



OR Annual Report

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2015





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**Editors**

Eiríkur Hjálmarsson og Einar Örn Jónsson

**List of reports, articles and lectures**

Anna Margrét Björnsdóttir

**Photographs**

Feifei Cui-Paoluzzo

Gretar Ívarsson

Gudmundur Thor Kárason

Gunnar Svanberg

Hafnarfjardarbær

Hallmar Freyr Thorvaldsson

Haraldur Gudjónsson

Magnea Magnúsdóttir

Nanna Lind

NordicPhotos / Getty Images / Lumi Images/Romulic-Stojcic

Páll Gudjónsson

Samtök atvinnulífsins

Sverrir Thórolfsson

Thorsten Henn

Yevgen Timashov

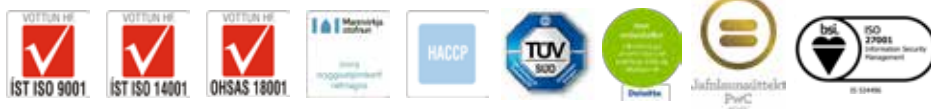
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# Chapter 1

## Board of Directors' Report

# Board of Directors' Report

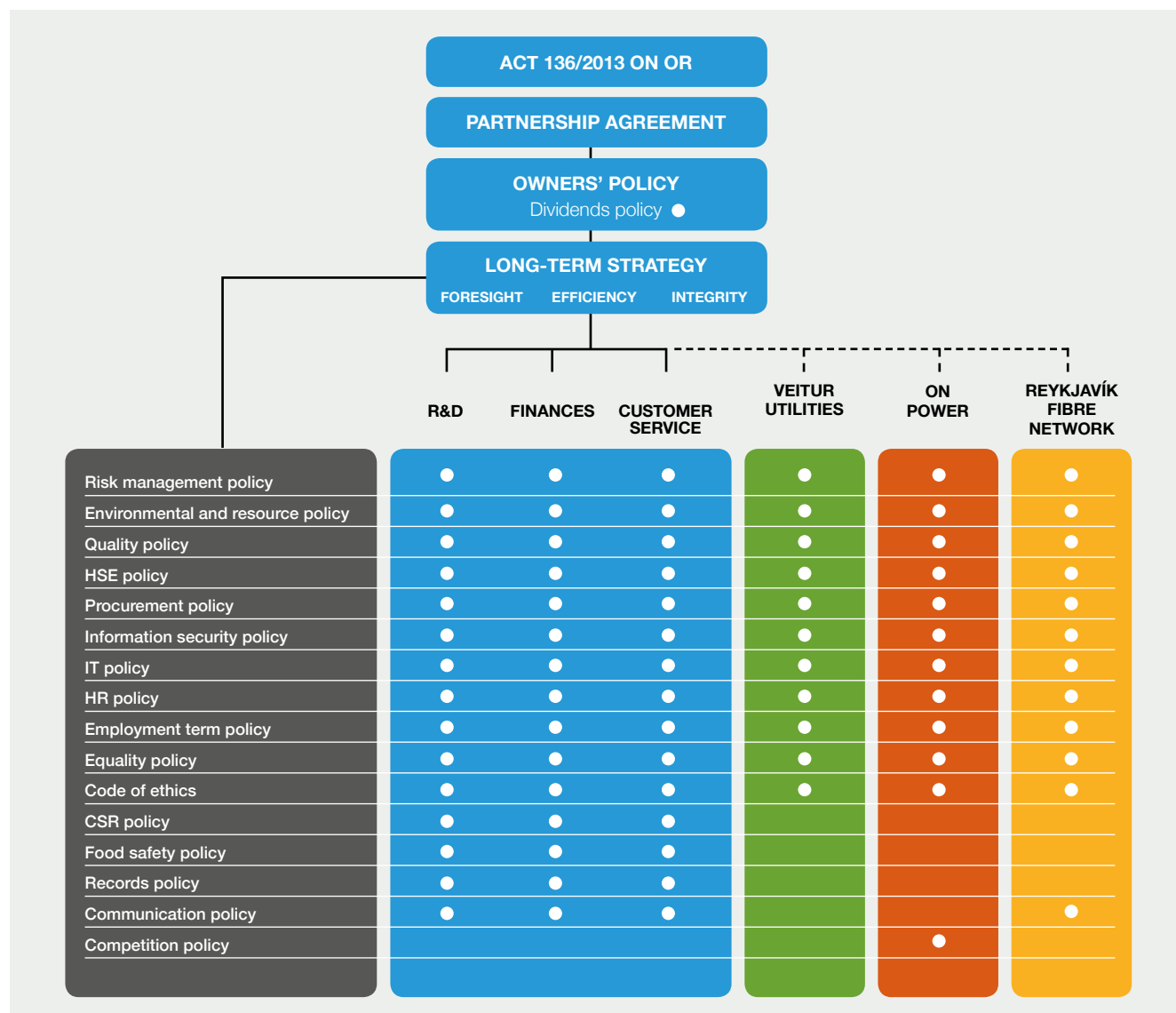
Orkuveita Reykjavíkur, also known as OR or Reykjavik Energy, is owned by three municipalities and is subject to an Act passed in 2013, which stipulates that the owners of the company must make a partnership agreement. This was renewed by the owners with the unbundling of OR at the beginning of 2014. The partnership agreement stipulates that the owners shall establish a policy for OR and its subsidiaries regarding the purpose and objectives of their operations, legal form, working methods and dividends.

These aspects are described in OR's owners' policy which defines the owners' partnership. The owners' policy endeavours to define the function and responsibility of the owners and to guarantee their participation in the decision-making process on important issues and policy making. Thus the ownership policy should guarantee the democratic, professional and effective management of the company. Through clear policy making by its owners, well defined functions of the company and a clear mandate from the

bodies of power, Board of Directors and CEO, as well as a description of corporate governance requirements and an effective monitoring system, OR creates the conditions for conducting its operations in the interest of the public.

The Board of Directors of OR works on behalf of its owners which entrust it with the implementation of its policy.

## OVERVIEW OF POLICY INSTRUMENTS WITHIN THE OR GROUP



The graph provides an overview of the policy instruments that apply to the activities of the OR group, mother company and subsidiaries.





#### Board of Directors of OR

As of June 2014, the Board of Directors of OR comprised Haraldur Flosi Tryggvason as chairperson, Brynhildur Davídsdóttir, vice-chair, and Gylfi Magnússon, Kjartan Magnússon, Áslaug Frídríksdóttir and Valdís Eyjólfsdóttir. Björn Bjarki Thorsteinsson sits as an observer from Borgarbyggð.

The Board of Directors of OR held 14 board meetings in 2015 in addition to two owners' meetings; the general annual meeting a regular meeting on finances. The board had two staff days. Over the past year, the Board of Directors' policy-making and implementation of the "Beyond Budgeting" ideology in the management of the OR group was very extensive in its activities. The board establishes an annual work plan in accordance with the partnership agreement. The work plan covers all the tasks which the Board of Directors is entrusted with under the partnership agreement and ownership policy. This ensures the implementation of the ownership policy and the board's constant vigilance, responsibility and overview of the company's operations.

The role of the Board of Directors of OR is to set a comprehensive policy and vision in line with the owners' policy. The policy-making of

subsidiaries shall be consistent with the policy-making of the parent company and the policies of the OR group shall be founded on the common values of foresight, efficiency and integrity. In the autumn of 2015, the board ordered an assessment of the status of the policy instruments in the OR group and a report on the implementation of the ownership policy, which was submitted to an owners' meeting in November. Policies exist in almost all the areas specified in the ownership policy and they are guided by the principles which the owners have established for OR.

A code of conduct applies to the entire group and contains the behavioural principles and requirements which the executive and staff of the OR group must abide by in their work. An emphasis is placed on integrity, mutual respect and trust. One of the guiding principles of OR's ownership policy is that the

company should cultivate social responsibility in its activities. A policy has now been formed in this area with a plan for its implementation and monitoring. A decision was made to follow the GRI (Global Reporting Initiative) criteria guidelines where the objective is to mediate information related to social responsibility in a transparent manner. In addition to its minutes, the Board of Directors decided in 2015 to publish the decisions underlying documents to promote a better provision of information. This is consistent with the owners' emphasis on being exemplary in the provision of information to the public.

We thank all the personnel of the OR group, management and board members for their contribution to the company in 2015.

**Haraldur Flosi Tryggvason,**  
Chairman of the Board of Directors







## Chapter 2

### From the CEO



# From the CEO



Bjarni Bjarnason  
CEO

The operations of Orkuveita Reykjavíkur have undergone a period of significant mutation. Ambitious targets were set in the 2011-2016 Action Plan and, by mid 2015, one and a half years ahead of schedule, the Plan's objective of improving the cash position was already achieved. Guided by principles of efficiency, the operations were put into order, thanks to which the financial position gradually improved.

Another important milestone was reached in 2015 when the owners of OR approved the Board of Directors's proposal regarding the financial conditions for the future payment of dividends to owners. The conditions revolve around, among other things, the equity ratio, liquidity position, indebtedness and percentage of profits that can be paid out as dividends. The proposal, which the Board of Directors drafted in accordance with the ownership policy of OR, was approved unanimously by all municipalities and reflects their clear determination to protect the results that have been achieved in adjusting the management and putting the finances of OR in good order.

In the middle of the Plan period, OR had to unbundle the competitive and exclusively licensed part of its activities and traditional utility operations, pursuant to the requirements of the Electricity Act. This was done at the beginning of 2014. ON Power was then presented to customers, since this company owns and run two of the biggest geothermal steam plants in the country, i.e. The Nesjavellir and Hellisheidi geothermal power plants, in addition to the Andakílsá Hydropower Station in Borgarfjörður. ON Power has gained a remarkable foothold and, in 2015, won deserved environmental recognition for its development of a network of fast-charging stations for electric cars.

Prior to this, the operations of the Reykjavik Fibre Network were separated from the exclusively licensed part of OR's operations. The Reykjavik Fibre Network offers households and businesses access to "Ljósleidarinn", a top-speed data transmission system that boosts the competitiveness of Icelandic society. The operations of the Reykjavik Fibre Network underwent a veritable transformation in 2015. Two of the biggest municipali-

ties in the country approached the company to improve the living conditions of their inhabitants by connecting households to the fibre network, and major agreements were made with telecom providers. Now, ten years after the task of connecting households to fibre optics started in the capital area, the mission has been fully completed, which is a major milestone.

On 1 December 2015, another milestone was reached when the traditional utility operations of OR were presented to customers under its own name and trademark: Veitur Utilities. This is the biggest utility company in the country, which distributes electricity, heat and cold water and runs sewerage systems in the most populated areas of Iceland, since its servicing area stretches from Grundarfjörður in the west, through the most densely populated capital area in the south-west and eastwards to Hvalsövellur in Southern Iceland. Veitur services three quarters of the population with district heating, distributes electricity to every other Icelander and four out of every ten Icelanders get their fresh water from Veitur, which also runs the sewerage systems



VEITUR

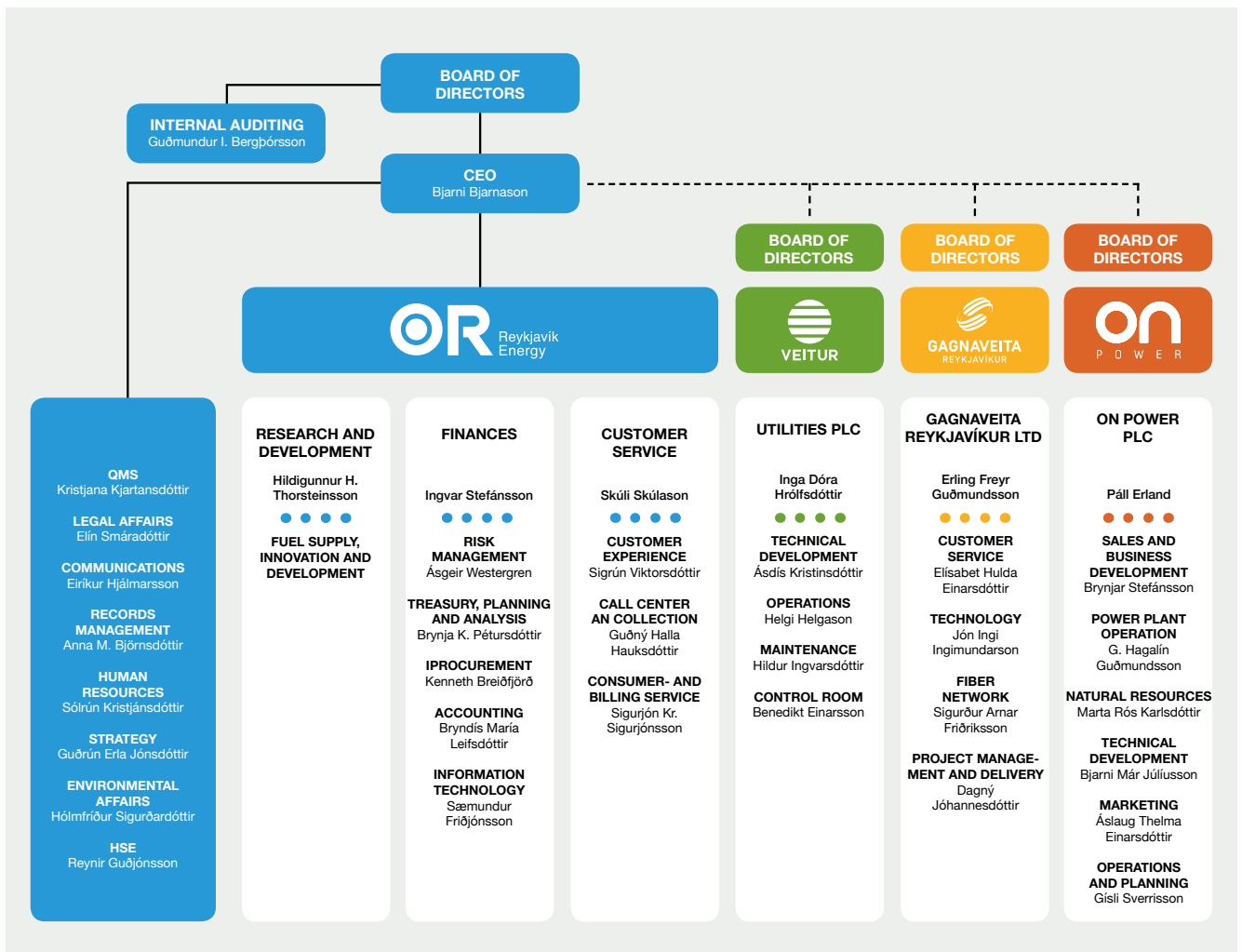


GAGNAVEITA  
REYKJAVÍKUR



ORKA NÁTTÚRUNNAR

OR Reykjavik Energy



Organisation chart of Group as of March 2016.

and treatment plants that cater for the discharge of their waste. Once Veitur Utilities was given its own flag, the unbundling of OR was completed.

As Veitur Utilities embarked on its new path, Reykjavik Energy also put the logo, which it had worked under since its foundation in 1999, aside. OR's role has also radically changed. The main task of the parent company of OR is now to support its subsidiaries Veitur Utilities, ON Power and the Reykjavik Fibre Network to enable them to fulfil their functions as the infrastructure of the Icelandic community as well as possible. OR is therefore the serving mother company, as the design of the OR group logo symbolises. Our subsidiaries are engaged in the important day-to-day communications with customers and enjoy the support of the mother company.

We have opted to allow the parent company to cater for most of the aspects that concern

the finances of the companies, running a joint service website, billing, human resources and archiving records, as well as accumulating scientific knowledge in common areas of development. Working at the parent company are also professional leaders who support and guide the companies on issues such as the environment, the safety and health of employees, quality control and legal issues. This organisation is similar to what it was before, the main difference being that customers are now served by independent companies with their respective boards of directors.

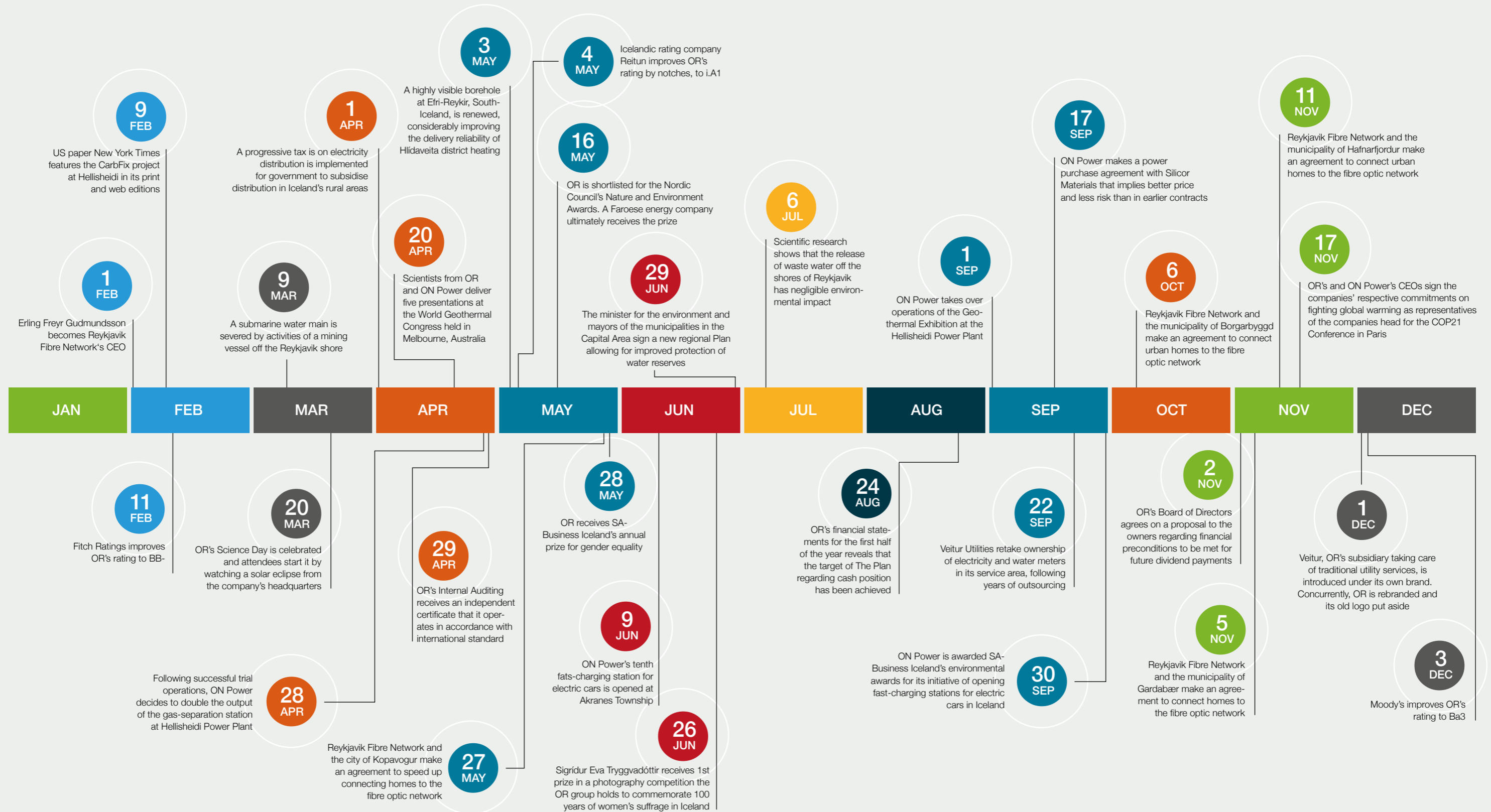
Few companies in Iceland serve as many customers as the OR Group. The change brought about by the unbundling of OR has been substantial and the company has endeavoured to publicise it. Nevertheless, it has not featured prominently in public debates. Hopefully this means that people are satisfied with how it has succeeded. Ultimately our performance will be judged

by how we manage to provide the services the companies have been entrusted with. This report on our operations in 2015 should enable interested parties to evaluate the results. For the first time, the information in the 2015 Annual Report, Environmental Report and the Consolidated Financial Statements is presented with regard to international corporate social responsibility standards. The Global Reporting Initiative (GRI) criteria was applied to help readers evaluate whether the operations of the OR Group are sustainable and likely to stand the test of time. The GRI guidelines contain over a hundred sustainability indicators and in the annual report we analyse the status of most of these as we evaluate them at OR.

