

## Corporate Responsibility

# Report

2018



wintershall dea

On May 1, 2019 Wintershall and DEA have become Wintershall Dea. The two major shareholders, BASF and LetterOne, signed a binding agreement to merge their respective oil and gas businesses, in September 2018. The merger was completed on May 1, 2019.

This Corporate Responsibility Report provides information on Wintershall's activities in the 2018 financial year. In the next year, a Corporate Responsibility Report will be published on Wintershall Dea's activities in the 2019 financial year.

## ABOUT THIS REPORT

In this Corporate Responsibility Report, Wintershall provides information on its activities in the 2018 financial year. We use examples and key figures to illustrate how our commitment to corporate responsibility contributes to the company's long-term success.

This report covers Wintershall itself and its subsidiaries.

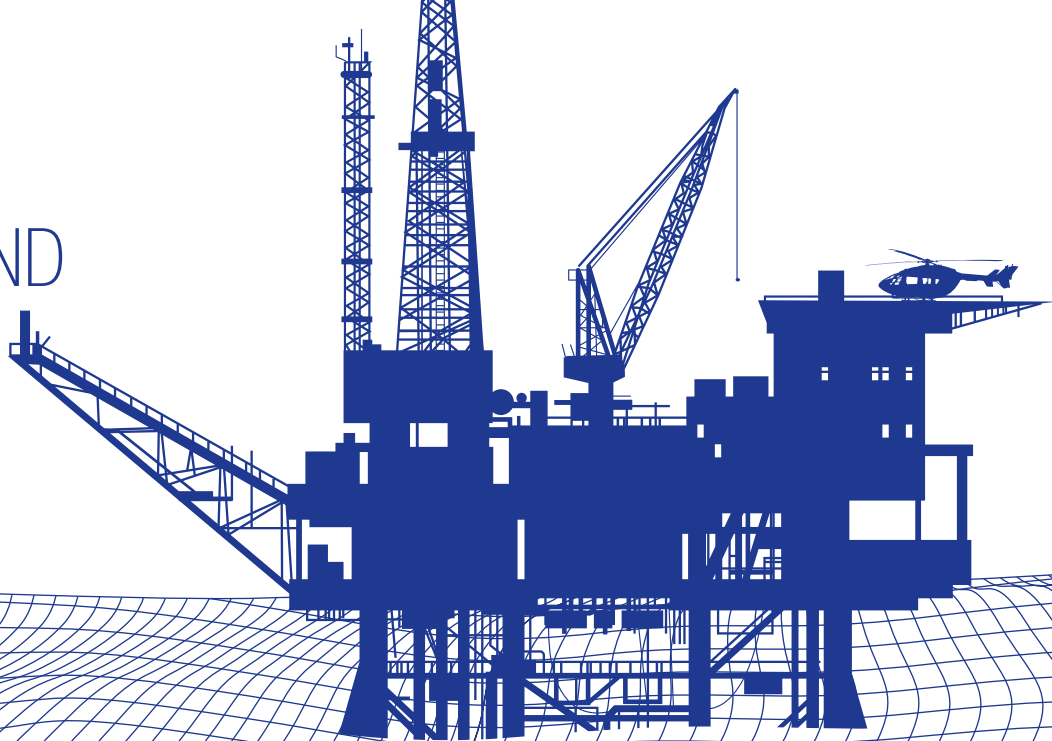
As part of the BASF Group, our financial information is based on the International Financial Reporting Standards (IFRS) requirements. The data regarding employees relate to individuals who were employed within the consolidated companies in the BASF Group as of December 31, 2018. The data and figures used to illustrate our performance in the areas of environment, safety and security correspond to national and international E&P industry standards. As a member of the International Association of Oil and Gas Producers (IOGP) and the German

oil and gas industry association, Bundesverband Erdgas, Erdöl und Geoenergie e.V. (BVEG), Wintershall uses the definitions provided by these two internationally recognized associations when compiling data.

Sustainability reporting is based on the standards defined by the global oil and gas industry association for advancing environmental and social performance (IPIECA). Deviations in standards or reporting period are explicitly shown. All data and information for the reporting period have been obtained from the relevant units using representative methods. The reporting period covers the 2018 financial year (reporting period: January 1, 2018 through December 31, 2018).

This report is published annually in both English and German and is available as a PDF on the Wintershall Dea website.

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Key:

-  Links to websites
-  Cross-reference within the 2018 report

## AT A GLANCE – KEY FIGURES 2018

### ECONOMIC DATA<sup>1</sup>

	Unit	2018	2017
Sales to third parties	€million	4,094	3,252
Income from operations before special items <sup>2</sup>	€million	1,745	683
Investments including acquisitions <sup>3</sup>	€million	1,062	988
Production	MMBOE <sup>4</sup>	171	164

### ENVIRONMENTAL DATA

	Unit	2018	2017
Water use (total)	million m <sup>3</sup>	21.8	21.6
Waste (total)	t	122,139	90,026
Energy			
Energy consumption	MWh <sub>el</sub>	537,540	443,173
Steam use	t	553,455	485,005
Greenhouse gas emissions			
CO <sub>2</sub>	million t	1.5	1.3
CH <sub>4</sub>	t	9,179	7,113
Emission of inorganic substances	t	4,707	3,952

### SOCIAL DATA

		2018	2017
Number of employees	as on Dec. 31	2,018	2,006
Apprentices <sup>5</sup>	as on Dec. 31	49	52
Occupational safety			
Fatalities (own employees and contractors)		0	0
Injury with 1 or more days lost time (own employees and contractors)		3	6

<sup>1</sup> The information on the financial aspects is based on the requirements of International Financial Reporting Standards (IFRS).

<sup>2</sup> Figures for 2018 do not include depreciation and amortization for the final quarter.

<sup>3</sup> Additions to intangible assets and property, plant and equipment (including acquisitions).

<sup>4</sup> Million barrels of oil equivalent.

<sup>5</sup> Apprentices in Germany.





**MARIO MEHREN**  
Chairman of the Board of Executive Directors

*Dear Readers,*

It has been an eventful year for Wintershall. Our efforts have taken the company in a new direction and we are well positioned for future success. We are embarking on a shared future with DEA Deutsche Erdöl AG and will have even greater capacity to provide a reliable and responsible supply of gas and oil worldwide. Going beyond economic factors, we give careful consideration to environmental and social aspects throughout our work. The United Nations Sustainable Development Goals also play a major role. These goals help us to reduce the company's ecological footprint and simultaneously ensure that more people have access to affordable and reliable energy.

Natural gas will become even more important in achieving these goals in the coming decades. The German Coal Commission's final report makes this even clearer. That gas will increase in significance as an energy source and storage system is of course extremely welcome news for Wintershall and the entire industry, but most of all the environment. Because, after all, anyone working on the transformation of the German energy sector – known as the 'Energiewende' – cannot afford to ignore natural gas. Natural gas is already the cleanest conventional energy source around and its potential is far from exhausted.

Wintershall is already well prepared for this with its existing portfolio. This is based on our collaboration with our long-standing partner Gazprom, in Russia and, in particular, the development of blocks 4A and 5A in the Achimov Formation. Our future entry to the Ghasha concession in Abu Dhabi will further supplement our production of natural gas in the coming years. This project allows us to put our decades of experience in the safe development of sour gas fields to good use. Production from the Aasta Hansteen field in Norway has now begun, and this will also serve as a base for further explorations for natural gas in the region. This also boosts our position as a producer of natural gas for Europe. Our financial investment in the Nordstream 2 pipeline project has allowed us to secure a convenient and reliable gas supply for Europe in the future.

As an international company with operations worldwide, we embody diversity and know how important and critical it is to our success. With this in mind, Wintershall has teamed up with other companies from the Kassel region to set a visible example of tolerance, respect and cosmopolitanism in Kassel by co-launching the 'Open to Diversity – Closed to Exclusion' initiative.

One topic that is revolutionizing almost every aspect of our lives is digitalization. This is also affecting our industry. Wintershall is actively shaping this process through its Wintershall 4.0 and Global Gas & Oil Data Integration projects. But digitalization is much more than just installing a few new programs and apps. The focus here is on rethinking our work processes in light of digitalization and taking decisive action to improve efficiency and modernize the way we work together. This can unlock various benefits, including environmental gains, for example, through reducing our energy consumption and consequently our ecological footprint, or through initiatives to improve the safety of our employees. You can read more about this topic in the dedicated section.

The following pages contain information on the economic, ecological and social aspects Wintershall takes into consideration throughout its activities and the key performance indicators used to measure our performance.

I hope you find this report both interesting and enjoyable.

Yours,



Mario Mehren  
Chairman of the Board of Executive Directors



# COMPANY PROFILE

## SUCCESS THROUGH TECHNOLOGICAL EXPERTISE AND STRONG PARTNERSHIPS

**Wintershall is Germany's largest international oil and gas producer and a wholly owned subsidiary of BASF SE. Around 2,000 employees from more than 50 countries support us in our mission to explore and produce crude oil and natural gas. We are also engaged in gas transport across Europe.**

### **Wintershall: At home all over the world**

As an international company with German roots, we focus on selected core regions, where we have a high level of regional and technological expertise. These are Europe, Russia, North Africa, South America, and Middle East.

### **Oil and gas needed to meet global demand**

With our core business being the exploration of crude oil and natural gas, Wintershall makes an important contribution to meeting global energy demands. We have more than 120 years of experience in the extraction of natural resources and have been producing hydrocarbons for more than 85 years. Oil and gas are form the backbone of our industrial society. Global prosperity is based on having a secure, long-term supply of energy. Hydrocarbons will continue to play an important role as energy sources and industrial raw materials in the decades to come. Oil is one of the world's most valuable fossil fuels, and this is not something that will change soon. Natural gas has an equally firm place in our future planning. Due to its low CO<sub>2</sub> emissions compared to other fossil fuels, it is primarily used to generate heat and electricity. At the same

time, natural gas is growing in significance as a raw material in industry.

### **Successful through innovation and research**

It is a long journey from the exploration of oil and gas deposits to their efficient and safe production. The decisive factor across all phases of the exploration and production E&P life cycle is technology. Wintershall continually strives to apply the most innovative and effective methods and processes, because this is the best path to securing our long-term success in the oil and gas industry. Wintershall relies on a balanced approach. On the one hand, our research focuses on developing our existing technologies to generate improvements both right now and in the medium term. On the other hand, we focus our research on our own long-term oriented innovations – especially in relation to enhanced oil recovery.

We lay the foundations of our technical expertise in our home country, Germany. Wintershall has been successfully engaged in the exploration and production of crude oil and natural gas in Germany for more than 85 years. Continuous innovation as well as high safety and environmental standards are a must due to the complex geological conditions and regulatory frameworks. Our innovations 'made in Germany' are used all over the world, making our company a valued partner in the international arena.

### **Strong partnerships**

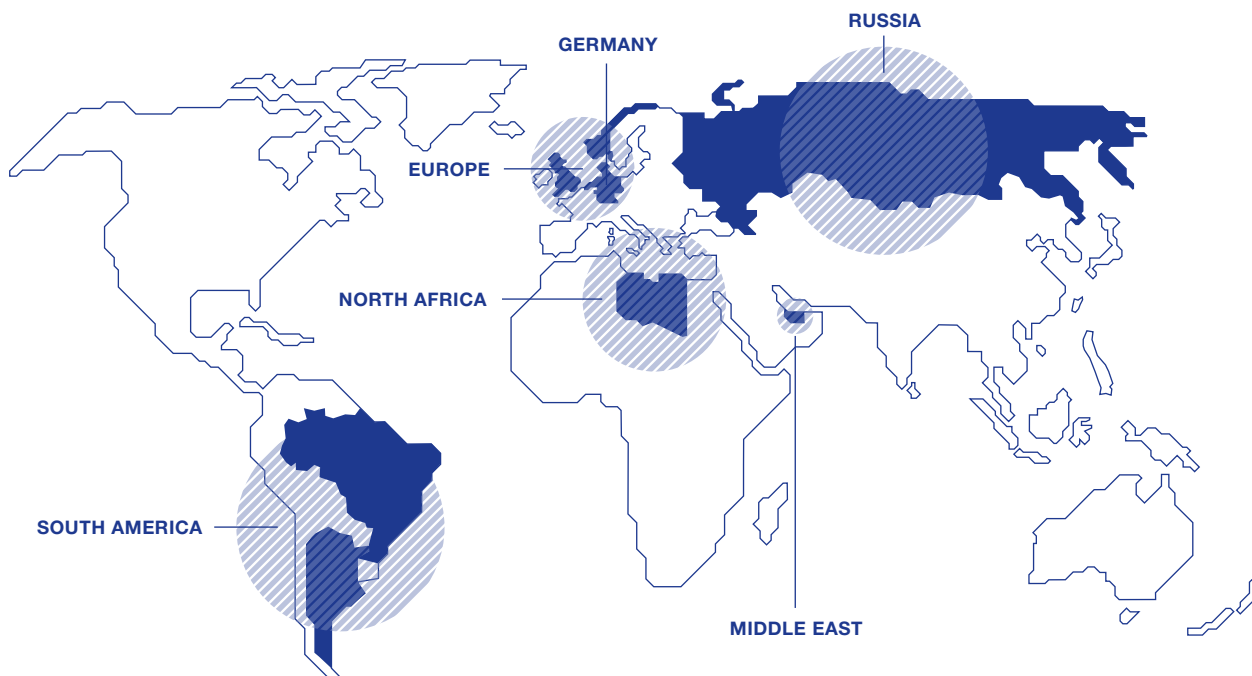
Strategic partnerships are an important basis for our company's success. Both

state-owned and private companies trust our expertise, experience and proven reliability – this is observed in our activities in locations ranging from Siberia's permafrost to the North African desert and the tip of South America. Our strategic partnerships are successful because every party contributes in their core area of expertise, perfectly complementing each other.

### **Responsible operations**

We are creative and technologically innovative in the pursuit of our business objectives. We have the courage to put even extraordinary ideas into action. We are open, value diversity, and encourage dialogue. Even before starting our projects, we examine the possible impacts on people and the environment, carefully considering both social aspects and the protection of cultural heritage. We constantly strive to improve the efficiency of our processes so that we can use resources more sparingly and minimize any negative impacts.

## CORE REGIONS

**GERMANY**

Wintershall has been active in Germany for more than 120 years and involved in oil and gas exploration and production for 85 years. We produce oil from 15 fields and gas from more than 35 fields in Germany for domestic energy supply, using the latest technology and maintaining high environmental standards.

**EUROPE**

Wintershall has been producing oil and gas in the Dutch North Sea since 1965. We also have licenses in British, Danish, and Norwegian territorial waters. Our company is involved in nine producing fields in Norway.

**NORTH AFRICA**

We have been active in the crude oil exploration and production in Libya since 1958, both offshore and onshore in the desert. Wintershall is regarded as a technological and environmental pioneer in the E&P sector in Libya.

**SOUTH AMERICA**

Wintershall has been active in South America for 40 years. We hold working interest in 15 oil and gas fields in Argentina. This makes us the fourth-largest gas producer in the country. It is also home to Wintershall's research center for production from unconventional reservoirs. Thanks to the acquisition of new licenses, Wintershall will also be active in Brazil.

**RUSSIA**

Our joint ventures with Gazprom and LUKOIL are the cornerstones of our work in Russia – Achimgaz, Severnftgazprom, and Wolgdeminoil. Wintershall is also an investor in Nord Stream – a pipeline system through the Baltic Sea. We are also involved in financing the construction of the Nord Stream 2 pipeline as a lender to Nord Stream 2 AG.

**MIDDLE EAST**

Wintershall became the operator of the Shuwaihat sour gas and condensate field in the United Arab Emirates in 2012, taking over the technical appraisal. Since 2018, Wintershall has been a partner in the Ghasha concession, the largest gas and condensate field still to be developed in the United Arab Emirates.

## HIGHLIGHTS 2018

### Wintershall and DEA merger

Wintershall and DEA have become Wintershall Dea. In September 2018, the two major shareholders, BASF and LetterOne, signed a binding agreement to merge their respective oil and gas businesses. The merger was completed on May 1, 2019. Wintershall Dea is the leading independent European exploration and production company engaged in activities in selected international core regions. The combined business of Wintershall and DEA had pro forma revenues of almost €5.7 billion in 2018, along with earnings before interest, tax, depreciation and amortization (EBITDA) of approximately €3.6 billion

and a net income after minority interests of just under €1.2 million. Wintershall and DEA together produced more than 215 million barrels of oil equivalent in 2018. This corresponds to a daily production volume of around 590,000 barrels of oil equivalent. The new merged company will have a regionally balanced portfolio with growth potential in core regions and aims to achieve a daily production volume of 750,000 to 800,000 BOE between 2021 and 2023. In the medium term, BASF and LetterOne plan to list Wintershall Dea on the stock exchange and are working towards an initial public offering (IPO).



## Partnership

Wintershall acquires a 10 percent interest in the Ghasha concession in Abu Dhabi. The sour gas and condensate field is located in the Al Dhafra region off the coast of Abu Dhabi.



## Start of production

The start of production in the Norwegian Aasta Hansteen gas field means the world's largest floating SPAR (Single Point Anchor Reservoir) platform is now operational.



## Milestone

The joint venture with Wolgodeminoil produced its ten millionth ton of crude oil. Oil has been produced in Volgograd in southern Russia since 1992. Around 520,000 metric tons of oil and gas and around 130 million cubic meters of gas were produced in 2018 alone.

## Anniversary

Wintershall is celebrating its 40th year of activities in Argentina. The company has been active in Argentina since 1978, and now produces around 26 million barrels of oil equivalent in the country every year.



## New activities in South America

Wintershall is awarded exploration licenses in Brazil. The licenses are located off the north and southeast coast of Brazil. Wintershall is the operator under four of these licenses.



# DIGITALIZATION AND SUSTAINABILITY

# DIGITALIZATION AND SUSTAINABILITY AT WINTERSHALL

## THE DIGITAL REVOLUTION

Digitalization is in full swing. It affects all of us and is leading to dramatic changes in every aspect of our lives. Digital transformation offers great opportunities to improve people's quality of life, while enabling revolutionary business models and a more efficient economy. The key to all this is data – the key commodity of the future.

Whether it's big data, online platforms, or artificial intelligence – Wintershall is also well on its journey. Three lighthouse projects are already underway and driving change at Wintershall. These support the company's drive for long-term sustainability and viability in areas such as climate protection, adherence to international social standards, and long-term value growth. Digitalization will bring these to the next level.

## DIGITAL COMPETENCE

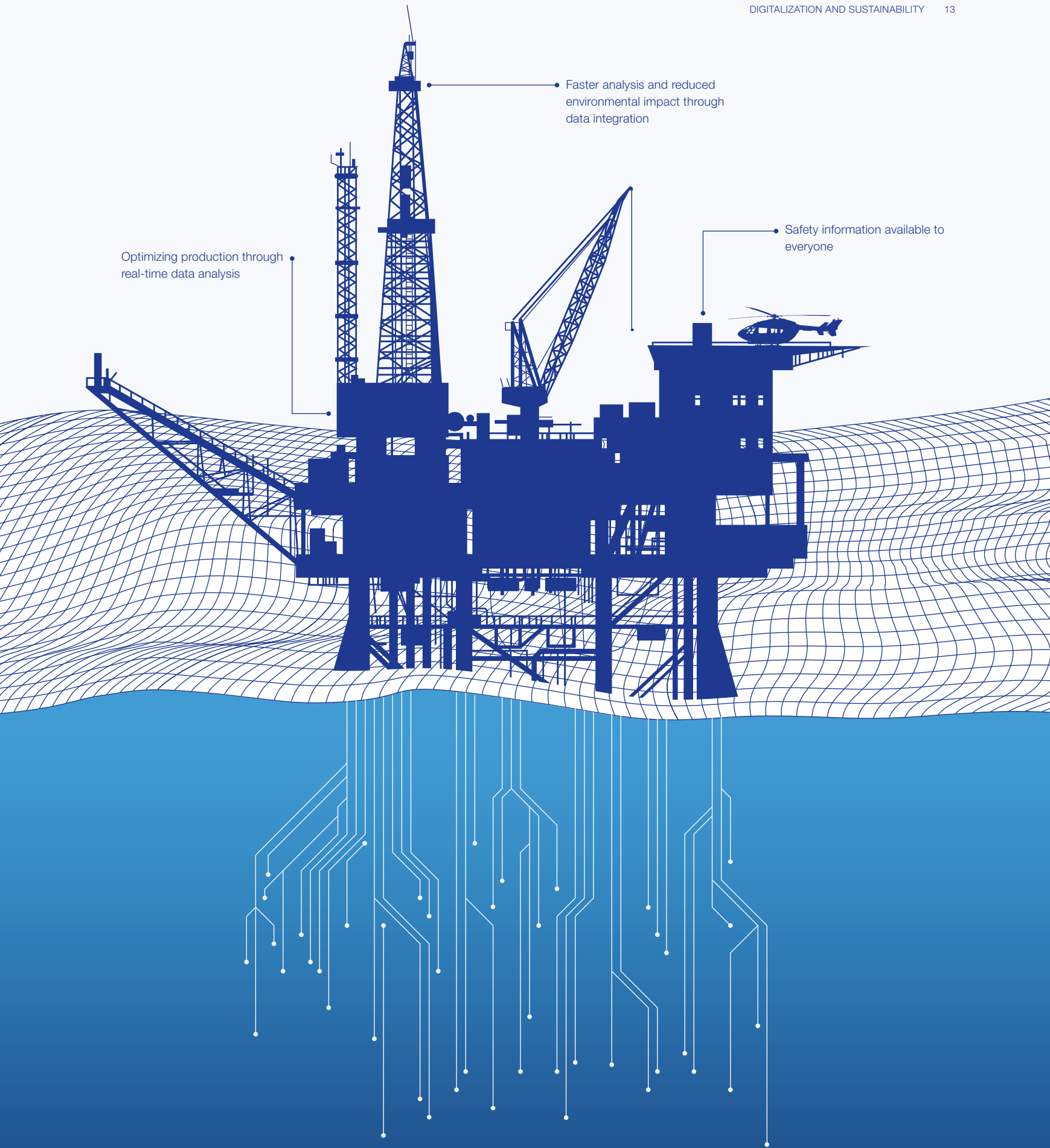
Connecting and harmonizing the company's expertise in technol-

ogy, business strategy, and business development – this is what digital competence is all about. It is a critical competitive factor for any business. In industry, digitalization in the form of smart processes and process controls can increase productivity and efficiency. This is how increasingly connected work processes worldwide is bringing about a new industrial revolution, known as Industry 4.0.

