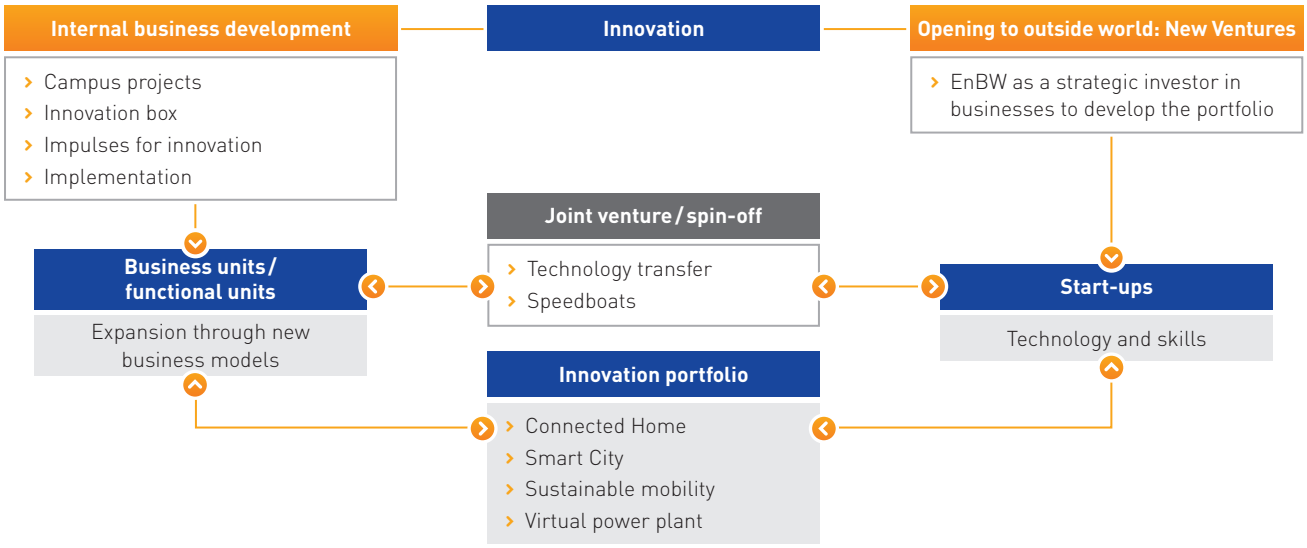
Innovation, research and development

Goals, guidelines and the innovation process

EnBW develops models for new future business areas through its innovation activities. The goal is to identify new sources of revenue for the Group in the short term in the new energy landscape and demonstrate ways to exploit them. A major role is played here by Group-wide innovation management, which is used to build up the skills and processes for developing new ideas. The aim is to establish an agile innovation culture at EnBW in the long term, which will be supplemented by selected partnerships and participating interests in start-up companies.

The innovation process is split into two main areas: the internal generation of new business ideas and the opening up of EnBW to the outside world under the heading "New Ventures".

The innovation process at EnBW



Innovation – focal points and selected results

Innovation culture

An example of how we have ventured into new worlds of business is "1492@enbw" that was introduced in the company two years ago: Employees can develop new interdisciplinary business ideas here free of hierarchical structures. This reinforces the project culture and willingness to change amongst employees while opening up new learning opportunities. This successful approach for lateral thinking and cross-departmental and cross-company action is now entering its third phase.

The Innovation Campus is picking up speed

Innovation management pushes forward the expansion of the innovation portfolio. In addition to the four existing projects, five further projects were installed at the Innovation Campus during the course of 2015 that promote the themes of sustainable mobility, virtual power plants and smart energy.