OR Group's culture rests on three values, namely foresight, efficiency and integrity. Our sound culture should ensure that we work in good harmony with the environment and community.

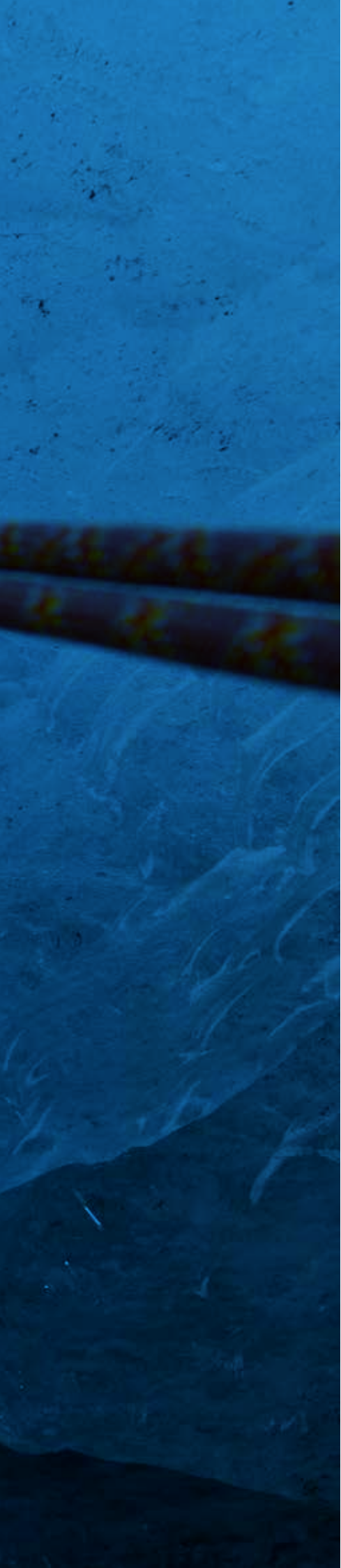
# Chapter 3

## 2015 in Brief









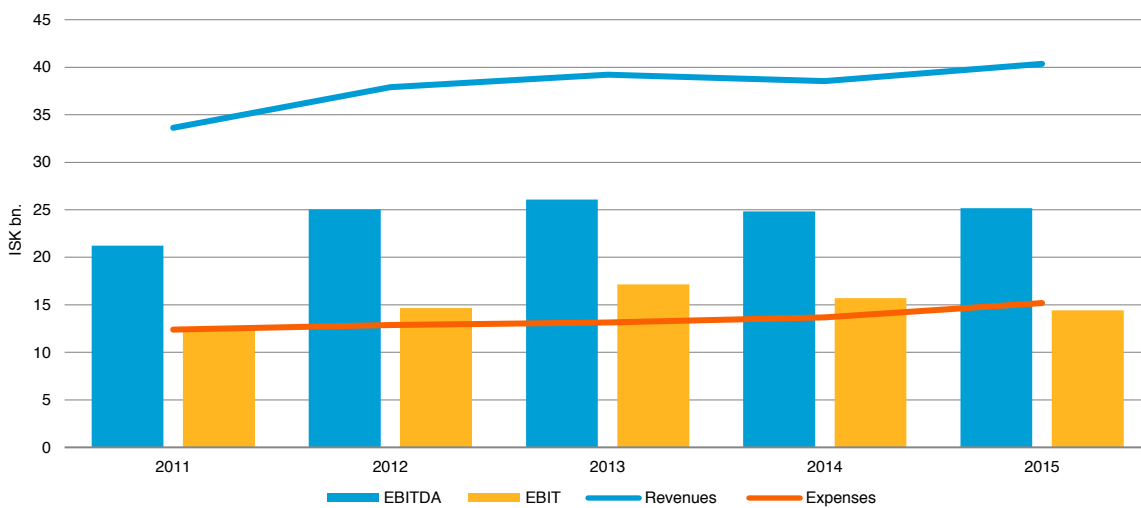
## Chapter 4

### Finances

# Finances

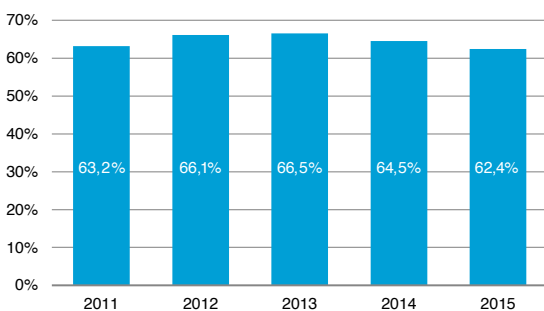
The radical actions undertaken in Orkuveita Reykjavíkur's operations and finances in the spring of 2011 have yielded solid and stable returns over the past years. The Plan, a series of measures undertaken by the company and its owners, achieved and even exceeded its set goals. Internal measures, the streamlining of operations and the sale of assets improved the cash position by ISK 34 billion by year-end 2015, while external measures, such as loans from owners and tariff adjustments, provided an additional ISK 21 billion. This amounted to a total of ISK 55 billion. The target that was to be reached by the end of 2015 was ISK 51 billion. This result therefore considerably exceeds that objective.

**OR OPERATIONS 2010-2014**



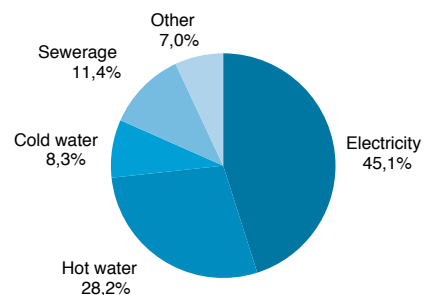
The reasons for OR's improved results were its streamlining of operations, coupled with a slight rise in revenue, particularly in the latter part of the period shown in the graph. The stability in revenue, despite changes in external circumstances, and sustained rationalisation, have yielded stable results which have been utilised to pay down the group's debts.

**EBITDA MARGIN**



OR Group's operational margins have been stable and good over the past years, since the final phase of the Hellisheidi Geothermal Power Plant came into operation in 2011, which was also the first year of the Plan.

**BREAKDOWN OF INCOME ACCORDING TO AREAS OF ACTIVITY**

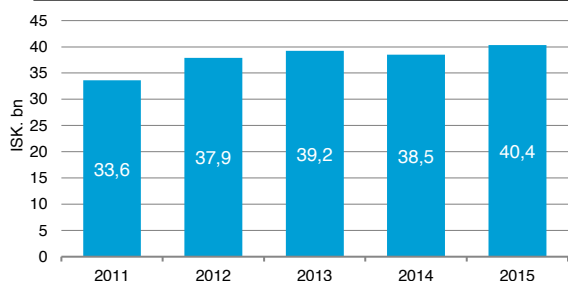


OR's tariffs on licensed operations are limited by law and regulations. Electricity revenues comprise both income from distribution and sales, and are then divided between sales to the private sector and industrial users. OR's district heating utilities serve about three-quarters of the population and are the company's most extensive utilities. The revenue from OR's sewerage services are needed to support large investments in the sewerage systems.



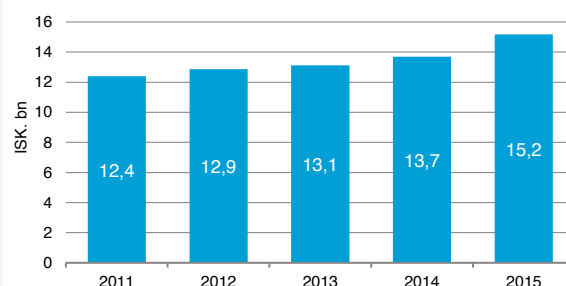
## OPERATIONS

### OPERATING INCOME



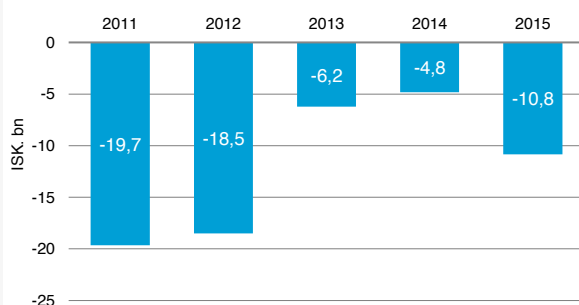
The increase in OR's income between 2011-2015 is attributable to utility tariff adjustments, the increase in production at the Hellisheidi Power Plant and the rise in the sale of hot water. This trend was offset by low aluminium prices in 2015, however.

### OPERATING EXPENSES



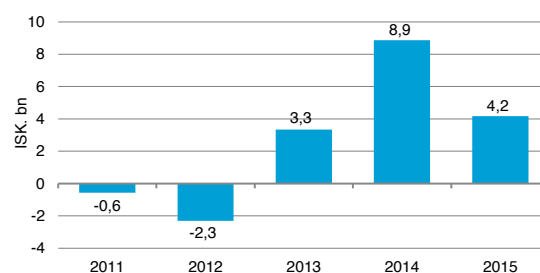
The biggest factor behind the rise in OR's operating expenses between years was the increase in the purchase of electricity to be resold. Collective wage agreements in 2015 also increased wage costs but other operating expenses remained virtually unchanged.

### FINANCIAL INCOME AND EXPENSES



Calculated figures, which do not affect OR's cash flow, but are entered in income statements, have a substantial impact on bottom-line results. The value of electricity contracts, linked to the price of aluminium, decreased significantly in 2015. On the other hand, there was a rise in the exchange rate of the US dollar, although the drop in aluminium prices was the greatest single factor behind the change in OR's income statement between 2014 and 2015.

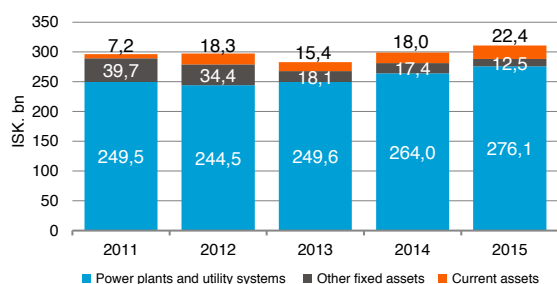
### ANNUAL RESULTS



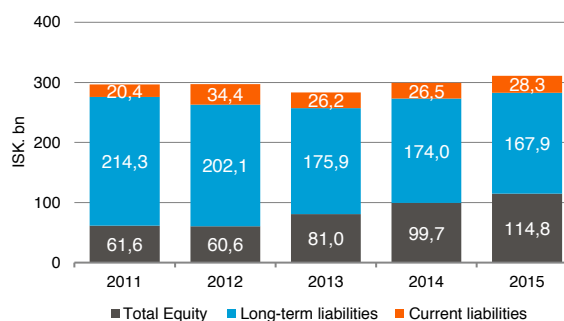
With the steady operating profits of the past years and diminishing impact of aluminium prices and exchange rates through better risk management, there is increased stability in the total earnings of OR.

## BALANCE SHEET

### ASSETS



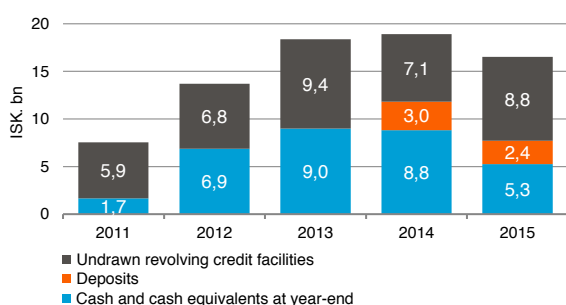
### LIABILITIES AND EQUITY



OR's power plants and utility systems have maintained their book value in recent years. Since 2011, OR has sold off assets that were not necessary for its core operations. The value of other fixed assets has therefore contracted, but the value of current assets has increased correspondingly. A bond that was acquired with the sale of assets will mature in 2016 and was therefore transferred from fixed assets to current assets between 2014 and 2015.

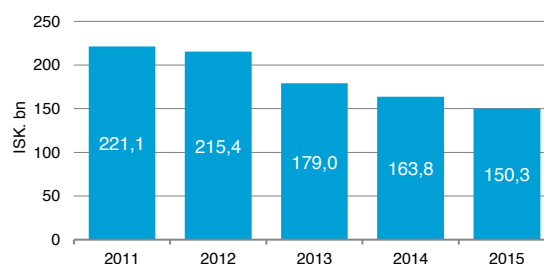
The equity of OR continued to grow in 2015 and, at year-end 2015, amounted to ISK 114.8 billion. The company's long-term liabilities have decreased by ISK 44 billion during the period.

### LIQUIDITY



OR's heavy debt position and large repayments in recent years have required the company to improve its cash position. This is one of the tasks being worked on under the company's Risk Management Policy.

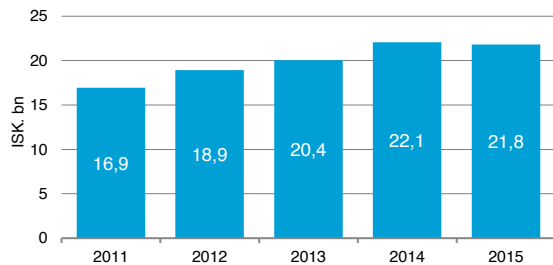
### NET LIABILITIES



2013 was the heaviest year for repayments in the history of OR. The objective of the Plan was to generate enough funds to honour the obligations of those years and it succeeded. The net interest-bearing liabilities of OR decreased by ISK 14 billion in 2015. They amounted to ISK 158 billion at year-end.

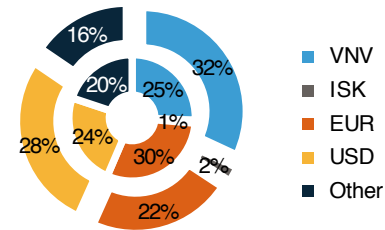
## CASH FLOW

### CASH FROM OPERATIONS

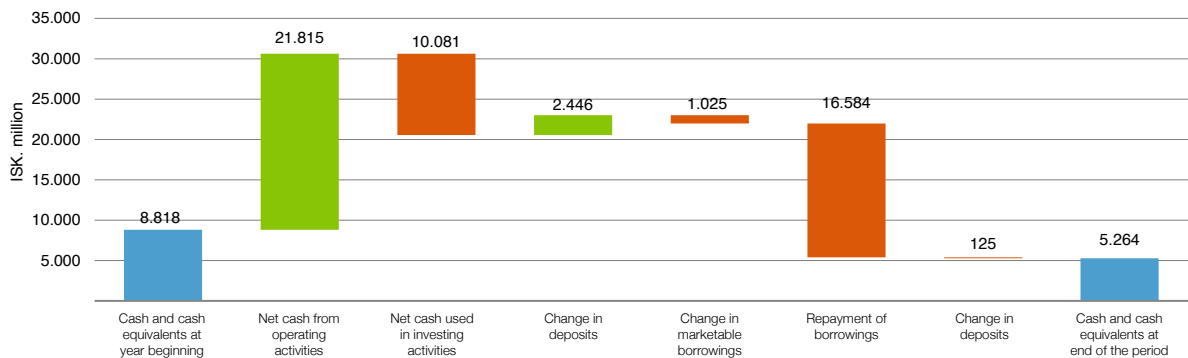


OR needed more cash to pay down the debts of the company and meet fluctuations in the external factors affecting results.

### PROTECTION AGAINST EXCHANGE RATE VOLATILITY

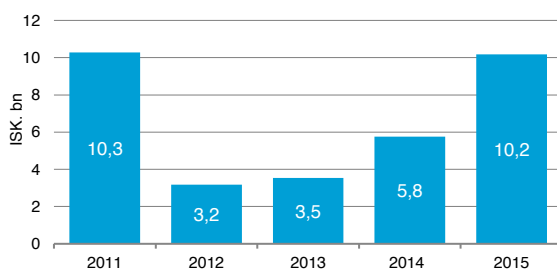


The currency composition of the OR group's income differs from that of its liabilities. The objective of boosting these currency hedges is therefore to reduce the operating risk caused by this imbalance.



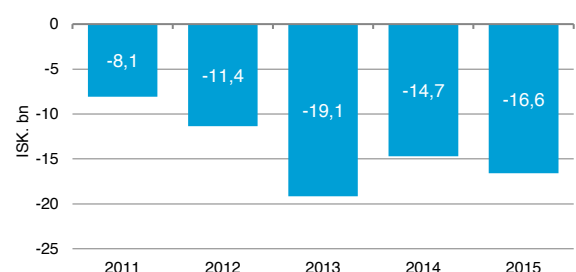
The graph shows the factors that had an impact on OR's cash position in 2015. Furthest to the left one can see the position at the beginning of the year and, to the right, at year-end. Investments doubled between 2014 and 2015. Over the next five years the aim is to pay down debt averaging at ISK 15.6 billion a year.

### INVESTING IN TANGIBLE ASSETS



The investments of companies in the OR group doubled between 2014 and 2015 and amounted to ISK 10.2 billion last year. The development of a sewage system in West Iceland was restarted in 2015 and a steam pipeline was laid to connect the Hellisheidi Geothermal Power Plant to the geothermal fields of Hverahlid.

### FINANCING ACTIVITIES

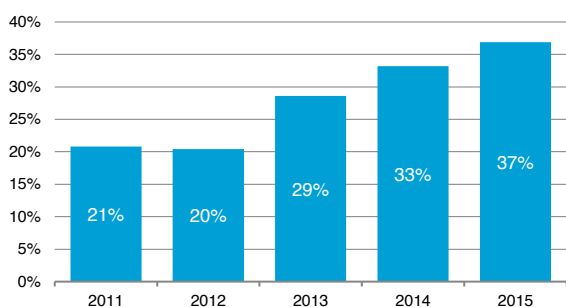


Since the Plan came into effect, OR has been rapidly paying down the company's loans. 2013 was a particularly burdensome year, but in the five year period shown in the graph, OR managed to pay off ISK 67.6 billion more than it borrowed.



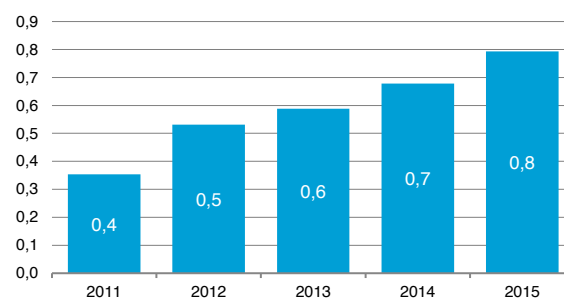
## OTHER INDICATORS

### EQUITY RATIO



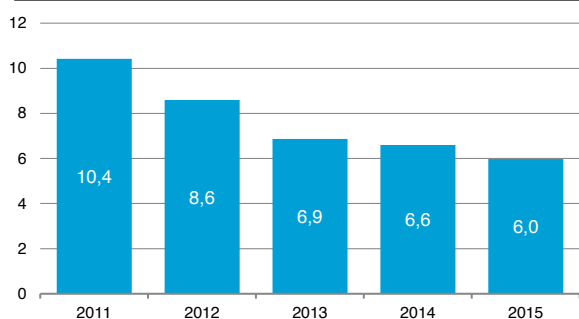
OR's equity ratio hit its lowest point at 14% after the Crash of 2008. Improved operational results and the rapid repayment of loans have improved the ratio in recent years. The Group's equity amounted to ISK 114.8 billion at year-end 2015

### CURRENT RATIO



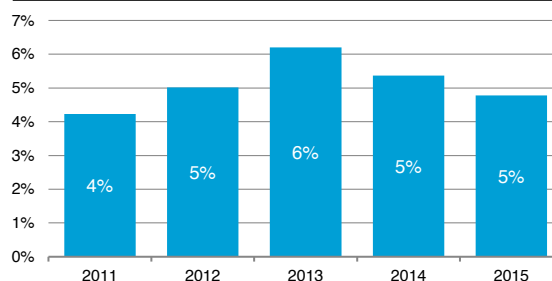
In the spring of 2011, when the Plan was launched, OR faced a critical cash position, not least because of the lack of access to financial markets. The Plan's success and other measures to bolster the company's cash position have enhanced the company's current ratio, but further improvements are needed.