The central challenge for companies lies not just in understanding new technologies and applying these to existing workflows, but in using them to create value beyond the scope of existing business models.

Companies are already completely revolutionizing entire industries through digitalization, which is a testament to its astounding potential. They are developing solutions for markets and customers that never existed before. Amazon, Google, Apple, Facebook – these digital champions have quickly risen to become





• Faster analysis and reduced environmental impact through data integration

• Optimizing production through real-time data analysis

• Safety information available to everyone

## ENORMOUS BENEFITS OF DIGITALIZATION TILL 2025 \*



**+\$1.6 TN.**

Value creation of \$1.6 trillion for the industry.



**–1,300 MN. TONS**

This means an enormous benefit for the environment if CO<sub>2</sub>-equivalent emissions will be reduced by approximately 1,300 million tonnes or about 3 billion liter of water could be saved.



**–3 BN. LITER**

some of the most valuable companies in the world. Digital business models have allowed them to claim their current position among other industry leaders.

### THE OIL AND GAS INDUSTRY IS CATCHING UP

Compared with other branches of industry, the oil and gas sector is still lagging behind. But it is catching up.

According to the World Economic Forum, a digital transformation could unlock approx. \$1.6 trillion of value for the oil and gas industry, its customers and wider society more generally until 2025. Among others, a digital transformation in the industry could for example save \$30 billion through reducing water usage and \$430 billion from lowering emissions. The great potential of digitalization is also illustrated by a comparison made by American economist George Westermann from the Sloan School of Management at MIT in Cambridge, USA: “Successful digital transformation is like a caterpillar turning into a butterfly. It’s still the same organism, but it now has superpowers. Unfortunately, when it comes to digital transformation, many senior execs aren’t thinking about butterflies. They’re just thinking about fast caterpillars. And it’s hard to keep up with your competitors if you’re crawling ahead while they can fly.” \*\*

### AND WHAT STAGE IS WINTERSHALL AT IN THIS PROCESS?

Wintershall is right in the middle. Going back to the same simile, Wintershall is currently in the pupa stage, enveloped in its chrysalis and soon to emerge as a nimble butterfly. Speak to the experts at Wintershall who are developing and integrating the results of the company’s digitalization drive, and this is quickly confirmed. Patrick von Pattay is in charge of the Wintershall 4.0 project and together with his team, he has developed a strategy that not only allows digital technologies to be applied to existing processes, but also supports a complete rethinking of the process landscape. For a long time, the oil and gas industry has not faced the stress or anxiety it would need to force innovation, because it tends to think and work in long lifecycles. But technology is developing faster and faster, and Wintershall wants to reap the benefits and be able to use digital technologies to organize processes in a way that improves the company, making it more profitable and more valuable to relevant interest groups.

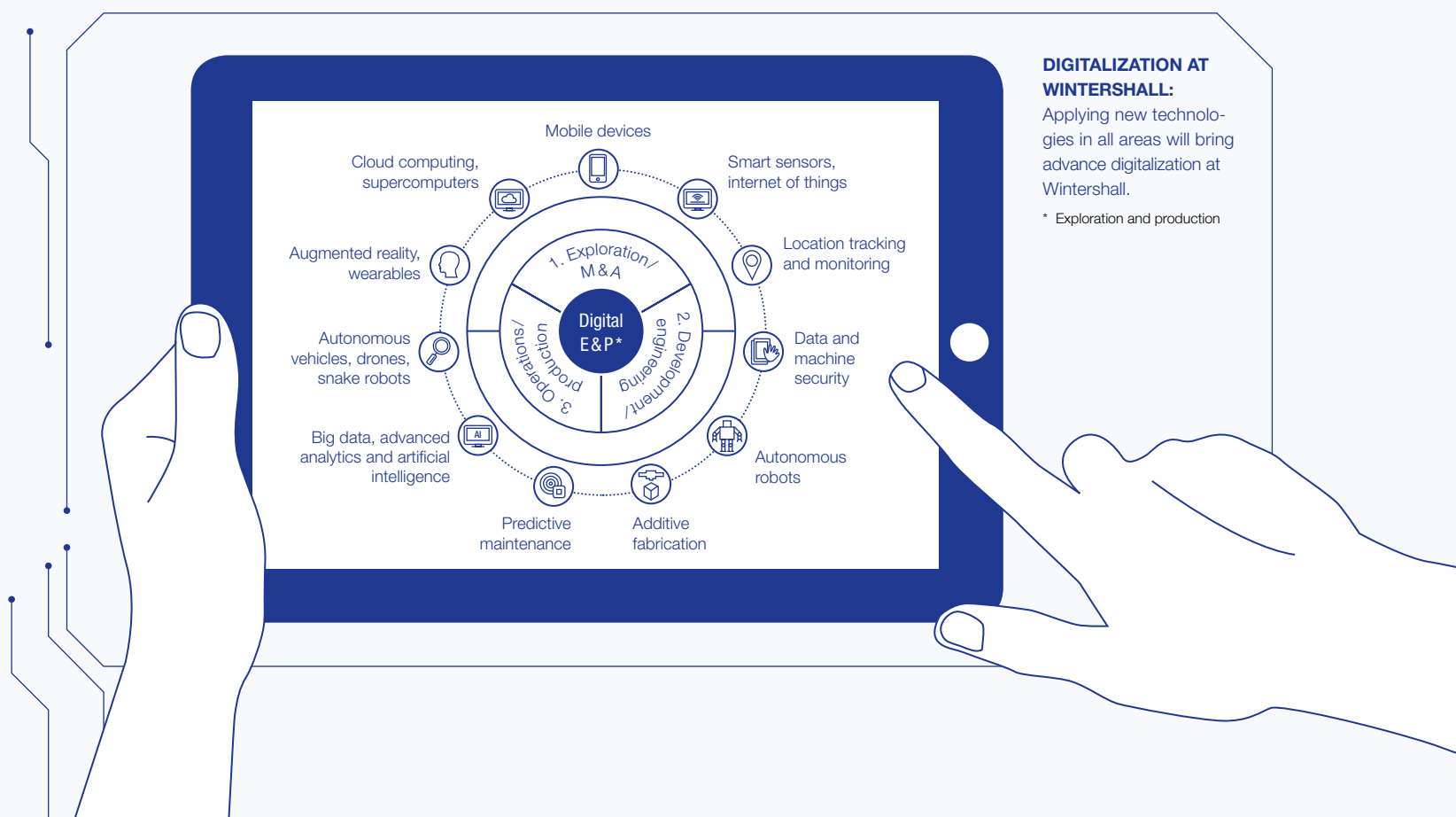
\* <http://reports.weforum.org/digital-transformation/wp-content/blogs.dir/94/mp/files/pages/files/dti-oil-and-gas-industry-white-paper.pdf>, page 5

\*\* <https://enterpriseproject.com/article/2017/5/digital-transformation-mits-westerman-shares-new-lessons>

## AND HOW WILL DIGITALIZATION HELP DRIVE WINTERSHALL FORWARD?

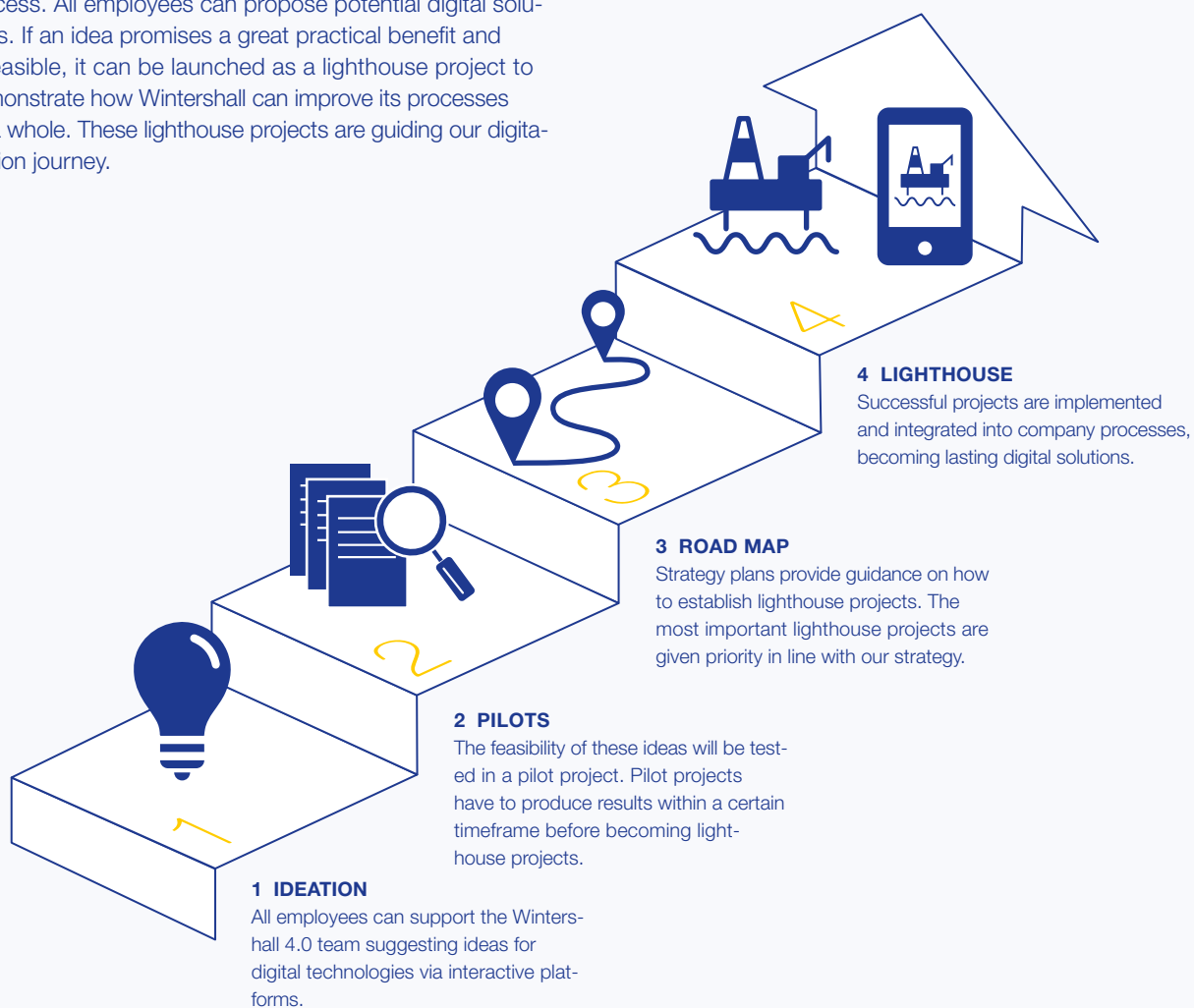
Quite simply, digitalization offers Wintershall a great opportunity to develop and improve its core processes. Redesigned processes and processes enhanced by digitalization enable us to optimize our day-to-day work. The production process can be further developed while minimizing the use of resources. Smart internal search engines facilitate better access to knowledge and expertise. The result is that employee's existing knowledge, resources and data can be more effectively applied, regardless of when or where. As an example, engineers can use digital channels such as augmented reality to share their expertise world-

wide, without needing to be there on site. This increases the company's profitability. This is also confirmed by those at Wintershall who are in charge of digital transformation with a simultaneous focus on sustainability. The Global Gas & Oil Data Integration project is allowing us to integrate different information sources to adapt our processes – making them smarter – while also more effectively integrating sustainability considerations. The effective use of digitalization will offer an excellent opportunity for the company to reduce its environmental impact.



## FROM NEW IDEA TO LIGHTHOUSE PROJECT

The pilot projects are helping us to test new technologies and gradually integrate these into our digitalization process. All employees can propose potential digital solutions. If an idea promises a great practical benefit and is feasible, it can be launched as a lighthouse project to demonstrate how Wintershall can improve its processes as a whole. These lighthouse projects are guiding our digitalization journey.



### THE ROADMAP TO WINTERSHALL 4.0

Wintershall is following a clear strategy plan with Wintershall 4.0 to ensure these changes are brought about in a way that is both targeted and efficient. This roadmap provides guidance while combining all digital transformation activities, driving them forward step by step. The first step is to select, test, and evaluate digital technologies in pilot projects. The aim of this stage is to assess their feasibility. The strategy plans provide guidance on how to develop a pilot project into a lighthouse project, with the aim of integrating the results of the project into the company processes.

The more successfully a particular technology can be implemented in a given scenario, the more energy will be invested

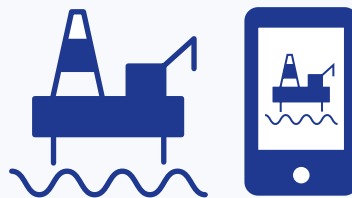
in its development. More than 100 pilot projects have been identified so far. Of these, 40 were launched in 2018; including projects in the fields of reservoir simulation, robotics, automation, and artificial intelligence. Some of these have already been completed and are now being developed further. Wintershall 4.0 has created a roadmap for Wintershall's core processes in close consultation with the expert departments. The pilot projects are helping Wintershall to test new technologies and gradually integrate these into its digitalization process. This method is used to identify the pilot projects that promise the greatest practical benefit to be gained through digital technologies, which can be demonstrated through lighthouse projects. As such, lighthouse projects work like signposts, helping Wintershall along its path of digitalization.

## LIGHTHOUSE PROJECTS



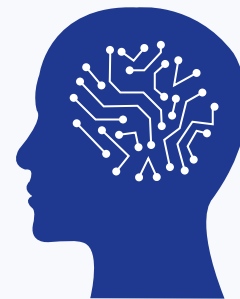
### WINTERSHALL2SHARE

Wintershall2Share data and makes documents available to all employees at all times. This makes work easier while reducing wasted time. Including customers and partners improves collaboration and the broader business relationship.




### DIGITAL TWIN

Interlinking and analyzing huge amounts of data – Big Data – has allowed the creation of a digital twin of a real-life platform. Production and resources can be optimized on the digital twin prior to making any adjustments to the real platform.



### ARTIFICIAL INTELLIGENCE

Huge amounts of data can be analyzed significantly faster using artificial intelligence or deep learning. These technologies support Wintershall employees and in their work and allow them to work more efficiently. Example applications of these technologies can be found on  Page 36.

PATRICK VON PATTAY



Project leader Wintershall 4.0

„ONLY WHEN EVERYONE FEELS INCLUDED AND ENCOURAGED TO SHARE THEIR KNOWLEDGE CAN THE COMPANY UNLOCK ITS FULL POTENTIAL.“

PATRICK VON PATTAY

to share their knowledge can the company unlock its full potential,” von Pattay says. And this potential is far-reaching: artificial intelligence can apply existing knowledge to optimize new drilling operations and analyze data at lightning speed, algorithms can organize and combine datasets, while workflows can be shared with employees, partners, and suppliers in real time via collaboration platforms.

#### FOSTERING A CULTURE OF SHARING

Sharing knowledge and information is the key to successful digitalization. “It’s not enough to simply use new technologies to optimize processes. It demands a cultural transformation, a shift away from a silo mentality towards an active and open exchange of knowledge, beyond the boundaries of departments and other structures,” Patrick von Pattay explains. “We need to move away from sharing knowledge on a ‘need to know’ basis.”

But how can Wintershall create the kind of culture that will allow the company to reap the maximum benefits from digitalization? “Changing a corporate culture is up to all employees – not just a select few. Only when everyone feels included and encouraged

“With so many proposed changes, some observers might have doubts as to whether this can all be put into practice,” the project leader von Pattay remarks. “We are convinced that cultural change will happen if all Wintershall employees are made aware

“OUR CULTURAL SHIFT IS CREATING TRANSPARENCY, WHICH IS LEADING TO BETTER DECISIONS.”

ALMUTH KLOTZKI

ALMUTH KLOTZKI



Responsible for data management

NADJA BRAUHARDT



Responsible for Sustainability

of the advantages that digitalization brings, and start personally applying and benefiting from these technologies. And that is part of what Wintershall 4.0 aims to achieve.”

#### WINTERSHALL2SHARE – FOSTERING TRANSPARENCY INSIDE AND OUT

Almuth Klotzki is in charge of Wintershall2Share, one of the light-house projects. When asked about the effects of digitalization, Klotzki confirms that she, too, sees great potential in regard to sustainability: “I think our cultural shift is creating a certain transparency, which is leading to better decisions – in the sense of sustainable corporate development.” Klotzki says the future

“THE DIGITAL OFFENSIVE MEANS IT WILL IN FUTURE BE MUCH EASIER TO OBTAIN THE DATA WE NEED.”

NADJA BRAUHARDT

development potential in this space is already apparent. She sees the advantages of close collaboration in specific examples where people’s actions and the effects these have on the environment are made tangible on a granular scale: “In future, it may be possible to examine emission data on demand, and direct correlations between each individual element could provide context to operational decisions and the use of resources. This gives us the opportunity to better and more directly assess the impact of our actions and enact targeted improvements.”

Nadja Brauhardt knows that this involves more than just sharing knowledge within Wintershall, and that this needs to go further: “Internal and external transparency is important to us,

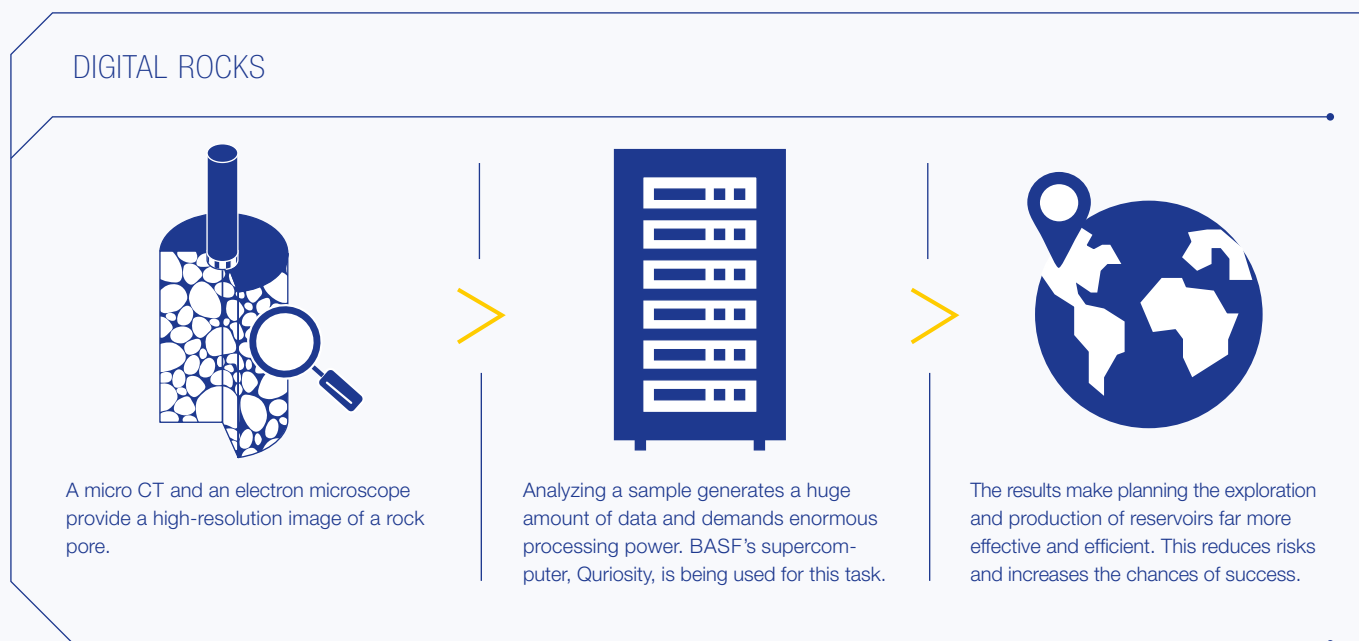
“NEW WAYS OF MODELLING OUR EXACT RESOURCE REQUIREMENTS HAVE THE GREATEST POTENTIAL TO INCREASE OUR EFFICIENCY.”