Current projects at the EnBW Innovation Campus

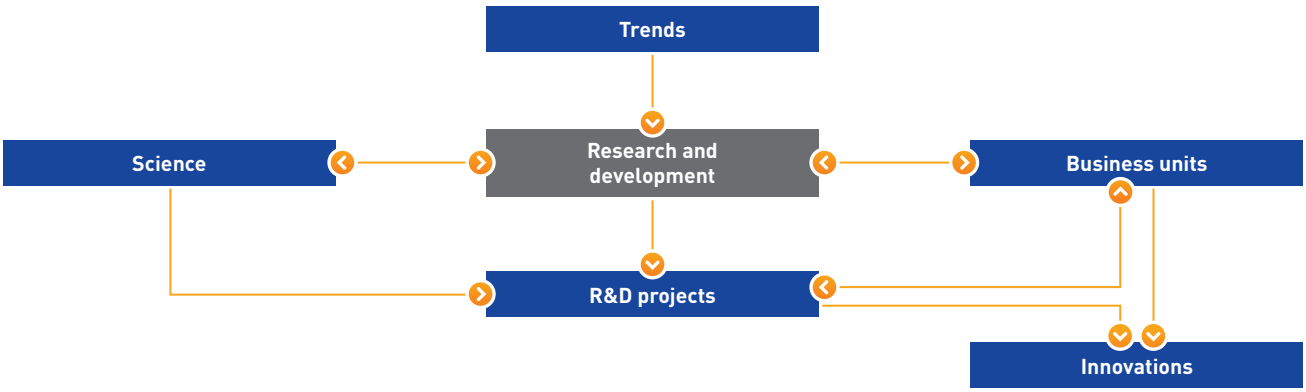
Campus project	Short description	Innovation phase
Small direct marketing	Direct marketing of small volumes of energy (from 100 kW feed-in power) from renewable energy sources, obligatory since the beginning of 2016. Providing digitalised and automated processes to owners of small generation plants	Development of business model/piloting
SANDy www.enbw.com/innovations	Helping companies to identify value-added interdependencies in their data, advising customers on the analysis of data, implementing the solutions found and making them operational in real time	Piloting/market launch. Three products on the market, platform created, four products realised, two in progress, a further four close to contract stage, level of interest at over 90%
EnergyBASE www.enbw.com/energybase	Intelligent combination of a photovoltaic plant, consumers and an electricity storage system to increase own consumption. Cooperation with Deutsche ACCUmotive. Actively being sold under the EnBW brand since October 2015.	Piloting/market launch. Start of process for developing business model for white label & B2B solution together with pilot customer, further development of B2C solution
SM!GHT www.smight.com	Innovative street lights as a visionary concept for an intelligently networked urban infrastructure	Market launch/scaling. Series production underway, already being used by 34 local authorities in Baden-Württemberg (50 SM!GHT Air, 16 SM!GHT Base)
CampusONE www.campus-one.de	Web-based e-training and business solutions for the digitalisation of business processes and for digital learning. Extensive training portfolio for the energy industry and industrial companies	Scaling. €1 million turnover in 2015

Goals, guidelines and the research and development processes

The goal of research and development at EnBW is to develop medium and long-term market opportunities. The task is to identify and evaluate relevant trends and technological developments at an early stage and to develop the required expertise through pilot and demonstration projects. This contributes to improving existing business activities and opening up new opportunities. The projects themselves are implemented in the operational units at EnBW or with customers – directly at the site of their subsequent application – and form a portfolio that is coordinated centrally for all EnBW units.

The research and development activities are integrated into an internal and external network of partners.

The research process at EnBW



Research and development – focal points and selected results

Decentralised power generation and heating

Decentralised generation accounts for the largest proportion of the customer-oriented research projects. EnBW has been successfully established on the market with CHP power plants for many years and aims to offer further tailor-made energy solutions in this area in future. By further developing fuel cells and micro gas turbines, which offer alternatives to the standard diesel or gas motors used in combined heat and power plants, EnBW will expand its range of solutions.

The test phase of a prototype for an especially efficient micro gas turbine was successfully concluded by EnBW with its transferral into regular operation in May 2015. It supplies 17 companies on a local industrial estate with base load heating from the Leonberger combined heat and power plant. As a result of improved heat recovery in particular, it was possible to increase the efficiency of the turbine by around 6% compared to the initial model.