### NET DEBT / EBITDA



The graph shows how many years it would take OR to pay off all its debts, if all the EBITDA were allocated solely to that purpose. The vast repayment of loans and stable EBITDA have shortened that repayment period by more than a half since 2010.

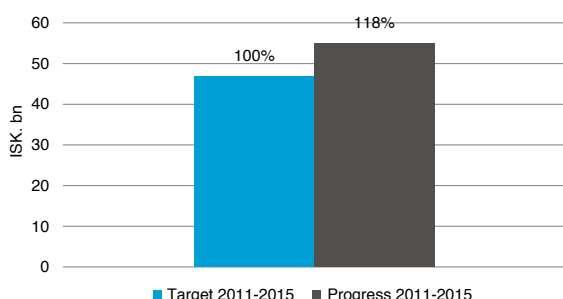
### RETURN ON CAPITAL EMPLOYED (ROCE)



OR's owners' policy provides for the implementation of a yardstick that shows returns on the capital which the owners have invested in operations. It should, at the very least, exceed the company's financing costs in addition to a reasonable risk premium.

## THE PLAN

### RESULTS OF THE PLAN



The action plan made by the owners and OR was launched at the beginning of April 2011. Since then reports on its progress have been published on a quarterly basis. Implementation of the Plan is a top priority. Its objective is to boost cash flow, not least by creating greater cost awareness in the company. Since the Plan's launch, external variables have evolved more unfavourably than expected, but through targeted measures these have largely been offset so that the total result at year-end 2015 exceeded the target by ISK 8.2 billion, i.e. 18%.

### PLANIÐ

Actions in ISK billions	Planið		Raun
	2011-2016	2011-2014	2011-2015
Reduction of investments in utility systems	15.0	12.3	✓ 15.1
Sale of assets	10.0	10.0	✗ 9.0
Reduction in operating costs	5.0	4.0	✓ 6.3
Reduction of other investments	1.3	1.1	✓ 1.4
Postponement of investments in sewerage	0.0	0.9	✓ 2.2
<b>Total</b>	<b>31.3</b>	<b>28.3</b>	<b>✓ 33.9</b>
Subordinated loans from owners	12.0	12.0	✓ 12.0
Increased revenues due to higher tariffs	8.0	6.5	✓ 9.1
<b>Total</b>	<b>20.0</b>	<b>18.5</b>	<b>✓ 21.1</b>
<b>The Plan Total</b>	<b>51.3</b>	<b>46.8</b>	<b>✓ 55.0</b>

### CREDIT RATING

Credit ratings are important for companies that do business with international financial institutions.

The purpose of a rating is to provide creditors with an independent assessment of a company's status and prospects.

The ratings of OR and other Icelandic firms can never surpass the sovereign rating of Iceland. The owners' guarantees on OR's loans have a positive impact on the company's rating. Today, OR is rated by three agencies: Moody's, Fitch Ratings and Reitun Rating Iceland.

	Moody's	Fitch Ratings	Reitun Rating
Long-term credit	Ba3	BB-	i.AA3
Outlook	Stable	Stable	Stable
Date of issue	Dec 2015	Dec 2015	March 2016







## Chapter 5

### Veitur Utilities

# Veitur Utilities

Veitur Utilities handles the development and management of utility systems which are mostly exclusively licensed operations. Veitur distribute electricity and hot and cold water, in addition to running sewerage systems in Iceland's most densely populated areas. Veitur is the biggest utility company in the country. With the unbundling of Orkuveita Reykjavíkur at the beginning of 2014, Veitur continued operating under the brand name of Reykjavík Energy, but on 1 December 2015, Veitur appeared under its own name and trademark. At the end of 2015, Veitur Utilities' workforce amounted to 164 full-time employees. Of those 84.5% reside in the capital area, 9.8% in West Iceland and 4.3% in South Iceland.

## Sound management in 2015

Veitur's areas of activity extend from Grunda-rfjörður in the west to Hvals-völlur in the east. These areas of activity encompass municipalities in the capital area; Reykjavík, Kópavogur, Hafnarfjörður, Gardabær, Mosfellsbær and Seltjarnarnes. About 64% of the country's population lives in these areas and, as a whole, Veitur services three out of four Icelanders in one way or another. In addition to these, almost every tourist who comes to Iceland visits the capital area. The sustainability of the communities, which Veitur services, therefore largely depends on how the company manages to fulfil its role: to supply a sufficient amount of excellent water for consumption and fire protection, to deliver quality electricity with the greatest security to customers, to provide and distribute sufficient hot water and treat and dispose of sewage from communities in a safe manner. These activities need to be financially viable with the lowest possible environmental impact so that the utility systems and the communities that it serves can be sustained in the long term.

Most residents just assume that water will

flow out of the tap and power be in their sockets. And so does Veitur. This is why Veitur places great emphasis on keeping customers informed, should there be any disruptions to its services. If any maintenance work that could impact delivery is about to be conducted, notifications are posted to people's homes and text messages are sent to the mobile phones registered with the company. In the case of bigger disruptions, news is posted on Veitur's website and its Facebook page and notifications are sent to the media if major disruptions are expected. The service desk is open 24/7 and its staff deals with numerous issues for customers. Some disruptions in the utility systems can threaten people's safety; i.e. only hot water may come out of a mixer tap if the cold water is cut off and, in the case of a power or hot water outage, a switched-on appliance or open tap can be a source of danger when the service returns. Messages sent to customers generally warn of dangers of this kind.

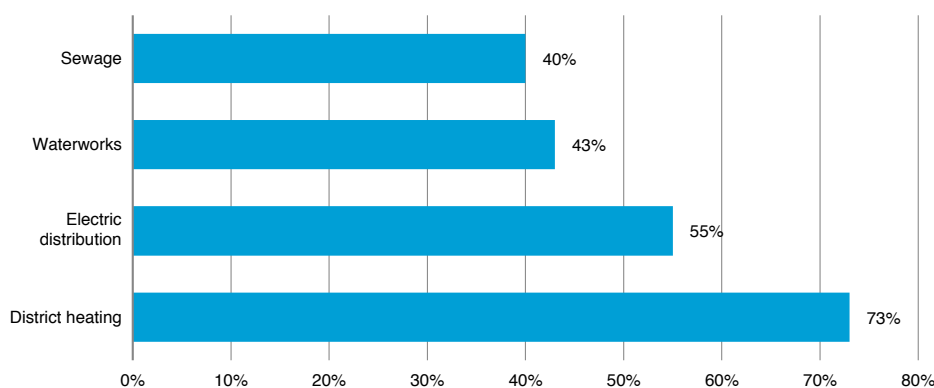
## Services and IT

Customer Service is one of OR's – Veitur parent company's – three branches. Its role is to

provide front-line services for the subsidiaries with a call center and onsite assistance, in addition to billing and the management of Veitur's meters. In 2015, work continued on increasing self-service options on the website which naturally remains open 24/7. A new service representatives' desk also came into use, which is an application that gives them access to all the main information systems that are needed to handle customers' cases. Improvements are aimed at ensuring that customers will soon have the facility to run their most common tasks in their communications with the companies within the OR group online when it suits them best, for example, change address or send in meter readings, apply for a home installation, change payment methods or request blueprints. The objective is to simplify communications for the customer's benefit.

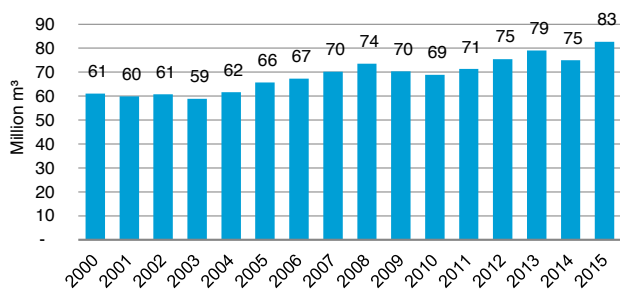
Although the automatization in communication is very important, it is just as important that the staff be ready to provide onsite advice. Customer Service has therefore put a great deal of effort into personnel training to enable them to guide customers in their tasks. Customers can also request a visit if a problem arises with the utility.

## PERCENTAGE OF ICELANDERS SERVED BY EACH OF VEITUR'S UTILITY



Veitur services three out of four Icelanders in one way or another, most of them with district heating. In addition to running the sewage system for 40% of the population, Veitur's treatment plants in Reykjavík dispose of the sewage from various neighbouring urban areas.

## HOT WATER USAGE IN CAPITAL AREA 2000-2015



2015 was a record year in terms of hot water use in the capital area. The air temperature was lower than in 2014, and it was a windy year with less sunshine than normal. The amount of housing that need to be heated has also increased.

### District heating

District heating operations performed well in 2015. Veitur is currently working on a detailed logging of malfunctions and other elements that can result in impaired services to customers. This data can be expected to appear in the next annual report but the indications from this development project are that delivery security is good and fully satisfactory. The most extensive disruption occurred in the western part of Reykjavík last summer. Sections of the Skólavörðuholt and Vesturbær neighbourhoods were without hot water for part of a day. In March the hot water supply had to be suspended in Vesturbær while repairs were carried out, but Veitur was able to notify the residents in advance. A leak in the supply pipeline of the hot water utility in Gardabær in September and delivery disruptions there were compounded by the need to cut off supplies in this area due to maintenance work on the street and household pipelines.

2015 was a record year for hot water usage at Veitur. This was not only determined by the extra living space that needed to be heated, but also by weather conditions, which were unusually cold, with little sunshine and considerable wind. The effective temperature which Veitur calculates from these climatic factors was two degrees lower than the annual average, even though the air temperature was only one degree lower. This high demand was amply satisfied and now some extensive analysis needs to be done to determine how cost-effective it would be to launch the second phase in the building of the district heating utility at the Hellisheidi Geothermal Power Plant. Its availability is now scheduled for year 2020, but every year

it is brought forward, without need for the increased capacity, costs ISK 200 million.

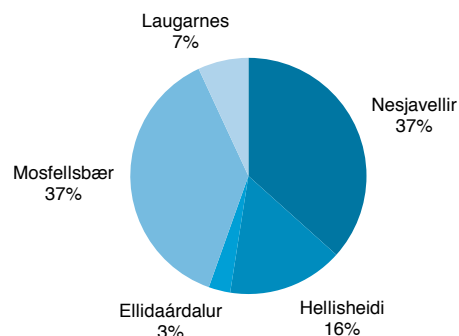
In the coming years, important pipelines are expected to be renovated in Veitur's hot water utilities. In the capital area the highest priority is to renovate the Reykir pipe, which has transmitted hot water from the low-temperature fields of Mosfellsbær to the storage tanks in Öskjuhlíð as far back as 1947. They were last completely renovated in the 1970's. Neighbours in the vicinity of the pipeline, who often follow the hot water piping duct on their hikes, will undoubtedly become aware of this and Veitur will endeavour to provide them with the clearest information on constructions once the precise scope and time frame has been established. An increased emphasis is placed on safety issues in this project, as in others conducted by Veitur. Strict safety requirements do not only apply to the population, but also to the employees of Veitur and its contractors as the company believes that no project is important enough to place anyone's life or health in jeopardy.

The renovation of Veitur's 70 kilometre long supply pipeline from Deildartunguhver's thermal spring continued in 2015. Delivery security in Akranes, which is the biggest community it serves, was substantially increased in 2014 with the building of a large hot water tank which will come in handy when the Deildartunga pipeline needs to be shut down while a new section is being connected. Moreover, the renewed part of the pipeline is made of steel and replaces a more fragile material.

### Waterworks

Water is a vital necessity in everyone's life.

## SOURCE OF HOT WATER IN DISTRICT HEATING IN CAPITAL AREA 2015



The Laugarnes area, which has supplied hot water for the longest, actually generates more power than depicted here. The water from there is 120°C and is eked out by being mixed with backflow water in the tanks at Öskjuhlíð. The proportion of water received from ON Power's plants in the Hengill area is gradually increasing.

The importance of having access to clean and healthy water can hardly be overestimated. Veitur supplies water to Mosfellsbær, Seltjarnarnes and Reykjavík, where the company also distributes it. In addition to this, Veitur runs water utilities in Akranes, Borgarbyggð, Grundarfjörður, Stykkishólmur and a summer house utility in Biskupstungur. The water utility was established in 1909 and it is therefore the oldest and most important. Veitur Utilities' high ambition is therefore to ensure that its customers, residents, companies and fire services have access to sufficient water through the reliable management.

In 2015, the municipalities in the capital area reached a consensus on a new regional plan for the greater Reykjavík area. This was signed by the Minister for the Environment and the heads of all six municipalities on 29 June, and issued under the title of "Capital Area 2040." In parallel with this, a plan was approved for the protection of water in the capital area. Veitur would have preferred to have seen even greater water protection than is provided for in the plan, but looks at the compromise that was reached as extremely important for Veitur and other water utilities in the area. The plan, in fact, calls for greater cooperation between water utilities and exploring whether interconnecting them would enhance security.

The water protection areas in the new plan are bigger than before and their definitions are based on new methods and more detailed research of groundwater aquifers and surface water. This scientific knowledge is important, should disputes arise regarding land utilisation in this vast area on the periphery of the capital area. Water protection





Mayors in the capital area and the minister for the environment signed the new regional plan for the capital area in June by Höfði House in Reykjavík.

areas that stretch all the way from Lake Ellidavatn up to the Bláfjöll mountains are popular destinations for outdoor recreation, dwelling and economic activities, not least due to the rise in tourism. The interests that come into play in utilisation are therefore more diverse than they were some decades ago when Heidmörk was a desolate lava field, difficult to traverse. Changed lifestyles in the country have also increased the risk of polluting water sources with new horse stable areas in the vicinity, a vast increase in car traffic around and within the protection areas and expanding neighbourhoods close to the water protection areas. In the coming months and years, the new water conservation plan will certainly face challenges as various parties are likely to find that the water conservation objectives restrict their interests. In issues of this kind Veitur will defend water sources with determination.

An unusual incident occurred in March 2015 when there was a significant leak in the submarine pipeline that conducts fresh water from Heidmörk to Kjalarnes. It transpired that the activity of a dredger ship that is used to mine gravel from the ocean floor had damaged the pipeline. Fortunately, Veitur has a reserve water source at Vallá in Kjalarnes which can be used in an incident like this because the reparation of pipelines at the bottom of the sea can be time-consuming. Pipelines of this kind enjoy special protection and, following this incident, a special review was conducted of the issuance of mining licences in the Reykjavík channel area with regard to the position of Veitur's water and gas pipelines.

2015 was in general a successful year for water utility operations. Major supply pipelines were renovated in Kringlumýrarbraut and Háteigsvegur in Reykjavík, which transport vast volumes of water between different parts of the city if needed, such as in the event of big fires.

#### **Sewage systems**

After a postponement of several years, due to financial difficulties in the wake of the economic crisis, the development of new sewage systems in West Iceland started again in 2015. The project, which started in 2007, is very extensive, particularly in Akranes and Borgarbyggð. In the countryside of Borgarfjörður four biological sewage treatment plants have been built and taken into use, and pumping and treatment plants have been built in Borgarnes, Akranes and Kjalarnes, while improvements have been made to the main sewers or new pipes have been laid. What remained to be done, after development was put on hold in 2011, was to install equipment in the plants, other than the biological ones already in use, and lay submarine pipelines. The goal is to finish that work by the end of 2016 so that the sewerage system issues of these municipalities can then come into line with the laws, regulations and normal environmental requirements residents make.

Reykjavík enjoys the advantage of having been engaged in reforms of this kind for almost 20 years. The shoreline has been cleansed of sewage which is one of the main reasons why sea swimming is now being practised along the city's shore. This all depends, however, on proper treatment equipment and a sewage system that works

as it should. In the heaviest downpours, the system is occasionally not swift enough and there are overflows in the pumping and sewage treatment plants. The same thing can occur in the event of malfunctions or regular maintenance of equipment. In honour of the United Nations' World Toilet Day on 19 November 2014 and 2015, Veitur launched a campaign to inform people of what can and cannot be thrown into a toilet. If a toilet is used as a garbage can this can create a great deal of strain on the sewage system and damage or result in malfunctions in the equipment of the treatment plants. The consequence of this is not only increased costs since it can also pollute the shore. Other utility companies have been participating in the campaign.

In 2015 remarkable results were achieved in reducing the waste from sewage treatment plants in Reykjavík. On average over 1,000 tons of waste was landfilled per year. Equipment was purchased to reduce the liquid in the waste with the result that in 2015 about 500 tons of waste was landfilled. This also significantly diminished bad smells. Reforms of this kind reduce the undesirable environmental effects of operations and improve the conditions of the people working in these plants.

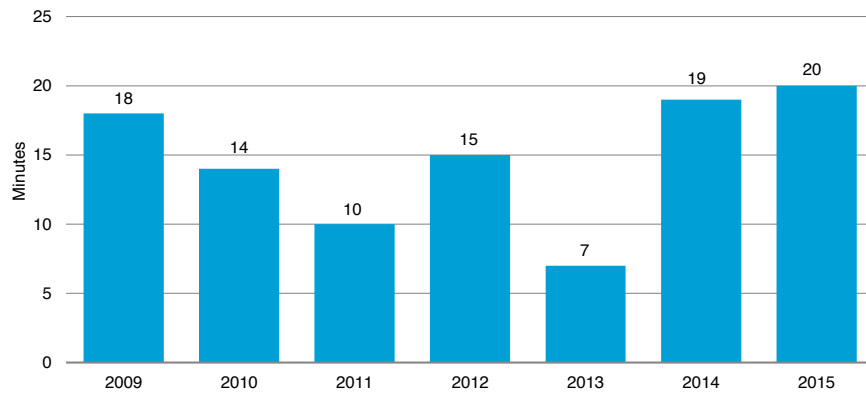
#### **Electricity utility**

Over the past 100 years, human communities have developed in such a way that they would practically be unable to function without electricity. It may be cosy to sit at home in the candlelight for a while, but the mood rapidly changes when information technology ceases to work, food starts to go off or there is no power to cook it. Economic activity, whether it be in production or services, is paralysed without electricity and the lives and health of many are thrown into jeopardy if medical or safety equipment fails, due to power outages. In collaboration with other key companies in the electrical power sector of Iceland, Veitur' personnel engaged in an electricity rationing exercise in 2015. This

#### **Number of meters in Veitur's servicing area**

- **94,000** meters for electricity
- **54,000** meters for hot water
- **2,600** cold water meters in companies and institution

## MINUTES OF POWER OUTAGE PER USER 2009-2015



The reliability of the power grid is, among other things, calculated on the basis of the combined length of power outages each year divided by the number of the electric utility's customers. The operations of Veitur's electric grid were particularly reliable in 2011 and 2013 and were last year close to levels in neighbouring countries. In percentage terms, power delivery reliability was 99.996% in 2015.

was both instructive and necessary in light of the various natural hazards which the generation and transmission of power between regions entails. In addition to volcanic eruptions, earthquakes and avalanches, extreme weather can damage the electrical grid. The advantage for residents inside Veitur Utilities' grid, however, is that most of the distribution system is underground. There were therefore no significant disruptions to the company's distribution of electricity in the very bad weather experienced in the latter half of 2015, which caused extensive and in some places long power outages.