PETER DABROWSKI

PETER DABROWSKI



Project leader Digital Twin



especially in relation to sustainability. It is both demanded and expected. The digital offensive means it will in future be much easier to obtain the data we need and we will be better able to present and communicate our impact on society and the environment." Collaboration with partners, contractors, and state institutions can also benefit from the new possibilities and could help to make Wintershall their partner of choice. "This will ensure that our progress in sustainability can also be seen by our stakeholders."

#### DIGITAL TWIN

Peter Dabrowski, who also works for Wintershall 4.0 and focuses on the interaction between connecting data and process optimization, confirms that artificial intelligence and environmental protection are very closely linked and have a positive influence on each other. "New ways of modelling our exact resource requirements have the greatest potential to increase our efficiency. Integrating and analyzing our measurements and data also greatly simplifies the targeted monitoring of critical interfaces, while making it easier to avoid serious incidents."

One example is predictive maintenance. The experts program a digital model of a platform, creating what is referred to as a 'digital twin'. This makes it possible to interlink the various readings, production data, and maintenance information originating from that platform. This allows wear to be detected in real time and maintenance activities can be individually planned in advance. Potential faults can then be predicted and avoided before any negative consequences or outages occur. The digital twin simulation also allows the plant manager to determine the current resource requirements and plan operations more effectively by optimizing the use of resources.

Sharing data and using artificial intelligence means decision processes can be significantly shortened, and the most sustainable solutions in respect of resource consumption can be identified.

#### TECHNOLOGY SUPPORTS PEOPLE

The Wintershall 4.0 team is focused on increasing the effectiveness of the company's activities. To them, the entire trans-



formation offensive is about directly supporting human work processes to improve Wintershall's performance and efficiency. That will in turn reduce costs and reduce the negative impact on the environment.

A good example of how ultra-modern digital technology and human experts can work together is the Digital Rocks project, in which BASF's supercomputer, known as 'Curiosity', is being used to perform digital drill core analyses. A conventional lab would take almost an entire year to perform a compre-

hensive rock analysis. The new facility within the technology center at Barnstorf will achieve this in just a few days with the supercomputer's support. This will assist Wintershall's engineers in planning the development of new reservoirs in compliance with applicable environmental standards. "The results of the analysis help colleagues in Norway or Argentina to make the right decisions when developing gas and oil deposits and play a part in ensuring their work is a success," says Thilo Wieland, Wintershall's Executive Board member responsible for E&P activities in Russia, North Africa and South America.

#### 4 QUESTIONS FOR ANDREAS SCHUCHARDT: DATA INTEGRATION AND DATA PROTECTION



**Andreas Schuchardt,**  
project leader Global Gas and  
Oil Data Integration

##### **Why is data integration so key to digital transformation?**

Without carefully tuned data integration, many digital transformation projects just would not work. Global Gas and Oil Data Integration is essentially about pooling the data available in many parts of the group and making this easy to find and available to all. This data is an invaluable asset and makes us an attractive partner of choice for our stakeholders.

##### **Has Wintershall not worked with connected data in the past?**

It has. Generally speaking, our business has always been based on data, information, and evaluation. In this respect, being more efficient in our use of data has become

a question of survival. This means that we must now increase the integration that has always existed to a new and higher level that goes far beyond the simple exchange of data.

##### **What are the rules for connecting and accessing information?**

This is an important question and one that we take very seriously. In the future, there will be people sitting at these interfaces who need to be persuaded of the advantages of digital transformation, while at the same time being assured that their data will be protected. We therefore define very precise rules to ensure data is protected and access is secure.

##### **In specific terms, how is this data protected?**

We will continue to have a strong focus on internet security and data protection, as well as on our compliance requirements. This includes complying with all laws in the country in question, for example, around restrictions on the export of geological data. But regardless of the approval mechanisms, each individual employee also bears the responsibility of handling all data entrusted to them with the utmost care and in accordance with our internal guidelines and procedures.

# HSE BENEFITS FROM DIGITALIZATION

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**Wintershall understands that digitization can bring about great improvements for all areas of the company, its employees, employee safety, and the environment.**

“We expect to see visible optimization, particularly in health, safety and the environment (HSE), and that key performance indicators will show lasting and ongoing improvements,” says Almuth Klotzki, who has a special interest in this important area.

For example, risks in this area can be reduced by using assistive technology to reduce human contact with hazardous environments and improving the accessibility of information and supporting systems. The safety of systems can be further improved by deploying highly developed sensor technology and integrating digital models.

“The data platform allows us to make our employees’ work environments better connected and simultaneously safer in many places,” says Klotzki. The clear structure planned on a target group-based GUI will in future allow project participants to keep a close eye on all important and safety-related information.

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“WE WANT PEOPLE AND THE ENVIRONMENT  
TO CONTINUE TO BENEFIT FROM OUR ACTIV-  
ITIES, WHICH GENERATES ADDED VALUE  
FOR THE COMPANY.”

PATRICK VON PATTAY, project leader Wintershall 4.0

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People will no longer have to browse through emails or print out plant plans, and will instead have instant mobile access at all times. “There are also plans to create additional connections to link related topics and add even more transparency,” Almuth Klotzki explains.

Where possible, drones and robots can relieve humans of laborious and time-consuming tasks. Tobias Führen from the Exploration division in Barnstorf is also familiar with an example of how risk to employees can be reduced and tasks can be delegated to digital assistants in the field. A seismic 3D survey was carried out in spring 2018 at the German-Dutch border, where Wintershall is developing its existing oil field at Emlichheim, which has been producing oil for over 70 years. For the first time in Germany, a drone was used to monitor wireless geophone stations during the survey. The geophysicist is always on the lookout for new ways to improve efficiency and reduce environmental impact. “Seismic measurements used to be carried out using geophone chains, which would include miles of cables, high personnel costs, and predictable consequences for the terrain. Now we use small, inconspicuous, wireless geophone stations that are checked several times a day via drone and wireless internet to ensure reliable functionality and battery life. This new approach has not only optimized the use of personnel and reduced the measurement time by 50 percent – it has also significantly reduced stress on the environment and the local population,” Tobias Führen explains.

## FOCUSING ON ECONOMIC EFFICIENCY

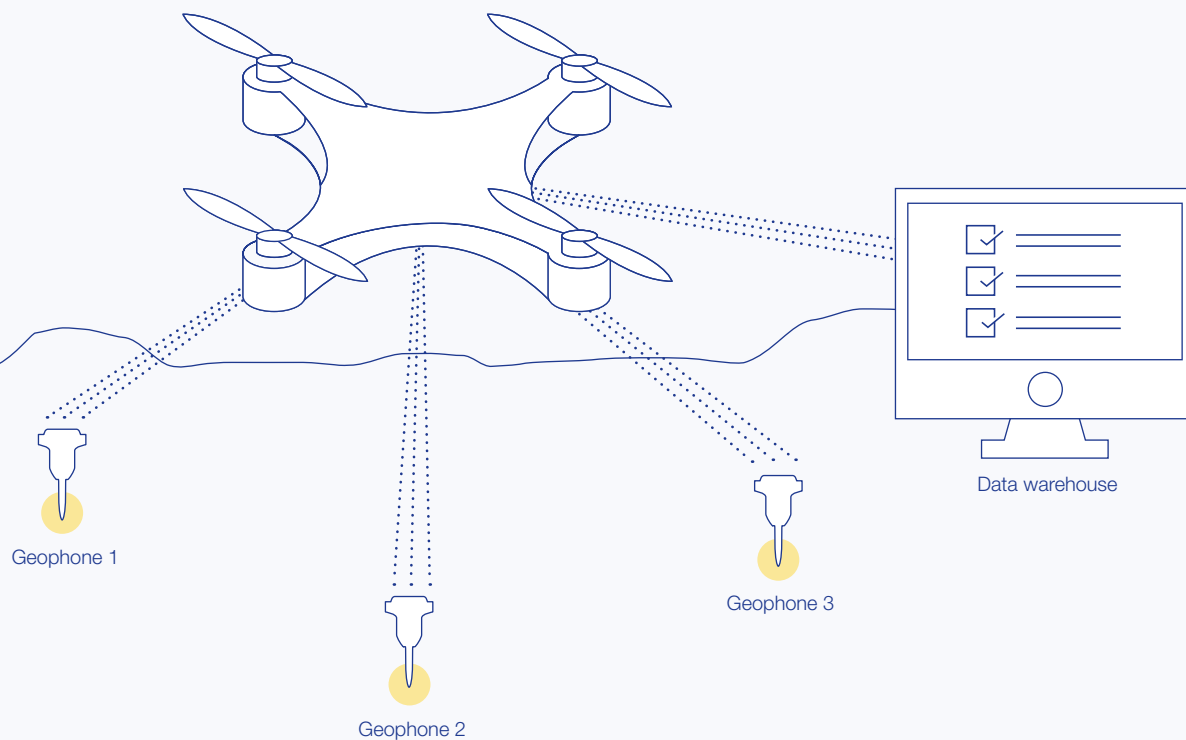
In Patrick von Pattay’s eyes, sustainability is not just about protecting the environment; it is also about securing the company’s long-term economic viability. “Sustainability should always focus on our stakeholders and be internally driven. We want people and the environment to continue to benefit from our activities, thus creating added value for the company.” Von Pattay is confident: “Digitalization will improve Wintershall’s sustainability. Through digitalization, we will show that we can operate with greater

efficiency and lower costs, with positive impacts on sustainability and environmental protection.”

And sustainable management is not a new idea for Wintershall. It has always been part of its corporate DNA – and now digital transformation is allowing it to come to the fore with entirely new potential. “The long lifecycles of our projects alone mean that

we must make decisions with foresight,” explains Wintershall CEO Mario Mehren. “If Wintershall 4.0 will now allow us to more quickly convert data into sound decisions, this in turn will enable us to further optimize the processes in our business model, which is designed with long-term sustainability in mind. To achieve this, we will make our culture of respect and trust one of the cornerstones of our digital transformation.”

## IMPROVING SAFETY WITH DRONES



# RESPONSIBLE GROWTH

Strategy	25
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Artificial Intelligence: Smart software makes exploration more efficient	36

## WE ACKNOWLEDGE OUR RESPONSIBILITY.

Wintershall is committed to taking responsibility and making a positive contribution to solving global challenges within its sphere of influence. Sustainability as we understand it means ensuring that we take a long-term and responsible approach to our operations. We use various tools and integrate sustainability aspects into our business model to harness opportunities while limiting risks.

### STRATEGY

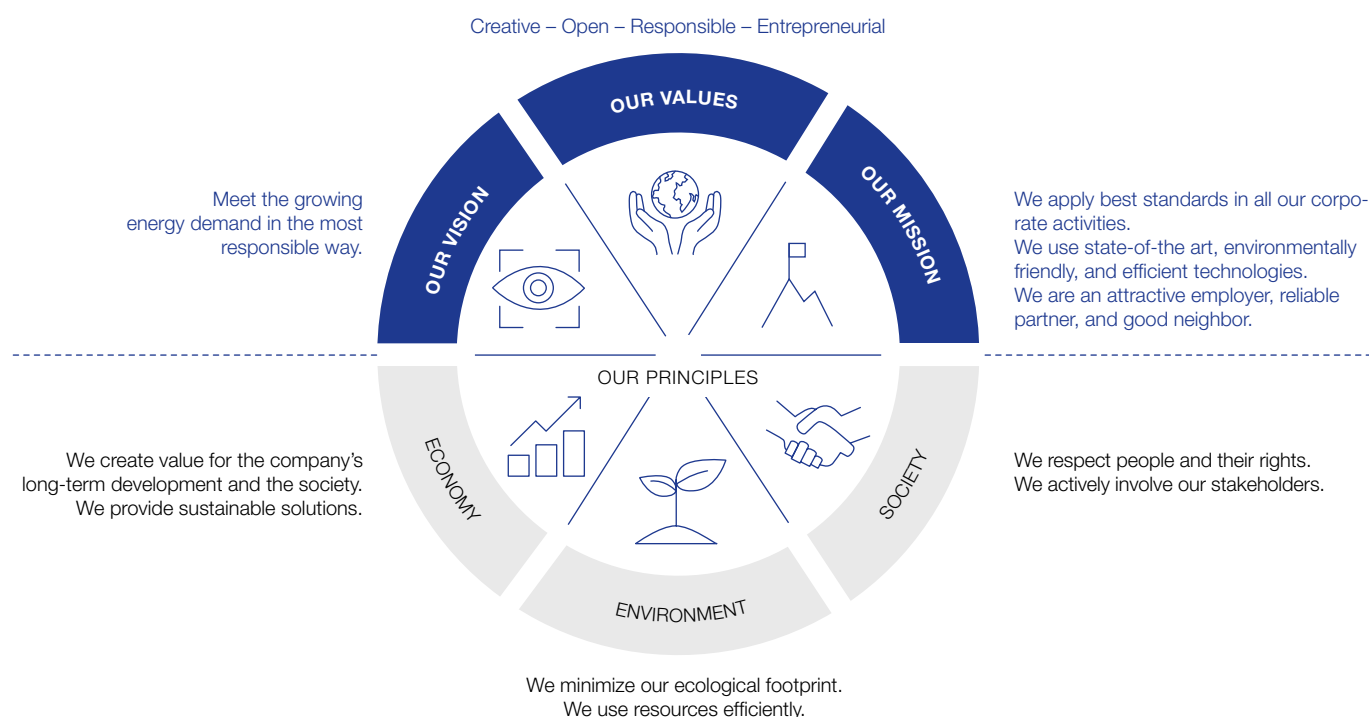
#### SUSTAINABILITY APPROACH

We are convinced that a responsible approach is an essential component of long-term success. This is why we have integrated sustainability into our corporate strategy and across all areas of our operations.

By sustainability, we mean a combination of economic, environmental, and social responsibility. This is because we know that we will only enjoy long-term economic success if we also give appropriate consideration to environmental and social aspects. We want to follow this through with all of Wintershall's activities. After all, we can only enjoy lasting economic success if we pay appropriate attention to environmental and social aspects in all of our operations.

#### OUR APPROACH

— FIG. 1



For this reason, the opportunities and risks are evaluated in respect of sustainability at an early stage of every project. The aim is to avoid or minimize any negative impacts on people, the environment, and society, while also taking advantage of potential business opportunities. This is how we create value for ourselves, our partners, our employees and society as a whole. — FIG. 1

## MATERIAL ASPECTS

We continually analyze the challenges we face in order to identify the key issues for Wintershall and our stakeholders. We use various tools to achieve this, such as internal assessments and industry-specific studies. We also apply findings from dialogue events, workshops with interest groups, and press and community events.

The most relevant topics can be mapped to the following focal areas, which also provide structure to the report:

- Responsible growth: compliance, technology and innovation, long-term profitability
- Responsible operations: employment, health, climate and environmental protection, safety and security, contractor and supplier management
- Responsible cooperation: transparency, dialogue, social engagement

## MANAGEMENT AND ORGANIZATION

### STANDARDS

We adhere to both international and internal standards as well as country-specific legislation in all that we do. Clear standards, guidelines, and frameworks provide us and

our employees with orientation and ensure that social and environmental aspects are taken into account in our operations. We also expect our partners and suppliers to comply with applicable legislation and regulations and to act in accordance with internationally recognized principles. — FIG. 2

## ORGANIZATION

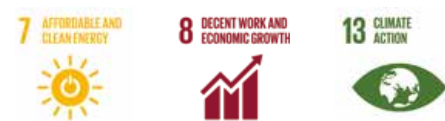
We view sustainability management as a strategic task with implications for the entire company. Advancing sustainable development at Wintershall requires coordinated efforts to implement the relevant measures and monitor progress. The Chairman of the Board of Executive Directors has overall responsibility for this area. In the Strategy division, a dedicated team works on the strategic integration of sustainability into core business processes and coordinates implementation across the company. This is supported by a global group of experts from the sustainable operations community. Dedicated divisions and regional operations at the various sites are responsible for the implementation of measures specific to a given division or region, as they are best able to estimate the needs and expectations in their divisions and regions.

The interdisciplinary expert group meets twice every year. It works on the practical challenges of operationalizing individual sustainability issues and exchanges information on current developments. In spring 2018, the focus was on our parent company BASF's 'Value to Society' philosophy. This approach means we can measure and monetarize the economic, environmental, and social impacts of our operations along the entire value chain, allowing us to determine the value to society of our entire operations. An additional application of this

method at Wintershall was also analyzed at the meeting.

In autumn 2018, the focus was on climate protection. Specifically, we looked at how greenhouse gas emissions can be managed and reduced as well as the strategic implications. The co-initiation of the Methane Guiding Principles in 2017 led to a campaign to measure methane emissions at all operational sites in 2018. The expert group discussed the results and possible next steps to be put into action.

In 2018, a gap analysis was carried out on the current status of Wintershall's implementation of its human rights due diligence obligations under the UN Guiding Principles for Business and Human Rights and the German National Action Plan. This enabled the committee to define the next steps towards better management of the issue. [👁 Page 46](#)



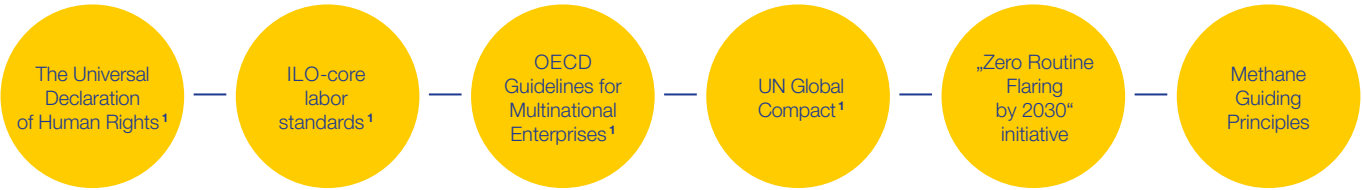
## MANAGEMENT SYSTEMS AND RISK MANAGEMENT

Wintershall has integrated sustainability into its company-wide management system. This describes processes and responsibilities while defining standards applicable across the company. Integrating sustainability issues into this system ensures that the relevant aspects are considered across all individual processes. These are regularly reviewed to ensure they continue to reflect changing requirements.

STANDARDS

BINDING REFERENCE FRAMEWORK

— FIG. 2



WINTERSHALL'S KEY SUSTAINABILITY GUIDELINES AND PRINCIPLES

 CODE OF CONDUCT	This Code of Conduct is binding for all employees of the BASF Group worldwide. It defines principles of behavior and firmly embeds these standards in day-to-day business.
 HEALTH, SAFETY, SECURITY, SUSTAINABILITY AND ENVIRON- MENTAL PROTECTION	With this policy, Wintershall commits itself to complying with central principles relating to health, safety, environmental protection and energy management.
 SUPPLIER CODE OF CONDUCT	The sustainability requirements that Wintershall's suppliers must meet are summarized in the BASF Group's Supplier Code of Conduct. These primarily relate to the environment, society and governance.  Page 47 and 64
 POSITION ON HUMAN RIGHTS	The BASF Group's Position on Human Rights summarizes in one document matters regarding human rights, labor and social standards from the Code of Conduct, as well as our operational standards and their implementation with regard to our employees, communities, and business partners. As part of the BASF Group, which is one of the founding members of the United Nations Global Compact Initiative, we support its guiding principles.


¹ These principles are also binding for Wintershall as part of the BASF Group.

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## THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS (SDGs)



The SDGs replaced the eight Millennium Development Goals in 2016. Aside from environmental sustainability, these primarily focused on social targets, such as reducing child mortality and combating diseases.

In 2017, Wintershall adopted the United Nations' Sustainable Development Goals and defined its priorities in respect of these goals in relation to the company's operations. Our contributions to goals 6, 7, 8, 9, 12 and 13 out of a total of 17 goals was highlighted in the previous report. Wintershall took action to achieve these six targets in 2018. One of the most important projects was a gap analysis on human rights due diligence as an active contribution to SDG 8: decent work and economic growth. The results of this gap analysis will now be used to enhance human rights management.  Page 46 In 2019, contributions will primarily be made towards achieving objectives 7 and 13: affordable and clean energy, and climate action. Just how Wintershall is working towards achieving the Sustainable Development Goals in its core business is clarified through visuals in the respective chapters.

