



## German Federal Environmental Foundation

We promote innovative, model projects to protect the environment.

150 employees

Sector: Private law foundation

## ORGANIZATION DESCRIPTION

The Deutsche Bundesstiftung Umwelt (DBU) is a foundation under private law. The foundation's capital currently amounts to €2.48 billion. It is one of the largest foundations in Europe.

In line with the foundation's mission and mission statement, the DBU promotes innovative, exemplary and solution-orientated projects to protect the environment, with a particular focus on small and medium-sized enterprises. Special attention is paid to the promotion of small and medium-sized enterprises - according to the German Association of Small and Medium-Sized Enterprises, these include 3.5 million or 99.5 % of all companies in Germany.

## ORGANIZATIONAL VISION

Projects supported by the DBU are intended to achieve sustainable effects in practice, provide impetus and have a multiplier effect. It is the DBU's aim to contribute to solving current environmental problems that result in particular from unsustainable economic practices and lifestyles in our society. The DBU sees the main challenges as being climate change, the loss of biodiversity, the unsustainable use of resources and harmful emissions.

A total of around 11,100 projects have been funded with over 2 billion euros since 1991.

The focus of the foundation's work is in Germany. The DBU also supports international projects to a limited extent. The regional focus is on Central and Eastern Europe.

This is complemented by a Green Start-up Programme, a doctoral scholarship programme and a fellowship for academics from Central and Eastern Europe.

In this way, the funding topics are linked both to current scientific findings on planetary boundaries and to the Sustainable Development Goals adopted by the United Nations.

# PROBLEM STATEMENT

## Description of the problem and formulation of the question

### The stable power supply of the future

We are in the midst of the energy transition: the previous demand-driven and centralised feed-in of electricity into the grid is being decentralised and possibly replaced altogether by the growing supply of energy from many small producers. At the same time, an increasing demand for electricity is forecast for the future.

Our electricity grid is not actually designed for either.

Efforts must therefore now be made to ensure the resilience of the electricity grid and thus a stable power supply for consumers. Fluctuations in electricity demand throughout the day and year as well as the irregular and decentralised feed-in of renewable energies must be taken into account. In order to be able to regulate the grid without major redispatch interventions\*, flexible load control is one of the measures with a favourable cost-benefit ratio. In principle, this can be carried out by the grid operator, by the consumer or by an intelligent combination of both.

### Examples

More and more companies are turning to innovative business models to make their energy consumption more flexible. In industry in particular, the use and storage of surplus electricity from renewable sources as process heat can both reduce costs and help stabilise the electricity grid. Load management allows energy consumption to be adapted to the grid situation, which enables additional cost savings and at the same time reduces the need for expensive grid expansion projects. In addition, modern technologies such as grid-forming inverters support grid stability and facilitate the integration of renewable energies.

### Question: Network-friendly innovations

Which grid-friendly innovations could contribute to the resilience of the electricity grid in the future?

Taken into account:

- How can load flexibilisation be promoted in order to stabilise the electricity grid without redispatch measures?
- What strategic planning makes sense for grid expansion in order to optimise the positioning of large consumers (e.g. fast charging stations for electric cars) and large electricity generators?



## JOKER QUESTION

What will a reliable power supply based solely on renewable energies look like in 10 years' time?

\*Meaning of redispatch: <https://www.bmwk-energie.wende.de/EWD/Redaktion/Newsletter/2015/06/Meldung/direkt-erklart-redispatch.html>

# OTHER

For example, existing guidelines, previous efforts, and strategies for responsible AI, digital ethics, or digital responsibility.

<https://www.dbu.de/themen/foerderinitiativen/speicher-und-netze/>

[https://www.dbu.de/app/uploads/dbu\\_media-Foerderinitiative-Netze-Speicher-Ausschreibungstext-\\_Netzdienliche-Innovationen\\_.pdf](https://www.dbu.de/app/uploads/dbu_media-Foerderinitiative-Netze-Speicher-Ausschreibungstext-_Netzdienliche-Innovationen_.pdf)

The following DBU-funded projects can already be seen in the context of the call for proposals:

<https://www.dbu.de/projektbeispiele/ki-basierte-software-loesungen-fuer-stromverteilnetze/>

<https://www.dbu.de/projektdatenbank/35507-73/>

<https://www.dbu.de/projektdatenbank/39527-01/>

<https://www.dbu.de/projektdatenbank/35507-44/>

In our current "Storage and grids" funding initiative, we are looking for innovative, technological solutions to shift energy on two time scales:

- On the one hand, surplus energy from the summer should be able to be used in the winter by means of "decentralised, seasonal storage".
- On the other hand, innovations that support the grid are intended to ensure a balance between electricity consumption and supply, even when using decentralised and renewable electricity sources.

As part of our funding programme, we support ideas and projects from small and medium-sized enterprises, network operators, research institutions and the like with a focus on the development of commercial products and digital solutions/business models.

As part of the Digital Future Challenge, we are also looking for future scenarios in the area of "Grid-serving innovations" that enable a fair and responsible distribution of energy, as well as technical and digital ideas and solutions that can already be used today and contribute to stabilising the electricity grid.