During the year, construction began on a new electricity substation in Akranes. Veitur has eleven substations and their function is to handle high voltage electricity from the county's distribution grid or other substations

within the distribution area in order to lower the voltage and then connect it to the distribution systems in the communities. The new station will strengthen the electricity grid in Akranes and enable Veitur to better serve the needs of the fish processing industry in the town, which has switched from polluting oil fuel to renewable electricity. The closing of an older station, which is planned in 2016, will also make space for a new neighbourhood.

Information technology will play an increasingly important role in the operation of the electrical grid, as in many other sections of the community. In 2015, Veitur started the installation of a new system administrator for the electrical grid. The system administrator is tailored IT hardware for monitoring the grid and controlling the electricity flow. The intro-

duction of this new equipment will revolutionise working conditions in Veitur's control center, and the additional remote control features, which the new system administrator offers, enables the control center personnel to swiftly respond to malfunctions in the high-voltage parts of the system. Power outages should therefore be shorter.

### Smart metering

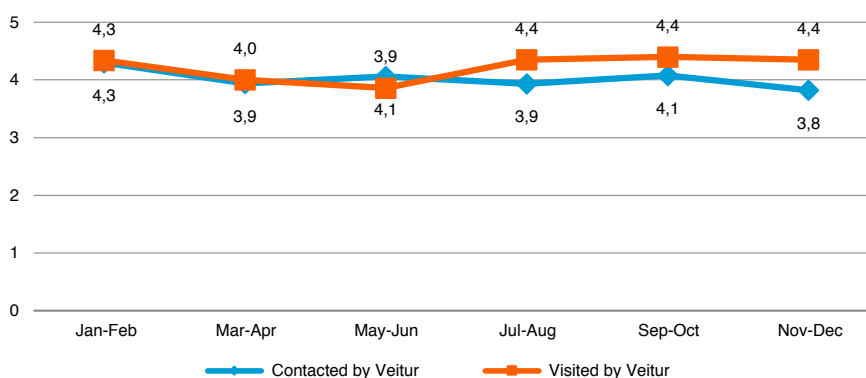
It is not only in Veitur control centre that smart systems are gaining ground. Many companies use operating systems that improve the efficiency of energy and water use and in recent years the number of domestic appliances that can exchange data with various types of control devices has soared. To make full use of this technology, in many cases there have to be power usage measurements in the home, which can be transmitted by the meters themselves.

In 2015, agreements were reached between Veitur and Frumherji for Veitur Utilities to reacquire customers' meters for the usage of electricity and hot and cold water in its service area. The metering service had been put out to tender in 2001 and again in 2007, but this arrangement was controversial. Veitur has now acquired about 150 thousand meters. The technology of metering equipment is rapidly evolving and Veitur wants to manage the development that lies ahead without intermediaries between the company and its customers.

### Board of Directors

The Board of Directors of Veitur Utilities comprised Ingvar Stefánsson as chairman, Guðrún Sævarsdóttir and Skúli Skúlason. The CEO is Inga Dóra Hrólfssdóttir.

## CUSTOMER SATISFACTION SURVEYS IN 2015



Every two months, a customer satisfaction survey is conducted on the customers who were in contact with the company in connection with its services. The results are divided according to whether the customer contacted Veitur or whether an employee of Veitur visited the customer at home for some reason. The results are processed in an organised fashion with a view to enhance the service and customer experience.





## Chapter 6

### ON Power



# ON Power

ON Power generates and sells electricity and produces hot water for district heating in the capital area. Key factors in the company's performance are sustainable energy production, cost-effective management, outstanding services and competitive prices. ON Power counted a staff of 61 full-time employees at the end of 2015. Of those 88.5% lived in the capital area, 9.8% in West Iceland and 1.6% in South Iceland.

ON Power owns and runs three power plants: The Hellisheidi and Nesjavellir geothermal power plants, which utilise geothermal steam in the Hengill area, and the Andakilsá Hydropower Station in Borgarfjörður. ON Power is the biggest producer of renewable energy from geothermal steam in Iceland. Geothermal energy from the plants is sold to Veitur Utilities for distribution in the capital area and this part of energy sales is subject to the rules and supervision of the National Energy Authority. ON Power buys electricity to resell it, primarily from the National Power Company of Iceland (Landsvirkjun) but is also the sole buyer of power from three entities that run small power plants and are not on the retail electricity market. ON Power's sale of electricity can be divided into three categories: retail sales to households and businesses on the private market, participation in the tenders of the biggest energy buyers, including those that are due to, among other things, the transmission losses of Landsnet, and finally sales to major users under long-term agreements. The cost-effective mediation of purchasing and reselling in the electrical power market is a growing factor in the operations of ON Power with substantial amounts of money at stake. It is therefore important to interweave one's own production with purchases and sales in an increasingly competitive market.

## Customer service

ON Power strives to provide efficient information services to its customers. ON Power's account managers serve the needs of big customers with more personalised advice on, among other things, good energy utilization, cost-effective sale rates and delivery reliability. The company's website offers a comprehensive system where buyers in the private sector can enter the basic data of their own energy usage and find out their level of consumption and how it compares to other customers.. In 2015, ON Power received several awards for its designs and functionality.

## Awards [www.on.is](http://www.on.is) 2015

- Award from the Icelandic Drawers Society (Félags íslenskra teiknara)
- International web design from AWWARDS and CSS Design Awards.
- Nomination from the Icelandic Web Industry Association (SVEF)
- Nominated best website for the Nexpo awards

ON Power monitors customer satisfaction by, among other things, participating in the Icelandic customer satisfaction scale survey. Between 2014 and 2015, satisfaction with vendors decreased by 3%. The decrease at

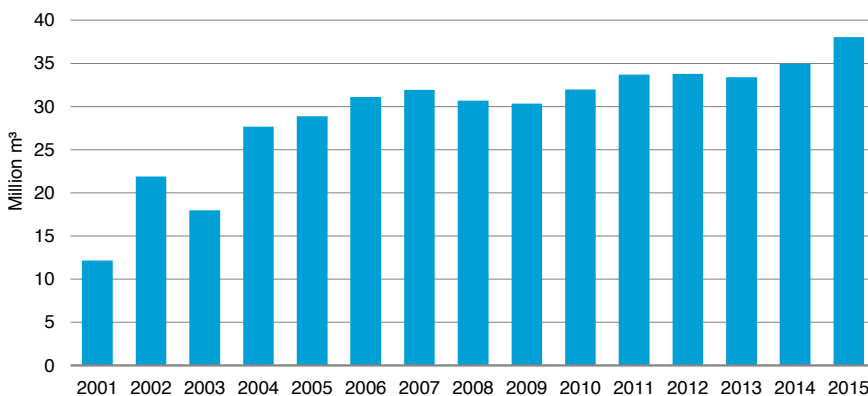
ON Power amounted to 0.5% and in 2015 there was no significant difference between customer satisfaction with ON Power and the one that scored the highest.

## Sustainable production

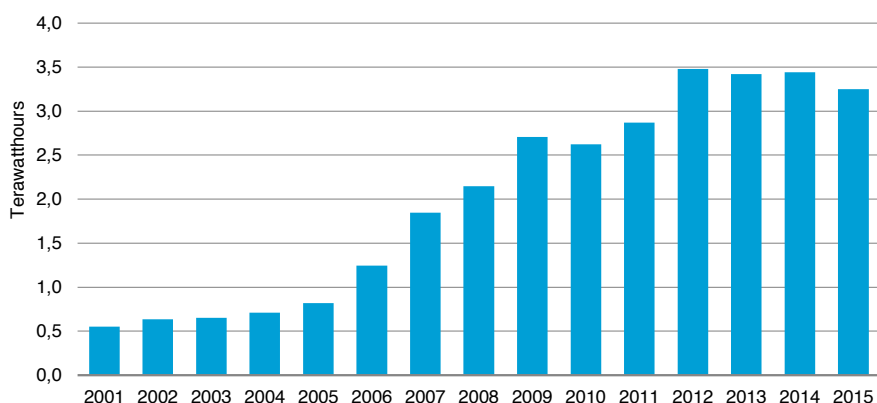
In 2015, ON Power worked on strengthening the sustainability of energy production in the Hengill area and the projects simultaneously encompassed the environmental, financial and social factors of sustainability. The company was once more at the forefront in the implementation of renewable energy in transport during the year and received an award for its contribution to increase the use of electric cars. Thus the climate change debate was in the spotlight, as was air quality and striking results were achieved in reclaiming disturbed land in the Hengill area.

The energy from the plants, whether it is in the form of electricity or thermal energy, is renewable. Stable geothermal energy comes from below and the supply of water that heats the bedrock is constant. On the other hand, it is very much a balancing act to utilise this great natural resource in a sustainable and financially viable manner so that it achieves the desired environmental effect for the short and long-term benefit of the community. The ultimate equilibrium, however, will take some time to achieve. This is not only

## HOT WATER PRODUCTION IN ON POWER'S PLANTS 2001-2015



## ELECTRICITY PRODUCTION IN ON POWER'S PLANTS 2001-2015



determined by how dynamic the resources are, since the changing environmental impact requirements placed on energy production and price fluctuations in competitive markets also have a definite impact on results.

### New major customer

In September 2015, ON Power signed its first contract with a major power-intensive user, Silicor Materials. Silicor Materials, a polysilicon manufacturer, intends to develop production in Grundartangi. Over the next quarters the energy sale agreements which Landsvirkjun and Reykjavik Energy entered into in 1997 and 2000 will expire. The contract between ON Power and Silicor will ensure the company the sale of the energy that was previously tied to those agreements and new power plants will therefore not have to be used to generate the power. In addition to ensuring the sale of electricity, the price that ON Power obtains with the new contract increases significantly so that the price of transporting the power is not included in the price. ON Power thereby reduces the risk of the transport cost being unfavourable to the company.

Compared to other heavy industry in Iceland, the polysilicon manufacturer Silicor will have little environmental impact. The conclusion of the Environment Agency of Iceland was therefore that the development did not need to be assessed for environmental impact. Silicor's production is designed to manufacture equipment that generates electricity from solar energy. Thus renewable energy in Iceland is being used to boost the production of green energy elsewhere.

### Steam production

ON Power's greatest investment in 2015 was the steam pipeline which connects the geothermal production fields at Hverahlíð to

the Hellisheidi Geothermal Power Plant. The objective of the project is to strengthen the generation of steam for the production of power and thereby make use of its mechanical power. Despite challenging weather conditions with heavy falls of snow in Hellisheidi, the project is progressing well. The project's scope can be gleaned from the fact that with the laying of the Hverahlíð pipes the combined length of the steam pipeline of the power plant extends by about a third. It is particularly gratifying that in 2015 there were no health and safety related incidents on a site of such significant scale. ON Power believes this is due to clearer safety requirements set by the company regarding contracted work, the dynamic supervision of the company and excellent collaboration with contractors. At the beginning of 2016 the steam started to flow in the Hverahlíð pipeline. This was consistent with the project's timeline and the capacity of the Hellisheidi Geothermal Power Plant increased by the same percentage as the rise in steam.

In 2015, the first drilling of wells at the ON Power plants since 2009 started. Considering that the combined nominal power of the two plants is 423 megawatts, one to two maintenance wells are supposed to be drilled every year, but finances have not permitted investments of this kind since the financial crisis. The drilling itself went well and according to schedule. The results were below expectations but acceptable. These measures – i.e. the boosting of steam production from Hverahlíð and maintenance wells in Hellisheidi and Nesjavellir – reinforce the foundations for the production of the two power plants in the long term.

The operations of the hydrogen sulphide abatement unit at the Hellisheidi Geothermal Power Plant went well in 2015, which was its

first full year of operation. It yielded such good results in the separation of different gases from the steam of the plant that a decision was made to double its capacity in the middle of last year. Once the carbon dioxide and hydrogen sulphide have been separated from the steam they are mixed with water and pumped deep into the bedrock in the vicinity of the plant at which point the extracted gases are permanently mineralised. It is estimated that by the end of 2015, 2,200 tons of hydrogen sulphide and 3,900 tons of carbon dioxide had been permanently mineralised in the basaltic bedrock in Hellisheidi.

The innovation and development projects behind this – called the CarbFix and SulFix projects – have attracted considerable international attention in the struggle against the impact of greenhouse gases. The media has had a viral impact in many parts of the globe by covering the projects in a positive and inspiring manner. In Iceland its impact can mostly be seen in public debates, although this has mainly been focused on the fact that hydrogen sulphide emissions seem to have decreased. The experimental running of the steam hood ejector at the Hellisheidi Geothermal Power Plant also started in 2015. Its primary purpose is to temporarily reduce the concentration of hydrogen sulphide in the atmosphere, should the hydrogen sulphide abatement unit and injection process temporarily fail. While the method was being developed, Reykjavik Energy, which managed the Hellisheidi Geothermal Power Plant at the time, was exempted from the regulatory limits for the concentration of hydrogen sulphide in the atmosphere. The exemption was granted with certain conditions but air quality measurements show that it was never needed because the concentration of hydrogen sulphide never exceeded the regulatory limits.

### Dissemination of know-how and other communication with interested parties

ON Power considers an important element in the promotion of sustainable power utilisation to be the dissemination of information about it to the public. Over the years, the Nesjavellir Geothermal Power Plant successfully acted as the production centre for the utilisation of geothermal energy in Iceland, but from 2006 the focal point shifted to the Hellisheidi Geothermal Power Plant. ON Power's geothermal energy exhibition contains impressive items which are aimed at increasing people's understanding of the nature of energy resources, as well as energy production processes and their impact on the environment and society. Most of the people visiting the exhibition are foreigners who express their satisfaction at having an opportunity to acquaint themselves with Iceland's special position in power production, since geothermal energy plays the biggest role in the nation's generation of power. One of the

tasks that needs to be undertaken is to develop the geothermal energy exhibition to attract more domestic visitors. In light of the importance of the exhibition in the dissemination of information about geothermal energy and the company, ON Power decided to take the management of the show into its own hands this year, instead of tendering it out again.

A number of public authorities have the legally mandated role of monitoring ON Power's activities, particularly energy production. ON Power has chosen to show initiative in its communications with supervisory authorities by regularly inviting them to meetings where they report on significant issues in the operation of its plants. That is without counting the annual meeting of Reykjavik Energy's directors of environmental affairs with representatives from the authorities entrusted with the task of ensuring companies comply with environmental requirements where they are

presented with the group's environmental report.

In the same spirit of transparency in its operations, ON Power openly published information when there were considered to be grounds to measure radiation from scale formations in Iceland's geothermal steam plants. This occurred after an increase in natural radioactivity was measured in scale formations at the Reykjanes power plant and ON Power took this news very seriously. Measurements were taken in collaboration between ON Power and the Icelandic Radiation Safety Authority in both of ON Power's geothermal steam plants. In brief, no increase was observed in the natural radioactivity at Nesjavellir and the slight increase measured in Hellisheidi was not considered to warrant extensive measures.

One of the projects that generally attracts a great deal of attention when its results are presented is the reclamation of local vegetation in disturbed areas by the Hellisheidi Geothermal Power Plant. The land was significantly disturbed during the building of the plant, but there were also old wounds left from the building of the mountain road over Hellisheidi and the management of the skiing area there. On the basis of scientific research, methods have been developed to revitalise this land with the local vegetation that characterises the Hengill area. The picking of seeds and collection of entire strips of turf form part of this project, but some knowledge has also been acquired on how to sow seeds and improve vegetation in disturbed areas. Many have been pleasantly surprised by how swiftly moss layers can recover, not to mention over faster-growing species.

### Initiative of the year

On 30 September, ON Power won Iceland's SA-Business' Environmental Award for its contribution to 2015 for developing a network of fast-charging stations for electric cars. In accepting the award from the President of Iceland, the CEO of ON Power, Páll Erlend, said that this prize would be an incentive for the company and its personnel to put even more effort into strengthening the infrastructure for the electrification of transport that had begun. ON Power's development of fast-charging stations was rapid in 2014, and 2015 was used to upgrade stations so that they can serve the owners of a broader range of electric cars. According to official figures, the number of vehicles that run exclusively on electricity has increased more than fivefold since ON Power started to build up its network of fast-charging stations in the country's most populated areas.



The pictures are taken with a two-year interval and show results of vegetation revitalisation efforts.



ON Power's CEO, Mr. Páll Erland, receives SA-Business' Environmental Award from The President of Iceland, Mr. Ólafur Ragnar Grímsson for the Initiative of the Year



**Climate Issues**

The United Nations Intergovernmental Conference on Climate Change held in Paris at the end of 2015 revealed that the electrification of transport is one of the most important components in the Icelandic government's plan to reduce the impact of greenhouse gases. ON Power's ambition is to continue to be at the forefront of the rapid development the government is aiming for.

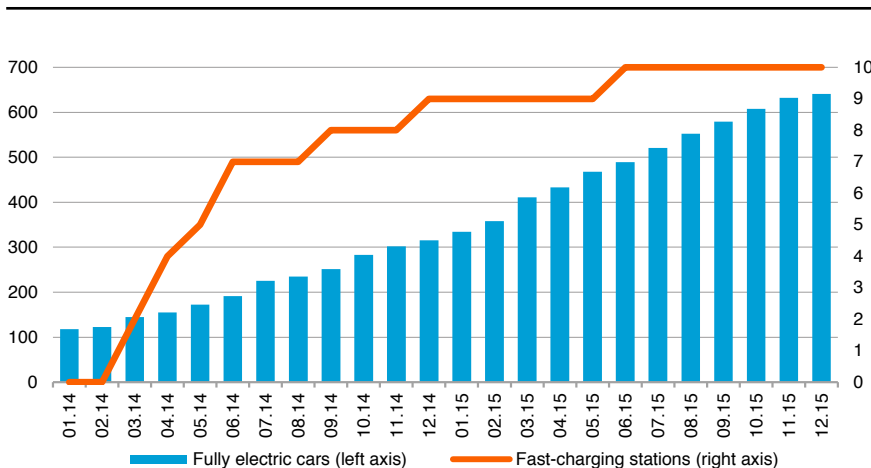
This is without counting ON Power's greatest contribution to reducing greenhouse gas emissions, however. In addition to its reinjection of geothermal gas and its contribution to the electrification of transport, the greatest difference comes from the huge savings in

emissions that stem from the company's production of green energy in the form of electricity and heat. The use of geothermal energy instead of oil in Veitur's district heating in the capital area reduces carbon dioxide emissions by three million tons a year. The percentage of ON Power plants engaged in the production of water for district heating is increasing and amounted to 53% in 2015. If the electricity which ON Power generated last year had been produced with oil, its carbon footprint would have amounted to 2.5 million tons. By comparison, the greenhouse gas emissions in Iceland for 2013, which is the last year official figures are currently available for, are estimated at 4.6 million tons. In addition to the hot

water production at the plants, carbon dioxide emissions would almost double if the energy from the ON Power plants was produced with oil.

Despite these great achievements in the production of green energy, ON Power believes there is still room for improvement. For this reason the company became a signatory of the declaration of the City of Reykjavik and the Festa Centre for Corporate Social Responsibility which was submitted at the Paris conference in December 2015. This included a commitment to establish objectives in climate and waste issues and follow them up with actions, measure their results and regularly issue status updates. Detailed reporting on these issues can be found in Reykjavik Energy's Environmental Report which has been published annually since the year 2000.

