LLC	Delaware	USA	100.00	
Hartebeest Wind Farm (Pty) Ltd.	Cape Town	South Africa	100.00	
High Plains Solar LLC	Delaware	USA	100.00	⁵
Holden Solar LLC	Delaware	USA	100.00	
Hotazel Solar Farm 1 (Pty) Ltd. (previously: Banzopax (Pty) Ltd.)	Cape Town	South Africa	100.00	
Hotazel Solar Farm 2 (Pty) Ltd. (previously: Banzocorp (Pty) Ltd.)	Cape Town	South Africa	100.00	
Hudsonville Solar LLC	Delaware	USA	100.00	
JSI Construction Canada LLC	Delaware	USA	100.00	
JSI PR Green Holding Company Inc.	Delaware	USA	100.00	

List of MVV's shareholdings at 30 September 2018

	Town/city	Country	Share of capital ¹ %	Footnote
JSI Procurement Group LLC	Delaware	USA	100.00	
JSI Rockfish Realty LLC	Delaware	USA	100.00	
juwi Energy Services 2 (Pty) Ltd.	Cape Town	South Africa	80.00	
juwi Nippon Energy K.K.	Tokyo	Japan	100.00	⁵
juwi Solar ZA Construction 9 (Pty) Ltd.	Cape Town	South Africa	60.00	
juwi Viet Nam Company Limited	Hanoi	Vietnam	100.00	
JWT Asset Co., Ltd.	Bangkok	Thailand	49.80	⁶
K20171516079 (Pty) Ltd.	Cape Town	South Africa	100.00	⁵
Kaip Wind Farm (Pty) Ltd.	Cape Town	South Africa	100.00	
Kap Vley Wind Farm (Pty) Ltd.	Cape Town	South Africa	100.00	
Kenhardt PV1 (Pty) Ltd.	Cape Town	South Africa	100.00	
Kiowa Creek Solar LLC	Delaware	USA	100.00	
Kiowa Solar LLC	Delaware	USA	100.00	
Klondike Solar LLC	Delaware	USA	100.00	
Koppie Enkel Solar Farm (Pty) Ltd.	Cape Town	South Africa	100.00	
Kronos Solar Farm 1 (Pty) Ltd.	Cape Town	South Africa	100.00	
Kronos Solar Farm 2 (Pty) Ltd.	Cape Town	South Africa	100.00	
Kronos Solar Farm 3 (Pty) Ltd.	Cape Town	South Africa	100.00	
L&D Solar LLC	Delaware	USA	100.00	
Lone Rock Solar LLC	Delaware	USA	100.00	
Long Prairie Solar LLC	Delaware	USA	100.00	
Lost Creek Solar LLC	Delaware	USA	100.00	
Madras Solar LLC	Delaware	USA	100.00	
Marovax (Pty) Ltd.	Cape Town	South Africa	100.00	
Meadowlark Solar LLC	Delaware	USA	100.00	
Mesilla Solar LLC	Delaware	USA	100.00	⁵
Mesquite Solar LLC	Delaware	USA	100.00	⁵
Monarch Solar LLC	Delaware	USA	100.00	⁵
Muleshoe Solar LLC	Delaware	USA	100.00	
MVV Environnement Ressources SASU	Colmar	France	100.00	
Namies Wind Farm (Pty) Ltd.	Cape Town	South Africa	100.00	
Nine Mile Solar LLC	Delaware	USA	100.00	
NM Solar I LLC	Delaware	USA	100.00	
Oasis Wind Farm (Pty) Ltd.	Cape Town	South Africa	100.00	
OH Solar I LLC	Delaware	USA	100.00	
Ophir Canyon Solar I LLC	Delaware	USA	100.00	⁵
Ophir Canyon Solar II LLC	Delaware	USA	100.00	⁵
Ophir Canyon Solar LLC	Delaware	USA	100.00	⁵
Osage Solar LLC	Delaware	USA	100.00	
Othello Solar LLC	Delaware	USA	100.00	
Outeniqua Wind Farm (Pty) Ltd.	Cape Town	South Africa	100.00	
Palisade Solar LLC	Delaware	USA	100.00	
Palmer Solar LLC	Delaware	USA	100.00	
Parachute Solar LLC	Delaware	USA	100.00	
Pike Solar LLC	Delaware	USA	100.00	⁵
Pilot Rock Solar LLC	Delaware	USA	100.00	
Pleasant Hill Solar LLC	Delaware	USA	100.00	

List of MVV's shareholdings at 30 September 2018

	Town/city	Country	Share of capital ¹ %	Footnote
Poplar Springs Solar LLC	Delaware	USA	100.00	
Pronghorn Solar LLC	Delaware	USA	100.00	⁵
Rawhide Flats II Solar LLC	Delaware	USA	100.00	⁵
Razorback Solar LLC	Delaware	USA	100.00	
Royal Slope Solar LLC	Delaware	USA	100.00	⁵
Saddle Butte Solar LLC	Delaware	USA	100.00	
San Arroyo Solar LLC	Delaware	USA	100.00	
San Carlos Solar LLC	Delaware	USA	100.00	
Sand Hollow Solar LLC	Delaware	USA	100.00	⁵
Santa Cruz Solar LLC	Delaware	USA	100.00	
Santa Rosa Solar LLC	Delaware	USA	100.00	
Saranac Solar LLC	Delaware	USA	100.00	
Shaefers Peak Solar LLC	Delaware	USA	100.00	⁵
Sierra Mojada Solar LLC	Delaware	USA	100.00	⁵
Silver Moon Solar LLC	Delaware	USA	100.00	⁵
Skipjack Solar LLC	Delaware	USA	100.00	
Squirrel Creek Solar LLC	Delaware	USA	100.00	
Stansburry Solar II LLC	Delaware	USA	100.00	
Stansburry Solar LLC	Delaware	USA	100.00	
Sugarcane Solar LLC	Delaware	USA	100.00	
Suwannee Solar LLC	Delaware	USA	100.00	
Tailwind Solar LLC	Delaware	USA	100.00	
Thatcher Solar LLC	Delaware	USA	100.00	⁵
Trout Creek Solar LLC	Delaware	USA	100.00	⁵
Valent Canyon Solar LLC	Delaware	USA	100.00	⁵
Vredendal Solar Farm (Pty) Ltd.	Cape Town	South Africa	100.00	
Wildebeest Wind Farm (Pty) Ltd.	Cape Town	South Africa	100.00	
Wolf Wind Farm (Pty) Limited	Cape Town	South Africa	100.00	
Zingesele Wind Farm (Pty) Ltd.	Cape Town	South Africa	100.00	

At equity**Joint ventures (Germany)**

Allegro engineering GmbH	Markranstädt-Thronitz	Germany	30.00	⁵
BEEGY Operations GmbH	Mannheim	Germany	51.00	
Biomasse Rhein-Main GmbH	Flörsheim am Main	Germany	33.33	
DataCenter Offenbach RheinMain GmbH (previously: EVO Alpha 2 GmbH)	Offenbach am Main	Germany	50.00	⁵
DC-Datacenter-Group GmbH	Wallmenroth	Germany	25.10	⁵
enerix Franchise GmbH & Co KG	Regensburg	Germany	25.10	
enerix Management GmbH	Regensburg	Germany	25.10	
Fernwärme Rhein-Neckar GmbH	Mannheim	Germany	50.00	
Gemeinschaftskraftwerk Kiel GmbH	Kiel	Germany	50.00	
Infrastruktur Donnersberg GmbH & Co. KG	Wörrstadt	Germany	36.31	
Infrastrukturgesellschaft Rheinhessen II GmbH & Co. KG	Wörrstadt	Germany	48.00	
KommunalWind GmbH & Co. KG	Tübingen	Germany	50.00	
Naunhofer Transportgesellschaft mbH	Parthenstein-Großsteinberg	Germany	50.00	
Qivalo GmbH	Mannheim	Germany	42.50	

List of MVV's shareholdings at 30 September 2018

	Town/city	Country	Share of capital ¹ %	Footnote
RIO Holzenergie GmbH & Co. Dotternhausen KG	Wörrstadt	Germany	50.00	
Rockenhausen Windenergie-Projektentwicklungs GmbH	Rockenhausen	Germany	49.00	
Stadtwerke Ingolstadt Beteiligungen GmbH	Ingolstadt	Germany	48.40	
Stadtwerke Sinsheim Versorgungs GmbH & Co. KG	Sinsheim	Germany	30.00	
Umspannwerk Donnersberg GmbH & Co. KG	Wörrstadt	Germany	36.31	

