

4.3 Intellectual Capital

	Management approach	Principal activities 2018	Outlook
Promotion of R&D	<ul style="list-style-type: none"> Iberdrola is now the <i>utility of the future</i> thanks to an innovative strategy based on a strong commitment to clean energy, smart grids, efficient energy storage, the development of custom-tailored solutions for customers, and digital transformation. 	<ul style="list-style-type: none"> €267 million of R&D investment in 2018, an 8% increase over 2017. Consolidation of the <i>Iberdrola Universities Programme (Iberdrola U)</i>. Commitment to internal talent through the <i>Renewables Accelerator Programme, Networks 2.0 and Accelerator for Customer</i> initiatives. Holding of <i>Innoday</i>, the major date of the energy sector with innovation. Inauguration in Qatar of the <i>Iberdrola Innovation Middle East</i>, a technology centre focused on responding to the challenges of the digitisation of the energy system. Publication of the Innovation Report 2016–2018. 	<ul style="list-style-type: none"> Development of <i>R&D Plan 2018–2022</i>. Iberdrola will invest 34,000 million euros between 2018 and 2022, focusing its innovative activity on: <ul style="list-style-type: none"> Cleaner and smarter generation. More and smarter storage. More and smarter grids. More and smarter customer solutions.
Efficiency and new products and services	<ul style="list-style-type: none"> Continuous optimisation of our operations, management of the life cycle of facilities and equipment, reduction in operating and maintenance costs, and decreasing environmental impact. Development of new and competitive products and services that adapt to an increasingly global and digitised market, the main goal of which is to meet the needs of customers. 	<ul style="list-style-type: none"> Increase in <i>customer engagement</i>, providing a simple, modern and intuitive customer experience during their entire life cycle. Launching innovative campaigns and projects towards increased personalisation of content and offers based on consumption. Delivery of proactive communications in real time and use of online self-service, with quick and simple online contracting. New social media channels at the international level, offering rapid and efficient customer service. 	<ul style="list-style-type: none"> As a result of its commitment to innovation, digitisation and the on-going search for excellence and quality, Iberdrola has designed unique products and services for its more than 16 million customers. In the future, Iberdrola will continue to wager on energy management of the home through smart devices that give customers greater knowledge and management of consumption, as well as products relating to electric vehicle charging.
Disruptive technology and business models	<p>Through the <i>Iberdrola-PERSEO</i> international start-up programme, funded with €70 million, investments are made in technologies and new disruptive businesses models, which ensure the sustainability of the energy model. Lines of activity:</p> <ul style="list-style-type: none"> Technologies favouring the integration of renewable energies: flexibility and storage. Aggregation and management of distributed energy resources (batteries, solar, etc.). Innovative solutions for customers (demand-side management, digital solutions, etc.). Advanced technologies for operation and maintenance of energy assets. Electromobility: charging infrastructures and new solutions. 	<ul style="list-style-type: none"> Iberdrola has been included for the second consecutive year among the top 12 European companies committed to the open innovation promoted by the <i>Europe Partnership</i> of the European Commission. Specifically, it has been selected by the European start-ups as one of the <i>Corporate Startup Stars</i> for 2018 and has also received, for the second time, the <i>Corporate Startup Procurement</i> award. More than 10 pilot projects with start-ups in technological areas like Artificial Intelligence, Big Data, Internet of things (IoT) and blockchain. Participation in the company <i>Atten2</i>, dedicated to developing solutions for online monitoring of critical assets to improve the operation and maintenance thereof. This investment is a major contribution to the digitisation of assets in order to prolong the useful life thereof through predictive maintenance and improved operation thereof. 	<ul style="list-style-type: none"> Ensure Iberdrola's access to the energy technologies of the future. Foster entrepreneurship and the development of an innovative entrepreneurial fabric within the energy sector. Investment in initiatives with a high social and job creation component. Establish alliances with key technology providers for Iberdrola (Open Innovation Ventures).

Highlight the value of the company's intangible assets

Main R&D research projects

Renewable energy	<ul style="list-style-type: none"> As to the improved efficiency of assets, <i>ROMEO</i> and <i>ASPA</i> seek to develop new models and tools for the early detection of failures based on AI/big data techniques. The <i>Renewables Digital Evolution Plan (2018–2022)</i> has also been launched. Avangrid Renewables has passed the process of being registered as a <i>Balancing Authority</i>, with responsibility for the real-time balancing of production and demand. In offshore wind, the <i>Wiking</i> offshore wind farm was inaugurated and construction of <i>East Anglia One</i> offshore wind farm has started in the United Kingdom.
Smart grids	<ul style="list-style-type: none"> The <i>ALOIS</i> project has commenced to develop a system for control and protection of feeders in distribution networks for stable and sustainable island operation. <i>LAYCA</i> seeks to develop a system for locating breakdowns and identifying failures in medium-voltage networks. <i>Quality Innovation Award</i> received in the Basque Country. Also noteworthy are the <i>Star+</i> and <i>Bidelek 4.0</i> projects, to continue pushing the digital transformation of the electricity grid and to improve the efficiency thereof.
Clean generation	<ul style="list-style-type: none"> Includes the <i>OCTAVE</i> project for the design of technologies for the diagnosis and control of the combustion process to make our plants more flexible. <i>OFF-GAS</i>, <i>RESHAND</i> and <i>FILTRABRIS</i>, which are part of Iberdrola's Supplier Innovation Programme, are oriented toward operational efficiency and nuclear safety.
Customers	<ul style="list-style-type: none"> <i>Energy Wallet</i>, a pioneering product that allows the purchase of 6-, 12- or 24-month green energy packages knowing the final price. They can be used at different addresses and allow for real-time management from one's mobile phone. In the United Kingdom, there is <i>PowerUp</i>, which allows for the purchase of gas or electricity in packages up to 180 days in advance at a pre-established price. <i>Smart Mobility</i>, a comprehensive solution that includes the acquisition of a charging point, installation and warranty, operation by means of an <i>app</i>, and a personalised supply contract.

Innoday 2018, we are committed to innovation and young talent

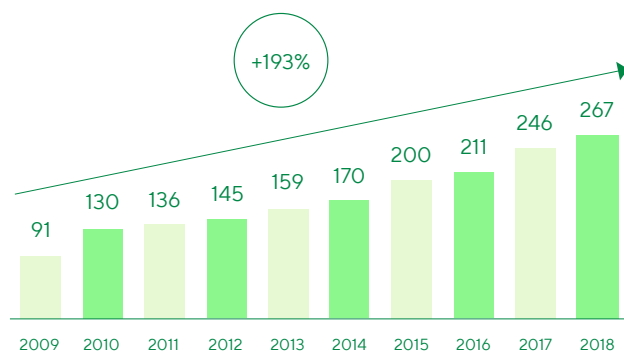
On 23 May, the company's international campus hosted the *Innoday 2018* symposium, a meeting space to disseminate *innovative* initiatives that transform the energy sector, encourage the transfer of knowledge and attract young talent.

Innoday 2018 was based around two pillars:

- The presentation of the Iberdrola group's Universities Programme.
- The innovation fair: 25 exhibitors showed emblematic projects relating to energy in the areas of the group's business as well as that of its partners.

Youth who participated in the start-up initiatives of the Universities Programme were also involved, with the winners of the challenges earning an award.

Investments in R&D (€M)



% R&D investment by strategic area