**NUMBER OF ELECTRIC CARS AND NUMBER OF FAST-CHARGING STATIONS**



Number of vehicles that run exclusively on electricity and the number of ON Power fast-charging stations since their development started in early 2014.

**Board of Directors**

The Board of Directors of ON Power comprised Bjarni Bjarnason chairman, Hildigunnur H. Thorsteinsson vice-chair, Bolli Árnason, Hólmfríður Sigurdardóttir and Sveinbjörn Björnsson. The CEO is Páll Erland.







**GAGNAVEITA**  
REYKJAVÍKUR

## Chapter 7

### Reykjavik Fibre Network





# Reykjavik Fibre Network

The Reykjavik Fibre Network is a telecommunications company owned by Reykjavik Energy and founded in 2007. The function of the Reykjavik Fibre Network is to provide Icelandic households and businesses access to high quality services on an open access network. At the end of 2015, RFN workforce amounted to 40 full-time employees, of which all but two reside in the capital area.

The Reykjavik Fibre Network operates in a highly competitive market. The key factors to the network's success against the competition are:

- The competitive edge of fibre optics compared to other technologies,
- capacity, security and up-time,
- The distribution scope of the fibre network and household subscriptions to its services,
- prices and services,
- and the eagerness of service providers to use the open Reykjavik Fibre Network.

## Services

The Reykjavik Fibre Network rebranded itself in 2015. The Icelandic name of "Ljósleidarinn" (Fibre optics) will be the main trademark of the company, which focuses attention on the services the company offers. In addition to this, the logo of the Reykjavik Fibre Network (known in Icelandic as Gagnaveita Reykjavíkur) was changed, new websites

were created and [www.ljosleidarinn.is](http://www.ljosleidarinn.is) was redesigned as a powerful service website for former and new customers who can now actively follow the status of their service requests in the system.

Reykjavik Fibre Network's new internal service website was equally important in improving the network's services in 2015. These handle communications with contractors working on behalf of the company, as well as the telecom providers that offer services through the fibre optic network. Reykjavik Fibre Network's internal service website is an integral part of its reforms since 2015, and is designed to enable new customers to make all the necessary connections in a single visit. The organisation of the Reykjavik Fibre Network was altered to support this task and its manpower was increased.

At the end of 2014, the Reykjavik Fibre Network counted 40 full-time employees. The headquarters are located at Bæjarhálsi 1.

## 500 megabits/sec

In 2015, the Reykjavik Fibre Network continued to show its superiority when the company offered a transmission speed of 500 megabits per second. A unique feature of fibre optics is that the speed work both ways, i.e. for uploads and downloads. This was in response to the demand of households and not least telecom providers that service households for broader bandwidth home connections. The need of households for higher data transmission speeds is currently due to the increase in files being saved on so-called cloud storage services, higher definition TV material and more members of the family using the home internet connection simultaneously.

During the year, the Reykjavik Fibre Network was asked to stop publishing adverts in which the transmission speed of fibre optics was compared to conventional transmission speeds. It was felt that the difference was not adequately explained. RFN complied with the result.



Hafnarfjörður is one of the large municipalities that made an agreement in 2015 with RFN on connecting homes there with the fibre optic network. Here, Erling Freyr Guðmundsson, CEO of RFN, and mayor Haraldur L. Haraldsson sign the agreement.

### Distribution

In 2015, the milestone of connecting all homes in Reykjavík's urban areas to the fibre network was achieved, which meant that the capital joined the ranks of Seltjarnarnes, Akranes, Hella, Hvolsvellir, Ölfus and Hveragerði. There was a great deal of interest from municipalities to collaborate with the Reykjavík Fibre Network. During the year, agreements were reached with Kópavogur to boost the development of the fibre network in the town and there were negotiations with the towns of Garðabær and Hafnarfjörður on the installation of fibre optics there, as well as Borgarbyggð for Borgarnes and Hvanneyri. The development of the network in the urban areas of these municipalities is scheduled to be completed by the end of 2018.

### Competitive prices

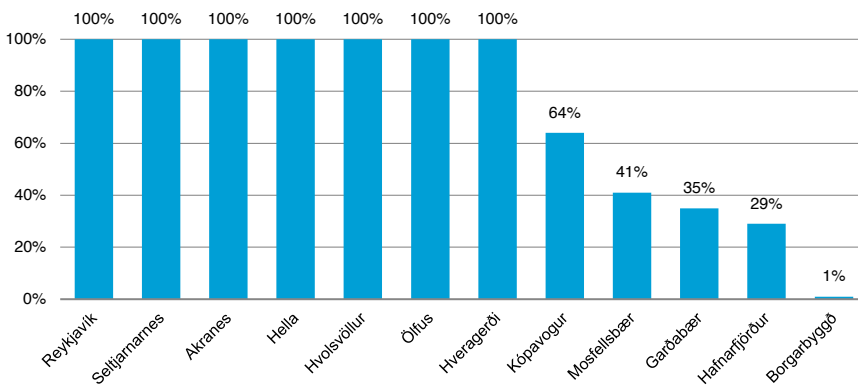
Telecom providers in Iceland are increasingly placing their trust in the Reykjavík Fibre Network as the transmission option for their services. The backbone network of the Reykjavík Fibre Network has transmitted data for mobile phone companies for decades, but the division between telecommunication and multimedia networks is becoming increasingly blurred. Phone companies have shifted over to the transmission of different types of media and multimedia companies have moved over to conventional data transmission. Instead of building up their own distribution systems, many companies now approach the Reykjavík Fibre Network for the transmission of data to and from households and businesses because the Reykjavík Fibre

Network offers a transmission capacity and network hardware with reliable connections at fair and competitive prices.

### Board of Directors

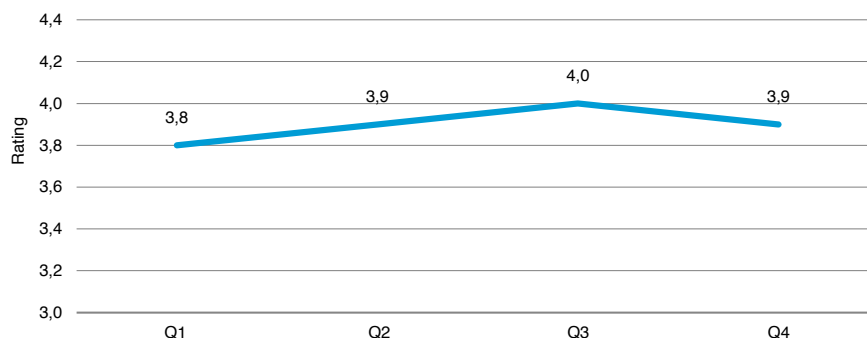
The Board of Directors of the Reykjavík Fibre Network comprised Bjarni Bjarnason chairman, Jóna Björk Helgadóttir and Ingvar Stefánsson. The alternate is Íris Lind Sæmundsdóttir. The CEO is Erling Freyr Guðmundsson.

### PERCENTAGE OF HOMES CONNECTED TO FIBRE OPTICS NETWORK AT END OF 2015



In 2015 the connection of households in Reykjavík's urban areas to the Fibre Optic Network was completed and connections to the municipalities named in the chart will be completed by the end of 2018.

### TOTAL CUSTOMER SATISFACTION WITH THE REYKJAVÍK FIBRE NETWORK

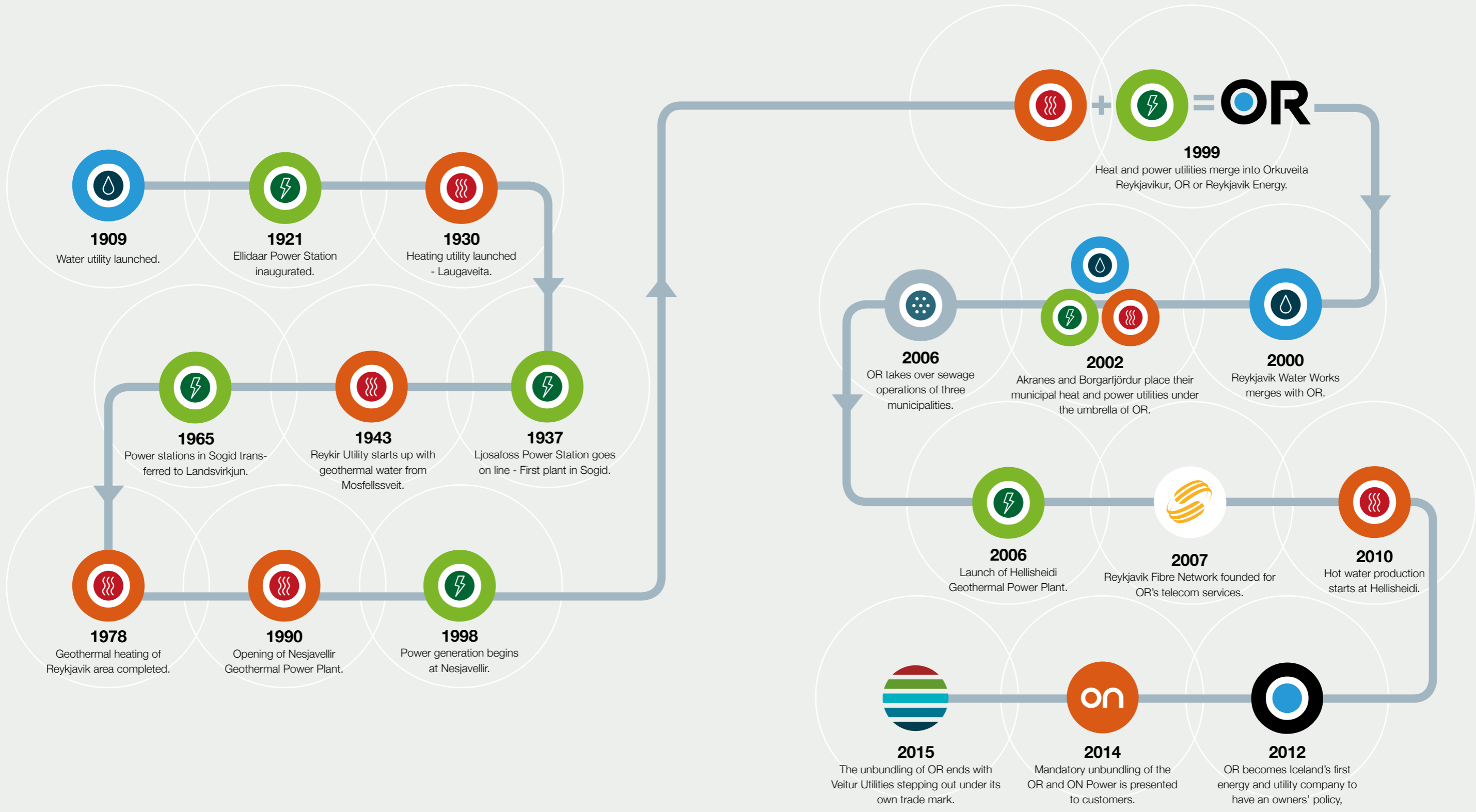


The Reykjavík Fibre Network regularly conducts surveys to gauge customers' satisfaction with the company's services. The graph shows its development per quarter in 2015. Reykjavík Fibre Network's goal is a score of 4 or higher.

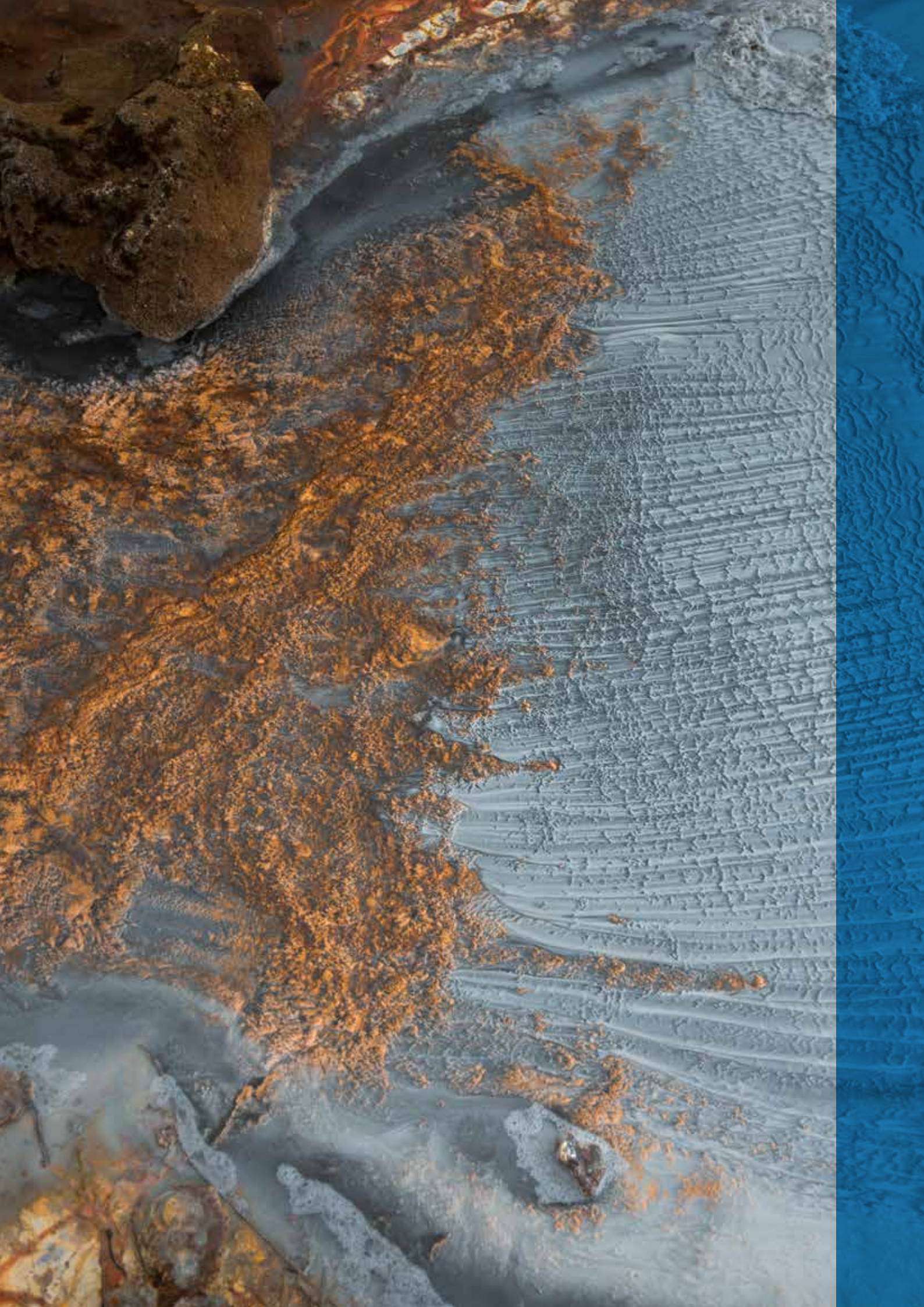


# Chapter 8

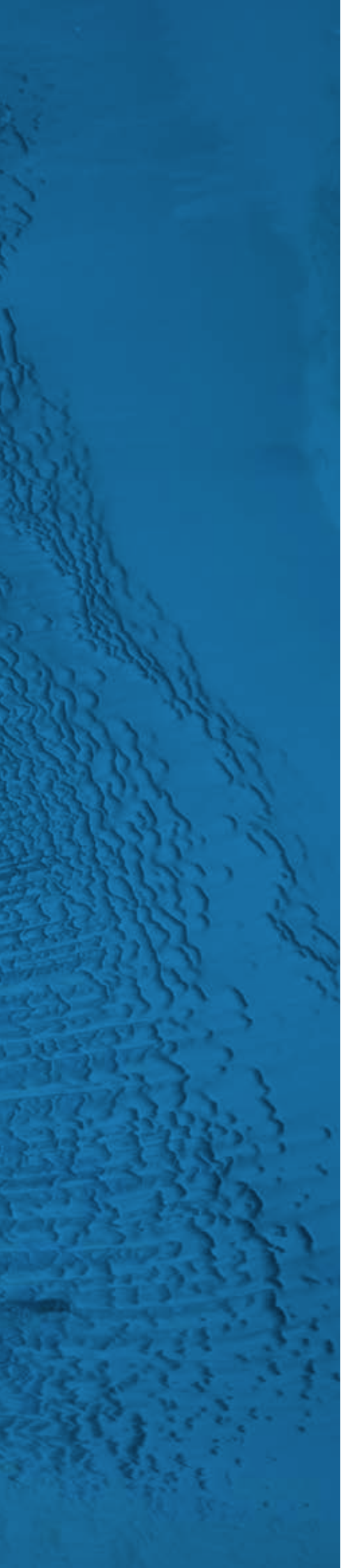
## Historical Milestones 1909-2015











## Chapter 9

### Summary of OR's Environmental Report

# Summary of OR's Environmental Report

Environmental issues are systematically monitored by Orkuveita Reykjavíkur (Reykjavik Energy or OR) and its subsidiaries. This entails a thorough monitoring of the impact its operations have on the environment and working on long-term improvements. OR's 2015 Environmental Report, which is being published in parallel with this Annual Report, provides a detailed analysis of the environmental aspects of its activities. They are presented from five main perspectives.

## Guiding principles behind the environmental and resource policy of Reykjavik Energy and its subsidiaries

### Responsible resource management

To ensure that future generations can enjoy the same opportunities as current generations to utilise the resources, and that it is possible to confirm OR's commitment to that goal. OR seeks effective solutions in which the utilisation of resources for the public benefit is weighed and assessed in the context of other interests.

### Importance of utility operations

Services shall promote healthy living and opportunities for eco-friendly operations in the community. OR sets ambitious goals for quality, secure delivery and efficiency and publishes detailed information on its performance.

### Impact of emissions and discharge

OR reduces the emission of pollutants as much as possible and prioritises research and development to seek the best possible solutions for that purpose.

### Impact on society

Due to its size, OR carries a great deal of weight nationwide. The personnel possesses important knowledge and experience which it aims to disseminate. This encourages a responsible treatment of the environment and has a positive impact on the community.

### Operations

OR will work in an organised and disciplined manner to ensure that resources are well utilised, structures and land are properly maintained, waste is properly treated and that eco-friendly transport and lifestyles are promoted.

## Noteworthy results in 2015

- A milestone was reached in June when a new water protection plan came into effect in the capital area along with a new and more stringent consensus regarding activity in water protection areas.
- It was demonstrated that it is possible to rapidly and permanently sequester hydrogen sulphide in the basaltic bedrock at the Hellisheidi Geothermal Power Plant. A hydrogen sulphide abatement unit at the Hellisheidi Geothermal Power Plant removes 25% of the hydrogen sulphide and a steam hood ejector was installed in an endeavour to further reduce the concentration of hydrogen sulphide in populated areas.
- Over 10% of the annual carbon dioxide emissions from the Hellisheidi Geothermal Power Plant were mineralised in the bedrock by the plant.
- Construction of sewerage systems restarted in Akranes, Borgarnes and Kjalarnes.
- Results of marine research on the sea floor and mussels in the bay of Faxafói revealed that the waste water from sewerage treatment plants in the capital area has virtually no impact on the environment.
- The Hverahlíð pipeline came into use to support the operation of the Hellisheidi Geothermal Power Plant and make it possible to partly put on hold parts of the production field of the plant.
- Efforts were launched to reduce the surface discharge of disposal water from the Nesjavellir Geothermal Power Plant to reduce its impacts on springs and bays by Lake Thingvallavatn.
- Initial results of the research on flow paths for reinjected disposal water indicate that a distributed and moderate reinjection at Hellisheidi offsets the pressure drop in the geothermal system.
- New and effective procedures continued to be applied to reclaim vegetation and restore disturbed areas in Hellisheidi.
- Work started on increasing the production capacity of the Rangá Utility in South Iceland and preparing research into providing hot water there.
- ON Power received Iceland's SA-Business Environmental Award in 2015 for establishing a network of fast-charging stations for electrical cars.
- The OR Group was nominated for the 2015 Nordic Council Nature and Environment Prize and the theme of the award was reducing greenhouse gas emissions. The district heating utility in the capital area had spared the earth's atmosphere about 100 million tons of carbon dioxide emissions at the end of 2014.