At equity**Joint ventures (International)**

juwi Shizen Energy Inc.	Tokyo	Japan	50.00	
luminatis S.à.r.l.	Luxembourg	Luxembourg	70.00	

At equity**Associates (Germany)**

AVR BioGas GmbH	Sinsheim	Germany	41.50	
ESN EnergieSystemeNord GmbH	Schwentimental	Germany	25.00	
Grosskraftwerk Mannheim Aktiengesellschaft	Mannheim	Germany	28.00	
Infrastrukturgesellschaft Erbes-Büdesheim GmbH & Co. KG	Wörrstadt	Germany	22.36	
juwi Beteiligungs GmbH & Co. Holzpelletieranlage Morbach KG	Wörrstadt	Germany	50.00	
juwi Wind Germany 100 GmbH & Co. KG	Wörrstadt	Germany	39.00	
Mainnetz GmbH	Obertshausen	Germany	25.10	
Naturenergie Main-Kinzig GmbH	Gelnhausen	Germany	50.00	
Netzgesellschaft Edingen-Neckarhausen GmbH & Co. KG	Edingen-Neckarhausen	Germany	24.00	
Phoenix Energie GmbH	Hanover	Germany	0.05	⁶
Recogizer Group GmbH	Bonn	Germany	25.11	⁵
ReNabi GmbH	Mannheim	Germany	51.00	
RIO Holzenergie GmbH & Co. Bad Arolsen KG	Wörrstadt	Germany	50.00	
Stadtwerke Buchen GmbH & Co. KG	Buchen-Odenwald	Germany	25.10	
Zweckverband Wasserversorgung Kurpfalz (ZWK)	Mannheim (domicile: Heidelberg)	Germany	51.00	³

At equity**Associates (International)**

juwi Shizen Energy Operation Inc.	Tokyo	Japan	30.00	
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Other minority shareholdings**Germany**

8KU GmbH	Berlin	Germany	12.50	
Infrastruktur Oberheimbach I GmbH & Co. KG	Wörrstadt	Germany	15.00	
Infrastrukturgesellschaft Bischheim GmbH & Co. KG	Wörrstadt	Germany	15.31	
juwi Wind Germany 129 GmbH & Co. KG	Wörrstadt	Germany	16.00	
Klimaschutzagentur Mannheim gemeinnützige GmbH	Mannheim	Germany	40.00	
Main-Kinzig-Entsorgungs- und Verwertungs GmbH	Gelnhausen	Germany	49.00	
Management Stadtwerke Buchen GmbH	Buchen-Odenwald	Germany	25.20	
RIO Holzenergie GmbH & Co. Langelsheim KG	Wörrstadt	Germany	37.55	
Stadtmarketing Mannheim GmbH	Mannheim	Germany	3.09	
Stadtwerke Langen Gesellschaft mit beschränkter Haftung	Langen	Germany	10.00	⁴

List of MVV's shareholdings at 30 September 2018

	Town/city	Country	Share of capital ¹ %	Footnote
Stadtwerke Schwetzingen GmbH & Co. KG	Schwetzingen	Germany	10.00	
Stadtwerke Schwetzingen Verwaltungsgesellschaft mbH	Schwetzingen	Germany	10.00	
Stadtwerke Sinsheim Verwaltungs GmbH	Sinsheim	Germany	30.00	
Stadtwerke Walldorf GmbH & Co. KG	Walldorf	Germany	25.10	
Stadtwerke Walldorf Verwaltungs GmbH	Walldorf	Germany	25.10	
SWT Regionale Erneuerbare Energien GmbH	Trier	Germany	51.00	
Wasserversorgungsverband Neckargruppe	Edingen-Neckarhausen	Germany	25.00	
Windfarm Wonnegau UW GmbH & Co. KG	Gundersheim	Germany	24.70	
WiWi Windkraft GmbH & Co. Westpfalz KG	Wörrstadt	Germany	5.32	
WVE Wasserversorgungs- und -entsorgungsgesellschaft Schriesheim mbH	Schriesheim	Germany	24.50	

1 Share of capital at 30 September 2018 pursuant to § 16 (4) AktG; equity and annual net income pursuant to HGB or local requirements

2 Majority of voting rights

3 No voting right majority

4 Profit transfer/operating profit transfer agreement

5 Added in financial year

6 Control agreement or controlling influence

40. Auditor's fee

The following fees were incurred in Germany for the services performed by the auditor of the consolidated financial statements, PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft, in the 2018 financial year:

Auditor's fee

Euro 000s	FY 2018	FY 2017
Audit	2,188	1,822
Other advisory services	486	317
Tax advisory services	101	101
Other services	357	578
	3,132	2,818

The audit services line item relates above all to the fees paid for the audit of the consolidated financial statements and the audit of the separate financial statements of MVV Energie AG and its subsidiaries. The fees paid for other audit services mainly relate to audits performed in accordance with energy industry requirements/attestations (EEG, KWKG) and voluntary certification services, including those relating to the internal tax control system. The tax advisory services line item particularly involves fees for the support provided in the context of tax audits and for tax advisory services in the field of transfer prices. The fees paid for other services chiefly include fees for project advisory services relating to the conversion in accounting to new IFRS standards.

41. Utilisation of § 264 (3) HGB

The following German subsidiaries will draw on the disclosure exemption provided for under § 264 (3) HGB for the 2018 financial year:

- BFE Institut für Energie und Umwelt GmbH, Mühlhausen
- MVV Alpha zwei GmbH, Mannheim
- MVV Alpha fünfzehn GmbH, Mannheim
- MVV Umwelt GmbH, Mannheim
- MVV Umwelt Ressourcen GmbH, Mannheim
- MVV Umwelt UK GmbH, Mannheim
- MVV Windenergie GmbH, Mannheim

42. Declaration of Conformity under § 161 AktG

The Executive and Supervisory Boards of MVV Energie AG submitted their Declaration of Conformity with the recommendations of the German Corporate Governance Code pursuant to § 161 AktG and made this available to the company's shareholders.

The complete declaration is published on the internet at www.mvv.de/investors.

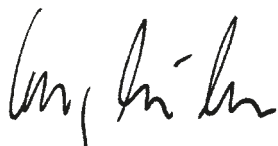
43. Information on concessions

In addition to the concession agreements between the City of Mannheim and MVV Energie AG (please see Note 38 Related party disclosures), further concession agreements have also been concluded between MVV companies and local and regional authorities. The remaining terms range from 12 to 17 years. These agreements assign responsibility for operating the respective distribution grids and providing for their maintenance. Should these agreements not be extended upon expiry, the facilities for supplying the respective utility services must be taken over by the new concession holder upon payment of commensurate compensation.


44. Events after balance sheet date

We are not aware of any events after the balance sheet date.


Mannheim, 13 November 2018
MVV Energie AG
Executive Board



Dr. Müller



Klöpfer

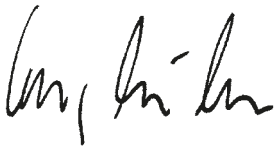


Dr. Roll

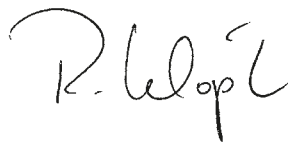
Responsibility Statement

“We affirm that, to the best of our knowledge, the consolidated financial statements give a true and fair view of the net asset, financial and earnings position of the Group in accordance with applicable accounting principles and that the group management report provides a fair view of the development and performance of the business and the position of the Group, together with a description of the principal opportunities and risks associated with the expected development of the Group.”