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In regard to risk management, Wintershall itself is integrated into the BASF Group's management system. The aim of risk management is to identify opportunities and risks as early as possible, evaluate them, and enable better business decisions as a result. This is to safeguard Wintershall's long-term position and create sustainable value.

## EVALUATION AND STEERING

Sustainability management is a continual improvement process that serves to regularly evaluate and systematically adapt our activities in a verifiable manner. We use various tools to achieve this.

These include our own evaluation methods as well as those of our parent company, BASF, such as Sustainable Solution Steering® and Eco-Efficiency Analysis. We have been including Wintershall-specific sustainability criteria for consideration when making investment decisions relating to fixed and financial assets since 2016. This



involves evaluating projects, identifying the potential impact of our activities on the environment, human health and safety, human rights and the socio-economic development of the regions in which we operate. We apply BASF's method of Sustainable Solution Steering® to track how our activities are contributing to sustainability and the main challenges encountered, and classify these activities based on specific criteria. This enables us to consider the entire value chain as well as regional differences. Various aspects of our projects are evaluated:

- Economy: e.g. opportunities to reduce costs and improve efficiency

- Environment: e.g. developing environmentally friendly solutions
- Society: e.g. increasing safety in production, application and processing, as well as acceptance of the solutions by our stakeholders.

The same method is also used to shape the course of our research and development activities.

## COMPLIANCE

Our Group-wide Compliance Program is designed to ensure adherence to legal regula-

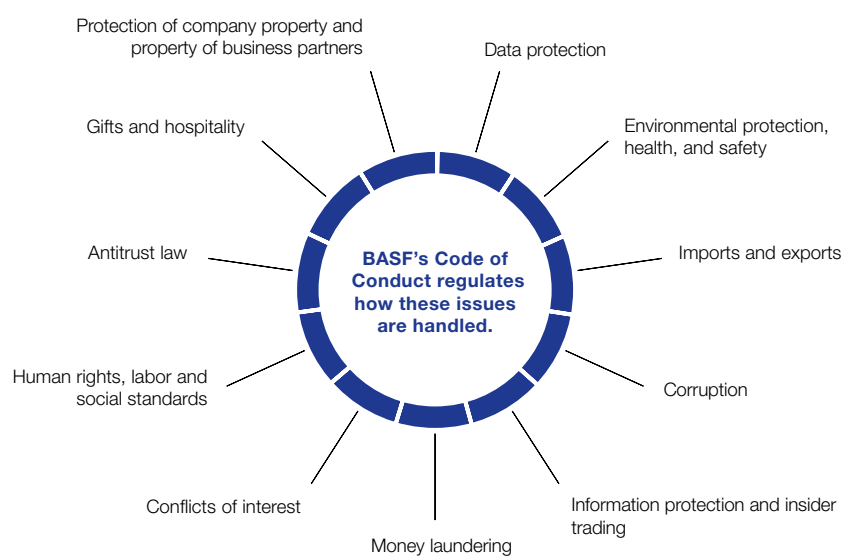
tions and the company's internal guidelines. We use the binding Code of Conduct of our parent company, BASF, for this purpose. This applies to all Wintershall employees and these standards are firmly embedded in the company's daily operations. The Members of the Board of Executive Directors are also expressly obligated to act in accordance with these principles. — FIG. 3

## COMPLIANCE PROGRAM AND CODE OF CONDUCT

Wintershall's Compliance Program is based on BASF's global regulations, which in turn are based on international standards and

## CODE OF CONDUCT

— FIG. 3





The Nova oilfield in the Norwegian North Sea is being developed using subsea-templates. This makes operations especially cost-efficient, while generating additional benefits for partners, suppliers and society.



Achimgaz employee working in sub-zero temperatures in Novy Urengoy, Russia.

cover a wide range of topics. The primary goal of our Compliance Program is to avoid any violations of these standards from the outset. For this reason, all employees must attend induction training in these principles when they join the company, followed by refresher training at regular intervals. This training takes place in various formats, including face-to-face, electronic form, and workshops.

#### COMPLIANCE CULTURE AT WINTERSHALL

We believe that it is the existence of a real culture of compliance that determines the success of a company. This culture takes years to develop and requires the consistent application of compliance standards. We combined our Compliance Codes with our global Code of Conduct in 2013, meaning that these standards are now established and undisputed throughout the company.

#### MONITORING ADHERENCE TO OUR COMPLIANCE GUIDELINES

The Wintershall Chief Compliance Officer manages the implementation of the BASF Compliance Management System. Together with five compliance managers in our core regions, he is one of more than a hundred BASF compliance officers worldwide who support the BASF Chief Compliance Officer. The Wintershall Chief Compliance Officer regularly reports to Wintershall's Board of Executive Directors on the status of the Compliance Program as well as any major developments.

Wintershall holds an annual compliance dialogue program, in which the Chief Compliance Officer discusses business-specific compliance risks with heads of selected operational units in the form of structured interviews. The objective is to identify risks that specifically relate to the division heads' respective regions or operations and im-

plement appropriate monitoring systems for both current and future business environments.

We particularly encourage employees to take action and promptly seek guidance when in doubt. Managers, specific departments – such as the legal department, and company compliance officers are all available to provide assistance. Employees and third parties can also contact our compliance hotlines to report potential violations of laws or company policies. All hotlines are also available to the public. Each concern is logged based on specific criteria, properly investigated in accordance with internally defined procedures, and responded to as quickly as possible. The results of the investigation and any measures taken are documented accordingly and included in internal reports.



Drilling rig cluster 33 of Wintershall's joint venture Achimgaz near Nowy Urengoi, Russia.



Wintershall's joint venture Achimgaz uses modern technology that allows the production of gas from the Urengoy natural gas field in Siberia.

## PARTNERSHIPS

With its large-scale projects, trustful partnerships are essential in the E&P industry, as these are often implemented in consortia – sharing both risks and opportunities. This is why Wintershall values strategic, long-term partnerships. Their enduring nature forms an important basis for success. We are an accepted and sought-after partner among both international and state-owned entities. One prominent example of this is Achimgaz, our joint venture with Gazprom, which celebrated its 15th anniversary in 2018. The founding of the company in 2003 marked a turning point for the Russian oil and gas industry. The project was the first company in Russia to tackle the large-scale development of the gas deposits in the Achimov formation in the Urengoy natural gas and condensate field, which were very difficult to access. Many of the challenges facing the oil and gas industry

cannot be solved by one company alone. Collaboration and partnerships allow us to combine our expertise and capabilities, develop joint initiatives, and pursue economically effective and sustainable solutions. The focus areas of our different partnerships vary greatly. This involves for example the development and application of new technologies to increase the recovery rate in reservoirs limited by difficult development and production conditions. The complexity of such solutions means that close and open collaboration with a joint team across company boundaries is absolutely essential. Our partners appreciate our expertise in finding appropriate solutions and our transparent approach, which increases the value and lifetime of our jointly operated fields.

For more than 25 years, we have maintained regular dialogue with Gazprom on a variety of topics as part of our ongoing scientific and technical cooperation (STC).

The current STC program consists of four areas and 26 specialist fields. The topics range from technical matters relating to the efficient development of natural gas and NGL fields, through project management, and process as well as occupational safety. In 2018, Gazprom, Wintershall and external experts exchanged thoughts on the safety of offshore platforms and work in the Arctic and, for the first time, on the issue of sustainability. The core focus was on the preparation of sustainability reports.

## TECHNOLOGY AND INNOVATION

The Wintershall Group focuses its innovation-related activities on improving the success rate in exploration activities, advancing technologies for reservoirs with challenging development and production conditions, and increasing the recovery rate for each reservoir. Efficient production



The recently opened Barnstorf Technology Center tests around 2,000 drill core samples every year.



Nova's first steel: construction of modules for the Gjøa platform in Stavanger, Norway, has begun.

and careful use of resources are especially important to us. We believe that technical expertise helps to ensure the success of our business and provides a competitive advantage in obtaining access to new fields.

Our portfolio of technologies is wide-ranging, because we aim to be able to find the right solution to every challenge.

Wintershall realigned its technology-related activities in 2016 in order to more effectively combine the different activities and focus more intensively on technology and research projects designed to deliver results that can be applied to Wintershall's own fields. The new approach also allows closer cooperation between headquarters and operating units. After all, they are most familiar with local challenges and needs.

We continued to carry out technology research projects to improve oil production

in 2018. These included a project to boost the output from mature oil fields using microbes. After a successful initial test on a single well, we are now laying the technical groundwork for a multi-well pilot project.

Digital technologies will not only aid us in our search for innovative ideas but will also transform all of Wintershall's future activities. In 2018, the Global Gas & Oil Data Integration and Wintershall 4.0 projects, where continued as part of the company's preparations for the digital future.

The focus of the first project includes expanding and enhancing the data and information landscape and creating a digital ecosystem to further improve opportunities for collaboration across unit and site boundaries. The second project will be based around the development of Wintershall's digitalization strategy. Individual light-house projects will also be launched, and our processes will be revised accordingly.

Wintershall has already seen the advantages of applying digital technologies to rock analysis, among other areas. Digital images of core samples and fluid distributions were generated for the Norwegian Maria project, making it possible to predict rock characteristics faster and with greater accuracy. This method enabled the time taken to analyze core samples through to the measurement of hydrocarbon flow parameters to be reduced by a few months.

Digital investigation methods are also particularly useful to improve understanding of unconventional reservoirs, like those in Argentina. Pore sizes in these formations are particularly small. Using new technologies with resolutions as detailed as one nanometer, i. e. one millionth of a millimeter, we were still able to determine rock characteristics such as porosity, permeability, and saturation. Our digital core laboratory in Barnstorf, Germany, helps



us to benefit from the potential to increase efficiency and optimize rock analysis throughout the company.



## ECONOMIC PERFORMANCE \*

According to estimates by the IEA, global energy consumption will rise from 14 billion metric tons of oil equivalent in 2017 to 17.7 billion metric tons of oil equivalent in 2040. Reasons for this include the growing world population, rising living standards, and the associated increase in economic activities. More than half of the world's

energy requirements will continue to be met by fossil fuels in the years to come. It is expected that around 75 percent of primary energy will still be generated in this way in 2040. Crude oil and natural gas in particular will therefore continue to play a major role in meeting the growing energy demand.

Selected collaborations and strategic partnerships, innovative technologies and the responsible development and production of hydrocarbons all form the basis of our

\* Financial information is based on International Financial Reporting Standards (IFRS) requirements.

## ONE YEAR OF THE INNOVATION SPACE

The idea of the Innovation Space, a digital platform to share all sorts of ideas, came from the employees themselves. In 2018, we collected a total of 171 ideas and conducted six campaigns via our Innovation Space, including one on a feedback culture that goes beyond technical matters. A supplementary platform called Boost! was also piloted in the final quarter. Enriched with gamification elements, the aim is to increase interaction across hierarchical levels and locations. Employees were also able to generate points through their communication on this platform, which were converted into a donation to support a selection of charitable projects. Employee engagement on the Boost! platform exceeded expectations. Wintershall donated a total of € 10,000 to the five selected projects. In response to this success, Wintershall is considering integrating this as a component of its innovation management strategy on a permanent basis.





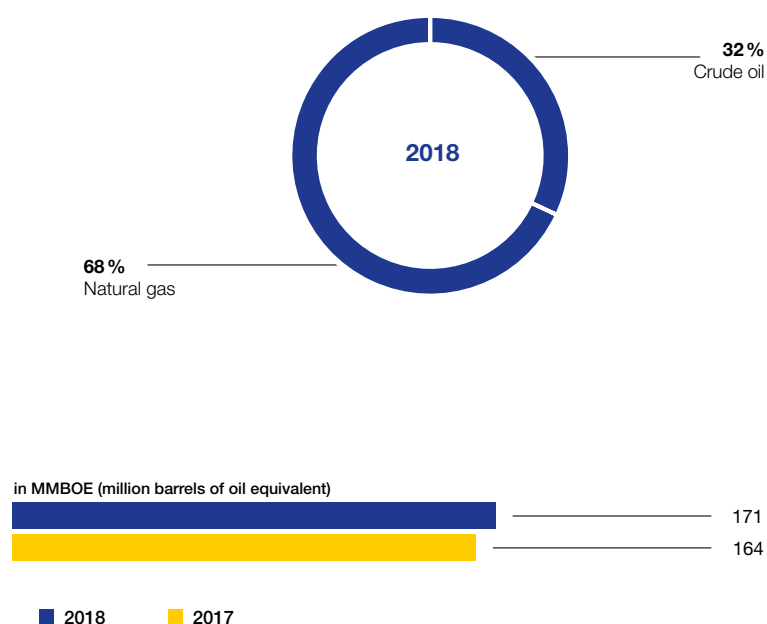
Wintershall has been working with DEA for 30 years, producing oil with an artificial drilling and production island from Germany's largest oil field (Mittelplate).



Wintershall has been active in Argentina for 40 years and is currently operator of the Aguada Federal block in Neuquén.

#### TOTAL PRODUCTION

— FIG. 4



growth-oriented strategy. We are also engaged in gas transport across Europe. In addition to our investment in the Nord Stream pipeline, we are also involved in financing the new Nord Stream 2 project as a lender.

Through the continuous optimization of our cost structure and portfolio of oil and gas activities, we ensure our competitiveness in times when oil and gas prices are volatile. In 2018, gas activities comprised around 68 percent of our portfolio. At 171 million barrels of oil equivalent (BOE), our oil and gas production was higher than in the previous year (2017: 164 million BOE). In the search for new oil and gas reservoirs, we completed a total of 12 exploration and appraisal wells in 2018, of which five were successful. The company's secure oil and gas reserves increased by 12 percent compared with the end of 2017, to 1,900 million barrels of oil equivalent (2017: 1,667 million BOE). We replenished 214 percent of the volumes produced in 2018. The reserves-to-production ratio



Crude oil production and pipelines in Emlichheim in Lower Saxony: Wintershall has been producing crude oil here for 70 years.



The drilling rig on the Deepsea Stavanger platform in Norway's Maria field.

is around eleven years. This is based on Wintershall's production in 2018 and the reserves at year-end. — FIG. 4

Sales to third parties increased by €842 million (plus 26 percent) year-on-year to €4,094 million (2017: €3,252 million) as a result of higher prices and volumes. The price of a barrel of Brent crude oil averaged \$71 in 2018 (2017: \$54). Gas prices on European spot markets rose by 32 percent compared with the previous year. — FIG. 5

SALES TO THIRD PARTIES  
in € million

— FIG. 5



Income from operations (EBIT) before special items increased by 155 percent to €1,745 million in 2018 (2017: €683 million). This was mainly due to higher gas and oil prices and higher production volumes in Norway and Russia. EBIT rose by €798 million (plus 85 percent) to €1,733 million. — FIG. 6

INCOME FROM OPERATIONS BEFORE SPECIAL ITEMS  
in € million

— FIG. 6



<sup>1</sup> Figures for 2018 do not include depreciation and amortization for the final quarter.

# ARTIFICIAL INTELLIGENCE: SMART SOFTWARE MAKES EXPLORATION MORE EFFICIENT

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**Interview with project leader  
Torsten Helbig  
from Exploration Resources and  
Performance Management**

**Along with big data analytics, artificial intelligence (AI) forms the core of Wintershall's digitalization offensive. Which areas have you chosen for testing these technologies?**

Let me first clarify something with regard to terminology. People often talk about AI in the context of digitalization. But we prefer to talk about deep learning (DL) in the context of this project, which is a better description of the technology used. We use deep learning – also referred to as DL – in very different ways in our flagship project. Firstly, we want to make it easier to locate information in unstructured data. Secondly, we want to develop a “virtual assistant” in the medium to long term, which would support staff with their work by identifying similarities with other projects.

**Those are very different areas of application. Let's start by looking at exploration: How can DL make the process of extracting raw materials more efficient?**

A good example of this is the Exploration Analogue tool, which offers a completely new type of support for professionals at work. This is based around the idea that we already have information for many geological formations and reservoirs. If we can speedily

record all the similarities in a new field, this reduces the processing time because an explorer can immediately focus on the core questions, enabling them to offer guidance regarding further development much more quickly.

**How has this been done previously?**

This used to be a time-consuming process of manually searching for the relevant data. Analyses often had to be performed several times, even though we already had data from existing boreholes in geologically similar formations on hand. This has been everyone's experience. This is why we have received such a great response to our idea to date.

**To what extent does this use of DL advantage people and support sustainability?**

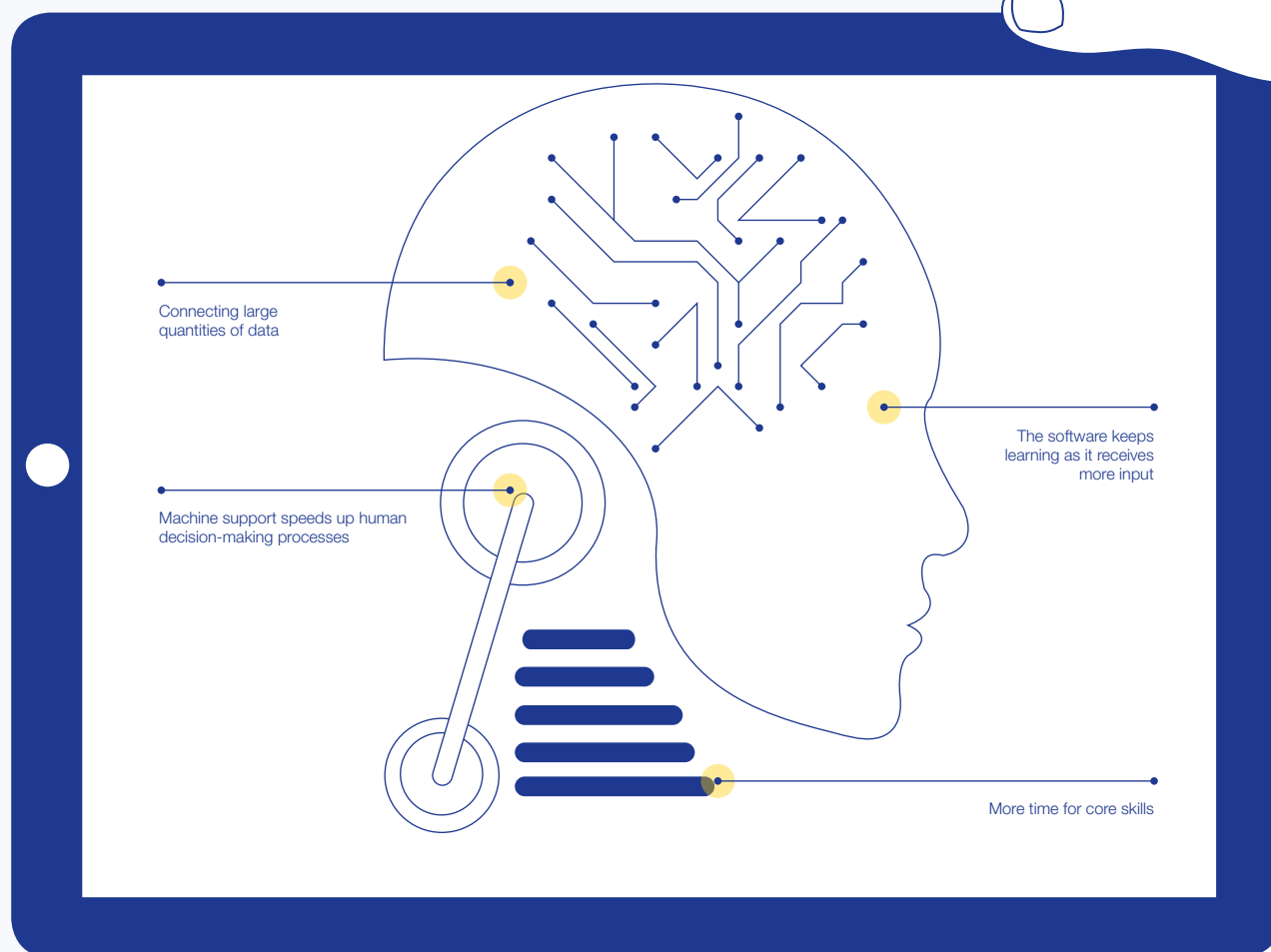
The project team only has to concentrate on those areas that have been highlighted by the DL software and actually require a closer look. This reduces our colleagues' workload, allowing them to focus on other issues such as resource efficiency. Comparisons with similar geologies make it possible to determine the optimal exploration program, which saves time.