## Chapter 10

### Human resources and safety

# Human resources and safety

In order for Orkuveita Reykjavíkur to perform its important function, its employees need to have the appropriate competence, know-how and service orientation. OR's ambition is to be an attractive workplace, where facilities and working conditions are competitive, job satisfaction prevails and career development is assured. Flexibility, health enhancement and equal rights are vital aspects of our daily work.

## Human Capital

2015 was a thriving year for human resources activities in all of the companies within the OR group. During the year an emphasis was placed on, among other things, training work mentors, the employees who receive new recruits. There are a total 25 of them in the group. In Veitur Utilities, the Reykjavik Fibre Network and the Finance Division of the parent company work was conducted on the "Dream Workplace Project." Employees from all units participated in this project which resulted in a statement on management style and how the management and staff intended to honour it. Some 61 new employees started to work at the OR group in 2015 and 31 retired. The average age of employees remained similar, at 48 years, and the average time of employment was 13 years.

### Equal Rights

In accordance with OR's personnel policy, in 2015 an emphasis was placed on job development, training and a good working environment. Equal rights issues are also an

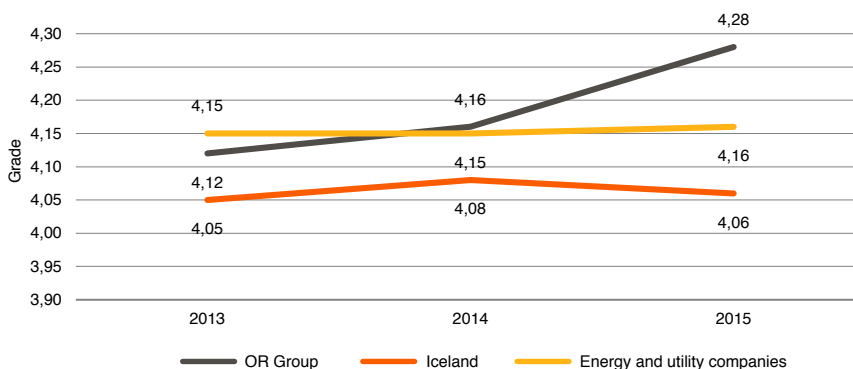
integral part of the personnel policy. During the year, the equal rights work of OR earned it a Motivation Award from SA-Business Iceland and it enjoys equal pay certification from PwC. OR is a signatory of the UN Women and UN Global Compact equality charter. This means that OR morally commits itself to promoting non-discrimination and taking the initiative.

Four independent equal rights committees were set up, one for each company in the OR group. Some 20 employees now actively participate in the equal rights work of these committees. Each committee sets its priorities in the non-discrimination issues implementation plan, in addition to issuing an annual report on equal rights issues within the relevant company. The goal is to conduct systematic and realistic work to promote equal rights, which takes into account the needs of the company, in line with the common objectives of the OR group.

### Vocational Project (Idnir)

The Idnir vocational project is a project connected to the equal rights work and is a cooperation project between the OR group and the elementary school of Árbær. Its goal is to increase girls' interest in the industrial sector and to raise its profile. 16 pupils from the 10th grade in Árbæjarskóli have visited OR twice a month and learnt about the industrial sector, safety issues, environmental issues, water, electricity and sewerage systems. Many OR employees have been involved in the project and participated in guiding the pupils. The leading principle behind the teaching is to introduce the students to the work of tradesmen and technicians at OR and its subsidiaries and show them the realistic options that exist when it comes to selecting their future studies and job choices after elementary schooling. The plan is to continue with this collaboration and to offer a new group of pupils this optional course in the 2016-2017 school year.

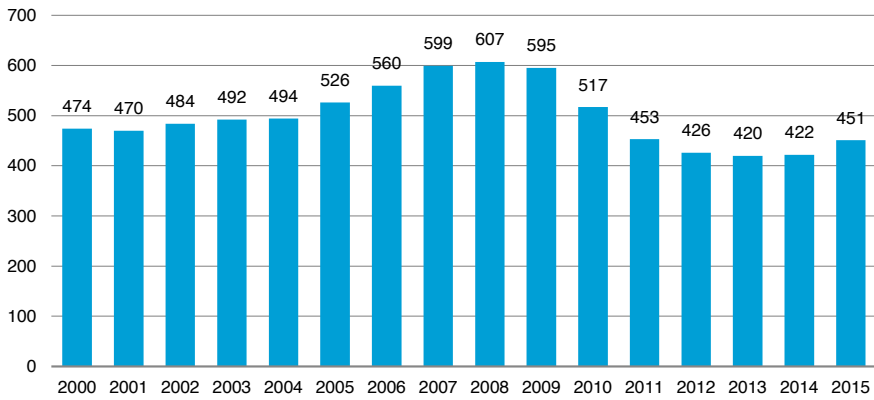
## JOB SATISFACTION



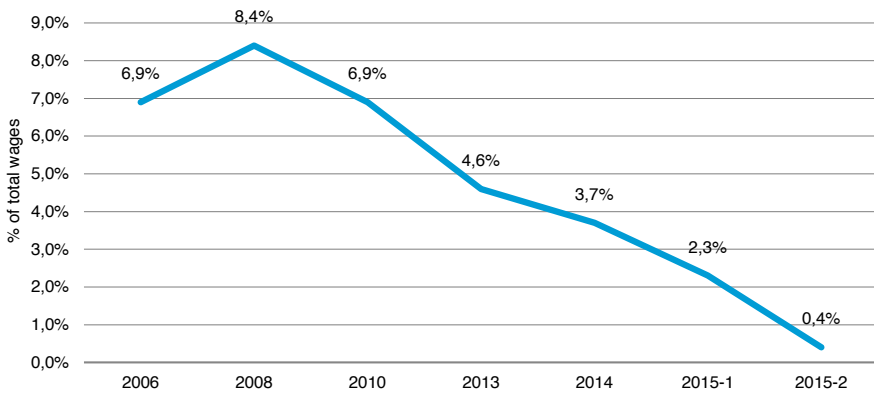
A workplace analysis and management assessment were conducted for the entire group at the end of 2015. 90% of the group's employees participated in them. This is an important reform tool which gives us a good indication of our personnel's feelings, the atmosphere in the company and trust in management. It was therefore gratifying to see that job satisfaction and satisfaction with the work atmosphere and management is still rising and the ratings given to all these factors were over 4.2, which is considered to reflect the company's special strength.



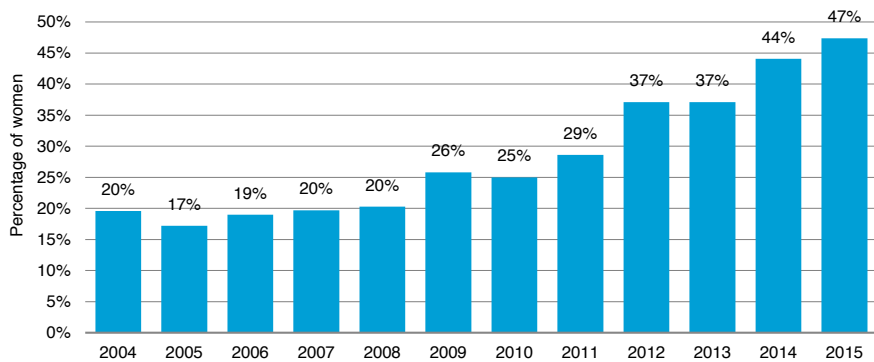
### NUMBER OF OR GROUP'S EMPLOYEES



### UNEXPLAINED GENDER WAGE-GAP



### PERCENTAGE OF WOMEN AMONG OR GROUP'S DIRECTORS



## Safety

None of the functions that OR performs is important enough to justify employees risking their lives or health in their work. For this reason, each and every employee is instructed to pause before launching into an assignment, since the environment is often risky, and conditions or the equipment employed can be hazardous. Our goal is simple: to create an accident-free workplace.

The companies of the OR group endeavour to handle safety issues with professionalism. This entails, among other things, detailed logging in a special database, not only of the accidents that occur, but employees are also encouraged to log risky work procedures and conditions, unsafe equipment or hazardous work environments or dangerous incidents which did not, however, lead to an accident. These notifications are handled systematically and their processing is the responsibility of the senior management.

All employees face the risk of an accident at work or when travelling to or from the workplace. Falls are the most common accidents but the table below lists other hazards of particular relevance to OR with a specification of the employees facing the highest risks:

Figures indicate that OR has not been sufficiently successful at managing the risks of the tasks specified in the table. Other hazards that have been faced have led to fewer accidents which may be a sign of a better handling of conditions. This is the hazard of electricity, particularly high-voltage, and the danger of impaired air quality when working in enclosed spaces in the vicinity of geothermal gases and working with asbestos, which is still the case in West Iceland while the complete renewal of the Deildartunga pipeline remains unfinished. The health of employees who work with asbestos is especially monitored, as well as that of those who work with the higher concentrations of geothermal gases that can be found in some low-temperature fields, but this applies in

particular to power plants in the Hengill area.

Each and every employee of OR and its subsidiaries is instructed to pause before launching into a task and to evaluate the possible risks involved. If the danger arises after the task begins, employees are instructed to immediately halt and mitigate the risks. OR is of the view that each employee is responsible for his or her own safety. In 2015, ON Power launched a project to enhance the role of the workers themselves as advocates of greater safety for their colleagues in an endeavour to identify, evaluate and reduce hazards in the work environment. The title of the project is OFF and it is the fruit of an extensive survey on safety culture within the OR group which was conducted in 2014. The results of the survey were in many respects positive and encouraging. The goal of an accident-free workplace in which the health of no employee, contractor or member of the public needs to be placed in jeopardy can only be achieved if everyone is informed and ready to improve safety issues. This is why safety, health and working environment issues form an integral part of all the activities of OR, Veitur Utilities, ON Power and the Reykjavik Fibre Network.

Any employee can participate in the selection of members of one of the safety committees that operate in the OR group. There are four committees: the safety committees of Veitur Utilities for the capital area and South Iceland and West Iceland, the safety committee for the power plants and finally the safety committee for office staff. The presence of these committees and their main tasks are described in collective agreements with the eight unions that OR negotiates with.

### Health enhancement

In 2015 a number of new measures were introduced to inform personnel of the importance of good physical and psychological health and employees were offered various options to enhance their physical fitness and

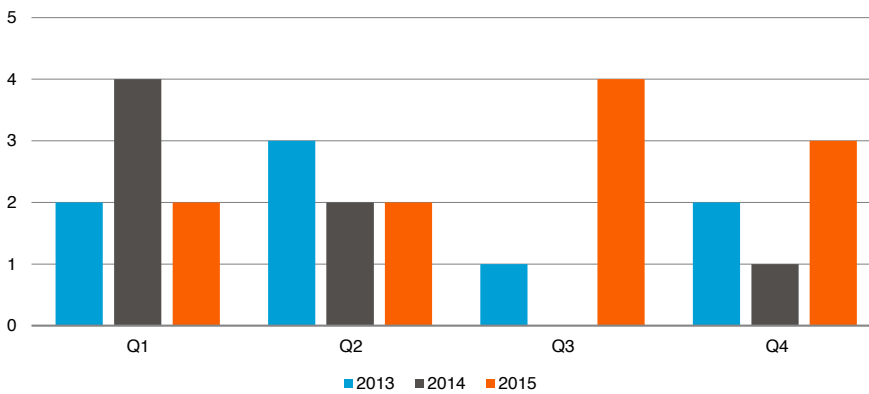
health. In addition to traditional fitness club grants, OR offers fitness training assistance at the company's own headquarters at Bæjarhóls. "Work clothes yoga" was also offered at lunchtime twice a week, a relaxation room was set up, and several lectures and courses were held with a special focus on the psychological aspects of health. The innovation was well received and the collaboration project encompassing safety, environmental and personnel issues launched in spring 2015 to offer staff a transport agreement has led to both healthier and more eco-friendly transport to and from work. Between 80 and 90 employees out of over 450 availed of the grant in 2015, i.e. about 20%.

The HSE unit in OR's parent company is also responsible for crisis management. It performs the function of preparing the company and its subsidiaries to cope with emergency situations in an organised and systematic manner. Crisis Management is operational for the whole of the OR group because the activities of its subsidiaries are intertwined in various ways, and they can support each other if a crisis situation threatens their activities. Veitur, ON Power and the Reykjavik Fibre Network also have their own emergency arrangements.

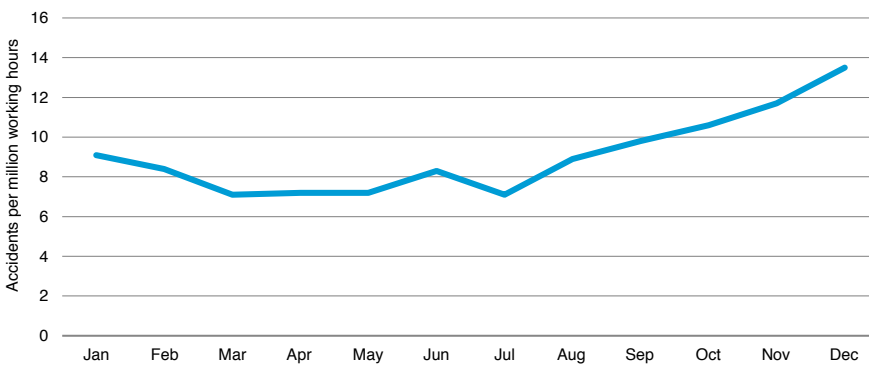
In November 2015 an extensive emergency drill run by Landsnet, the national grid company, was held. Its goal was to train staff to cope with the consequences of sudden glacial floods causing significant damage to the generation and transmission of power in the country. The emergency plan of OR and all its subsidiaries was activated in the exercise, but was also tested when public authorities needed to be called in to evaluate how the overall interests of the nation are best served when dealing with a crisis on the scale they were training for. Much of it was successful and systematic work is now being conducted to improve the shortcomings the exercise revealed.

Type of accident	Special risk group	Percentage of manpower
Cut injuries	Technicians and workers in all of the companies of the OR group	52%
Burning injuries	Technicians and workers in Veitur's water sections and the steam utility workers of ON Power	6%
Clamp wounds or knocks	Technicians and workers in all of the companies of the OR group	52%

### ABSENCE ACCIDENT BY QUARTER 2013-2015

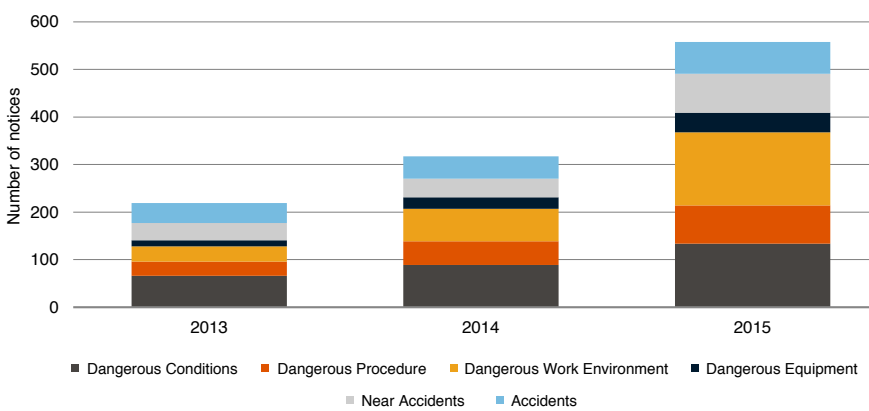


### FREQUENCY OF ABSENCE ACCIDENTS 2015 (H-NUMBER)



Frequency of absences due to accidents on the basis of 1,000,000 working hours. An absence due to an accident refers to an accident which results in the person not being able to go to work for at least one of the seven calendar days that follow the incident.

### NOTICES INTO SAFETY DATABASE 2013-2015 BY TAPE



The safety notification database has now been operating for close to four years. The database has been so successful that it is now also used to log environmental and quality issue incidents, as well as information security issues.





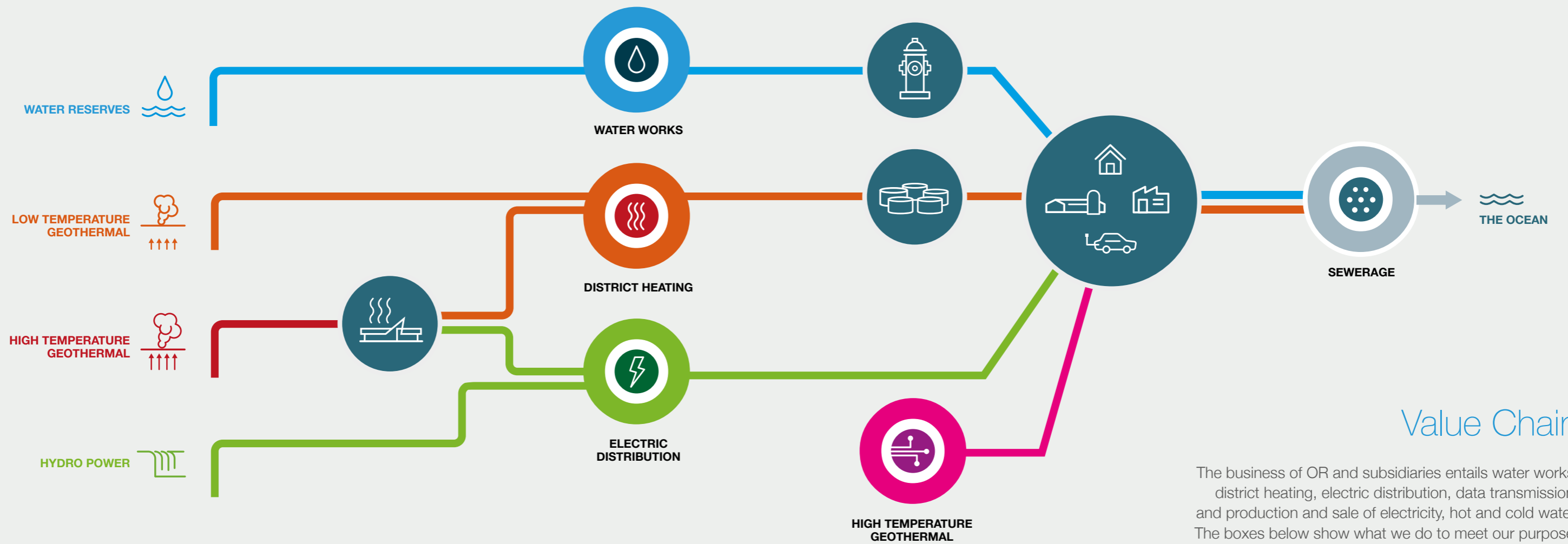


## Chapter 11

### Resources and value chain

# ACCESS TO NATURAL RESOURCES

The OR group's purpose is to ensure people's access to the natural resources it has been entrusted with. The picture shows how the produces and services of OR and its subsidiaries connect to the natural resources and the societies served.



## Value Chain

The business of OR and subsidiaries entails water works, district heating, electric distribution, data transmission, and production and sale of electricity, hot and cold water. The boxes below show what we do to meet our purpose.