Mannheim, 13 November 2018
MVV Energie AG
Executive Board



Dr. Müller



Klöpfer



Dr. Roll

Directors and Officers

EXECUTIVE BOARD OF MVV ENERGIE AG

Dr. Georg Müller

CEO, Commercial Affairs
and Labour Director

Ralf Klöpfer

Sales

Dr. Hansjörg Roll

Technology

SUPERVISORY BOARD OF MVV ENERGIE AG

Dr. Peter Kurz

(Chairman)
Lord High Mayor of City of Mannheim

Heike Kamradt¹

(Deputy Chairman)
Chairman of Group Works Council

Johannes Böttcher¹

Chairman of Works Council
of Energieversorgung Offenbach AG

Timo Carstensen¹

Deputy Chairman of Works Council
of Stadtwerke Kiel AG

Ralf Eisenhauer

Construction and Project Manager at
MWS Projektentwicklungsgesellschaft mbH, Mannheim

Peter Erni¹

Trade Union Secretary at ver.di Rhine-Neckar

Detlef Falk¹

Chairman of Works Council
of Stadtwerke Kiel AG

Dieter Hassel

Member of Executive Board
of RheinEnergie AG, Cologne

Barbara Hoffmann

Auditor, Tax Advisor

Prof. Dr. Heidrun Kämper

Academic Employee at Institut für Deutsche Sprache,
Mannheim

Brigitte Kemmer

Tax Advisor

Dr. Antje Mohr¹

Trade Union Secretary at ver.di Kiel

Dr. Lorenz Näger

Member of Executive Board of HeidelbergCement AG

Steffen Ratzel

Managing Director of BKV-Bäder- und Kurverwaltung
Baden-Württemberg, Anstalt des öffentlichen Rechts,
Baden-Baden (since 1 January 2018)

Peter Sattler¹

Member of Works Council

Bernhard Schumacher¹

Director of Regional Sales Division at MVV Energie AG

Christian Specht

First Mayor of City of Mannheim

Carsten Südmersen

Management Consultant (until 31 December 2017)

Katja Udluft¹

Trade Union Secretary at ver.di Rhine-Neckar

Prof. Heinz-Werner Ufer

Graduate in Economics

Jürgen Wiesner¹

Chairman of Works Council of MVV Energie AG

Additional positions held by members of Executive and Supervisory Boards on supervisory boards or comparable supervisory bodies are listed in detail on the following pages.

¹ Employee representative

MEMBERS OF SUPERVISORY BOARD COMMITTEES AT MVV ENERGIE AG

Committee	Name
Audit Committee	<ul style="list-style-type: none"> • Prof. Heinz-Werner Ufer (Chairman) • Heike Kamradt (Deputy Chairman) • Peter Erni • Detlef Falk • Dr. Lorenz Näger • Steffen Ratzel (since 1 January 2018) • Carsten Südmersen (until 31 December 2017)
Personnel Committee	<ul style="list-style-type: none"> • Dr. Peter Kurz (Chairman) • Heike Kamradt (Deputy Chairman) • Ralf Eisenhauer • Peter Erni • Steffen Ratzel (since 1 January 2018) • Carsten Südmersen (until 31 December 2017) • Jürgen Wiesner
Nomination Committee	<ul style="list-style-type: none"> • Dr. Peter Kurz (Chairman) • Ralf Eisenhauer • Barbara Hoffmann • Steffen Ratzel (since 1 January 2018) • Carsten Südmersen (until 31 December 2017) • Prof. Heinz-Werner Ufer
Mediation Committee	<ul style="list-style-type: none"> • Dr. Peter Kurz (Chairman) • Heike Kamradt • Steffen Ratzel (since 1 January 2018) • Carsten Südmersen (until 31 December 2017) • Jürgen Wiesner
New Authorised Capital Creation Committee	<ul style="list-style-type: none"> • Dr. Peter Kurz (Chairman) • Ralf Eisenhauer • Peter Erni • Dieter Hassel • Heike Kamradt • Steffen Ratzel (since 1 January 2018) • Christian Specht • Carsten Südmersen (until 31 December 2017) • Prof. Heinz-Werner Ufer

MEMBERS OF EXECUTIVE BOARD OF MVV ENERGIE AG

Name	Positions held on other statutory supervisory boards of German companies	Membership of comparable German and foreign company supervisory boards
Dr. Georg Müller	<ul style="list-style-type: none"> • Energieversorgung Offenbach AG, Offenbach (Chairman) • Grosskraftwerk Mannheim AG, Mannheim • Juwi AG, Wörrstadt (Chairman) • MVV Enamic GmbH, Mannheim (Deputy Chairman) • MVV Insurance Services GmbH, Mannheim (Chairman) • MVV Trading GmbH, Mannheim • MVV Umwelt GmbH, Mannheim • Saarschmiede GmbH, Völklingen • Stadtwerke Kiel AG, Kiel (Chairman) 	
Ralf Klöpfer	<ul style="list-style-type: none"> • Energieversorgung Offenbach AG, Offenbach • IDOS Software AG, Karlsruhe • Juwi AG, Wörrstadt • MVV Enamic GmbH, Mannheim (Chairman) • MVV Trading GmbH, Mannheim (Chairman) • Stadtwerke Ingolstadt Beteiligungen GmbH, Ingolstadt (Deputy Chairman) • Stadtwerke Kiel AG, Kiel 	<ul style="list-style-type: none"> • BEEGY GmbH, Mannheim (Chairman) • MVV Energie CZ a.s., Prague, Czech Republic (Chairman) • Qivalo GmbH, Mannheim (Deputy Chairman) • Soluvia GmbH, Mannheim • Stadtmarketing Mannheim GmbH, Mannheim
Dr. Hansjörg Roll	<ul style="list-style-type: none"> • Energieversorgung Offenbach AG, Offenbach • Grosskraftwerk Mannheim AG, Mannheim (Chairman since 16 May 2018) • Juwi AG, Wörrstadt • MVV Netze GmbH, Mannheim (Chairman) • MVV Umwelt GmbH, Mannheim (Chairman) • Stadtwerke Kiel AG, Kiel 	<ul style="list-style-type: none"> • MVV Energie CZ a.s., Prague, Czech Republic • Soluvia GmbH, Mannheim (Chairman)

MEMBERS OF SUPERVISORY BOARD OF MVV ENERGIE AG

Name Occupation	Positions held on other statutory supervisory boards of German companies	Membership of comparable German and foreign company supervisory boards
Dr. Peter Kurz (Chairman) Lord High Mayor of City of Mannheim	<ul style="list-style-type: none"> • Universitätsklinikum Mannheim GmbH, Mannheim (Chairman) • MKB Mannheimer Kommunal-Beteiligungen GmbH, Mannheim (Chairman) 	<ul style="list-style-type: none"> • GBG Mannheimer Wohnungsbau-gesellschaft mbH, Mannheim (Chairman) • mg: mannheimer gründungszentren gmbh, Mannheim (Chairman) • MWS Projektentwicklungsgesellschaft mbH, Mannheim (Chairman) • Popakademie Baden-Württemberg GmbH, Mannheim • Sparkasse Rhein Neckar Nord, Mannheim (Chairman since 12 August 2018) • Stadtmarketing Mannheim GmbH, Mannheim
Heike Kamradt (Deputy Chairman) Chairman of Group Works Council	<ul style="list-style-type: none"> • MVV Enamic GmbH, Mannheim • MVV Insurance Services GmbH, Mannheim • MVV Netze GmbH, Mannheim • MVV Trading GmbH, Mannheim • MVV Umwelt GmbH, Mannheim 	
Johannes Böttcher Chairman of Works Council of Energie- versorgung Offenbach AG	<ul style="list-style-type: none"> • Energieversorgung Offenbach AG, Offenbach (Deputy Chairman) 	
Timo Carstensen Deputy Chairman of Works Council of Stadtwerke Kiel AG	<ul style="list-style-type: none"> • Stadtwerke Kiel AG, Kiel 	
Ralf Eisenhauer Construction and Project Manager at MWS Projekt- entwicklungsgesellschaft mbH, Mannheim		<ul style="list-style-type: none"> • Sparkasse Rhein Neckar Nord, Mannheim • Stadtmarketing Mannheim GmbH, Mannheim
Peter Erni Trade Union Secretary at ver.di Rhine-Neckar		
Detlef Falk Chairman of Works Council of Stadtwerke Kiel AG	<ul style="list-style-type: none"> • Stadtwerke Kiel AG, Kiel 	<ul style="list-style-type: none"> • Soluvia GmbH, Mannheim

Name Occupation	Positions held on other statutory supervisory boards of German companies	Membership of comparable German and foreign company supervisory boards
Dieter Hassel Member of Executive Board of RheinEnergie AG, Cologne	<ul style="list-style-type: none"> • BRUNATA-METRONA GmbH, Hürth • NetCologne Gesellschaft für Telekommunikation mbH, Cologne 	<ul style="list-style-type: none"> • Agger Energie GmbH, Gummersbach • BELKAW GmbH, Bergisch Gladbach (Chairman) • Energieversorgung Leverkusen GmbH & Co. KG, Leverkusen • Gasversorgungsgesellschaft mbH, Rhein-Erft, Hürth • Rheinische NETZGesellschaft mbH, Cologne • Stadtwerke Leichlingen GmbH, Leichlingen (Deputy Chairman) • Stadtwerke Lohmar GmbH & Co. KG, Lohmar
Barbara Hoffmann Auditor, Tax Advisor		<ul style="list-style-type: none"> • Berliner Stadtreinigungsbetriebe, Anstalt des öffentlichen Rechts, Berlin
Prof. Dr. Heidrun Kämper Academic Employee at Institut für Deutsche Sprache, Mannheim		<ul style="list-style-type: none"> • m:con – mannheim:congress GmbH, Mannheim • Stadt Mannheim Beteiligungs GmbH, Mannheim
Brigitte Kemmer Tax Advisor		
Dr. Antje Mohr Trade Union Secretary at ver.di Kiel	<ul style="list-style-type: none"> • Stadtwerke Kiel AG, Kiel 	