**Could you give us some concrete examples of how DL can help to improve the sustainability of our operations?**

Deep learning always shines brightest in situations where large quantities of data have to be analyzed quickly. In oil and gas, we see this particularly in our production operations. For example, deep learning can be used to simulate deposition processes in transport pipelines or on production lines. This makes it possible to improve maintenance and ensure the plants always operate within the optimal range. Our colleagues in the Netherlands have already developed and are using corresponding algorithms. So, we are clearly making good progress.



## ARTIFICIAL INTELLIGENCE



Along with big data analytics, artificial intelligence (and deep learning in particular) is a key component of Wintershall's digitalization offensive. This involves the automation of intelligent behavior and machine learning. Wintershall wants to deploy this advanced technology to support various areas of its business model and accelerate them from the ground

up. There are plans to develop systems to evaluate geological data and filter soft data such as technical essays and scientific articles. Artificial intelligence is one of the driving forces of the digital revolution – in terms of both existing and emerging areas of application.

# RESPONSIBLE OPERATIONS

Employees	39
Environment and climate protection	49
Safety and security	57
Responsibility across the value chain	64
Digital twin: optimizes production and sustainability	66

## WE HARNESS POTENTIAL AND PROTECT NATURAL RESOURCES

The strong commitment of our employees is a significant factor in our long-term success. We want to maintain this engagement, so we offer them an attractive and healthy workplace. Ensuring safe operations while protecting the environment and climate are key obligations. Even before starting our projects, we examine the possible impacts on people and the environment and continually strive to minimize these. We also promote a responsible attitude across our entire value chain. In our case, this means we also raise awareness of safety concerns along with environment and climate protection issues among our suppliers and contractors.

### EMPLOYEES \*

People come first at Wintershall. After all, only healthy and motivated employees can be productive and creative. We rely on a diverse team of qualified staff in everything we do. We want to offer these people the best working conditions, professional development opportunities, and a good work-life balance.

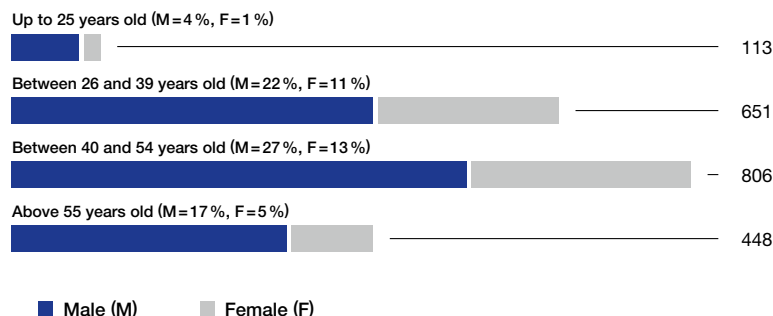
TOTAL EMPLOYEES  
as of December 31, 2018

— FIG. 7



EMPLOYEES BY AGE

— FIG. 8



### HR STRATEGY AND KEY FIGURES

Our human resources strategy is derived from our corporate strategy and contributes to the achievement of our targets. We focus on three main areas: dedicated employees, strong managers, and good working conditions. This is how we position ourselves, as an employer that promotes the professional development and lifelong learning of its em-

ployees and managers around the world. We also want to offer our employees a safe and attractive working environment.

As Germany's largest internationally active producer of crude oil and natural gas, Wintershall employed 2,018 people worldwide at the end of 2017, of which 30 percent were women. — FIG. 7, 8, 9

\* The data in chapter Employees relate to individuals who were employed within the consolidated companies in the BASF Group as of December 31, 2018.

## GLOBAL LABOR AND SOCIAL STANDARDS

We adhere to the applicable national legislation and core labor standards defined by the International Labour Organization (ILO) in our interactions with our employees. We are also organizing working conditions worldwide in line with our voluntary commitments, the OECD Guidelines for Multinational Enterprises and local requirements. [🔗 Page 27 and 47](#)

## TRAINING AND CAREER ENTRY PROGRAMS

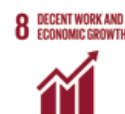
In the global competition for the best specialists and managers, we want to attract qualified talent as early as possible. This is why we consistently invest in the training and development of our employ-

ees. Related activities around the world include everything from traditional vocational training and career entry programs for students to special programs for junior executives.

For example, in Germany, Wintershall is training mechatronics engineers, mining technologists, electronics technicians, industrial managers, chefs, and restaurant staff. A total of 49 young people were undergoing training in these areas as of December 31, 2018.

We give students the chance to get to know us while they are still studying. We offer internships and placements for theses based around practical experience. Wintershall also offers special trainee programs aimed at graduates, preparing them to work in finance, information management, purchas-

ing (START IN), geology, and oil and gas engineering (SPEAD). 22 employees took part in this program in 2018. — **FIG. 10**



## CAREER DEVELOPMENT AND LIFE-LONG LEARNING

We can only master new challenges if our employees and managers recognize the importance and necessity of lifelong learning and not only maintain, but continually expand their knowledge and skills. With today's constantly changing requirements, personal development and lifelong learning

### SPEAD CELEBRATING ITS 20TH ANNIVERSARY

The SPEAD program to promote young talent is celebrating its 20th anniversary. Wintershall's international program is aimed at university geosciences and engineering graduates, disciplines relevant to our industry. SPEAD stands for Special Professional Experts Accelerated Development. Over the course of 24 months, SPEAD participants are prepared for their future roles via on-the-job training in operational units at home and abroad, and intensive seminars. 273 colleagues have started their careers in the SPEAD program since 1998, 185 of whom are still employed at Wintershall today.



SPEAD participants Benjamin Shuzena and Markus Helfrich on the Mærsk Resolve platform in Esbjerg Port, Denmark.



Certificate for participation in the Partners for a Day program to support young people in Buenos Aires.



Wintershall trainees in Barnstorf, Germany.

are critical to the success of the company and satisfaction of employees.

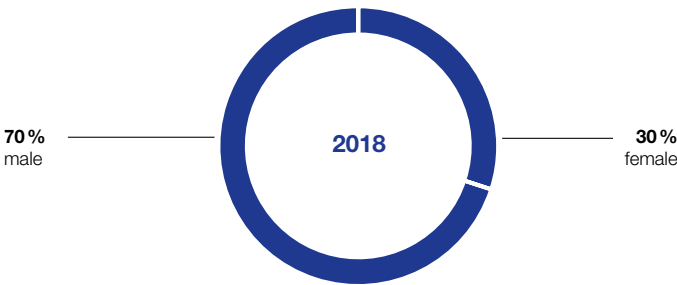
At their annual employee performance reviews, employees meet with their managers to outline individual professional development opportunities. The concept of development paths helps us to highlight possible career pathways within the company. The manager and individual employee then work together to develop a personal development plan.

DIVERSITY

Promoting diversity is part of our corporate culture. As a company with operations around the world, Wintershall has a strong focus on diversity, both in attracting skilled workers and in everyday working life. We want to benefit from the different perspectives that our employees bring to the table thanks to their differing biographical backgrounds. After all, we recognize diversity

GENDER RATIO

FIG. 9



TRAINEES AND CAREER ENTRY PROGRAMS  
As of December 31, 2018

FIG. 10



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INTERVIEW

### FIONA DEWEY ANSWERS THREE QUESTIONS ABOUT THE WINTERSHALL WOMEN'S NETWORK



Fiona Dewey,  
Head of Global Support  
in Rijswijk, The Netherlands

Formed in March 2018, the Wintershall Women's Network is an initiative to promote greater diversity and equal opportunities at Wintershall. The core team includes female staff from various departments at the Kassel headquarters, as well as representatives from all operational sites. Working closely with dedicated colleagues of all genders across the company, the network aims to ensure greater transparency in personnel decisions, promote flexible working conditions, and increase awareness of unconscious bias. The goal is to improve gender balance at Wintershall and promote equal opportunities.

The network is headed up by Fiona Dewey, Capability Manager for Geology and Geophysics, and Joanna Jedrys, Innovation Manager. Fiona shared her insight into the group's activities and ambitions:

**Ms. Dewey, you have been working for Wintershall for more than 20 years. How do you feel about diversity at Wintershall?**

The company has become very international, especially over the past decade. This is something we can really take pride in. Our SPEAD graduate program attracts a wide range of young people from many countries all over the world every year. This diversity is reflected across most departments, but when you look at management and the various executive levels, there is a distinct lack of women. Statistics show that women are underrepresented in the higher job grades. Wintershall needs to do better in this area.

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as the enrichment it is. At the same time, we are certain that employees are more motivated and identify even more strongly with the company when their individuality is recognized and valued.

Our employees come from more than 50 countries. The majority of our managers

outside of Germany are locals to the respective region. International personnel assignments are an indispensable part of everyday work in many functions and for the development in our company.

Together with our parent company BASF, we are working to achieve the target we

have set ourselves to increase the proportion of women in management positions to between 22 and 24 percent by 2021. Various measures were implemented to this end in 2018, focusing primarily on the selection processes for managers. We have also successfully implemented programs to improve our management culture. Cur-



Women's Network kick-off meeting.



**The Wintershall Women's Network has grown significantly in the last year. What do you want to achieve with your work and what are the most important changes you want to bring about?**

We need to identify the issues that are hampering people in their career development and find appropriate countermeasures. We need more opportunities for flexible working hours, making it easier for staff to manage their private and professional lives. With the impending merger and potential changes in working locations, this is now more important than ever. Parental leave and sabbaticals should not be seen as the end of someone's career, but an opportunity to gain new insights, shift focus for a time, and then continue with their career.

To improve the diversity and gender balance in management and senior technical positions, there needs to be more transparency in the recruiting, promotion and development process. This includes a fit-for-purpose and easy to manage HR database, transparency in available positions, and unbiased processes. These are all initiatives we are committed to furthering in the new Wintershall Dea company.

**That sounds like a lot of work. How does the network intend to approach these issues and who can support you?**

Our approach is essentially to start by raising awareness of an issue, then identifying the cause, before finally proposing solutions. All Wintershall employees can support us in this process. We have a channel on Wintershall's innovation platform, the Innovation Space, where every employee can propose ideas. This has been very well received and we have already been able to gather a number of good ideas which are being worked on by dedicated groups. The core team is responsible for examining and implementing these ideas. That is really what it is all about: getting all employees equally involved and working together to help Wintershall to achieve greater diversity.

rently, around 21 percent of our management positions are filled by women.



## WORK-LIFE BALANCE

Enabling our employees to successfully combine work, family, and a private life is a fundamental part of our commitment as an employer. This plays an important role in employee performance and motivation. We have a wide range of programs designed

to create the frameworks to meet individual needs. Wintershall offers its employees considerable flexibility in terms of working hours, with options including part-time, remote working/working from home, and job sharing. Employees can also take advantage of services such as childcare and seminars on improving work-life balance.





Children can learn a range of interesting things in a fun way at the company's in-house childcare facility in Kassel.

We address country-specific conditions and local needs through regional initiatives. An annual Sports Day is held in Argentina, for example, in which employees compete in various sporting events together. Employees at the Group headquarters in Kassel can also take part in a varied sports program. After five years with the Group, employees have the opportunity to take time off work for a period of between three and nine months for a sabbatical. A total of four employees took time off from work for an extended period in 2018.

## HEALTH MANAGEMENT

We support our employees in staying healthy, motivated, and fit for work over the longer term by providing comprehensive healthcare services.

The physical and mental health, well-being, and safety of our employees is of utmost

importance. An operational health management system has been established at all our sites to improve and promote the health and performance of local employees. Our focus is on preventive occupational health programs, health promotion, and ensuring effective medical care in emergencies. Our various sites can set different health management priorities based on local requirements. The services include information events, medical check-ups, occupational health consultations, and ergonomic workplace inspections. Regular occupational health audits verify compliance with health standards and operating procedures.

The results of our occupational health activities have been positive once again in 2018. A total of 745 occupational health checks and 370 general health check-ups were carried out worldwide. Wintershall Norge reported just a single case of a recognized occupational illness. Preventive healthcare offerings included flu vaccina-

tions, and skin cancer and vein screening. Numerous campaigns were carried out as part of the company's health promotion program, such as the Wintershall Health Day and special days to specifically promote health awareness among employees.

As a follow-up to the risk assessment on psychological stress in the workplace carried out in 2017, additional organizational measures were put in place at the Kassel office in order to reduce work-related stress and improve working conditions. Various information events were held to improve employees' resilience.

In 2018 and for the ninth year running, Wintershall Norge offered its employees the opportunity to participate in its cancer screening program. The screening was carried out at various locations. The central focus was on screening for the most common cancers, namely colorectal, prostate and skin cancer. Norway is among



### “OPEN TO DIVERSITY – CLOSED TO EXCLUSION” CAMPAIGN

In October 2018, Wintershall, together with other companies in the Kassel region, launched the ‘Offen für Vielfalt – Geschlossen gegen Ausgrenzung’ (Open to Diversity – Closed to Exclusion) campaign to promote diversity, respect and the rule of law. In the run-up to the state elections in Hesse, this was a sign of cosmopolitanism and tolerance. In addition to announcements in national newspapers, the campaign created a practical symbol for citizens, companies and their employees, or retailers to show their support for the initiative, in the form of a door sign. The reversible sign shows the campaign messages: ‘Open to diversity’ on the front and ‘Closed to exclusion’ on the back. As an international company, people from many different countries work at Wintershall, and these people are critical to the company’s success. This campaign



Wintershall employee Dagmar Krauß with signs with the words “Offen für Vielfalt” and “Geschlossen gegen Ausgrenzung” of the tolerance campaign.

allowed Wintershall to show its commitment to its employees and support for their diverse backgrounds and a tolerant society.

### HEROES. SAVE. LIVES.

Our 2018 global health campaign was based around reanimation with the motto “HEROES. SAVE. LIVES.” The targeted short training sessions taught employees worldwide how to respond in the event of sudden cardiac arrest. Unfortunately, cardiac arrest is not uncommon and can strike anyone without warning. When it happens, those nearby must respond quickly, because every second counts. Immediate cardiopulmonary resuscitation (CPR) doubles or even triples a person’s chances of survival. The aim of this health campaign was to enable employees to deliver first aid faster and more effectively and remove their inhibitions. And it was a success: in Germany alone, 82 percent of all staff are now able to perform CPR. More than 1,350 employees have received this training worldwide.



Wintershall employees practicing CPR.



At the Understanding Your Culture workshop for managers at Wintershall's headquarters in Kassel, Germany.



Exchange Express, an event held at Wintershall's headquarters in Kassel, Germany, in connection with the Corporate Culture Initiative.

the countries with the highest incidence of malignant skin cancer.

## DIALOGUE

The ideas, skills, and experience of the people who work for us are an important resource for our company. Wintershall therefore engages in active dialogue with people working at all levels of the organization. Employees are regularly updated on current developments and organizational changes at events, on the company intranet, in newsletters, and in the employee magazine. Honesty and respect are the basis of productive communication.

Managerial staff and the Board of Executive Directors discussed Wintershall's strategy and future as well as the upcoming merger at the annual Executive Day. Other key areas for discussion included digitalization, HSE and leadership. Participants in the SPEAD and START-IN programs had the

opportunity to talk to the CEO over breakfast. At the 'Time out for Dialogue' event in Kassel, around 400 Wintershall employees from all across the company discussed the expansion of the 'Understanding your Culture' initiative and additional activities to promote a successful long-term cultural shift to become an even more open, flexible and creative company.

## Working with employee representative bodies

Employer and employee representatives maintain open and trustful dialogue at Wintershall. Our company respects the freedom of association and the right to collective bargaining. In our view, co-determination helps employees to take responsibility for the medium- to long-term development of the company as a whole.

## OUR RESPONSIBILITY TO RESPECT HUMAN RIGHTS

### Human rights

Respect for human rights throughout all our operations and business relationships forms the basis of our approach to social responsibility. Our standards comply with applicable legislation and regulations and are based on internationally recognized principles.

### Standards

With BASF as our parent company, a founding member of the UN Global Compact, we support the UN Guiding Principles for Business and Human Rights and are working to align our internal guidelines and processes accordingly.

Consequently, our global Code of Conduct, which applies to the entire BASF Group, also covers the issues of human rights, labor and social standards and



SPEAD participant Nadia Poultney in Barnstorf, Germany.



The UN Guiding Principles on Business and Human Rights are discussed by Wintershall's Sustainable Operations Community at regular meetings. The idea is to embed the UN Guiding Principles on Business and Human Rights in our everyday working lives at Wintershall.

strictly embeds these principles in our day-to-day business. Our commitments include the Universal Declaration of Human Rights and the two UN Human Rights Covenants, the ILO Core Labor Standards and the Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy (MNE Declaration), as well as the OECD Guidelines for Multinational Enterprises.

The BASF Group's Position on Human Rights summarizes these commitments and our operational standards and their implementation with regard to our employees, the communities in which our sites are located and our business partners, all in a single document. Important aspects of our corporate obligations to respect human rights are safety and health, labor and social standards and supply chain management. These aspects are – either explicitly or implicitly – an integral part of various management systems.

### Risk analysis

The safety of our employees, contractors, neighbors and facilities is our top priority. For all activities, we analyze possible weak points and their effects on the safety of our employees or our environment. We regularly conduct regional risk analyses for our businesses for this purpose. Risks in respect of human rights and social standards are also analyzed as part of our investment approval process, and, recommendations to remedy these risks are formulated where required. Compliance with our standards is monitored using a reporting system that also includes compliance hotlines. If the analysis produces indications that our voluntary commitments are being inadequately implemented, we follow up on these and take remedial action.

### Integration

Human rights considerations are fundamentally integrated into our commercial decision-making processes. We also strive

to ensure that all working conditions within our company worldwide are consistent with our standards, local requirements, and industry best practices. Our Supplier Code of Conduct covers environmental protection, observance of human rights, compliance with labor and social standards, and anti-discrimination and anti-corruption policies. We highlight the importance of observing human rights obligations in all new supplier contracts. We ensure our sustainability profile is regularly evaluated by external service providers and are working on our own ESG (Environment, Social and Governance) prequalification questionnaire with the aim of better identifying risks in advance and continually improving the quality of our human rights due diligence.

### Human Rights Peer Learning Group

As members of the Human Rights Peer Learning Group, which is part of the German Global Compact Network, we regularly

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## INTERVIEW

### WORKS COUNCILS AND THE MERGER



Birgit Böhl,  
chair of the works council at  
Wintershall

**When two companies merge, there are many needs and conditions that have to be considered and reconciled. What is done to ensure employees' concerns are heard?**

Wintershall and DEA's respective works councils, along with the German Mining, Chemical and Energy Workers' Union (IG BCE), have from the outset acted to ensure that a merger and its planning can only take place with the involvement of employee representatives. We were successful, and thus a working committee that includes works councils and speaker committees from the two companies, along with the IG BCE, is regularly informed of and consulted regarding current considerations and plans regarding the new joint company. This ensures proper representation of employees' interests.

**The merger offers great potential for the companies involved, but many employees are feeling less certain. Just how secure are their futures at Wintershall?**

When the fundamentals of the new Wintershall Dea company are defined, we want to be consulted regarding employment, locations and structures for worker participation. We will make sure that our joint efforts are focused on ensuring the futures of all employees. Our experience of other transition periods, such as those in 1993, when the oil price was below \$14/bbl, and 2003, when it was just under \$20/bbl, shows that we can make big changes in a socially responsible manner. Back then, we were able to negotiate good solutions for a large majority of affected employees. We are still in contact with some of these colleagues today and they always reflect positively on what we achieved at that time.

**BASF and LetterOne have announced that they expect to realize at least €200 million in synergies per year from the third year after the transaction is completed. Will this affect jobs?**

The agreed merger between Wintershall and DEA will generate a considerable workload to consolidate the two companies over the years ahead, and jobs will also be affected. The key factor is that the companies, works councils, and trade union have made a commitment to achieving socially acceptable outcomes to this merging process. This means that Wintershall Dea will continue existing agreements, such as collective agreements, works agreements, and social plans. In regard to personnel adjustments and new employment options, the partners will together define appropriate mechanisms, whereby socially acceptable solutions are given top priority. Redundancies and site closures for operational reasons will be ruled out until June 30, 2020, in order to give sufficient time and care to be able to develop and implement these mechanisms to the necessary extent. As to the later stages of this integration process, the involved parties agree that, if all agreed mechanisms are properly implemented, we can effectively rule out the risk of compulsory redundancies.

**Should employees anticipate further major changes after 2020?**

As already mentioned, there have been changes in Wintershall's past, and there will also be changes in the future. Wintershall Dea will also continue to change, again and again. Our obligation as a works council is, among other things, to observe and participate in these transformation processes, and ensure that these are carried out in a way that is as fair, open, and transparent as possible, in the interests of both the employees and the company alike.

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exchange information on developments, progress and challenges we face in human rights due diligence.

### Consultation and complaint mechanisms

Our employees can refer to their superiors, numerous specialist departments, and the company's compliance officers regarding any complaints or indications of misconduct. The BASF Group has also established worldwide external hotlines, which allow employees and external parties to report their concerns anonymously. All reported incidents are investigated by our experts. We ensure that every reported issue receives a response within a fixed period of time.

