

# 1. Involving citizens in renewable energy projects

Community energy projects in Europe generally refer to projects where citizens own or participate in the generation of sustainable energy<sup>1</sup>. This is in Europe usually achieved if citizens (private households, communities etc.) form a legal structure to collectively finance and establish renewable energy projects. Renewable electricity generated by such projects is then collectively sold, e.g. to local energy utilities, and profits are split among participating citizens. Citizens that form a community to invest in renewable energy projects may live in close neighbourhood or grow out of people having the same interest but living geographically distant from each other<sup>2</sup>.

Community energy projects include two approaches: the bottom-up approach and the top-down approach. While citizens establish and own renewable energy projects in the former case, citizens are only partly involved in the latter case. Participation is realized through buying shares of renewable energy projects, which are already established by other actors such as energy utilities<sup>3</sup>. The top-down approach allows renewable energy projects to be co-owned by citizens, thus facilitating also large-scale projects.

Due to community-owned (or co-owned) energy projects, citizens are actively involved in renewable energy generation. Consequently, public acceptance of renewable energy production has increased significantly<sup>3</sup>. Community-owned renewable energy projects are not only beneficial for the achievement of a transition to low carbon energy but provide also other co-benefits. For instance, these projects allow participants to harness local natural resources, to build social capital, to counteract fuel poverty as well as to increase employment opportunities at the regional level. All of these effects assist in increasing public awareness of and decreasing local opposition to renewable energy projects<sup>1</sup>. See also Knowledge Package "[Social Acceptance of Renewable Energy](#)" for further related information.

## 2. Status Quo in Member States of the EU

Community energy projects have become common practice in the European Union over the past years. By now such projects represent already an indispensable element in the achievement of the low carbon energy transition<sup>1</sup>. As a result, Europe has become worldwide pioneer in developing community energy projects<sup>2</sup>.

Some European countries (e.g. especially Denmark) have recognized the benefits of community energy projects at an early stage, and by now several EU Member States provide good practice examples for such projects<sup>1</sup>. Based on differences in legal, social, cultural and political contexts as well as in energy market designs of EU Member States, a variety of community energy projects across Europe has emerged<sup>2</sup>. The existing national legislation in different Member State is not always triggering the development of community energy projects and may in some cases even hinder its establishment<sup>1</sup>. As a result, some Member States, such as Denmark and Germany, are pioneers and demonstrate best practice examples in community energy generation, while others still need to push community energy generation in future<sup>1,2</sup>. In Europe, wind and solar plants are the most commonly used technologies for establishing community-owned renewable energy projects<sup>2</sup>. For a closer description of renewable energy support schemes in EU Member States, see Knowledge Package "[Renewable Energy Support Policies in Europe](#)".

In the following, the article presents two countries to give insights in best practice examples of community energy generation conducted in Europe. Denmark focuses on wind power plants, while Germany also invests in solar projects.

## 3. Good practice examples for community energy generation in Europe: Denmark and Germany

### 3.1 Denmark

Since the 1970's communities in Denmark have collectively invested in wind parks. As a result, by 2013, 70-80% of existing wind turbines are owned by communities and also the rate of RES generation owned by communities has become one of the highest globally<sup>1</sup>.

In Denmark, the federal government is responsible for most energy issues<sup>1</sup>. Although the support has been declining in the last years, the Danish government has promoted the development of community-owned energy projects, and wind power plants in particular. An important policy for promoting community-owned energy projects refers to a grid connection arrangement. This arrangement defines that turbine owners have to pay only for the connection to the closest technically feasible point of the grid<sup>2</sup>. Energy utilities are thus required to pay any necessary expansion of the grid and not the owners of the turbine. Also since 2009, the Danish Renewable Energy Act requires all new wind projects to be owned by at least 20% by local people. In Denmark community energy generation will therefore occur predominantly in partnership with energy utilities (co-owned community energy projects) rather than in fully private owned projects<sup>2</sup>.

The Middelgrundens Wind Farm in Denmark is one good practice example for a large-scale community co-owned energy project. It has been developed in 2000 just 3.5 km outside the harbour of Copenhagen. 50% of the Middelgrundens Wind Farm (20 turbines, 2 MW each) is owned by the local utility hold by the City of Copenhagen, and the other 50% is hold by members of the Middelgrundens Vindmollelaug I/S. The Middelgrundens Vindmollelaug I/S is a general partnership guild of citizens, of which each member holds a different share. At the beginning of the project, only municipal residents of Copenhagen could be a member of the partnership, but now it is open for anyone to participate. Private individuals are attracted to invest in the Middelgrundens Wind Farm by a low personal risk since the partnership cannot incur debt. Moreover, each member has one vote in important decisions regardless the amount of shares owned<sup>1</sup>.

A wind park in Hvide Sande is another best practice example in Denmark. There, the community energy generation benefits not only individuals holding shares, but the community in total. Benefits of the project arise through tourism, harbour (rentals), and by time the project is paid off also through local development. Within the small Danish fishing village Hvide Sande, three offshore wind turbines have been established in 2010 under the direction of several local unions, industries and utilities founding a local community foundation. The high common interest in the community allowed realizing the project although offshore windfarms usually underlie strict planning restriction. An earlier attempt of private investors only failed to approve the project. 80% of the wind farm is hold by the community foundation, the remaining 20% by the general partnership Hvide Sande Nordhavn Mollelaug I/S<sup>1</sup>.

### 3.2 Germany

In contrast to Denmark, Germany is not only holding numerous community-owned wind projects, but has also several community-owned solar projects<sup>2</sup>. The array of solar projects owned by individual citizens helped decreasing prices in past years and thus in turn increasing the attractiveness of these projects. By 2014, 50% of renewable generation in Germany are community owned. Germany is therefore one of the leading European countries in establishing community energy projects<sup>1</sup>.

In Germany, energy related policies are mostly in the competence of the federal government. Since the early 90's several federal policies supported (community-owned) renewable energy generation. Among such policies are for example the installation of priority grid connections for renewable energy, lucrative renewable support schemes, an obligation for grid operators to purchase power from renewable energy generators and the adaptation of the grid extension to renewable energy generators needs<sup>2</sup>.

The Windpark Druiberg in Dardesheim, Germany, is one outstanding example for community energy projects. Outside the small rural village, 31 wind turbines (66 MW) have been installed

since the early 90's. Ownership of wind park shares is limited to local residents only and by 2014 about 90% of Dardesheim residents are involved in the project. Co-benefits of the project include boosting the regional economy and generating local energy self-sufficiency. As already intended at the beginning of the project, the profit has also been used for further expansion of renewable energy in the region as well as for supporting the development of local infrastructure and other regional projects. Overall financing has been based on capital investment of shareholders as well as on co-funding through commercial credit<sup>1</sup>.

A good practice with regard to community-owned solar projects has been accomplished in the City of Freiburg, Germany. The City of Freiburg strongly supports the installation of solar Photovoltaics (PV) and thermal installations on public buildings (especially schools). Through transparent administrative procedures, citizens shall be motivated to invest in such projects. With the development of an online tool called "FREE-SUN", citizens are able to easily identify roof spaces available for solar PV and thermal installations. This facilitates the planning process of community based PV projects for citizens. Via "FREE-SUN" citizens can access information on the suitability of certain building structures for PV and thermal installations and on how projects could be realised<sup>1</sup>.

#### Sources

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