<p><b>NATURAL RESOURCES</b></p> <ul style="list-style-type: none"> <li>• Locating natural resources and acquiring rights.</li> <li>• Controlling and monitoring utilisation.</li> </ul>	<p><b>SYSTEM EXPANSION</b></p> <ul style="list-style-type: none"> <li>• Design and acquiring permits.</li> <li>• Tendering for materials, machinery and contractors.</li> <li>• Supervision and testing.</li> </ul>	<p><b>PRODUCTION</b></p> <ul style="list-style-type: none"> <li>• Commissioning system expansions.</li> <li>• Controlling and monitoring utilisation.</li> <li>• Supervision, maintenance and renewal.</li> <li>• Purchasing materials and machinery.</li> </ul>	<p><b>DISTRIBUTION</b></p> <ul style="list-style-type: none"> <li>• Commissioning system expansions.</li> <li>• Controlling and monitoring systems.</li> <li>• Supervision, maintenance and renewal.</li> <li>• Purchasing materials and machinery.</li> </ul>	<p><b>BUSINESS AND SERVICES</b></p> <ul style="list-style-type: none"> <li>• Acquiring and registering customers.</li> <li>• Connecting homes and businesses.</li> <li>• Metering and billing.</li> <li>• Responding to outages.</li> </ul>	<p><b>NATURAL RESOURCE</b></p> <ul style="list-style-type: none"> <li>• Monitoring sewage receptor.</li> </ul>
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## Chapter 12

Published reports and articles



# Published reports and articles

## Reports by staff of OR and subsidiaries

**Bjarni Reykr Kristjánsson, Anette K. Mortensen, Ingi Gunnarsson og Gunnar Gunnarsson 2015.**  
Hverahlíðarholur. Profun á borholum veturinn 2013-2014 vegna fyrirhugaðrar vinnslu og tengingar svæðisins við Helliðsvirkjun. 2015-OR-007.

**Einar Gunnlaugsson 2015.**  
Helliðsvirkjun – Vinnsluskýrsla 2014. Af, vatnsborð, vinnsla efnaræði Yfirlit yfir rannsóknir. 2015-OR-023.

**Einar Gunnlaugsson 2015.**  
Nesjavellir – Vinnsluskýrsla 2014. Af, vatnsborð, vinnsla efnaræði Yfirlit yfir rannsóknir. 2015-OR-022.

**Greinar Ívarsson 2015.**  
Hitaveita í Reykjavík. Vatnsvinnslan og efnaræði vatnsins 2014. 2015-OR-002.

**Guðleifur Kristmundsson 2015.**  
Mælingar á íbúðaaðagi í desember 2014 og janúar 2015. 2015-OR-003.

**Guðrún Erla Jónsdóttir 2015.**  
Framfylgd eigendastefnu Orkuveitu Reykjavíkur. 2015-OR-024.

**Hafsteinn Björgvinsson 2015.**  
Fuglar og önnur dýr á verndarsvæðum vatnsbóla Reykjavíkur. 19. útgáfa. 2015-OR-001.

**Selma Olsen 2015.**  
Vatnsvinnsla Austurveitu 2014. 2015-OR-005.

**Selma Olsen 2015.**  
Vatnsvinnsla Grímsnesveitu 2014. 2015-OR-004.

**Selma Olsen 2015.**  
Vatnsvinnsla Hitaveitu Akraness og Borgarfjarðar 2014. 2015-OR-018.

**Selma Olsen 2015.**  
Vatnsvinnsla Hitaveitu Rangæinga 2014. 2015-OR-006.

**Selma Olsen 2015.**  
Vatnsvinnsla Hitaveitu Skorradals 2014. 2015-OR-019.

**Selma Olsen 2015.**  
Vatnsvinnsla Hitaveitu Stykkishólms 2014. 2015-OR-020.

**Selma Olsen 2015.**  
Vatnsvinnsla Hitaveitu Þorlákshafnar 2014. 2015-OR-014.

**Selma Olsen 2015.**  
Vatnsvinnsla Hlíðaveitu 2014. 2015-OR-008.

**Selma Olsen 2015.**  
Vatnsvinnsla Munaðarnesveitu 2014. 2015-OR-016.

**Selma Olsen 2015.**  
Vatnsvinnsla Norðurárdalsveitu 2014. 2015-OR-021.

**Selma Olsen 2015.**  
Vatnsvinnsla Ölfusveitu 2014. 2015-OR-017.

**Sólveig R. Gunnarsdóttir, Brynja Kolbrún Pétursdóttir, Björn Ágúst Björnsson, Gísli Björn Björnsson, Ingvar Stefánsson og Ívar Örn Lárusson 2015.**  
Fjármálaskýrsla 2014. 2015-OR-013.

## Reports for OR and subsidiaries

**Andrés Þórarinnsson 2015.**  
H<sub>2</sub>S loftgæðamælingar í Norðlingaholti og Hveragerði. Skýrsla um mælingar árið 2014. Unnið fyrir Orku náttúrunnar. Verkfræðistofan Vista. 2015-ON-102.

**Andrés Þórarinnsson 2015.**  
H<sub>2</sub>S loftgæðamælingar í Norðlingaholti og Hveragerði. Skýrsla um mælingar fyrir janúar, febrúar og mars árið 2015. Unnið fyrir Orku náttúrunnar. Verkfræðistofan Vista. 2015-ON-104.

**Andrés Þórarinnsson 2015.**  
H<sub>2</sub>S loftgæðamælingar í Norðlingaholti og Hveragerði. Skýrsla um mælingar fyrir janúar til og með júní 2015. Unnið fyrir Orku náttúrunnar. Verkfræðistofan Vista. 2015-ON-107.

**Andrés Þórarinnsson 2015.**  
H<sub>2</sub>S loftgæðamælingar í Norðlingaholti og Hveragerði. Skýrsla um mælingar fyrir janúar til og með september 2015. Unnið fyrir Orku náttúrunnar. Verkfræðistofan Vista. 2015-ON-109.

**Andrés Þórarinnsson 2015.**  
H<sub>2</sub>S loftgæðamælingar við Helliðsvirkjun og við Nesjavallavirkjun. Skýrsla um mælingar árið 2014. Unnið fyrir Orku náttúrunnar. Verkfræðistofan Vista. 2015-ON-103.

**Andrés Þórarinnsson 2015.**  
H<sub>2</sub>S loftgæðamælingar við Helliðsvirkjun og við Nesjavallavirkjun. Skýrsla um mælingar fyrir janúar, febrúar og mars árið 2015. Unnið fyrir Orku náttúrunnar. Verkfræðistofan Vista. 2015-ON-105.

**Andrés Þórarinnsson 2015.**  
H<sub>2</sub>S loftgæðamælingar við Helliðsvirkjun og við Nesjavallavirkjun. Skýrsla um mælingar fyrir janúar til og með júní 2015. Unnið fyrir Orku náttúrunnar. Verkfræðistofan Vista. 2015-ON-108.

**Andrés Þórarinnsson 2015.**  
H<sub>2</sub>S loftgæðamælingar við Helliðsvirkjun og við Nesjavallavirkjun. Skýrsla um mælingar fyrir janúar til og með september 2015. Unnið fyrir Orku náttúrunnar. Verkfræðistofan Vista. 2015-ON-110.

**Auður Agla Óladóttir 2015.**  
Jarðhitasvæðið í Hverahlíð. Vöktun á yfirborðsvirkni haustið 2015. Unnið fyrir Orku náttúrunnar. ÍSOR-2015/067. Íslenskar orkurannsóknir (ÍSOR). 2015-ON-118.

**Birgir Tómas Arnar og Snorri Þórisson 2015.**  
Skólphreinsistöðvar. Sýnataka og mælingar. Árleg yfirlitsskýrsla 2014. Borgarbyggð. Verkis. 2015-OR-102.

**Birgir Tómas Arnar og Snorri Þórisson 2015.**  
Skólphreinsistöðvar. Sýnataka og mælingar. Árleg yfirlitsskýrsla 2014. Reykjavík. Verkis. 2015-OR-101.

**Eric M. Myer og Ágúst Guðmundsson 2015.**  
Höfuðborgarsvæði. Grunnvatns- og rennslislikan. Árleg endurskoðun fyrir árið 2014. Skýrsla nr. 15.16. Vatnaskil. 2015-OR-107.

**Garðar Þorfinnsson 2015.**  
Uppgræðsla vestan Hengils. Áfangaskýrsla 2014 áætlun 2015. Landgræðsla ríkisins. 2015-ON-106.

**Guðjón Atli Auðunsson 2015.**  
Viðtakarannsóknir 2011. Setgildir, kræklingur og sjór. Nýsköpunarmiðstöð Íslands. 2015-OR-106.

**Guðni Þorvaldsson og Svavar T. Óskarsson 2015.**  
Upphitun ípróttavalla. Landbúnaðarháskóli Íslands. 2015-OR-103.

**Haraldur R. Ingvason, Finnur Ingimarsson, Stefán Már Stefánsson og Þóra Hrafnadóttir 2015.**  
Vöktun á lífríki og vatnsgæðum Þingvallavatns. Gagnaskýrsla fyrir árið 2014. Fjölrit nr. 1-2015. Náttúrufræðistofa Kópavogs. 2015-OR-104.

**Helgi Gunnar Gunnarsson 2015.**  
Reynisvatnshéiði og Mosfellsheiði. Mat á áhrifum niðurdælingar heits vatns. Skýrsla nr. 15.08. Vatnaskil. 2015-OR-109.

## Peer-reviewed articles and lectures

### **Hörður Tryggvason 2015.**

Mælingaefirlit á Bitru árið 2015. Unnið fyrir Orkuveitu Reykjavíkur. ÍSOR-2015/062. Íslenskar orkurannsóknir (ÍSOR). 2015-OR-108.

### **Hörður Tryggvason 2015.**

Mælingaefirlit á Nesjavöllum árið 2015. Unnið fyrir Orku náttúrunnar. ÍSOR-2015/065. Íslenskar orkurannsóknir (ÍSOR). 2015-ON-111.

### **Hörður Tryggvason 2015.**

Mælingaefirlit í Hverahlíð árið 2015. Unnið fyrir Orku náttúrunnar. ÍSOR-2015/056. Íslenskar orkurannsóknir (ÍSOR). 2015-ON-112.

### **Ingvar Þór Magnússon 2015.**

GNSS- og þyngdarmælingar á Hengilssvæði árið 2015. Unnið fyrir Orku náttúrunnar. ÍSOR-2015/064. Íslenskar orkurannsóknir (ÍSOR). 2015-ON-117.

### **Khodayar, Maryam, Guðni Axelsson og Benedikt Steingrímsson 2015.**

Potential structural flow paths for traces and source faults of earthquakes at Húsmúli. Hengill, South Iceland. Unnið fyrir Orku náttúrunnar. ÍSOR-2015/035. Íslenskar orkurannsóknir (ÍSOR). 2015-ON-119.

### **Kristján Ágústsson, Hanna Blanck, Sif Pétursdóttir og Stefán Auðunn Stefánsson 2015.**

Nesjavellir. Jarðskjálftar við borun holu NJ-28 og niðurdæling í holur NJ-17 og NJ-26. Unnið fyrir Orku náttúrunnar. ÍSOR-2015/061. Íslenskar orkurannsóknir (ÍSOR). 2015-ON-115.

### **Magnús Jóhannsson og Benóný Jónsson 2015.**

Rannsóknir á urriðastofni Ólfusvatnsár árið 2015. Veiðimálastofnun. 2015-OR-105.

### **Sveinborg Hlíf Gunnarsdóttir, Hörður Tryggvason og Björn S. Harðarson 2015.**

Hellisheiði – Hóla HE-58. Forborun 1. og 2. áfangi. Unnið fyrir Orku náttúrunnar. ÍSOR-2015/044. Íslenskar orkurannsóknir (ÍSOR). 2015-ON-116.

### **Sveinborg Hlíf Gunnarsdóttir, Hörður Tryggvason, Björn S. Harðarson og Magnús Á. Sigurgeirsson 2015.**

Nesjavellir – Hóla NJ-28. Forborun 1. og 2. áfangi. Unnið fyrir Orku náttúrunnar. ÍSOR-2015/032. Íslenskar orkurannsóknir (ÍSOR). 2015-ON-113.

### **Sveinborg Hlíf Gunnarsdóttir, Helga M. Helgadóttir, Hörður Tryggvason, Magnús Á. Sigurgeirsson, Þorsteinn Egilsson og Halldór Órvars Stefánsson 2015.**

Nesjavellir – Hóla NJ-28. 3. áfangi. Unnið fyrir Orku náttúrunnar. ÍSOR-2015/033. Íslenskar orkurannsóknir (ÍSOR). 2015-ON-114.

### **Aradóttir, Edda S. P., Gunnarsson, Ingvi, Sigfússon, Bergur, Gunnarsson, Gunnar, Júlíusson, Bjarni M., Gunnlaugsson, Einar, Sigurðardóttir, Hólmfríður, Arnarson, Magnús Th., Sonnenthal, Eric 2015.**

Toward cleaner geothermal energy utilization. Capturing and sequestering CO<sub>2</sub> and H<sub>2</sub>S emissions from geothermal power plants. Transport in Porous Media, 108, 61-84.

### **Friðleifsson, Guðmundur Ómar, Pálsson, Bjarni, Albertsson, Albert L., Stefánsson, Björn, Gunnlaugsson, Einar, Ketilsson, Jónas, and Gíslason, Þór 2015.**

IDDP-1 drilled into magma. World's first magma-EGS system created. Proceedings World Geothermal Congress 2015 Melbourne, Australia, 19-25 April 2015.

### **Gunnarsson, Gunnar and Aradóttir, Edda S. P. 2015.**

The deep roots of geothermal systems in volcanic areas. Boundary conditions and heat sources in reservoir modeling. Transport in Porous Media, 108, 43-59.

### **Gunnarsson, Gunnar, Kristjánsson, Bjarni Rey, Gunnarsson, Ingvi and Júlíusson, Bjarni Már 2015.**

Reinjection into a fractured reservoir – induced seismicity and other challenges in operating reinjection wells in the Hellisheiði field, SW-Iceland. Proceedings World Geothermal Congress 2015 Melbourne, Australia, 19-25 April 2015.

### **Gunnarsson, Ingvi, Júlíusson, Bjarni Már, Aradóttir, Edda Sif, Sigfússon, Bergur, and Arnarson, Magnús Þór 2015.**

Pilot scale geothermal gas separation, Hellisheiði power plant, Iceland. Proceedings World Geothermal Congress 2015 Melbourne, Australia, 19-25 April 2015.

### **Gunnlaugsson, Einar, Ívarsson, Greinar, and Friðriksson, Jakob S. 2015.**

85 years of successful district heating in Reykjavik, Iceland. Proceedings World Geothermal Congress 2015 Melbourne, Australia, 19-25 April 2015.

### **Júlíusson, Bjarni Már, Gunnarsson, Ingvi, Matthíasdóttir, Kristín Vala, Markússon, Sigurður H., Bjarnason, Bjarni, Sveinsson, Óli Grétar, Gíslason, Þór, and Thorsteinsson, Hildigunnur H. 2015.**

Tackling the challenge of H<sub>2</sub>S emissions. Proceedings World Geothermal Congress 2015 Melbourne, Australia, 19-25 April 2015.

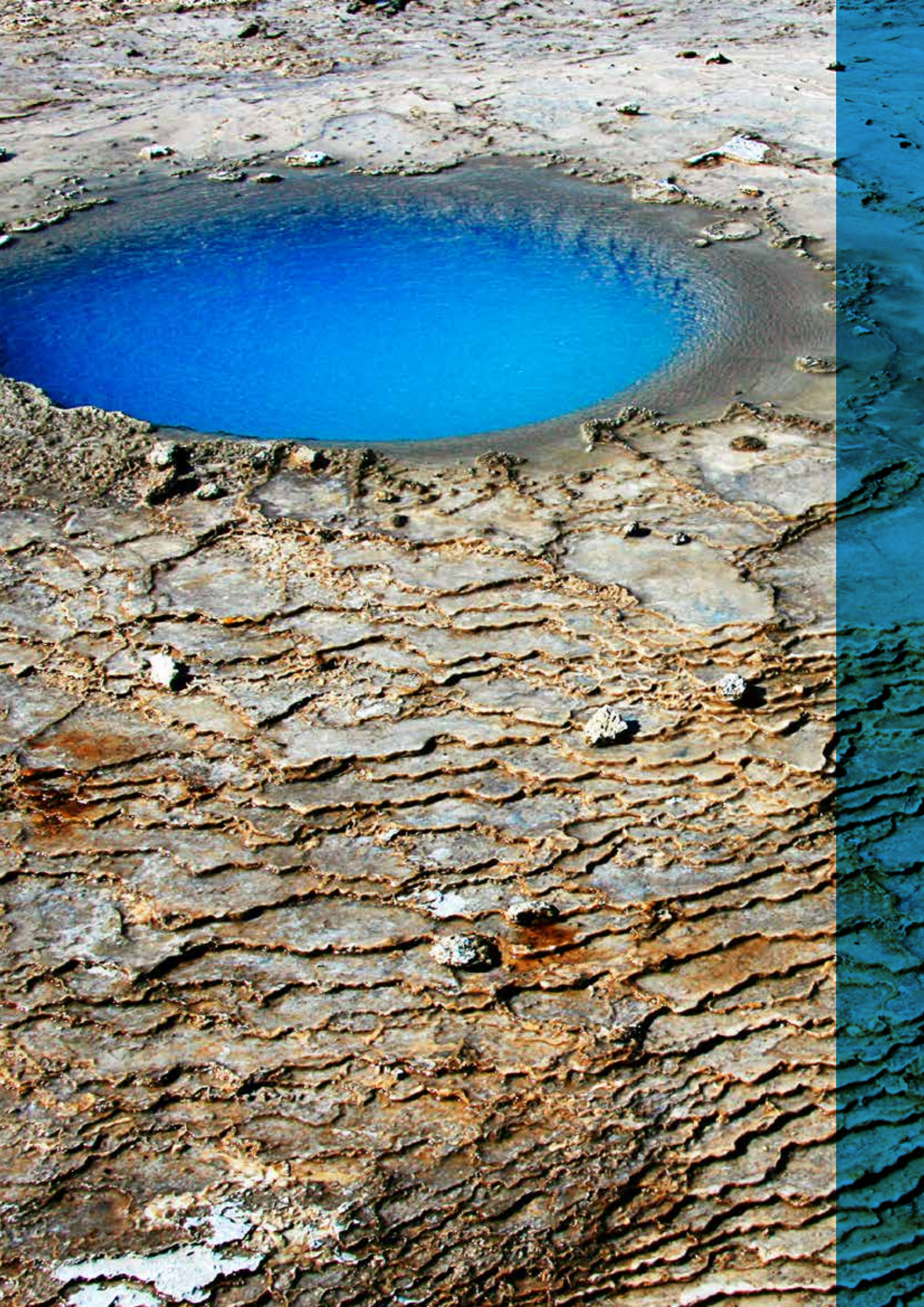
### **Aradóttir, Edda S. P., Gunnarsson, Ingvi, Sigfússon, Bergur, Gíslason, Sigurður R., Oelkers, Eric H., Stute, Martin, Matter, Juerg M., Snæbjörnsdóttir, Sandra Ó., Mesfin, Kiflom G., Alfreðsson, Helgi A., Hall, Jennifer, Arnarsson, Magnús Th., Dideriksen, Knud, Júlíusson, Bjarni M., Broecker, Wallace S., and Gunnlaugsson, Einar 2015.**

Towards cleaner geothermal energy. Subsurface sequestration of sour gas emissions from geothermal power plants. Proceedings World Geothermal Congress 2015 Melbourne, Australia, 19-25 April 2015.