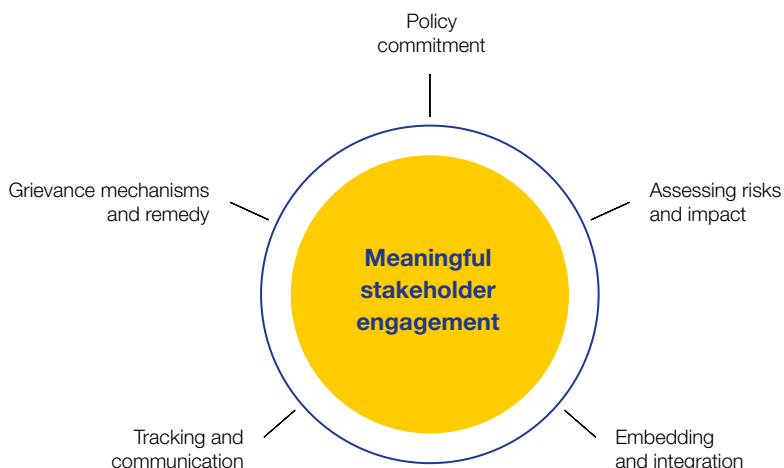
### Continuous improvement

We take our obligations to properly ensure human rights due diligence in our value chain in compliance with the UN Guiding Principles on Business and Human Rights very seriously. In 2018, we commissioned an external service provider to carry out a gap analysis in order to ascertain the precise current status of our implementation of our human rights due diligence obligations in accordance with these principles and the German National Action Plan and to identify areas with room for improvement. Drawing on these results, we will develop a plan to guide our future expansion of our due diligence process. — FIG. 11



## KEY ELEMENTS OF HUMAN RIGHTS DUE DILIGENCE

— FIG. 11



## ENVIRONMENT AND CLIMATE PROTECTION\*

Wintershall is aware of the potential environmental impact of its business activities. As a company with operations around the globe, we want to play our part in protecting the environment and climate worldwide. We take responsibility in this regard by setting high standards and investing in technical innovation.

### STRATEGY

Through clear guidelines and consistent oversight, we aim to minimize our ecolog-

ical footprint and use resources sparingly. With this in mind, reducing emissions and energy consumption in our operations in the interests of the environment is a fixed component of our ongoing process optimization strategy. In order to improve the quality of our environmental and energy management processes, we are currently bringing our management systems in line with the international ISO standards for environmental management (ISO 14001) and energy management (ISO 50001). This will further reduce our environmental impact, improve energy efficiency, and reduce emissions. Our parent company, BASF, has set itself the voluntary target to have certified energy management systems implemented at relevant production sites by 2020. We at Wintershall are also playing our part. In our

\* Key environmental performance figures include both operated and non-operated activities corresponding to Wintershall shares.

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## INTERVIEW

### WINTERSHALL'S CONTRIBUTION TO THE INDUSTRY'S METHANE GUIDING PRINCIPLES INITIATIVE



Richard Culpan,  
physicist and project leader  
behind Methane Guiding  
Principles project at Wintershall

Wintershall was invited to become a founding member of the Methane Guiding Principles initiative in 2017. The initiative reaffirms the need for standardization in the identification and reporting of these emissions. Together, the members call for a regulatory framework that supports incentives to reduce emissions. The guiding principles are being analyzed by an interdisciplinary working group at Wintershall and will be developed into company-wide standards. This involves close dialogue with various interest groups, including environmental regulatory authorities, NGOs, academic institutions and the World Bank.

Three questions for Richard Culpan, a physicist and the project leader behind the Methane Guiding Principles project at Wintershall:

#### **Mr. Culpan, the initiative was largely founded by the major industry players. How do you see Wintershall's role within the initiative?**

As an independent European producer, Wintershall has a lot of experience working with various partners in this initiative. Inclusiveness and diversity are vital to this project's success. The diverse signatories include experts from universities, NGOs, and IGOs, as well as oil and gas companies (NOC and IOC) from every part of the value chain and different regions. This ensures a broad range of opinions and knowledge are covered. Inclusiveness means that all signatories get a say – not just oil and gas companies.

#### **What changes have you seen in the way we operate and produce oil and gas?**

We at Wintershall already have experience in reducing emissions, but there are differences in experience between the various departments and platforms. We want to enhance the exchange of knowledge within the company and also learn from other experienced operators. This will allow us to optimize existing methods of reducing methane emissions and continuously reduce emissions resulting from our own production activities. In so doing, we wish to set an example, and highlight the importance of reducing emissions in our platforms operated by partners.

#### **That is an ambitious path. Does Wintershall already have specific targets, and if so, how will these targets be achieved?**

We want to review the emissions of our existing portfolio. Once we have identified the big emitters, we can look for technical solutions to minimize these. We want to make sure that steps taken to minimize emissions are state-of-the-art in our planning for new platforms. This demands openness to applying new methods and technologies, and a shared desire to improve across the entire company.



case, this relates to our sites in Germany and Norway. Both are already certified accordingly.

The management systems at Wintershall Noordzee, based in the Netherlands, and the Norwegian subsidiary, Wintershall Norge, are certified to ISO 14001:2015. The management systems at our Russian joint ventures, Achimgaz, Severneftegazprom, and Volgedeminoil, are also certified to ISO 14001. Severneftegazprom is additionally certified to ISO 50001. There are plans to achieve ISO 14001 certification for the Argentinian subsidiary, Wintershall Energia S.A, and the Libyan Wintershall AG in 2019.

We regularly analyze our performance to determine the effectiveness of the measures we are taking. A company-wide network of environmental experts across all Wintershall sites is working to continually improve our environmental impact. We promote environmental and energy awareness among our employees through internal guidelines, training, and articles on current developments published on our intranet and in the employee magazine.

## CLIMATE PROTECTION

Wintershall is aware of the consequences of climate change and the associated challenges the global community now faces. It is our ambition to be part of the solution in providing a responsible source of energy. This starts with controlling and measuring our energy consumption and company-wide emissions. This is the responsibility of the Health, Safety and Environment department. The company's latest performance is regularly discussed with the Executive Board in this regard

## ENERGY

— FIG. 12



and appropriate objectives are set. The corporate sustainability strategy team also works on long-term strategic issues and relevant commitments. The team develops the company's positions and ambitions in relation to sustainability and climate protection. These are always discussed and communicated in close consultation with the Executive Board. This means Wintershall as a company always has the latest figures and can make long-term adjustments to further its climate protection objectives.

## Risk Management

Wintershall is committed to minimizing the risks associated with its activities and their effects on people and the environment. To this end, issues such as emissions of greenhouse gases and the energy efficiency of platforms are included in project risk assessments. These risks are quantified in project assessments, social and environmental impact assessments, and HSE due diligence reports for potential acquisitions and steps are taken to minimize these risks.

## EMISSIONS

Wintershall is convinced that the E&P industry can play a valuable role in reducing emissions. As operator we eliminated routine flaring of associated gas during regular oil production operations back in 2012. All existing facilities have already been retrofitted, while for new plants the use of associated gas is already taken into account during planning. To underscore our commitment, Wintershall also supports the World Bank's Zero Routine Flaring by 2030 initiative. Governments, oil producers, and development organizations are working together through this initiative to ensure that routine flaring of associated gas will cease worldwide by 2030.

Wintershall installed new NO<sub>x</sub> catalytic converters in its gas turbines on offshore platforms in the Dutch North Sea in 2018. Measurements have shown that the catalytic converters have reduced NO<sub>x</sub> emissions by 95%. Precise coordination of the gas turbines simultaneously reduced NO<sub>x</sub> emis-



Wintershall has installed new NO<sub>x</sub> catalytic converters in its gas turbines on offshore platforms in the Dutch North Sea. Pictured: Platform Q4-A.



A micro gas turbine that generates electricity from associated gas has been in operation at Wintershall's Aitingen site since 2011.

SOURCES OF EMISSIONS  
in metric tons

TAB. 1

	2018	2017	2016
<b>Sources of CO<sub>2</sub> emissions</b>			
Production processes	1,194,672	1,054,771	890,896
Indirect (import/export of electricity/steam)	105,009	50,160	48,644
Direct (electricity and steam production)	278,374	224,448	230,633
Intensity (metric ton of CO <sub>2</sub> per metric ton of production)	0.069	0.063	0.056
<b>Sources of CH<sub>4</sub> emissions</b>			
Production, undifferentiated	9,179	7,113	3,729
<b>Sources of N<sub>2</sub>O emissions</b>			
Production, undifferentiated	31	26.8	19.6

sions by 35 percent. These measures show that Wintershall is responding to the stricter restrictions on nitrogen oxide emissions under Dutch environmental legislation and falls well below these thresholds.

### Greenhouse gas emissions

Our activities result in the release of greenhouse gases, namely carbon dioxide (CO<sub>2</sub>), nitrogen oxide (NO<sub>x</sub>), and methane (CH<sub>4</sub>). The amount of emissions depends greatly on the nature of our projects, for example the development of new fields, gas transport, or maintenance and repair work. Wintershall's greenhouse gas emissions were 16.6 percent higher in 2018 than in

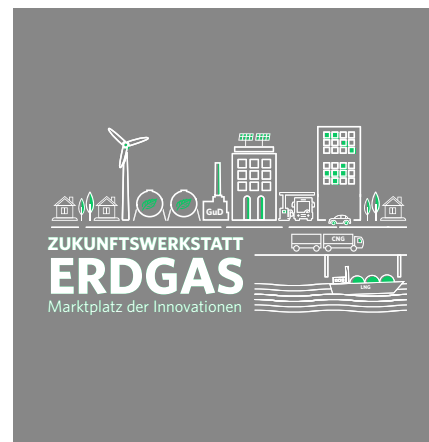
2017. Carbon dioxide accounts for by far the largest share at 1.57 million metric tons (2017: 1.32 million metric tons of CO<sub>2</sub>). In relation to Wintershall's production of crude oil, natural gas, and condensate, this corresponds to direct emissions of 0.069 metric tons of CO<sub>2</sub> per metric ton of production. The corresponding international industry benchmark for the oil and gas industry (IOGP) is 151 metric tons of CO<sub>2</sub> per 10<sup>3</sup> metric tons of production. Emissions of other greenhouse gases add another 9,179 metric tons of CH<sub>4</sub> (2017: 7,113 metric tons of CH<sub>4</sub>) and 31.5 metric tons of N<sub>2</sub>O (2017: 26.8 metric tons of N<sub>2</sub>O). There are a number of reasons for these increases in greenhouse gas emissions. On the one hand, production in Libya increased. On the other hand, it was not possible to utilize the associated gas due to the security situation. Greenhouse gas emissions also increased due to the additional production from the Maria field in Norway, with active production starting in December 2017, and as part of well-testing activities in connection with







Modern facilities such as the natural gas processing plant near Novy Urengoy, Russia, are highly energy-efficient.



Wintershall is a partner of the Zukunftswerkstatt Erdgas industry initiative, which presents innovative technologies using gas.

EMISSIONS OF OTHER SUBSTANCES RELEASED INTO THE ATMOSPHERE  
in metric tons

TAB. 2

	2018	2017	2016
<b>Inorganic substances</b>			
Total inorganic substances	4,707	3,952	3,823
Carbon monoxide (CO)	2,410	1,983	1,500
Nitrogen oxides (NO <sub>x</sub> ) as NO <sub>2</sub>	1,924	1,729	1,932
Sulfur oxides (SO <sub>2</sub> + SO <sub>3</sub> ) as SO <sub>2</sub>	373	240	391
<b>Organic substances</b>			
Non-methane volatile organic substances	3,929	2,962	1,690
<b>Other substances</b>			
Particulates	23	21	29

securing production from the Ravn field in Denmark. — TAB. 1

#### Emissions of other substances released into the atmosphere

As well as greenhouse gases, we also track emissions of inorganic gases, such as carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), and sulfur dioxide (SO<sub>2</sub>). These are released in the combustion of natural gas,

fuel oil, and diesel to generate power. In the year under review, emissions of inorganic substances increased to 4,707 metric tons (2017: 3,952 metric tons). — TAB. 2

#### Emissions Trading

Five of our group's plants across Europe are subject to legislation that regulates emissions trading. These include three production platforms in the Netherlands,

the Norwegian Brage platform, and one site in Germany.

In 2018, these plants emitted a total of 413,103 metric tons of CO<sub>2</sub>. We were allocated 215,201 emission allowances (EUA per annum) for our plants, where one EUA is equivalent to one metric ton of CO<sub>2</sub>. The remaining allowances were purchased.

#### Energy Efficiency

We require energy in one form or another for all of our activities. This makes energy efficiency very important to us; it helps us to reduce energy costs while protecting the environment. In 2018, we collectively used a total of 537,540 MWh of electricity (2017: 443,173 MWh) and 553,455 metric tons of steam (2017: 485,005 MWh). We use electricity to drive pumps and compressors, for example. We need thermal energy in the form of steam for crude oil production or to heat our plants. — FIG. 12

Depending on the location of our production facilities, we obtain electricity either from the



Water treatment plant in Landau.



Platform Q4-C in the Dutch North Sea.

public grid or generate it ourselves at remote locations. Where appropriate and feasible, we use micro gas turbines or combined heat and power plants to improve energy efficiency. We are also always looking for ways to improve.



## Water

Wintershall takes a conscious approach to the use and protection of natural water resources. Each of our relevant sites has a water protection plan. This is of particular importance in water stress areas. In these regions, Wintershall conducts early-stage analysis to identify potential savings and thereby reduce total water consumption. We continuously strive to save and reuse as much water as possible by using innovative technologies, recycling drilling fluids and using closed-loop

systems. Wintershall has shut down wells in two offshore fields in the Dutch North Sea following cessation of production activities. These are now being used to inject production water from other producing fields back into the former reservoir. This has allowed 22,000 cubic meters of water to be pumped back into the empty fields rather than having to invest considerable resources treating the water before discharging it into the North Sea.

Wintershall used a total of 21.8 million cubic meters of water in 2018 (2017: 21.6 million cubic meters). Most of this water – 10.6 million cubic meters (2017: 10.5 cubic meters) was reservoir water, which is a byproduct of producing crude oil and natural gas. Other water originated as surface water, or was taken from groundwater supplies.

WATER  
in million m<sup>3</sup>



FIG. 13

Of the total 21.8 million cubic meters of water used, 12.2 million cubic meters were discharged by our offshore production platforms into the sea after treatment



Wintershall employee and amateur beekeeper Pascal Meyer looks after the honeybee colonies in the biotope created by Wintershall at Holleberger Moor, Emlichheim, Germany .



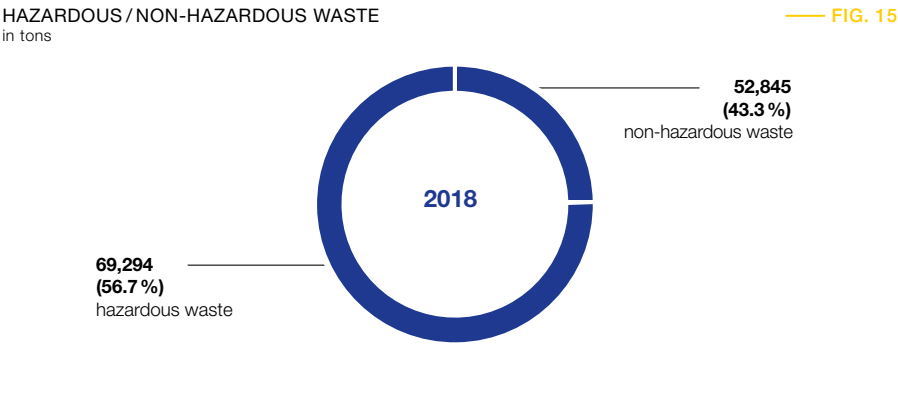
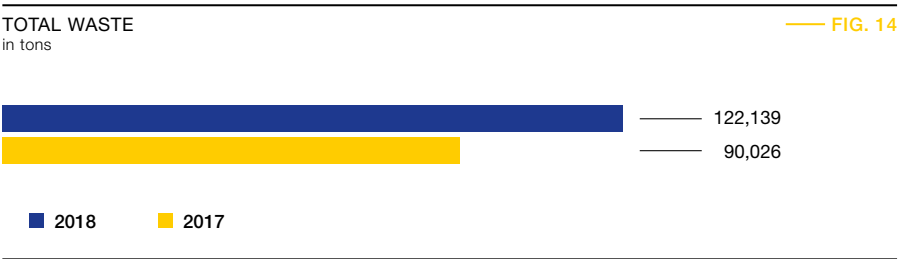
In line with its role as a Partner for Biological Diversity in Hesse, Wintershall has hung nesting boxes in front of the company headquarters.

and in compliance with legal limits. At 8.2 million cubic meters, the majority of this was cooling water. Around 8.8 million cubic meters of reservoir water were separated from crude oil and natural gas, then treated and reinjected into the reservoirs. Another 0.8 million cubic meters of water were discharged into the sewage system. This includes both sanitary wastewater and urban rainwater runoff.



BIODIVERSITY

We ensure natural ecosystems are protected in the regions where we produce crude oil and natural gas. We also want to contribute to the preservation of biodiversity. For this reason, we always conduct risk assessments and studies to ascertain the potential environmental impact of our



activities before initiating a new project or constructing new facilities.

The topic of biodiversity is also relevant in the remediation and renaturalization of former sites. Since 2003, Wintershall has invested more than €60 million in remediating and renaturalizing former landfill sites in Germany in a way that is both environmentally friendly and in keeping with the natural landscape. For example, the Holleberger Moor landfill site in Emlichheim, Germany, was carefully recultivated. In collaboration with the Naturschutzstiftung Grafschaft Bentheim, a local non-profit conservation organization, we created a 50,000 square meter habitat with water areas and gravel islands to serve as a resting and breeding area for rare birds and grazed extensively by old breeds of sheep.

In 2018, Wintershall's Kassel site took part in the Hessian Ministry of the Environment's program to promote corporate premises

that are more welcoming to nature. Nesting boxes for songbirds, swifts, kestrels, and bats were installed, which led to official recognition as a 'Partner for biological diversity in Hessen'. A 2,500-meter shrub area is also carefully maintained on the premises, providing a welcoming breeding area and habitat for birds, small animals and insects. In Norway, Wintershall supported the first phase of Seatrack in 2018. Seatrack is a project to provide detailed mapping of important wintering areas and migration routes for seabirds in the Barents Sea and North Sea. Phase I of Seatrack was completed in December 2018. Wintershall Norge will apply the results in its environmental risk assessments and will also support the second phase of the project.

#### WASTE DISPOSAL

We consider efficient waste management to be a core component of operational

efficiency. This includes the prevention, recycling, and disposal of waste created as a result of crude oil and natural gas exploration and production.

We comply with applicable local legislation in the classification, storage, treatment, transportation, and disposal of waste, in addition to international standards and those we set ourselves. Our company recycles and disposes of waste in an environmentally friendly and appropriate manner. In 2018, Wintershall's total generated waste amounted to 122,139 metric tons (2017: 90,026 metric tons). Of this total, 69,294 metric tons were hazardous waste (2017: 67,720 metric tons), and 52,845 metric tons were non-hazardous waste (2017: 22,306 metric tons)\*. We were able to recycle 70.9 percent of the waste,

\* The terms "hazardous waste" and "non-hazardous waste" are used in accordance with European regulations.

#### GOODBYE TO DISPOSABLE CUPS

Wintershall abolished paper cups at the Kassel, Bergen, and Stavanger sites. Until now, 90,000 paper cups were used to serve coffee every year at the Kassel site alone. These paper cups are difficult to recycle due to the layer of plastic they contain. Only china cups and mugs have been in use since mid-2018. Employees at these sites also received a personal reusable drinking bottle as part of the campaign.





### „SMART RECYCLING PROJECT“

Wintershall started the preparatory phase of the project in 2018, and is examining available technologies for a mobile machine that can be used to treat the slurry produced by drilling activities, which consists of drilling mud, cuttings, and wastewater. The idea is to put the drilling fluid back into circulation, so that less new drilling fluid needs to be purchased and transported to the drilling site. The mobile ‘washing machine’ is intended to separate the oil, water, and rock. This could minimize the loss of fluid and expensive transportation for waste disposal.

Wintershall is also examining whether the cleaned rock can be reclaimed as a building material, e.g. as subsoil in the construction of roads. The challenge lies in developing a machine that is mobile enough for easy transportation to all production regions in which Wintershall now operates. The machine must also comply with all national regulations that control the handling of drilling mud and the processing thereof, as applicable in the areas where the machine will be used.

combusted 14.6 percent, and 14.5 percent was properly disposed of. — FIG. 14, 15

Wintershall established a waste management system in Germany in 2018. This will relieve the burden on production platforms across various sites in the future. The platforms report all waste left over from dismantling and demolition materials, as well as soil, concrete, bitumen, scrap metal, and drilling mud to the waste management department. The dedicated team then takes care of sampling and laboratory analyses, and contacts local disposal services. They also ensure that waste disposal routes are short, evidence of proper disposal is submitted, quotes are collected, and the waste disposal process is centrally monitored.