Name Occupation	Positions held on other statutory supervisory boards of German companies	Membership of comparable German and foreign company supervisory boards
Dr. Lorenz Näger Member of Executive Board of HeidelbergCement AG		<ul style="list-style-type: none"> • Castle Cement Limited, Maidenhead, UK • Cimenteries CBR S.A., Brussels, Belgium • ENCI Holding N.V., 's-Hertogenbosch, Netherlands • Hanson Limited, Maidenhead, UK • Hanson Pioneer España, S.L.U., Madrid, Spain • HeidelbergCement Canada Holding Limited, Maidenhead, UK • HeidelbergCement Holding S.à.r.l., Luxembourg • HeidelbergCement UK Holding Limited, Maidenhead, UK • HeidelbergCement UK Holding II Limited, Maidenhead, UK • Italcementi Fabbriche Riunite Cemento S.p.A., Bergamo, Italy • Lehigh B.V., 's-Hertogenbosch, Netherlands (Chairman) • Lehigh Hanson, Inc., Irving, TX, USA • Lehigh Hanson Materials Limited, Calgary, Canada • Lehigh UK Limited, Maidenhead, UK • Palatina Insurance Limited, St. Julians, Malta (until 24 October 2017) • PHOENIX Pharmahandel GmbH & Co. KG, Mannheim, Germany • PT Indocement Tungal Prakarsa Tbk., Jakarta, Indonesia • Recem S.A., Luxemburg (until 31 March 2018)
Steffen Ratzel Managing Director of BKV-Bäder- und Kurverwal- tung Baden-Württemberg, Anstalt des öffentlichen Rechts, Baden-Baden (since 1 January 2018)		<ul style="list-style-type: none"> • Rhein-Neckar Flugplatz GmbH, Mannheim • Gemeinschaftskraftwerk Baden-Baden GmbH, Baden-Baden • Staatsbad Wildbad – Bäder- und Kurbetrieb- gesellschaft mbH, Bad Wildbad • Badenweiler Thermen und Touristik GmbH, Badenweiler
Peter Sattler Member of Works Council of MVV Energie AG	<ul style="list-style-type: none"> • MVV Insurance Services GmbH, Mannheim 	

Name Occupation	Positions held on other statutory supervisory boards of German companies	Membership of comparable German and foreign company supervisory boards
Bernhard Schumacher Director of Regional Sales Division at MVV Energie AG		<ul style="list-style-type: none"> • AVR Biogas GmbH, Sinsheim (Deputy Chairman) • Management Stadtwerke Buchen GmbH, Buchen (Deputy Chairman) • Stadtwerke Schwetzingen Verwaltungsgesellschaft mbH, Schwetzingen • Stadtwerke Walldorf GmbH & Co. KG, Walldorf
Christian Specht First Mayor of City of Mannheim	<ul style="list-style-type: none"> • Universitätsklinikum Mannheim GmbH, Mannheim • MV Verkehr GmbH, Mannheim (Chairman) • Rhein-Neckar-Verkehr GmbH, Mannheim 	<ul style="list-style-type: none"> • Verkehrsverbund Rhein-Neckar GmbH (VRN), Mannheim (Chairman)
Carsten Südmeren Management Consultant (until 31 December 2017)		
Katja Udluft Trade Union Secretary at ver.di Rhine-Neckar		
Prof. Heinz-Werner Ufer Graduate in Economics	<ul style="list-style-type: none"> • Amprion GmbH, Dortmund (Chairman) 	
Jürgen Wiesner Chairman of Works Council of MVV Energie AG	<ul style="list-style-type: none"> • MVV Enamic GmbH, Mannheim • MVV Trading GmbH, Mannheim • MVV Umwelt GmbH, Mannheim 	<ul style="list-style-type: none"> • Soluvia GmbH, Mannheim

Independent Auditor's Report

To MVV Energie AG, Mannheim

REPORT ON THE AUDIT OF THE CONSOLIDATED FINANCIAL STATEMENTS AND OF THE GROUP MANAGEMENT REPORT

Audit Opinions

We have audited the consolidated financial statements of MVV Energie AG, Mannheim, and its subsidiaries (the Group), which comprise the consolidated balance sheet as at 30 September 2018, the consolidated income statement, statement of comprehensive income, consolidated statement of changes in equity and consolidated cash flow statement for the financial year from 1 October 2017 to 30 September 2018, and notes to the consolidated financial statements, including a summary of significant accounting policies. In addition, we have audited the group management report of MVV Energie AG, which is combined with the Company's management report, for the financial year from 1 October 2017 to 30 September 2018. We have not audited the content of those parts of the group management report listed in the "Other Information" section of our auditor's report in accordance with the German legal requirements.

In our opinion, on the basis of the knowledge obtained in the audit,

- the accompanying consolidated financial statements comply, in all material respects, with the IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § [Article] 315e Abs. [paragraph] 1 HGB [Handelsgesetzbuch: German Commercial Code] and, in compliance with these requirements, give a true and fair view of the assets, liabilities, and financial position of the Group as at 30 September 2018, and of its financial performance for the financial year from 1 October 2017 to 30 September 2018, and
- the accompanying group management report as a whole provides an appropriate view of the Group's position. In all material respects, this group management report is consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development. Our audit opinion on the group management report does not cover the content of those parts of the group management report listed in the "Other Information" section of our auditor's report.

Pursuant to § 322 Abs. 3 Satz [sentence] 1 HGB, we declare that our audit has not led to any reservations relating to the legal compliance of the consolidated financial statements and of the group management report.

Basis for the Audit Opinions

We conducted our audit of the consolidated financial statements and of the group management report in accordance with § 317 HGB and the EU Audit Regulation (No. 537/2014, referred to subsequently as "EU Audit Regulation") and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW). Our responsibilities under those requirements and principles are further described in the "Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report" section of our auditor's report. We are independent of the group entities in accordance with the requirements of European law and German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements. In addition, in accordance with Article 10 (2) point (f) of the EU Audit Regulation, we declare that we have not provided non-audit services prohibited under Article 5 (1) of the EU Audit Regulation. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions on the consolidated financial statements and on the group management report.

Key Audit Matters in the Audit of the Consolidated Financial Statements

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements for the financial year from 1 October 2017 to 30 September 2018. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our audit opinion thereon; we do not provide a separate audit opinion on these matters.

In our view, the matters of most significance in our audit were as follows:

- 1. Recoverability of goodwill**
- 2. Accounting treatment of energy trading transactions**

Our presentation of these key audit matters has been structured in each case as follows:

- a. Matter and issue
- b. Audit approach and findings
- c. Reference to further information

Hereinafter we present the key audit matters:

1. Recoverability of goodwill

- a. Goodwill amounting in total to € 197 million is reported under the “Intangible assets” balance sheet item in the consolidated financial statements of MVV Energie AG. Goodwill is tested for impairment by the Company once a year or when there are indications of impairment to determine any possible need for write-downs. The impairment test is carried out at the level of the groups of cash-generating units to which the relevant goodwill is allocated. The carrying amount of the relevant cash-generating units, including goodwill, is compared with the corresponding recoverable amount in the context of the impairment test. The recoverable amount is generally determined using the value in use. The present value of the future cash flows from the respective group of cash-generating units normally serves as the basis of valuation. Present values are calculated using discounted cash flow models. For this purpose, the adopted medium-term business plan of the Group forms the starting point which is extrapolated based on assumptions about long-term rates of growth. Expectations relating to future market developments and assumptions about the development of macroeconomic factors are also taken into account. The discount rate used is the weighted average cost of capital for the respective group of cash-generating units. In the context of the quarterly financial statements as of 31 March 2018, MVV Energie AG conducted an impairment test on the goodwill allocated to the juwi subgroup due to indications of impairment. The result of this impairment test was an impairment in the amount of € 24.0 million – after taking into account the fair value less costs of disposal. In addition, as a result of periodic impairment tests impairments of € 9.7 million were recognized, particularly for MVV Enamic’s goodwill.