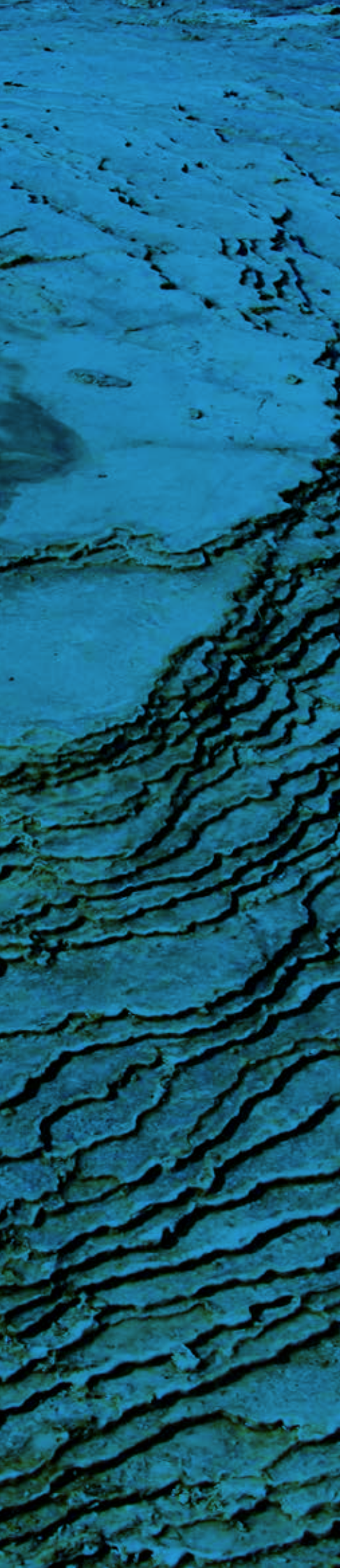
### **Sigfússon, Bergur, Gíslason, Sigurður R., Matter, Juerg M., Stute, Martin, Gunnlaugsson, Einar, Gunnarsson, Ingvi, Aradóttir, Edda S. P., Sigurðardóttir, Hólmfríður, Mesfin, Kiflom G., Alfreðsson, Helgi A., Wolff-Boenisch, Domenik, Arnarsson, Magnús T., and Oelkers, Eric H. 2015.**

Solving the carbon-dioxide buoyancy challenge. The design and field testing of a dissolved CO<sub>2</sub> injection system. International Journal of Greenhouse Gas Control, 37, 21-219.









## Chapter 13

### Overview of GRI

# Overview of GRI

Reykjavík Energy's (OR) owners' policy states that the company shall be socially responsible in its operations. It is OR's and its subsidiaries strategy to be at the forefront of corporate social responsibility and always to strive towards better results. Corporate social responsibility is an ongoing journey.

In preparing its Financial Statement, Annual Report and Environmental Report, OR, for the very first time, follows the core option of Global Reporting Initiative's (GRI) guidelines regarding social responsibility. The goal is to communicate information relating to social responsibility in a transparent manner. The GRI overview lists the sustainability indicators mentioned in the reports, which report and page number.

In the index A represents that the information is included in this Annual Report, E represents that the information is included in the Environmental Report and F represents the 2015 Consolidated Financial Statement. After the index comes additional information regarding the GRI sustainability index.

STRATEGY AND ANALYSIS		Reference
G4-1	Statement from the CEO.	A 11
G4-2	Description of key impacts, risks, and opportunities.	A 6-11
ORGANIZATIONAL PROFILE		Reference
G4-3	Name of the organization.	A Front Page
G4-4	Primary brands, products, and services.	A 10
G4-5	Location of the organization's headquarters.	F 10
G4-6	Countries where the organization operates.	F 10
G4-7	Nature of ownership and legal form.	F 3
G4-8	Markets served (including geographic breakdown, sectors served, and types of customers and beneficiaries).	A 24, 30, 36
G4-9	Scale of the organization.	A 16-21, 24, 30, 36
G4-10	Number of employees by employment contract and gender.	A 24, 30, 36, 46-47
G4-11	Percentage of total employees covered by collective bargaining agreements.	94%
G4-12	Description of the organization's supply chain.	A 51-52
G4-13	Significant changes during the reporting period regarding the organization's size, structure, ownership, or its supply chain.	A 10-11, 16-17; F 37
Commitments to external initiatives		
G4-14	Report whether and how the precautionary approach or principle is addressed by the organization.	A 2, 49, F 25-34; E 6-7
G4-15	List externally developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes or which it endorses.	A 31, 33, 46, 56-57; E 5-6
G4-16	Memberships of associations.	E 5
Identified material aspects and boundaries		
G4-17	List all entities included in the organization's consolidated financial statements or equivalent documents. Report whether any entity included in the organization's consolidated financial statements or equivalent documents is not covered by the report.	F 3
G4-18	Explain the process for defining the report content and the Aspect Boundaries. Explain how the organization has implemented the Reporting Principles for Defining Report Content.	A 11, 60
G4-19	List all the material Aspects identified in the process for defining report content.	A 11, 60
G4-20	For each material Aspect, report the Aspect Boundary within the organization, whether the Aspect is material within the organization, any specific limitation regarding the Aspect Boundary within the organization.	A 11, 60
G4-21	For each material Aspect, report the Aspect Boundary outside the organization, report whether the Aspect is material outside of the organization, Report any specific limitation regarding the Aspect Boundary outside the organization.	A 11, 60

G4-22	Report the effect of any restatements of information provided in previous reports, and the reasons for such restatements.	Does not apply
G4-23	Report significant changes from previous reporting periods in the Scope and Aspect Boundaries.	Does not apply
Stakeholder engagement		
G4-24	Provide a list of stakeholder groups engaged by the organization.	A 24-27, 30-33, 36; E 5-6
G4-25	Report the basis for identification and selection of stakeholders with whom to engage.	A 24-27, 30-33, 36; E 5-6
G4-26	Report the organization's approach to stakeholder engagement, including frequency of engagement by type and by stakeholder group, and an indication of whether any of the engagement was undertaken specifically as part of the report preparation process.	A 24-27, 30-33, 36; E 5-6
G4-27	Report key topics and concerns that have been raised through stakeholder engagement.	A 24-27, 30-33, 36; E 5-6
Report profile		
G4-28	Reporting period (such as fiscal or calendar year) for information provided.	A 6,10; F 3
G4-29	Date of most recent previous report (if any).	Does not apply
G4-30	Reporting cycle (such as annual, biennial).	Annually
G4-31	Provide the contact point for questions regarding the report or its contents.	A 2
G4-32	Report the 'in accordance' option the organization has chosen.	A 11
GRI overview		
G4-33	Report the organization's policy and current practice with regard to seeking external assurance for the report.	R 4; E 59
GOVERNANCE		Reference
Governance structure and composition		
G4-34	Report the governance structure of the organization, including committees of the highest governance body. Identify any committees responsible for decision-making on economic, environmental and social impacts.	A 6-7; F 47
ETHICS AND INTEGRITY		Reference
Standard disclosure of organization's values, principles, standards and norms		
G4-56	Describe the organization's values, principles, standards and norms of behavior such as codes of conduct and codes of ethics.	A 6-7; F 47
G4-57	Report the internal and external mechanisms for seeking advice on ethical and lawful behavior, and matters related to organizational integrity, such as helplines or advice lines.	F 47
G4-58	Report the internal and external mechanisms for reporting concerns about unethical or unlawful behavior, and matters related to organizational integrity, such as escalation through line management, whistleblowing mechanisms or hotlines.	F 47

ECONOMIC		Reference
<b>Economic performance</b>		
G4-EC1	Direct economic value generated and distributed, including revenues, operating costs, employee wages and benefits, payments to providers of capital, payments to government, community investment and economic value retained.	F 5-9
G4-EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change.	A 31, 33
G4-EC3	Coverage of the organization's defined benefit plan obligations.	F 7
G4-EC4	Financial assistance received from government.	Does not apply
<b>Market presence</b>		
G4-EC5	Ratio of standard entry level wage by gender compared to local minimum wage at significant locations of operation.	Not covered
G4-EC6	Proportion of senior management hired from the local community at significant locations of operation.	100%
<b>Indirect economic impacts</b>		
G4-EC7	Development and impact of infrastructure investments and services supported.	A 24-27, 30-33, 36
G4-EC8	Significant indirect economic impacts, including the extent of impacts.	A 24-27, 30-33, 36
<b>Procurement practices</b>		
G4-EC9	Proportion of spending on local suppliers at significant locations of operation.	A 63
ENVIRONMENTAL		Reference
<b>Materials</b>		
G4-EN1	Materials used by weight or volume.	Does not apply
G4-EN2	Percentage of materials used that are recycled input materials.	Does not apply
<b>Energy</b>		
G4-EN3	Energy consumption within the organization.	E 54, 56-57, 89
G4-EN4	Energy consumption outside of the organization.	E 47-48
G4-EN5	Energy intensity.	E 54
G4-EN6	Reduction of energy consumption.	E 54
G4-EN7	Reductions in energy requirements of products and services.	Does not apply
<b>Water</b>		
G4-EN8	Total water withdrawal by source.	E 14-15, 22-23, 72-75
G4-EN9	Water sources significantly affected by withdrawal of water.	E 14-15, 22-23, 72-75
G4-EN10	Percentage and total volume of water recycled and reused.	Does not apply
<b>Biodiversity</b>		
G4-EN11	Operational sited owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.	A 56-57; E 12-15, 68-69
G4-EN12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.	A 56-57; E 12-13, 68-69
G4-EN13	Habitats protected or restored.	E 12-13
G4-EN14	Report the total number of IUCN Red List species and national conservation list species with habitats in areas affected by the operations of the organization, by level of extinction risk.	E 70-71
<b>Emissions</b>		
G4-EN15	Direct greenhouse gas (GHG) emissions (scope 1).	E 34-35, 55-57, 80-81
G4-EN16	Energy indirect greenhouse gas (GHG) emissions (scope 2).	Does not apply
G4-EN17	Other indirect greenhouse gas (GHG) emissions (scope 3).	E 55-57, 80-81
G4-EN18	Greenhouse gas (GHG) emissions intensity.	E 34-35
G4-EN19	Reduction of greenhouse gas (GHG) emissions.	E 34-35, 55-57, 90

G4-EN20	Emissions of ozone-depleting substances (ODS).	Not covered
G4-EN21	NOx, SOx and other significant air emissions.	E 31-34, 80-83
<b>Effluents and waste</b>		
G4-EN22	Total water discharge by quality and destination.	E 28-30, 37-39, 76-79, 84-86
G4-EN23	Total weight of waste by type and disposal method.	E 54, 56, 87-88
G4-EN24	Total number and volume of significant spills.	E 5, 32, 36, 39, 56, 76
G4-EN25	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel convention annexes I,II,III, and VIII, and percentage of transported waste shipped internationally.	E 14-15, 50
G4-EN26	Identity, size, protected status, and biodiversity value of water and related habitats significantly affected by the organization's discharge of water and runoff.	E 12-13, 14-15, 28-30, 68-39
<b>Products and services</b>		
G4-EN27	Extent of impact mitigation of environmental impacts of products and services.	A 31; E 51
G4-EN28	Percentage of products sold and their packaging materials that are reclaimed by category.	Does not apply
<b>Compliance</b>		
G4-EN29	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations.	0 ISK.
<b>Transport</b>		
G4-EN30	Significant environmental impacts of transporting products and other goods and materials for the organization's operations, and transporting members of the workforce.	E 47-48, 56, 88-89
<b>Overall</b>		
G4-EN31	Total environmental protection expenditures and investments by type	Not covered
<b>Supplier environmental assessment</b>		
G4-EN32	Percentage of new suppliers that were screened using environmental criteria.	Not covered
G4-EN33	Significant actual and potential negative environmental impacts in the supply chain and actions taken.	A 48-49; E 45
<b>Environmental grievance mechanisms</b>		
G4-EN34	Number of grievances about environmental impacts filed, addressed, and resolved through formal grievance mechanisms.	E 5, 12-14, 32, 36, 39, 49, 56, 76
LABOR PRACTICES AND DECENT WORK		Reference
<b>Employment</b>		
G4-LA1	Total number and rates of new employee hires and employee turnover by age group, gender and region.	A 63
G4-LA2	Benefits provided to full-time employees.	A 48, 63
G4-LA3	Return to work and retention rates after parental leave, by gender.	A 63
<b>Labor/Management relations</b>		
G4-LA4	Minimum notice periods regarding operational changes, including whether these are specified in collective agreements.	A 63
<b>Occupational health and safety</b>		
G4-LA5	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advice on occupational health and safety programs.	A 48
G4-LA6	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender.	A 48-49
G4-LA7	Workers with high incidence or high risk of diseases related to their occupation.	A 48
G4-LA8	Health and safety topics in formal agreements with trade unions.	A 52
<b>Training and education</b>		
G4-LA9	Average hours of training per year per employee by gender, and by employee category.	A 63
G4-LA10	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings.	A 46-47; E 42



G4-LA11	Percentage of employees receiving regular performance and career development reviews, by gender and by employee category.	A 63
<b>Diversity and equal opportunity</b>		
G4-LA12	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity.	A 46-47, 63
<b>Equal remuneration for men and women</b>		
G4-LA13	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation.	A 46-47
<b>Supplier assessment for labor practices</b>		
G4-LA14	Percentage of new suppliers that were screened using labor practices criteria.	Not covered
G4-LA15	Significant actual and potential negative impacts for labor practices in the supply chain and actions taken.	A 48-49
<b>Labor practices grievance mechanisms</b>		
G4-LA16	Number of grievances about labor practices filed, addressed, and resolved through formal grievance mechanisms.	A 48-49
<b>HUMAN RIGHTS</b>		<b>Reference</b>
<b>Investment</b>		
G4-HR1	Total number and percentage of significant investment agreements and contracts that include human rights clauses or that underwent human rights screening.	Not covered
G4-HR2	Total hours of employee training on human rights policies or procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained.	Not covered
<b>Non-discrimination</b>		
G4-HR3	Total number of incidents of discrimination and corrective actions taken.	No incidents
<b>Freedom of association and collective bargaining</b>		
G4-HR4	Operations and suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and measures taken to support these rights.	Not covered
<b>Child labor</b>		
G4-HR5	Operations and suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor.	Not covered
<b>Forced or compulsory labor</b>		
G4-HR6	Operations and suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor.	Not covered
<b>Security practices</b>		
G4-HR7	Percentage of security personnel trained in the organization's human rights policies or procedures that are relevant to operations.	Not covered
<b>Indigenous rights</b>		
G4-HR8	Total number of incidents of violations involving rights of indigenous peoples and actions taken.	Does not apply
<b>Assessment</b>		
G4-HR9	Total number and percentage of operations that have been subject to human rights reviews or impact assessments	Not covered
<b>Supplier human rights assessment</b>		
G4-HR10	Percentage of new suppliers that were screened using human rights criteria.	Not covered
G4-HR11	Significant actual and potential negative human rights impacts in the supply chain and actions taken.	Not covered
<b>Human rights grievance mechanisms</b>		
G4-HR12	Number of grievances about human rights impacts filed, addressed, and resolved through formal grievance mechanisms.	None

<b>SOCIETY</b>		<b>Reference</b>
<b>Local communities</b>		
G4-SO1	Percentage of operations with implemented local community engagement, impact assessments, and development programs.	Environmental Report
G4-SO2	Operations with significant actual and potential negative impacts on local communities.	E 4
<b>Anti-corruption</b>		
G4-SO3	Total number and percentage of operations assessed for risks related corruption and the significant risks identified.	F 47
G4-SO4	Communication and training on anti-corruption policies and procedures.	F 47
G4-SO5	Confirmed incidents of corruption and actions taken.	F 47
<b>Public policy</b>		
G4-SO6	Total value of political contributions by country and recipient/beneficiary.	F 47
<b>Anti-competitive behavior</b>		
G4-SO7	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes.	A 36
<b>Compliance</b>		
G4-SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations.	A 36
<b>Supplier assessment for impacts on society</b>		
G4-SO9	Percentage of new suppliers that were screened using criteria for impacts on society.	Not covered
G4-SO10	Significant actual and potential negative impacts on society in the supply chain and actions taken.	E 6-7
<b>Grievance mechanisms for impact on society</b>		
G4-SO11	Number of grievances about impacts on society filed, addressed, and resolved through formal grievance mechanisms.	A 24-27; E 5
<b>PRODUCT RESPONSIBILITY</b>		<b>Reference</b>
<b>Customer health and safety</b>		
G4-PR1	Percentage of significant product and service categories for which health and safety impacts are assessed for improvement.	A 24-27; E 14, 72-77
G4-PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning the health and safety impacts of products and services during their life cycle, by type of outcomes.	Not covered
<b>Product and service labeling</b>		
G4-PR3	Type of product and service information required by the organization's procedures for product and service information and labeling, and percentage of significant product and service categories subject to such information requirements.	Does not apply
G4-PR4	Total number of incidents on non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes.	Does not apply
G4-PR5	Results of surveys measuring customer satisfaction.	A 25, 30, 37
<b>Market communications</b>		
G4-PR6	Sale of banned or disputed products.	Does not apply
G4-PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship, by type of outcomes.	A 36
<b>Customer privacy</b>		
G4-PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.	None
<b>Compliance</b>		
G4-PR9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services.	0 ISK.

## Additional information regarding GRI

**G4-LA1** The employee turnover at OR and its subsidiaries in the year 2015 was 7,3%, equal for men and women. There is a linear relationship between staff turnover and seniority. Most for those who had worked for 0-5 years (14%) and lowest for those who had worked more than 20 years (3,8%).

**G4-LA2** The main benefits provided to full-time employees of OR and its subsidiaries are access to subsidized canteen, transport subsidies for the promotion of environmentally friendly transportation,

sports grants for health and the employee's society that provides access to holiday rental homes.

**G4-LA3** All employees who took a maternity leave in 2015 returned to work.

**G4-LA4** The minimum period of notice after probationary of employees is three months in accordance with collective agreements.

**G4-LA9** Average hours of training per year per employee by employee category.

Employee category	Men	Women	Total
Technicians	14,7	22,2	15,1
Workers	11,6	8,9	10,5
Specialists	10,9	25,0	16,1
Office workers	9,0	10,3	10,0
Managers	15,3	21,3	18,0
<b>Total</b>	<b>13,2</b>	<b>16,3</b>	<b>14,2</b>

**G4-LA11** Percentage of employees receiving regular performance and career development reviews in 2015, by gender and area of work:

Employee category	Men	Women	Total
Technicians	75%	75%	75%
Workers	58%	86%	69%
Specialists	83%	77%	81%
Office workers	92%	85%	87%
Managers	75%	73%	74%
<b>Total</b>	<b>75%</b>	<b>81%</b>	<b>77%</b>

**G4-EC9** Proportion of spending on local suppliers at significant locations of operation.

	Proportion of spending
Capital area	85%
South Iceland	5%
West Iceland	2%
Other domestic areas	1%
Foreign	8%
<b>Total</b>	<b>100%</b>

**G4-LA12** Composition of governance bodies and breakdown and employees per employee category according to gender and age group:

Age agers	Technicians	Workers	Specialists	Office workers	Managers	All employees
20-29	3,6%	13,0%	5,2%	4,8%	0,0%	5,3%
30-39	14,4%	15,9%	39,1%	21,0%	28,9%	23,1%
40-49	21,0%	31,9%	30,4%	24,2%	31,6%	26,4%
50-59	34,7%	17,4%	15,7%	29,0%	31,6%	26,2%
60-69	26,3%	21,7%	9,6%	21,0%	7,9%	19,1%
<b>Total</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>	<b>100,0%</b>

Employee category	Men	Women	Total
Technicians	95,2%	4,8%	100,0%
Workers	59,4%	40,6%	100,0%
Specialists	63,5%	36,5%	100,0%
Office workers	21,0%	79,0%	100,0%
Managers	52,6%	47,4%	100,0%
<b>All employees</b>	<b>67,8%</b>	<b>32,2%</b>	<b>100,0%</b>