In the Netherlands, Wintershall has improved waste separation in its offshore activities. A contracted waste management

company has implemented a process that further separates presorted waste generated on the platforms and allows suitable materials to be reused.



### DECOMMISSIONING, DISMANTLING AND RECYCLING OF OFFSHORE PLATFORMS

Wintershall's responsibility as an operator does not end when a reservoir reaches the end of its production life. We are also responsible for the decommissioning and dismantling of our facilities. This can be challenging, especially in the case of offshore platforms. No two production platforms are alike. Construction details and

local conditions such as weather and water depths are what make decommissioning and disposal just as complex as the construction and installation of a new platform – even when using state-of-the-art offshore technology. Environmental concerns along with occupational health and safety play a major role here.

Over the past few years, Wintershall has gained valuable experience in this area, particularly in the North Sea, having reused a total of seven offshore platforms, with two more to follow soon. The Dutch subsidiary, Wintershall Noordzee, is also actively involved in the work of the national Nexstep forum, which was founded in 2017. This initiative is a collaboration between the Dutch government and the E&P industry, and aims to facilitate dialogue on

\* Key occupational safety figures relate exclusively to activities operated by Wintershall.

## ACTIVITIES IN 2018

### Safety Awareness Exercises

The safety and security training aims to raise awareness of risks in respect of IT security, physical security, and personal safety. One of the exercises was a simulation of a sabotage attack on a processing plant in which people were injured. An important aspect of this exercise was to build communication and teamworking skills among all participants. Three exercises were carried out in total, to ensure all staff working on the Brage platform could be included. The first of the three exercises was combined with the emergency training that takes place every two years on the Brage platform and with the annual exercise at the headquarters in Kassel.



### Incident investigation

In Norway, staff members involved in incident investigations have received training in how incidents are investigated and causes determined. The participants learned more about investigative methods and interview techniques. An external HSE manager gave a presentation on the investigation of a deadly accident and how the oil and gas company affected investigated the incident. Participants included the offshore installation manager and security delegates from the Brage platform, as well as operations, IT, administration and legal staff. The selection of staff members from different locations and departments ensured that the skills would be disseminated across different business areas.

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## Wintershall HQ

Several fire prevention and safety training sessions were carried out at the end of September at the company headquarters in Kassel. The training was primarily directed at safety officers, first aiders, and reception staff. A total of 50 individuals took part. In the theoretical part, an external expert explained the different types of fire, what to do in the event of fire, and how to operate a fire extinguisher. Participants then put what they had learned into practice in the practical session by extinguishing fires at a training facility using a CO<sub>2</sub> fire extinguisher.

## Training course on rescue procedures

Staff at Wintershall Libya took part in a special training course on rescue procedures for vehicles involved in accidents. Over the course of four days, the Emergency Response Team (ERT) performed multiple challenging exercises involving rescuing people trapped in vehicles. Wintershall Libya operates a large fleet through concessions C96 and C97. The company operates largely in the desert, away from public roads, and in a location that public emergency services are unable to access within an acceptable time frame. For this reason, Wintershall Libya's ERT is equipped with all the necessary tools to help and rescue people involved in car accidents.



## HSE-Workshop

Wintershall organized a workshop on HSE management and safety culture at the Neuquén in Argentina. The aim was to further establish the HSE culture in our company and to develop visible leadership qualities and behavior-based safety. This was followed by practical training on how to conduct safety observations effectively.





The zero harm principle is a foundation of Wintershall's HSE strategy.



Decommissioning of Wintershall platform K10-b in the Dutch North Sea. Cranes lifting a deck.

how to deal with oil and gas infrastructure that will no longer be needed in the future, and to support the search for solutions and synergies.



## SAFETY AND SECURITY

We apply high safety standards\* worldwide and use modern technologies in order to minimize risks to people, the environment, and our facilities. Further, we regularly train our own employees and contractors on safety-conscious behavior.

### STRATEGY

Prevention is at the forefront of all our activities. Our company-wide E&P management system therefore includes bind-

ing requirements and methods to ensure occupational safety and process safety as well as security. We regularly check to see whether these are observed and effective.

Wintershall has implemented a clearly defined and interdisciplinary crisis management system to ensure emergency preparedness and efficient response. Emergency plans and regular safety exercises ensure that, in the event of an incident, the right measures can be taken at any time and at any place. This applies to firefighting as well as other emergency situations such as uncontrolled oil or gas leaks. Our HSE specialists provide regular training for our employees to raise their awareness of risks and prepare them for potential emergency situations. They practice all planned procedures with employees, contractors, and authorities and examine our emergency systems at regular intervals.

## PROCESS SAFETY

We play it safe when operating our sites. The facilities we use for exploration and production meet high safety standards around the world. We also continually invest to provide new sites with the appropriate equipment and modernize older ones.

All facilities undergo a four-stage review process in respect of safety, health, and environmental protection measures. The aim is to identify potential risks that may arise during the construction and operation of a facility – ideally during the planning stage, so we can avoid or minimize them. This review is carried out by an interdisciplinary team under the supervision of an independent HSE expert. A follow-up analysis takes place five years later. Every ten years the overall process will be repeated.

All Wintershall sites have a multi-stage barrier system to ensure safe operation. This



## INTERVIEW

## STRENGTHENING THE HSE CORPORATE CULTURE



Henrik Ciekals,  
Project leader HSE, Wintershall

Back in 2017, Wintershall set itself a clear goal with its HSE strategy: ZERO HARM. This means that we want to protect people, the environment and our assets from harm. Each employee's individual mindset plays a vital role in achieving this goal. The 'Understanding Your Culture' campaign was launched in 2017 with this in mind, and it was substantially implemented in 2018. A total of 90 workshops were held worldwide, at which more than 1,600 suggestions were made as to how Wintershall could improve in respect of HSE.

Project leader Henrik Ciekals explains how the project is being implemented:

**The high number of suggestions received shows that there is room for improvement. Which topics were most important to employees?**

We wanted to reach as many people as possible with the Understanding Your Culture project. The workshops were very useful and revealed many points where improvements could be made. Employees saw the greatest need for catching up in terms of rewarding good HSE performance, improving skills and providing training, and establishing stronger communication from management regarding HSE.

**That gives you an action plan. So how is implementation going? Are any specific projects already underway?**

This is a continual, long-term process that is going on at the company level, but is also being directly implemented at individual locations. HSE ambassadors, monthly HSE themes, and safety reminders during meetings are already promoting strong awareness of the issue. At the same time, we are continually working on improving management's focus on HSE and developing our capabilities. We also want to take advantages of digital innovations through our Synergi Life project and increase transparency through company-wide reporting standards accessible via an easy-to-use dashboard. Synergi Life is to be launched globally in 2019.

**How will the success of this be measured? Have you been able to see any changes yet?**

We are unable to record specific improvements in such a short time. But one thing is already clear: the topic is being more actively discussed and put into practice. Our platforms in particular have embedded the topic more deeply into their everyday lives thanks to the HSE ambassadors. Transforming the corporate culture is a long-term project. But it is worth it, because in the end it means a safe working environment for our employees and brings us one step closer to our goal of ZERO HARM.

comprises technical measures to prevent and detect potential leakages, facilities to manage the resulting damage scenarios, measures to minimize impacts, as well as technical facilities to ensure safe evacuation.

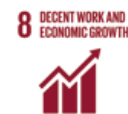
Each barrier consists of several safety mechanisms and elements, with specifications based on function, reliability, and resilience. If one barrier fails, the next one takes over. This ensures the overall integrity of the system, even if one or more elements fail. We regularly inspect the effectiveness of these barriers via internal audits, and other means.

Wintershall developed and introduced new global guidelines for SU-SHE assess-

ments (Subsurface Safety, Health, Environment) in 2018. These are HSE-related risk assessments for underground drilling activities and installations. In contrast to Subsurface Risk Assessments (SRA), which focus mainly on technical aspects of drilling activities, the SU-SHE deals extensively with HSE risks that are not covered as part of a technical risk assessment for drilling activities. The SU-SHE assessment is usually carried out in parallel to the SRA. It is documented in the EIKOS risk assessment module, a standardized piece of software used when drilling bore holes.

An optimized incident database was launched in 2017 to document incidents

relating to process safety, and this was also maintained in 2018. The results are used to continuously improve company-wide evaluation of such incidents.



## OCCUPATIONAL SAFETY

Our aim is to avoid incidents of any kind. Our focus in this is on comprehensive preventive measures and the cooperation of all employees. We provide the framework for a safe working environment.

## HSE AMBASSADOR

Wintershall's HSE ambassadors have been appointed to promote communication and discussion on HSE matters among colleagues. Their work has been helping to increase HSE awareness and improve our HSE culture. Individuals can be assigned the role of ambassador for a period of one to twelve months. The longer periods in office ensure continuity, while the shorter periods make it easier to reach more employees. HSE ambassadors also meet one another on a regular basis to discuss HSE issues and initiatives and, for example, select a theme of the month. These can be general themes such as using lights on bicycles when riding at night or sorting waste, or work-related themes such as recent incidents or integrating HSE into our day-to-day work. The ambassadors share knowledge with colleagues, discuss the topic, and function as multipliers to ensure a safe work environment.



Wintershall Noordzee's HSE ambassadors meet regularly to discuss HSE issues and how to increase employee awareness.



As part of the SPEAD induction week, participants visited Wintershall's Düste 97 well in Barnstorf, Germany and received on-site training in operational safety.



HSE in everyday life: signs remind people to hold onto the handrails as they use the stairs.

In order to improve occupational safety, we are currently bringing our management system in line with the international ISO standard for occupational safety (ISO 45001). This includes globally applicable guidelines and requirements, such as the performance of workplace risk assessments. Wintershall regularly carries out safety briefings, emergency preparedness training, awareness workshops, and seminars for employees and contractors at all locations.

Wintershall also regularly conducts both offshore and onshore emergency response exercises. Employees receive intensive theoretical and practical training on all safety issues. For example, all offshore employees must undergo survival training once every four years. In 2018, Wintershall performed a variety of exercises in Norway, Germany,

the Netherlands, and the UAE to prepare for various incidents. Training locations included both drilling sites and office buildings. The scenarios ranged from evacuation and life-saving activities to remediating water pollution. Some exercises were designed to simulate major accidents and were carried out in collaboration with authorities and local community representatives.

We were able to improve our performance in respect of lost-time injuries, reducing these from six in 2017 to just three. The accident rate therefore fell from 0.71 in the previous year to 0.42 accidents per million hours worked. This result already puts us below our target of 0.49 for 2020. The accident rate for total recordable incidents was 3.50 in 2018, and so slightly higher than the 3.07 of the previous year.\*

— TAB. 3

\* The data and figures used in this report correspond to national and international E&P industry standards. As a member of the International Association of Oil and Gas Producers (IOGP) and the German oil and gas industry association, Bundesverband Erdgas, Erdöl und Geoenergie e.V. (BVEG), Wintershall uses the definitions provided by these two internationally recognized associations when compiling data.



## SITE SECURITY AND INFORMATION PROTECTION

One of our core interests is to protect our business activities and our employees against potential risks and mitigate existing issues. Our standardized security concepts are applied across all global operations and create the required framework to achieve this.

In countries with increased security risks, where political or social unrest can suddenly transform everyday life, we inform business travelers and local employees about local safety precautions and provide individual support where needed.

Wintershall continued to closely monitor the security situation at its Libya site in 2018 as well, because the protection of our employees, their families, and our production facilities always comes first. Measures taken in 2018 included behavioral training exercises to prepare for fire or terrorist attacks.

## KEY OCCUPATIONAL SAFETY FIGURES

TAB. 3

	Wintershall employees		Contractors		Total	
	2018	2017	2018	2017	2018	2017
Number of hours worked <sup>1</sup>	4,101,758	4,070,084	3,046,775	4,406,974	7,148,533	8,477,058
Fatalities (FAT)	0	0	0	0	0	0
Injuries involving ≥ 1 day lost time (LTI)	1	3	2	3	3	6
Lost Time Injury Frequency per million hours worked (LTIF)	0.24	0.74	0.66	0.68	0.42	0.71
Total Recordable Injury Cases (TRIC)	11	8	14	18	25	26
Total Recordable Injury Rate per million hours worked (TRIR)	2.44	1.97	4.92	4.08	3.50	3.07

<sup>1</sup> 2018/2017 data on hours worked across all activities operated by Wintershall.

Wintershall attaches great importance to the protection of information, because the value of a company is primarily determined by the available knowledge and expertise. A worldwide network of information protection officers provides assistance to our employees in the implementation of globally binding requirements. An employee guideline was also published in 2018, which provided information for employees on preventative action that could be taken, including blocking third-party access to personal data, classifying information, and protecting data when traveling. There was also an information week dedicated to the topic in 2018. At the Kassel site, employees were able to participate in activities and dedicated sessions on information protection and automation security. A representative from the Hessian State Office for the Protection of the Constitution also offered insights into economic espionage, the consequences, and how to protect corporate knowledge.

## RESPONSIBILITY ACROSS THE VALUE CHAIN

The success of Wintershall's activities depends not only on the expertise of its own employees – but also on the support of external partners. It is therefore important that our partners are familiar with Wintershall's philosophy and standards and act accordingly.

## STRATEGY

Wintershall selects its suppliers and contractors based on a number of criteria aside from economic factors. We also evaluate existing and new potential supplier relationships in respect of compliance, environmental protection, safety, and adherence to social standards. To us, sustainability-driven supply chain management also means that we raise our suppliers' awareness of our standards.

## COMMON STANDARDS AND THEIR IMPLEMENTATION

In addition to our purchasing terms and conditions, our Supplier Code of Conduct describes in detail what we expect from our suppliers and contractors. This code is based on the principles of the UN Global Compact. It includes provisions relating to environmental protection, human rights, labor and social standards, as well as anti-discrimination and anti-corruption guidelines.

Wintershall has various tools at its disposal to ensure that suppliers and contractors comply with sustainability standards. They can be subjected to a sustainability assessment, which is tailored to the relevant country- and product-specific risks. The measures range from requests for information and certificates to nominations for audit by external service providers as part of our participation in the Together





Gas pipelines on the site of the Aguada Pichana natural gas production plant in the Neuquén province, Argentina.



Volgodeminoil is a German-Russian joint venture between Wintershall and RITEK, a subsidiary of Lukoil, based in Volgograd, Russia.

for Sustainability initiative. This global program for the responsible procurement of goods and services aims to ensure supplier compliance with internationally recognized environmental and social standards.

Wintershall has been a member of IPIECA, the oil and gas industry's global association for environmental and social issues, since 2017. In 2018, Wintershall actively participated in the IPIECA working group on supply chains. The focus of the group's work was on human rights in the supply chain. Wintershall is currently developing a questionnaire to support prequalification of suppliers in line with Environment, Social and Governance (ESG) standards, based on the standards developed by IPIECA.

#### Guidelines for security personnel

Specific additional guidelines apply to our service providers in the security sector. These are specified in our parent company's

Principles for Deploying Security Personnel. These principles focus on the obligation of employees and contractors to adhere to human rights standards and uphold the principle of proportionality.

#### Contractor management

We want to build long-term relationships with our contractors and work together to continually improve our performance. Our goal is to provide information and training for our contractors regarding our environmental protection, occupational safety, and plant safety requirements, making specific recommendations and therefore improving performance.

In Norway, Wintershall has decided to use only LNG carriers in our future activities to reduce emissions. Suppliers are requested to report fuel consumption and emissions from carriers with Wintershall contracts for traceability and documentation purposes. The decision was also made to adapt the

Nova project to meet the requirements for drilling rigs. Drilling rigs are usually powered by diesel engines. In the case of the Nova project, Wintershall relies heavily on battery operation on board drilling rigs and has awarded drilling contracts to a platform that features a low-emission hybrid power plant with a battery-based energy storage system (ESS). Four converter battery systems with a maximum total output of six megawatts reduce both fuel consumption and NO<sub>x</sub> emissions by 12 percent and CO<sub>2</sub> emissions by 15 percent. The ESS solution reduces the running time of diesel engines and ensures an optimal level of combustion. The platform's diesel generators charge the batteries and can provide additional power at peak load, reducing fuel consumption and emissions.



# DIGITAL TWIN: OPTIMIZES PRODUCTION AND SUSTAINABILITY

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**Interview with project leader  
Peter Dabrowski,  
4.0 Subsurface Lead,  
Wintershall Digitalization**

## **Mr. Dabrowski, what exactly is a 'digital twin'?**

A digital twin is a virtual representation of an existing object and its associated processes. Digital twins help us to bridge the gap between the real and digital world. In our case, we have created a digital replica of one of our production platforms so we can process, analyze, and visualize data pertaining to the platform in real time. This technology helps us to optimize the twin's counterpart in the North Sea in line with various specifications.

## **What opportunities does this technology offer for Wintershall?**

The digital twins provide the opportunity for Wintershall to tap new sources of value creation. For example, they can be used to renew or transform every function of a drilling platform before we implement these changes in the real world, on the real-life twin. These digital replicas allow us to continually optimize our production of oil and gas. We can try things out before we implement them in the real world. This makes our work more cost-effective and efficient, ultimately improving our productivity.

## **How does it improve sustainability?**

One significant advantage is predictive maintenance for all components. This technology allows us to exchange components that are coming to the end of their useful life sufficiently early, before they become defective and, in the worst case, lead to production outages. Our aim is to reduce downtime and prevent the release of dangerous substances that may harm the environment.

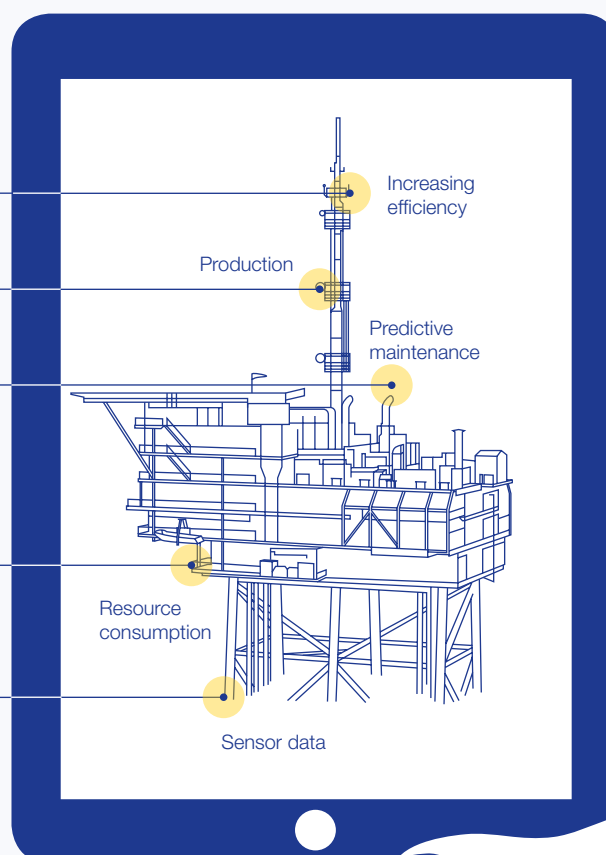
## **How do you assess the opportunities to use this technology at Wintershall in the future? What potential do you see?**

Our use of digital twins is still in its infancy. But I think this will change in a few years. New technologies such as cloud computing, which play a role in the digital twin, are developing rapidly. We also anticipate a significant increase in the amount of data generated, which can then be analyzed and visualized in real time using modern methods. This will play an increasingly important role in the production of oil and gas. We are currently gathering valuable experience in our flagship project.

## **How will this technology develop in the future?**

That is an exciting question. I can well imagine that a digital twin will be able to expand its capabilities through artificial intelligence and be increasingly able to adapt to specific situations. Which layers of rock do we need to focus on in relation to this borehole? What is the ideal composition for the drilling fluid? Which production rate is the most efficient? The digital twin can process this information independently. This gives the drillmaster excellent support on the platform.

## DIGITAL TWIN



Big data, i.e. the availability of large amounts of data, data analysis tools, high-performance computers and cloud computing mean we can equip production sites with digital twins. All information, e.g. data about an oil platform, is then presented in explicit detail in real time via the

virtual replica. This enables continuous optimization of the production process. It is similarly possible to implement predictive maintenance and tools for more effective control of energy consumption. The Brage platform will now have a digital twin as part of a flagship project.

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# WE STRIVE FOR OPEN COLLABORATION.

Wintershall considers itself a responsible member of society. Broad acceptance of what we do provides the foundation for our company’s success. That is why we foster interactive dialogue with our stakeholders and regularly update them on our activities. We show commitment in the regions in which we operate, seeing ourselves as a neighbor who will provide assistance when needed.