EnBW has installed a total of 155 fuel cell heating devices for customers and partners in Baden-Württemberg – it took stock of its research activities in November 2015 as part of the nationwide Callux practical tests which are being run over many years. EnBW had installed fuel cell heating devices together with a number of different manufacturers across the whole of Germany up to April 2014– from private houses to town halls and libraries through to kindergartens. EnBW already launched its first product on the open market in 2014 on the basis of this experience.

Another focal point was the better utilisation of near-surface geothermal energy for heating. In a two-year pilot scheme called “Flexible Heat Transfer Systems”, it was demonstrated that the intelligent management of geothermal heating using heat pumps could reduce the regional oversupply of wind and photovoltaic energy and reduce grid bottlenecks.

Renewable energies

Alongside near-surface geothermal heating, the focus was placed on generating electricity and heat from deeper geothermal energy. In the Soultz-sous-Forêts geothermal power plant, the partners Electricité de Strasbourg and EnBW upgraded important parts of the overground demonstration plant in 2015 with the aim of restarting operation with greater efficiency in 2016. In the past three years, the plant technology at the Bruchsal geothermal power plant was fundamentally optimised – also with the help of an accompanying research project. The return line will be replaced in 2016 following corrosion problems. The pilot plant should subsequently supply additional heat for a public facility in the vicinity.

Biogas is set to make a greater contribution to the local self-supply of energy in the future. The EnBW subsidiary Erdgas Südwest concluded a demonstration project called “biotark privat” with two households in north Baden and upper Swabia in September 2015. The electricity and heating requirements were cleverly covered by the use of a photovoltaic plant, a micro combined heat and power plant and a heat storage system – all controlled via a central control station in the home.

Storage systems for the smart energy world

We are investigating in a variety of different research projects how photovoltaic electricity can be utilised to a greater degree than ever before to meet local energy demands. In this context, EnBW is testing a holistic energy management system with a major discount store that utilises, in particular, an electricity storage system.

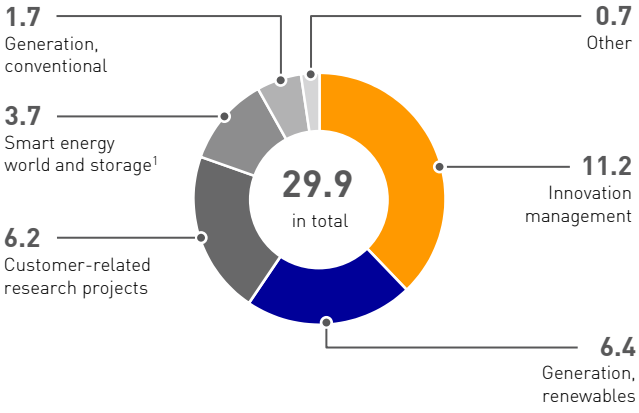
In cooperation with a project developer, EnBW is using a large 30 MW battery to analyse the possibilities for energy companies to open up new business opportunities in the area of large battery storage systems connected to the electricity grid.

In an ongoing research project at the Hydrogen Filling Station in Stuttgart, the facilities were converted in 2014 for the buses operated by Stuttgarter Straßenbahnen AG. The hydrogen is generated on-site by the filling station's own electrolysers powered by green electricity. EnBW is investigating new business models involving hydrogen on the basis of the findings from the research project.

Expenditure and personnel

Expenditure on innovation, research and development

in € million



[1] Includes e.g. e-mobility and hydrogen.

The EnBW Group invested €29.9 million (previous year: €27.9 million) in the 2015 financial year in innovation, research and development. EnBW received government research grants of €3.6 million (previous year: €3.1 million).

A total of 38 staff were employed in the areas of innovation, research and development in 2015– which was unchanged compared to the previous year. A further 46 employees were involved in innovation projects. In addition, 109 employees (previous year: 131 employees) were involved in research and development projects as part of their operational work.