The outcome of this valuation exercise is dependent to a large extent on the estimates made by management with respect to the future cash inflows from the respective group of cash-generating units, the discount rate used, the rate of growth and other assumptions, and is therefore subject to considerable uncertainty. Against this background and due to the complex nature of the valuation, this matter was of particular significance during our audit.

- b. As part of our audit, we assessed the methodology used for the purposes of performing the impairment test, among other things. After matching the future cash inflows used for the calculation against the adopted medium-term business plan of the Group, we assessed the appropriateness of the calculation, in particular by reconciling it with general and sector-specific market expectations. In addition, we assessed the appropriate consideration of the costs of Group functions. In the knowledge that even relatively small changes in the discount rate applied can have a material impact on the value of the entity calculated in this way, we also focused our testing on the parameters used to determine the discount rate applied, and assessed the calculation model. In order to reflect the uncertainty inherent in the projections, we evaluated the sensitivity analyses performed by the Company. Overall, the valuation parameters and assumptions used by the executive directors are in line with our expectations and are also within the ranges considered by us to be reasonable.
- c. The Company's goodwill disclosures are contained in note "14 Intangible assets" of the notes to the consolidated financial statements.

2. Accounting treatment of energy trading transactions

- a. Within the MVV Energie AG Group, the consolidated subsidiary MVV Trading GmbH has primary responsibility for the procurement of energy and emission rights and for hedging energy price risks for the Group companies MVV Energie AG, Stadtwerke Kiel AG, Energieversorgung Offenbach AG and Stadtwerke Ingolstadt GmbH. MVV Trading GmbH trades to a large extent on the spot and futures market for electricity, gas and emission rights on stock exchanges and on the over-the-counter market for these purposes. These contracts are classified as derivative financial instruments in accordance with IAS 39, which are either accounted for at fair value through profit or loss (classified as held-for-trading financial instruments) or as pending transactions if the underlying for the derivative financial instrument will be received or delivered in future as part of the Company's own expected purchase, sale or usage requirements ("own use exemption"). The accounting treatment for physically settled derivative financial instruments is determined with the aid of the risk management system of MVV Trading GmbH, which allocates these derivative financial instruments to their corresponding purpose and therefore to the appropriate accounting treatment from a Group perspective. Accordingly, physically settled derivative financial instruments that do not form part of the Group's own expected purchase, sale or usage requirements and all financially settled derivative financial instruments are measured at fair value through profit or loss. To some extent these derivative financial instruments for energy are included as hedging instruments in the hedge accounting in accordance with IAS 39 as so called hedged cash flows. The underlying transactions are the purchase respectively the sale of energy at variable prices within maximum five years.

The energy trading operations are supported by energy trading systems. These systems handle the process chain from the recording of trading transactions to the calculation and measurement of positions and the confirmation of trading transactions, as well as risk management. In view of the high volume of trading and the complexity of accounting for derivatives in accordance with IAS 39 and IFRS 13, respectively, as well as its significant effects on the assets, liabilities, financial position and financial performance, this business area is of particular significance for the consolidated financial statements and the conduct of our audit.

- b. As part of our audit, among other things, we assessed the appropriateness of the internal control system established for the purpose of entering into and settling energy trading transactions, including the trading system used for this purpose. As part of our audit of the internal control system, we also evaluated the effectiveness of the controls established by the Company on a sample basis. We analyzed the methodology for determining the fair values of the derivative instruments with respect to compliance with IFRS 13 and carried out an appraisal using our own valuations on a sample basis. With respect to the accounting treatment of the derivatives in accordance with IAS 39, we evaluated the application of the own use exemption for physically settled derivative financial instruments using the process implemented within the Group – from the submission of orders by the consolidated subsidiaries to MVV Trading GmbH to the processing of the data by MVV Trading GmbH – and satisfied ourselves that the own use exemption is applied correctly on the basis of a random sample. We assessed the recognition of cash flow hedges and their accounting. With respect to the hedged cash flows, we assessed the essential past hedge effectiveness and the expected future hedge effectiveness and the correctness of the corresponding amounts recorded in equity as well as the reclassified amounts within the consolidated income statement. In our view, the accounting policies applied by management and the methodology for accounting for energy trading transactions are appropriate overall.
- c. The Company's disclosures relating to energy trading and its effects on the consolidated financial statements are contained in section "35 Financial instruments" in the notes to the consolidated financial statements.

Other Information

The executive directors are responsible for the other information. The other information comprises the following non-audited parts of the group management report:

- the statement on corporate governance pursuant to § 289f HGB and § 315d HGB included in section "Corporate Governance" of the group management report
- the corporate governance report pursuant to No. 3.10 of the German Corporate Governance Code
- the separate non-financial report pursuant to § 289b Abs. 3 HGB and § 315b Abs. 3 HGB

The other information comprises further the remaining parts of the annual report – excluding cross-references to external information – with the exception of the audited consolidated financial statements, the audited group management report and our auditor's report.

Our audit opinions on the consolidated financial statements and on the group management report do not cover the other information, and consequently we do not express an audit opinion or any other form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the other information and, in so doing, to consider whether the other information

- is materially inconsistent with the consolidated financial statements, with the group management report or our knowledge obtained in the audit, or
- otherwise appears to be materially misstated.

Responsibilities of the Executive Directors and the Supervisory Board for the Consolidated Financial Statements and the Group Management Report

The executive directors are responsible for the preparation of the consolidated financial statements that comply, in all material respects, with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e Abs. 1 HGB and that the consolidated financial statements, in compliance with these requirements, give a true and fair view of the assets, liabilities, financial position, and financial performance of the Group. In addition the executive directors are responsible for such internal control as they have determined necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the executive directors are responsible for assessing the Group's ability to continue as a going concern. They also have the responsibility for disclosing, as applicable, matters related to going concern. In addition, they are responsible for financial reporting based on the going concern basis of accounting unless there is an intention to liquidate the Group or to cease operations, or there is no realistic alternative but to do so.

Furthermore, the executive directors are responsible for the preparation of the group management report that, as a whole, provides an appropriate view of the Group's position and is, in all material respects, consistent with the consolidated financial statements, complies with German legal requirements, and appropriately presents the opportunities and risks of future development. In addition, the executive directors are responsible for such arrangements and measures (systems) as they have considered necessary to enable the preparation of a group management report that is in accordance with the applicable German legal requirements, and to be able to provide sufficient appropriate evidence for the assertions in the group management report.

The supervisory board is responsible for overseeing the Group's financial reporting process for the preparation of the consolidated financial statements and of the group management report.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the group management report as a whole provides an appropriate view of the Group's position and, in all material respects, is consistent with the consolidated financial statements and the knowledge obtained in the audit, complies with the German legal requirements and appropriately presents the opportunities and risks of future development, as well as to issue an auditor's report that includes our audit opinions on the consolidated financial statements and on the group management report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with § 317 HGB and the EU Audit Regulation and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer (IDW) will always detect a material misstatement. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements and this group management report.

We exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements and of the group management report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our audit opinions. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit of the consolidated financial statements and of arrangements and measures (systems) relevant to the audit of the group management report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an audit opinion on the effectiveness of these systems.
- Evaluate the appropriateness of accounting policies used by the executive directors and the reasonableness of estimates made by the executive directors and related disclosures.
- Conclude on the appropriateness of the executive directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in the auditor's report to the related disclosures in the consolidated financial statements and in the group management report or, if such disclosures are inadequate, to modify our respective audit opinions. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to be able to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements present the underlying transactions and events in a manner that the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Group in compliance with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e Abs. 1 HGB.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express audit opinions on the consolidated financial statements and on the group management report. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinions.
- Evaluate the consistency of the group management report with the consolidated financial statements, its conformity with German law, and the view of the Group's position it provides.
- Perform audit procedures on the prospective information presented by the executive directors in the group management report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by the executive directors as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate audit opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with the relevant independence requirements, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, the related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter.

OTHER LEGAL AND REGULATORY REQUIREMENTS

Further Information pursuant to Article 10 of the EU Audit Regulation

We were elected as group auditor by the annual general meeting on 9 March 2018. We were engaged by the supervisory board on 26 June 2018. We have been the group auditor of the MVV Energie AG, Mannheim, without interruption since the financial year 2008/09.

We declare that the audit opinions expressed in this auditor's report are consistent with the additional report to the audit committee pursuant to Article 11 of the EU Audit Regulation (long-form audit report).

GERMAN PUBLIC AUDITOR RESPONSIBLE FOR THE ENGAGEMENT

The German Public Auditor responsible for the engagement is Kerstin Krauß.