## DIALOGUE

Our business brings us into contact with various stakeholders. Knowing their needs and expectations is key to our success, because they can influence decisions or project developments, the underlying regulatory framework, and our reputation. We provide regular detailed updates on our activities and consult with stakeholders across the entire value chain. These in-

clude employees, business partners, local authorities, government authorities and political decision-makers, industry associations and networks, scientific institutions and the media. — FIG. 16

Our aim is to build both trust and our understanding of the concerns and positions of individual stakeholders. Engaging in ongoing dialogue ensures that we can keep our fingers on the pulse of new trends

STAKEHOLDERS & TOOLS — FIG. 16

STAKEHOLDER	TOOLS
 NETWORKS AND ASSOCIATIONS	Participation in national and international industry associations and initiatives
 ACADEMIA	Participation in specialist conferences and congresses, teaching and research
 COMMUNITIES	Bilateral exchange, open days, project-related meetings and information events
 MEDIA	Annual press conference, press trips, interviews, social media
 AUTHORITIES AND POLITICAL DECISION-MAKERS	Bilateral exchange, participation in hearings, organization of own events
 EMPLOYEES	Employee survey, staff meetings, internal media
 BUSINESS PARTNERS	Topic-specific exchange
 BASF	Continuous exchange, participation in internal working committees



Wintershall Board Member Thilo Wieland with author Stephan Orth at an event in Kassel in November 2018.



Wintershall Chairman Mario Mehren during his speech at the ONS Conference: Innovate NCS, held in Stavanger, Norway.

and include these in our current and future activities. At the same time, this dialogue helps us to generate acceptance for our business activities and decisions. The form and intensity of our related activities varies, depending on the impact of our projects, the interests of individual stakeholders, and local cultural traditions.

## EVENTS

Every Wintershall site feels like home. That is why we regularly invite our neighbors and interested members of the public to visit us and learn more about what we do at our regular open days. We also seek dialogue with other interest groups.

## ASSOCIATIONS AND POLITICS

We want to constructively and transparently shape the environment in which we conduct business. That is why we are participating in public discourse on the industry, environment, and social policy issues

and are involved in relevant national and international networks and associations. This allows us to exchange ideas with other stakeholders and contribute our perspectives to the debate.

We are actively involved in the work of national oil and gas associations in our core regions. In Germany, Wintershall is also a member of the EITI (Extractive Industries Transparency Initiative) multi-stakeholder group, representing the oil and gas industry. EITI is an international initiative established to improve financial transparency in the extractive industries, which also involves numerous non-governmental organizations, companies, and national states. The multi-stakeholder group includes representatives from society, government, and industry, who work together to implement the initiative at the national level. The first EITI report on transparency in the German extractive sector was published in 2017. This report and a supplementary report approved in October 2018 will provide the

basis for the decision in the current validation process on whether Germany meets the EITI criteria.

A website to provide information on transparency in raw materials was also launched at this time.

[rohstofftransparenz.de/en](http://rohstofftransparenz.de/en)

We also support the work of various organizations at the international level. One such organization is the International Association of Oil and Gas Producers (IOGP), where we participate in various committees. The key topics covered include the legal framework, energy and climate policy goals, and operational issues related to the production of oil and gas.

In spring 2017, Wintershall joined IPIECA, the global association for environmental protection and social responsibility in the oil and gas industry. IPIECA promotes the exchange of experience and the develop-



Hugo Dijkgraaf, Managing Director of Wintershall Norge, during his presentation at the ONS Young Professionals' Arena in Stavanger, Norway.



Wintershall is in regular communication with politicians and trade unions.

ment of best practice solutions to resolve industry-specific sustainability challenges. Wintershall participates in several working groups within IPIECA, including groups around social responsibility, reporting, and climate change.

Wintershall has representative offices in Berlin, Germany, and Brussels, Belgium. These are in regular contact with political decision-makers and ministries at federal and state levels, EU institutions, industry associations and non-governmental orga-

nizations. Discussion is focused on economic, foreign, energy and environmental policy issues.

2018 was again a year dominated by natural gas as an energy source and the

## POSTCARD FOR THE WORLD CLIMATE CONFERENCE

"Greetings from Katowice" – so reads the postcard that Wintershall sent to members of the German delegation when they attended the 24th World Climate Conference (COP24). The card was also sent to more than 300 politicians at the state and federal level. Wintershall's unusual greeting via postcard – quite unusual in political discourse – illustrates what the location chosen for the 24th UN Climate Conference is known for: coal. Katowice, the city of coal, is reinventing itself. Back in 1990, there



were still 15 coal mines within the metropolitan district and the surrounding area. Today only three remain. This transformation is noteworthy: immediate action such as switching from coal to natural gas is vital to achieve immediate goals to protect our climate.



Local handball club MT Melsungen is a fellow partner in the Open for Diversity campaign.



Thilo Wieland tells students from the Lichtenberg School in Kassel about the work that goes into producing Wintershall Information, the company magazine, at a journalism conference.

associated benefits to meeting energy demand and climate protection targets. It is in this context that Wintershall joined the Make Power Clean initiative. Together with other international companies and associations, Wintershall supports the introduction of a cap for CO<sub>2</sub> emissions from power plants under EU regulations on capacity mechanisms in the electricity market. The initiative has included a number of joint activities, as well as organizing events for staff working for Members of the European Parliament and educating and providing relevant information through social media channels.



## CORPORATE CITIZENSHIP

We feel connected with the regions in which we operate. That is why we work to support

them in their economic and social development. Regular dialogue with local communities enables us to identify the challenges that they face and how we can help to solve them.

Our social engagement is based around education and science, culture, and social participation. In selecting projects to support, we focus on continuity and activities where our work can have the greatest effect and produce tangible results. Global areas of focus are defined centrally by a dedicated corporate department, while the local Wintershall companies are responsible for their implementation at a national level.

## EDUCATION, SCIENCE AND TECHNOLOGY

As a technology-driven company, we promote interest in mathematics, information technology, natural sciences and technology – commonly referred to as MINT subjects. We support projects that aim to

encourage children and young people to develop enthusiasm for these subjects.

We are also investing in programs to support young scientists. Here we are cooperating with several institutions including the European Association of Geoscientists and Engineers (EAGE), the Society of Petroleum Engineers (SPE), and the Argentinian Institute for Oil and Gas (Instituto Argentino del Petroleo y del Gas, IAPG). In 2017, we sponsored several conferences dedicated to topics such as technologies to increase production rates, energy efficiency, innovation, and environmental protection.

We sponsored a number of key conferences in 2018. These were dedicated to issues such as technologies to increase production rates, energy efficiency, innovation, and environmental protection. Wintershall sponsored the ONS Young Event at the leading industry trade fair, ONS – Offshore Northern Seas. The event was designed to bring schoolchildren, teachers, and students in closer contact with



science and technology, and specifically oil and gas, while inspiring young talent to take an interest in the industry.



## SOCIAL PARTICIPATION

Wherever we operate, we see ourselves as a neighbor who will provide assistance when needed. We support regional proj-

ects that benefit disadvantaged people at our sites.

In Norway, for example, Wintershall sponsors a social worker from the Church City Mission, who works with people who struggle to manage various aspects of their everyday lives. In 2018, Wintershall donated part of the corresponding budget to the Norwegian TV charity auction. Wintershall employed a total of seven interns for this purpose during this same year, each of whom were placed with the Norwegian Labour and Welfare Administration (NAV) via an entry program for the long-term unemployed and people with functional disabilities.

## ART AND CULTURE

Art and culture are essential components of every society. They transport values, give us insights into the past, and add to societal development and understanding between people. That is why we support art and cultural projects at our sites around the world, with the aim of improving the quality of life at a local level. Our focus is on long-term partnerships, such as our 30 year partnership with the Kulturzelt music festival in Kassel, Germany, and our ongoing partnership with the Stavanger Symphony Orchestra in Norway.

## YOUNG VISION AWARD

In 2017, Gazprom International and Wintershall held the Young Vision Award contest for the sixth year running. It is directed at students in Europe and Russia whose research projects aim to combine environmental protection and economic efficiency in the production of oil and gas. The competition gives these young students the chance to develop new and creative approaches that could improve the cost-effectiveness, efficiency, and environmental compatibility of our projects. A different core theme is chosen each year. The winners in 2018, Ksenia Sherbakova and Tatiana Kruglikova, are students at the Russian State Geological Prospecting University. They won over the international jury with their project on environmentally safe offshore platforms.

The winners say that their project outlines a system whereby associated gas and carbon dioxide are utilized, eliminating the need for flare stacks on these platforms. It is a closed system that generates energy from 'waste', making use of the waste as a source of clean energy. The result



The winners of the Young Vision Award 2018, Ksenia Sherbakova and Tatiana Kruglikova (Russian State Geological Prospecting University Sergo Ordzhonikidze, from left).

is that no CO<sub>2</sub> would be released and diesel fuel to the value of \$ 17,000 a day could be saved.

## OUR WORK IN 2018

### School exchange with Novy Urengoi



Wintershall has been supporting regular student exchanges between Kassel and the Siberian city of Novy Urengoy for 13 years. This year, 12 students from the North Hesse Student Research Center visited school no. 17 in Novy Urengoi. During part of the exchange, the students worked together on their own climate research projects in five mini-laboratories. The students visited the gas treatment plant operated by Achimgaz, a German-Russian joint venture, and were able to visit the 'heart' of the plant – the control center – where experts monitor the various technological processes involved in the production of gas and gas condensate.

### Student visit to Argentina

Wintershall Argentina invited 18 students in later stages of the Petroleum Engineering course at the Instituto Tecnológico de Buenos Aires to their non-conventional facility in Neuquén, Argentina. During their visit to

Aguada Federal, students were able to experience how work in the field is carried out in compliance with health, safety and environmental guidelines. They were also able to talk to the Wintershall team on site to gain further insight.

### Young journalists from Russia visit Wintershall in Berlin

Young Russian journalists visited Berlin as part of their journalism internship at the Berlin German-Russian Forum. The 15 scholarship students were welcomed to Wintershall's representative office in Berlin. Wintershall gave a presentation to the young journalists and they then participated in training in interview techniques provided by an external journalist. The presentation covered Wintershall's global activities, but particularly focused on the internal workings of the communications department of a large company. The young journalists then visited the German Bundestag.





## School grants for young engineers

Achimgaz has been supporting a school project in Novy Urengoi since 2017, known as The School of Young Engineers. This project provides students in their last two years at the 11th School of Novy Urengoy with the opportunity to examine chemical, biological and technical subjects beyond the scope of their usual schooling. The aim is to teach these schoolchildren some of the theory while also offering practical insights into the subterranean world.

## “Promoting the positive – a must for us.”

Wintershall supported the Federal Association of Natural Gas, Petroleum and Geoenergy's (BVEG) communications campaign in 2018: “Promoting the positive – a must for us”. Part of the environmental transparency initiative, the campaign is intended to increase acceptance of oil and gas production in Germany and promote public dialogue. Transparency, information and communication surrounding domestic production in Germany are the cornerstones of this initiative.

## Wintershall supports pro-diversity organizations

Wintershall uses its annual Christmas donation to support initiatives in Kassel and the surrounding region that are

actively engaged in promoting education, integration, inclusion and international understanding. In line with the local campaign motto, ‘Open to Diversity – Closed to Exclusion’, Wintershall donated €50,000 to projects that boost diversity in the region. Wintershall's donations have a direct positive impact on these institutions and new projects.

## Students gain their first practical insights in Germany



Students from Khalifa University in Abu Dhabi visited Germany with financial support from Wintershall. The focus of the educational trip was on German-made technology, as well as gas and oil production in Germany and the pioneering energy research going on in the country. During their visits to the Barnstorf site and the Staffhorst sour gas field, the students were able to see how HSE is a part of everyday operations at Wintershall, with all of them participating in the obligatory safety training. This is the fifth time that Wintershall has given students from the United Arab Emirates (UAE) the opportunity to take a closer look at technological expertise in Germany.

# WINTERSHALL2SHARE: SHARE DATA AND KNOWLEDGE ON ONE PLATFORM

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**Interview with project leader  
Almuth Klotzki,  
Wintershall 4.0 Team**

## **What is the idea behind Wintershall2Share?**

The collaboration platform is intended to make our employees' work environments better connected and more agile. The planned integration of relevant information on a GUI optimized for the target group will allow project participants to keep a close eye on all important information in future. The aim is to provide the data, applications, and processes required for each project via one single online platform, and thus make these quicker and easier to access.

## **How will this change the work itself?**

I am sure that Wintershall2Share will make our work more efficient as it integrates existing applications and processes into a central platform so that all important information relating to a project can be seen at a glance. Work processes can also be optimized by digitalizing processes, making them clearer for all involved. This ensures smooth collaboration, streamlines communication channels, and boosts our ability to respond in an agile way to any changes. The platform will allow our work to develop sustainably over the longer term.

## **How can Wintershall2Share be used to support exploration activities or platform operations?**

One example would be by providing a contractor with round-the-clock access to all the necessary information about the exact location (e.g. GPS) or status of the plant at any time while en route to a remote platform. Wintershall2Share means that processes are better integrated. The employee out on the oil field or platform also has access to all the information they need in one place and can, for example, retrieve information, view processes or complete tasks via their tablet.

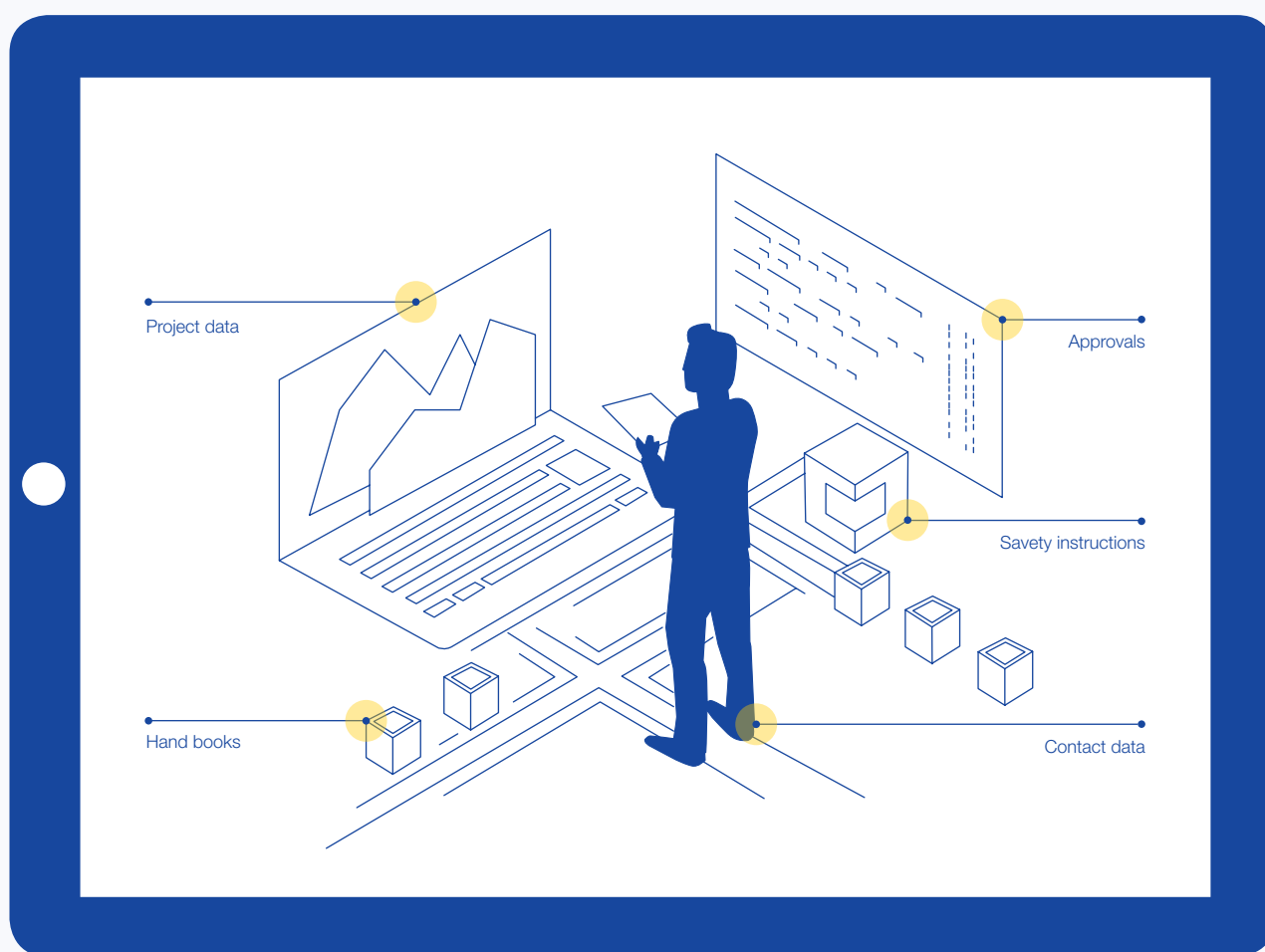
## **What does this mean for HSE?**

Wintershall2Share grants our staff easy access to verified information. All the key safety-related data they need is available at the touch of a button. There is no longer any need to trawl through emails, print out platform plans, or search through manuals. All this information is perfectly structured and at everyone's fingertips.

## **How will this ability to access all available information via this shared online platform change Wintershall's corporate culture?**

Transparent access to information and the ability to work in a more connected way, sharing results with one another, allows us to make smarter decisions. We will develop a culture of connected collaboration. If knowledge just sits on someone's desk, we can't generate any value from that. Only when we can draw on the expertise of others will we be able to work together to achieve our goals. At the same time, the issue of data security and protecting sensitive data is of great importance here at Wintershall. We must satisfy the need for collaboration and dialogue while simultaneously meeting the requirement to keep information secure.

## WINTERSHALL2SHARE



This online platform is intended to raise collaboration at Wintershall to the next level. Employees have direct access to the information they need and can quickly get an overview of key data via application-related interfaces. Embedded applications allow smooth collaboration in

digital workflows and dynamic processes. The longer term plan is to integrate other stakeholders, such as customers or suppliers, into the platform. "Wintershall2Share makes Wintershall an attractive business partner," says project leader Almuth Klotzki.



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SUSTAINABILITY REQUIRES LONG-TERM THINKING AND CONTINUAL IMPROVEMENT PROCESSES.  
THIS OUTLOOK SHOWS OUR KEY SUSTAINABILITY TARGETS FOR 2021.

### RESPONSIBLE GROWTH

Sustainability Management	Wintershall is working to further enhance its sustainability management processes. Our first step has been to focus on integrating sustainability into business processes and the E&P management system. We developed dedicated guidelines and standards for this purpose in 2016 and 2017. We also created an employee guide, which explains Wintershall's approach to sustainability, contains recommended actions to be taken, and highlights appropriate tools that can be used.
Sustainability Indicators	In order to properly direct progress towards Wintershall's sustainability targets, we will develop and establish further sustainability KPIs and integrate these into a tracking system by 2020.
Purchasing Processes	Our aim is to ensure sustainability across the entire value chain. This is why we are participating in the Together for Sustainability (TfS) initiative, which supports us in assessing our existing suppliers and contractors. We are also involved in an industry initiative where we have developed a tool to help us to better evaluate the sustainability performance of new suppliers and contractors. The next step is to integrate this into our purchasing processes.

### RESPONSIBLE OPERATIONS

Environment, Energy and Safety	Wintershall has adjusted its target to certify the company's management systems in accordance with ISO 14001 (environmental management) and ISO 45001 (occupational safety and health management) by 2020. Existing management systems will instead be improved and brought in line with the new ISO High-Level Structure standard, ready for certification. The target to certify relevant locations in accordance with ISO 50001 (energy management) per 2020 is currently being implemented.
Diversity	Promoting diversity is part of our corporate culture. In 2015, BASF, our parent company, also set global quantitative goals to increase the percentage of women in leadership positions. The aim is to increase this figure to 22 – 24 percent worldwide by 2021, and we want to play our part in this.

### RESPONSIBLE COLLABORATION

Social Engagement	Social engagement has a long tradition at Wintershall. We want to ensure that our activities better reflect our needs and those of our stakeholders, so we will seek to prioritize our commitments based on their potential impact. We will introduce a global framework, including evaluation and management tools, by 2020.
Sustainability Reporting	Since 2007, Wintershall has regularly published an HSE report to enable interested parties to learn more about our activities. By 2020, we want to expand this into a comprehensive sustainability report for Wintershall Dea, based around the industry and international reporting guidelines of IPIECA and GRI.

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## CONTACT

We look forward to receiving your questions, suggestions or comments on the Corporate Responsibility Report 2018.

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# IMPRINT

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Wintershall/Zukunft ERDGAS (p. 53)