Mannheim, 13 November 2018

PricewaterhouseCoopers GmbH
Wirtschaftsprüfungsgesellschaft



Folker Trepte
Wirtschaftsprüfer
(German Public Auditor)






Kerstin Krauß
Wirtschaftsprüferin
(German Public Auditor)

Other Disclosures

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Separate Non-Financial Report
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About this Report

In our 2018 Annual Report, we have documented information about sustainability at MVV in accordance with the Sustainability Reporting Guidelines of the Global Reporting Initiative (GRI) in the GRI Standards version.





The listed company MVV Energie AG, which has its legal domicile in Mannheim, is the parent company of MVV. As a stock corporation under German law, it has three governing bodies: the Annual General Meeting, the Supervisory Board and the Executive Board.  **GRI 102-5** Information about the areas of responsibility and modes of operation of the Executive and Supervisory Boards of MVV Energie AG can be found in the Corporate Governance Report  **Page 100**.  **GRI 102-18**




Unless otherwise stated, the information refers to our 2018 financial year (1 October 2017 to 30 September 2018).

 **GRI 102-50**


This report has been compiled in accordance with the “Core” option of the GRI Standards.  **GRI 102-54** In our GRI Content Index  **Pages 218–220** we list both the material topics for our Group and associated topic-specific disclosures for GRI Standards. We also publish proprietary topic-specific disclosures. The page references in the index all refer to this 2018 Annual Report, which we published on 11 December 2018. Our previous annual report was published on 12 December 2017. It also included a chapter on sustainability and complied with the “Core” option pursuant to GRI-G4.  **GRI 102-51**

Within this report, indications and references are denoted as follows:



-  Reference to other information contained in this report.
-  Reference to other information on the internet.
-  **GRI** Reference to a sentence or paragraph that contains disclosures in accordance with the Sustainability Report Guidelines of the Global Reporting Initiative.
-  **GRI** If underlined, the reference indicates a section.

Unless we indicate otherwise, the information refers to MVV, i.e. to all fully consolidated companies  **Page 189**. In our sustainability reporting, we publish additional data about our at-equity shareholdings as our stakeholders rightly expect a high degree of transparency from us. Most of the energy we generate conventionally, for example, comes from the two joint power plants, namely Grosskraftwerk Mannheim (GKM) and Gemeinschaftskraftwerk Kiel (GKK), which we consolidate using the equity method. For select topics, we focus on our three largest locations of Mannheim, Offenbach und Kiel – for example in our disclosures on grid infrastructure. Unless stated otherwise in the comments on the various indicators, our reporting focuses on those markets and regions in which we primarily operate. These are Germany, the UK and the Czech Republic. Most of our suppliers and partners are also located in these regions.  **GRI 102-6**  **GRI 102-45**

We compile our greenhouse gas balance sheet on the basis of the Greenhouse Gas Protocol. The overwhelming share of the CO₂ emissions we report comes from plants governed by the emissions trading system (ETS) and is therefore certified. We collect further data with the assistance of various internal and external systems. Among others, these include energy audits and energy management systems, occupational health and safety systems such as OHSAS 18001, environmental management systems such as EMAS and compliance management systems.


In the GRI Content Index, we have indicated which report contents are subject to external audits. These audits were conducted by PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft (PwC) in its audit of the consolidated financial statements and management report (FSA) and its review pursuant to ISAE 3000 (revised).  **GRI 102-56**

In the following table, we show how our material topics changed compared with the previous year and explain the changes made.

Material sustainability topics 2018	Material sustainability topics 2017	Changes on previous year  GRI 102-49
System change <ul style="list-style-type: none"> Secure Energy Supply Sector Coupling Changed Energy Demand 	Supply Reliability	Formation of new System Change cluster – previous topic of Supply Reliability renamed as Secure Energy Supply; new topics: Sector Coupling, Changed Energy Demand.
Decarbonisation and energy turnaround <ul style="list-style-type: none"> Climate Protection Renewable Energies Energy Efficiency 	Climate Protection, Renewable Energies Energy Efficiency	New cluster
Resource efficiency and local environmental protection	Resource Use and Environmental Protection	Renamed
Digital transformation <ul style="list-style-type: none"> Industry 4.0: Changed Patterns of Consumption and Customer Relationships Customer Solutions Information Security and Data Protection 	Market and Customers <ul style="list-style-type: none"> Customer Solutions Customer Satisfaction Information Security and Data Protection 	Formation of new Digital Transformation cluster – new reporting content: Industry 4.0: Changed Patterns of Consumption and Customer Relationships. Customer Satisfaction (product labeling) now reported as a standard disclosure pursuant to GRI Standards  Page 20.
Employee concerns	Employees	Renamed
Social responsibility	Social responsibility	No changes

GRI Content Index

 102-55

GRI Standard	Designation	Page	Notes	External assurance  102-56
Foundation				
GRI 101: Foundation 2016				
GRI 102: General Disclosures 2016				
Organisational profile				
102-1	Name of the organisation	63		FSA
102-2	Activities, brands, products and services	63		FSA
102-3	Location of headquarters	63		FSA
102-4	Location of operations	63		FSA
102-5	Ownership and legal form	63, 216	www.mvv.de/shareholderstructure	
102-6	Markets served	64		FSA
102-7	Scale of the organisation	63, 75		FSA
102-8	Information on employees and other workers	50		FSA
102-9	Supply chain	25 – 26		ISAE 3000 (revised)
102-10	Significant changes to the organisation and its supply chain	–	None	
102-11	Precautionary principle or approach	–	Given our strategic corporate alignment, which is closely linked to our sustainability strategy, we account for the precautionary approach towards dealing with potentially negative implications for the environment.	
102-12	External initiatives	21		
102-13	Membership of associations	21		
Strategy				
102-14	Statement from senior decision-maker	5 – 6		
Ethics and integrity				
102-16	Values, principles, standards and norms of behaviour	19		ISAE 3000 (revised)
Governance				
102-18	Governance structure	19, 201, 216		
Stakeholder engagement				
102-40	List of stakeholder groups	20		
102-41	Collective bargaining agreements	–	75 % of our employees in Germany are employed at companies that have concluded collective bargaining agreements.	
102-42	Identifying and selecting stakeholders	20		
102-43	Approach to stakeholder engagement	20		
102-44	Key topics and concerns raised	20	Key stakeholder concerns are dealt with in greater detail under Material Topics (Pages 27 – 59).	

GRI Standard	Designation	Page	Notes	External assurance 🌐 102-56
Reporting practice				
102-45	Entities included in the consolidated financial statements	133		FSA
102-46	Defining reporting content and topic boundaries	21	Supplementary information on Pages 17 – 19	
102-47	List of material topics	22 – 23		
102-48	Restatements of information	–	None	
102-49	Changes in reporting	217		
102-50	Reporting period	216		
102-51	Date of most recent report	216		
102-52	Reporting cycle		Annual	
102-53	Contact point for questions regarding the report	227		
102-54	Claims of reporting in accordance with the GRI Standards	216		
102-55	GRI content index	218 – 220		
102-56	External assurance	216, 208, 223		

GRI 103: Management Approach 2016


103-1	Explanation of the material topic and its boundary	21		
103-2	The management approach and its components	27, 32, 42, 46, 49, 55		
103-3	Evaluation of the management approach	27, 32, 42, 46, 49, 55		

Specific standard disclosures on material topics**Material topic: system change***Specific disclosures*

MVV-1	Diversified generation portfolio	28		
GRI 203-1 2016	Infrastructure investments and services supported	29		
MVV-2	Sector coupling	29 – 30		
MVV-3	Changed energy demand	30 – 31		

Material topic: decarbonisation and energy turnaround*Specific disclosures*

GRI 302-5 2016	Reductions in energy requirements	39 – 40		
GRI 305-1 2016	Direct (Scope 1) GHG emissions	34		ISAE 3000 (revised)
GRI 305-2 2016	Energy indirect (Scope 2) GHG emissions	34		ISAE 3000 (revised)
GRI 305-3 2016	Other indirect (Scope 3) GHG emissions	34		ISAE 3000 (revised)
GRI 305-5 2016	Reduction of GHG emissions	35		
MVV-4	Installed renewable energies capacities	36		ISAE 3000 (revised)
MVV-5	Concluded development of new renewable energies plants	38		
MVV-6	Grid losses	40		

GRI Standard	Designation	Page	Notes	External assurance
				 102-56
Material topic: resource efficiency and local environmental protection				
<i>Specific disclosures</i>				
GRI 301-1 2016	Materials used	44		
GRI 305-7 2016	Nitrogen oxides (NO _x), sulphur oxides (SO _x) and other significant air emissions	45		
Material topic: digital transformation				
<i>Specific disclosures</i>				
MVV-7	Changed patterns of consumption and customer relationships	47		
MVV-8	Individual customer solutions	47 – 48		
MVV-9	Information security and data protection	48		
Material topic: employee concerns				
<i>Specific disclosures</i>				
GRI 403-1 2016	Worker participation, consultation and communication on occupational health and safety	49		ISAE 3000 (revised)
GRI 403-2 2016	Occupational health and safety	54		
GRI 404-2 2016	Knowledge management	51 – 52		ISAE 3000 (revised)
MVV-10	Promoting women	52 – 54		ISAE 3000 (revised)
Material topic: social responsibility				
<i>Specific disclosures</i>				
GRI 201-1 2016	Direct economic value generated and distributed	56 – 57		FSA
GRI 413-1 2016	Local communities	57 – 58	No disclosures on scope	
MVV-11	Social commitment	59		




Progress Report for UN Global Compact

MVV is committed to the ten principles of the UN Global Compact. By way of a progress report, in the following table we link our material sustainability topics to the principles of the UN Global Compact.

Progress report for UN Global Compact		
Principle	Topic	Page
Human rights		
1. Businesses should support and respect the protection of internationally proclaimed human rights.	Human rights policy	18 – 19
2. Businesses should make sure that they are not complicit in human rights abuses.	Compliance	18, 102 – 103
Labour		
3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.	Employee concerns – Workforce representation	49
4. Businesses should be committed to the elimination of all forms of forced and compulsory labour.	Value chain	25 – 26
5. Businesses should be committed to the effective abolition of child labour.	Value chain	25 – 26
6. Businesses should be committed to the elimination of discrimination in respect of employment and occupation.	Compliance Corporate culture	18, 50, 102 – 103
Environment		
7. Businesses should support a precautionary approach to environmental challenges.	Sustainability chapter Opportunity and risk report	17 – 59, 115 – 123
8. Businesses should undertake initiatives to promote greater environmental responsibility.	Sustainability chapter	17 – 59
9. Businesses should encourage the development and diffusion of environmentally-friendly technologies.	Sustainability chapter	17 – 59
Corruption		
10. Businesses should work against corruption in all its forms, including extortion and bribery.	Compliance	18, 102 – 103

UN Sustainable Development Goals (SDG)

In 2015, the United Nations created a basis for jointly tackling global challenges with its “Sustainable Development Goals”, the 17 targets set out in its “2030 Agenda for Sustainable Development”. In 2018, we completed our analysis of the Sustainable Development Goals. With our business activities, we contribute in particular to the following three SDGs:

SDG		Chapter	Content	Page
 <p>7 AFFORDABLE AND CLEAN ENERGY</p>	Sustainable and modern energy for everyone – securing access to affordable, reliable and up-to-date energy for everyone.	System Change	Secure Energy Supply	28 – 29
 <p>11 SUSTAINABLE CITIES AND COMMUNITIES</p>	Sustainable cities and communities – shaping cities and communities to make them inclusive, resilient and sustainable.	Materiality Analysis	Changed Infrastructures and Smart Cities	24
 <p>13 CLIMATE ACTION</p>	Take immediate measures to combat climate change and its implications.	Decarbonisation and Energy Turnaround	Climate Protection Renewable Energies Energy Efficiency	32 – 35 35 – 38 39 – 41

Auditor's Report on Combined Separate Non-Financial Report ¹

INDEPENDENT PRACTITIONER'S REPORT ON A LIMITED ASSURANCE ENGAGEMENT ON NON-FINANCIAL REPORTING

To MVV Energie AG, Mannheim

We have performed a limited assurance engagement on the combined separate non-financial report pursuant to §§ (Articles) 289b Abs. (paragraph) 3 and 315b Abs. 3 HGB ("Handelsgesetzbuch": "German Commercial Code") of MVV Energie AG, Mannheim, (hereinafter the "Company") for the period from 1 October to 30 September 2018 comprising the sections marked with blue font in chapter "Sustainability" and in the combined management report within the annual report of the Company (hereinafter the "Non-financial Report").

Responsibilities of the Executive Directors

The executive directors of the Company are responsible for the preparation of the Non-financial Report in accordance with §§ 315b and 315c in conjunction with 289c to 289e HGB.

This responsibility of Company's executive directors includes the selection and application of appropriate methods of non-financial reporting as well as making assumptions and estimates related to individual non-financial disclosures which are reasonable in the circumstances. Furthermore, the executive directors are responsible for such internal control as they have considered necessary to enable the preparation of a Non-financial Report that is free from material misstatement whether due to fraud or error.

Independence and Quality Control of the Audit Firm

We have complied with the German professional provisions regarding independence as well as other ethical requirements.

Our audit firm applies the national legal requirements and professional standards – in particular the Professional Code for German Public Auditors and German Chartered Auditors ("Berufssatzung für Wirtschaftsprüfer und vereidigte Buchprüfer": "BS WP/vBP") as well as the Standard on Quality Control 1 published by the Institut der Wirtschaftsprüfer (Institute of Public Auditors in Germany; IDW): Requirements to quality control for audit firms (IDW Qualitätssicherungsstandard 1: Anforderungen an die Qualitätssicherung in der Wirtschaftsprüferpraxis – IDW QS 1) – and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Practitioner's Responsibility

Our responsibility is to express a limited assurance conclusion on the Non-financial Report based on the assurance engagement we have performed.

Within the scope of our engagement we did not perform an audit on external sources of information or expert opinions, referred to in the Non-financial Report.

We conducted our assurance engagement in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (Revised): Assurance Engagements other than Audits or Reviews of Historical Financial Information, issued by the IAASB. This Standard requires that we plan and perform the assurance engagement to allow us to conclude with limited assurance that nothing has come to our attention that causes us to believe that the Company's Non-financial Report for the period from 1 October to 30 September 2018 has not been prepared, in all material aspects, in accordance with §§ 315b and 315c in conjunction with 289c to 289e HGB.

¹ PricewaterhouseCoopers GmbH has performed a limited assurance engagement on the German version of the separate non-financial report and issued an independent assurance report in German language, which is authoritative. The following text is a translation of the independent assurance report.

In a limited assurance engagement the assurance procedures are less in extent than for a reasonable assurance engagement, and therefore a substantially lower level of assurance is obtained. The assurance procedures selected depend on the practitioner's judgment.

Within the scope of our assurance engagement, we performed amongst others the following assurance procedures and further activities:

- Obtaining an understanding of the structure of the sustainability organization and of the stakeholder engagement
- Inquiries of personnel involved in the preparation of the Non-financial Report regarding the preparation process, the internal control system relating to this process and selected disclosures in the Non-financial Report
- Identification of the likely risks of material misstatement of the Non-financial Report
- Analytical evaluation of selected disclosures in the Non-financial Report
- Comparison of selected disclosures with corresponding data in the consolidated financial statements and in the group management report
- Evaluation of the presentation of the non-financial information

Assurance Conclusion

Based on the assurance procedures performed and assurance evidence obtained, nothing has come to our attention that causes us to believe that the Company's Non-financial Report for the period from 1 October to 30 September 2018 has not been prepared, in all material aspects, in accordance with §§ 315b and 315c in conjunction with 289c to 289e HGB.

Intended Use of the Assurance Report

We issue this report on the basis of the engagement agreed with the Company. The assurance engagement has been performed for purposes of the Company and the report is solely intended to inform the Company about the results of the limited assurance engagement. The report is not intended for any third parties to base any (financial) decision thereon. Our responsibility lies only with the Company. We do not assume any responsibility towards third parties.

Munich, 13 November 2018

PricewaterhouseCoopers GmbH
Wirtschaftsprüfungsgesellschaft

Hendrik Fink
Wirtschaftsprüfer
[German public auditor]

ppa. Axel Faupel

Ten-Year Overview

Ten-year overview

	FY 2018 ^{1,2}	FY 2017 ^{1,2}	FY 2016 ^{1,2}	FY 2015 ^{1,2}	FY 2014 ²	FY 2013 ²	FY 2012 ²	FY 2011 ²	FY 2010 ²	FY 2009 ²
Income statement (Euro million)										
Sales excluding energy taxes	3,903	4,010	4,066	3,422	3,717 ¹	4,044	3,895	3,600	3,359	3,161
Adjusted EBITDA	443	407	425	336	330 ¹	376	399	404	406	385
Adjusted EBIT	228	224	213	175	170 ¹	208	223	242	243	239
Adjusted EBT	179	169	139	132	127 ¹	143	151	179	165	165
Adjusted annual net income	111	107	98	92	93 ¹	101	98	125	105	112
Adjusted annual net income after minority interests	94	93	95	75	86 ¹	85	80	108	95	98
Balance sheet figures (Euro million)										
Non-current assets	3,493	3,326	3,586	3,513	3,056 ¹	3,032	2,868	2,965	2,684	2,795
Current assets	1,647	1,387	1,418	1,071	1,015 ¹	1,207	1,211	910	953	1,159
Share capital	169	169	169	169	169	169	169	169	169	169
Capital reserve	455	455	455	455	455	455	455	455	455	455
Accumulated net income	777	705	641	594	579 ¹	547	517	512	452	371
Accumulated other comprehensive income	-21	-57	-81	-107	-73	-74	-48	-3	16	15
Non-controlling interests	245	249	243	203	206 ¹	206	207	213	95	103
Equity	1,625	1,521	1,427	1,314	1,336 ¹	1,303	1,300	1,346	1,187	1,113
Non-current debt	1,922	1,976	2,080	2,211	1,710 ¹	1,751	1,882	1,555	1,500	1,698
Current debt	1,593	1,216	1,497	1,059	1,025 ¹	1,185	897	974	950	1,143
Total assets	5,140	4,713	5,004	4,584	4,071 ¹	4,239	4,079	3,875	3,637	3,954
Net financial debt ³	1,075	1,077	1,283	1,341	1,063 ¹	1,111	1,028	1,011	1,202	1,192
Key balance sheet figures and ratios										
Cash flow from operating activities (Euro million)	331	474	274	255	407 ¹	372	285	376	356	258
Adjusted equity ratio ⁴ (%)	37.3	35.1	33.0	33.8	35.7 ¹	34.5	36.1	37.7	35.7	33.9
ROCE ⁵ (%)	8.5	8.2	7.6	6.6	6.7 ¹	8.3	9.0	9.7	9.1	9.0
WACC ⁶ (%)	6.3	6.1	6.4	6.4	7.4	7.4	8.6	8.5	8.5	8.5
Value spread ⁷ (%)	2.2	2.1	1.2	0.2	-0.7 ¹	0.9	0.4	1.2	0.6	0.5
Capital employed ⁸ (Euro million)	2,674	2,734	2,806	2,660	2,527 ¹	2,507	2,486	2,489	2,688	2,649

1 Since 2015 financial year: Ingolstadt subgroup no longer recognised proportionately, but included in consolidated financial statements at equity (figures for 2014 financial year adjusted)

2 Since 2009 financial year: excluding non-operating measurement item for financial derivatives and excluding restructuring result; since 2011 financial year: also including interest income from finance leases; since 2013 financial year: also excluding structural adjustment for part-time early retirement

3 Non-current and current financial debt less cash and cash equivalents

4 Adjusted equity as percentage of adjusted total assets

5 Return on capital employed: until 2009 financial year: adjusted EBITA as percentage of capital employed; since 2010 financial year: adjusted EBIT as percentage of capital employed

6 Weighted average cost of capital

7 Value spread (ROCE less WACC)

8 Until 2010 financial year: adjusted equity plus financial debt plus provisions for pensions and similar obligations plus accumulated goodwill amortisation (calculated as annual average); since 2011 financial year: adjusted equity plus financial debt plus provisions for pensions and similar obligations less cash and cash equivalents (calculated as annual average)

Ten-year overview

	FY 2018 ^{1,2}	FY 2017 ^{1,2}	FY 2016 ^{1,2}	FY 2015 ^{1,2}	FY 2014 ²	FY 2013 ²	FY 2012 ²	FY 2011 ²	FY 2010 ²	FY 2009 ²
Share and dividend										
Closing price at 30 September ³ (Euro)	26.30	22.85	19.90	21.15	23.89	22.35	21.39	23.86	29.00	30.83
Annual high ³ (Euro)	26.80	24.15	22.00	26.20	26.05	28.00	27.96	29.90	33.00	34.04
Annual low ³ (Euro)	22.94	19.90	19.30	20.26	21.85	20.50	19.50	18.85	29.00	26.55
Market capitalisation at 30 September (Euro million)	1,733	1,506	1,312	1,394	1,575	1,473	1,410	1,573	1,911	2,032
Average daily trading volume (no. of shares)	3,307	8,313	5,630	4,233	2,882	4,121	6,707	8,431	6,108	19,162
No. of individual shares at 30 Sep (000s)	65,907	65,907	65,907	65,907	65,907	65,907	65,907	65,907	65,907	65,907
No. of shares with dividend entitlement (000s)	65,907	65,907	65,907	65,907	65,907	65,907	65,907	65,907	65,907	65,907
Dividend per share (Euro)	0.90 ⁴	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Dividend total (Euro million)	59.3 ⁴	59.3	59.3	59.3	59.3	59.3	59.3	59.3	59.3	59.3
Adjusted earnings per share ⁵ (Euro)	1.43	1.41	1.45	1.14	1.30 ¹	1.29	1.21	1.63	1.44	1.48
Cash from operating activities per share ⁵ (Euro)	5.03	7.19	4.16	3.86	6.18 ¹	5.64	4.33	5.70	5.40	3.91
Adjusted carrying amount per share ^{5,6,7} (Euro)	19.71	18.88	18.36	17.73	18.03 ¹	17.89	17.80	17.61	16.94	16.52
Price/earnings ratio ^{5,8}	18.4	16.2	13.7	18.6	18.4 ¹	17.3	17.7	14.6	20.1	20.8
Price/cash flow ratio ^{5,8}	5.2	3.2	4.8	5.5	3.9 ¹	4.0	4.9	4.2	5.4	7.9
Dividend yield ⁸ (%)	3.4 ⁴	3.9	4.5	4.3	3.8	4.0	4.2	3.8	3.1	2.9
Investments (Euro million)										
Total	290	194	236	470	310 ¹	392	294	281	267	255
of which growth investments	124	64	121	336	207 ¹	301	191	177	156	–
of which investments in existing business	166	130	115	134	103 ¹	91	103	104	111	–
Number of employees at 30 September (headcount)										
MVV	5,978	6,062	6,174	5,308	5,166 ¹	5,459	5,541	5,919	6,059	6,037
of which in Germany	5,137	5,227	5,328	4,676	4,561 ¹	4,900	4,900	5,278	5,444	5,457
of which abroad	841	835	846	632	605	559	641	641	615	580
Full-time equivalents at 30 September										
	5,408	5,487	5,575	4,828	4,688 ¹	4,785	4,898	5,085	5,181	5,171
Sales volumes										
Electricity turnover (kWh million)	23,556	26,293	21,797	20,823	23,207 ¹	25,817	28,283	26,093	23,891	19,582
Heating energy turnover (kWh million)	6,598	6,917	6,716	6,995	6,292 ¹	7,510	6,888	7,289	7,586	7,217
Gas turnover (kWh million)	21,209	25,190	28,270	27,410	22,517 ¹	25,078	17,418	10,888	11,775	10,851
Water turnover (m ³ million)	41	40	41	46	47	47	53	54	54	53
Combustible waste delivered (tonnes 000s)	2,328	2,291	2,306	2,041	1,940	1,888	1,897	1,835	1,762	1,599

1 Since 2015 financial year: Ingolstadt subgroup no longer recognised proportionately, but included in consolidated financial statements at equity (figures for 2014 financial year adjusted)

2 Since 2009 financial year: excluding non-operating measurement item for financial derivatives and excluding restructuring result; since 2011 financial year: also including interest income from finance leases; since 2013 financial year: also excluding structural adjustment for part-time early retirement

3 XETRA trading

4 Pending approval by Annual General Meeting on 8 March 2019

5 Weighted average number of shares: 65,906,796

6 Excluding minority interests, weighted annual average number of shares

7 Excluding non-operating measurement items for financial derivatives

8 Basis: closing price in XETRA trading at 30 September

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All of MVV's financial reports can be downloaded
from our websites.

www.mvv.de/investors

Financial Calendar

11 December 2018

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2018 Financial Year

11 December 2018

Annual Results Press Conference and Analysts' Conference
2018 Financial Year

15 February 2019

Q1 Quarterly Statement
2019 Financial Year

8 March 2019

Annual General Meeting

15 May 2019

H1 Interim Report
2019 Financial Year

15 August 2019

9M Quarterly Statement
2019 Financial Year

10 December 2019

Annual Report
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10 December 2019

Annual Results Press Conference and Analysts' Conference
2019 Financial Year

The dates of analysts' conference calls to be held during the financial year will be announced in good time.

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