

Renewable Energy Policy

100% Renewable Energy in Urban Areas – Frankfurt, Germany

In addition to being a global financial centre, for several decades Frankfurt has positioned itself as a leader in sustainability and climate protection. In 1985, it founded one of the first municipal energy and climate protection agencies, which has worked extensively on promoting energy efficiency in local buildings and the adoption of combined heat and power systems. Frankfurt's 100% renewable energy target is closely connected to its climate strategy; they feature mutually reinforcing components and policy objectives. Further, the national policy framework – mainly the feed-in tariff policy - triggered and supported action on the regional and local level.

Due to the fact that Frankfurt is a relatively dense urban area, city representatives and local experts determined that in order to supply 100% of its energy needs from renewable energy sources, Frankfurt would need to rely on neighbouring communities and the surrounding rural area in order to reach its target. Currently, the Master Plan envisions that approximately 25% of the target will be met with supply from within the City, 25% from outside the City, and total energy consumption will be decreased by 50%, thereby making it possible to supply 100% of the City's total energy needs from renewable energy sources.

There are a few key elements to Frankfurt's 100% strategy:

- Increasing energy efficiency by 50%
- Expanding combined heat and power (CHP)
- Increasing the role of solar (both thermal and PV), wind, and the use of local organic wastes for both heating and power generation

In addition, there are a number of pilots underway, including the initiative to develop a Virtual Power Plant (VPP), which would be designed to integrate several small generators into an interconnected network capable of adjusting to fluctuations in RE output. A core element of Frankfurt's approach is that it is approaching the 100% strategy in both a top-down as well as a bottom-up way, involving local citizens and businesses in achieving its objectives while establishing a clear vision in its city-wide Master Plan.

As an indicator of its success, since 1990 when Frankfurt began to implement its climate and energy strategy, it has saved an estimated EUR 100 Million in energy costs, a number that is projected to continue increasing as energy efficiency and conservation efforts continue. Among the main beneficiaries of this are local residents and businesses, who now pay lower energy costs. Hereby, Frankfurt demonstrates that an ambitious energy and climate strategy can provide significant cost savings to both governments and local residents. The fact that the local government can already point to specific cost savings has been a powerful factor in maintaining momentum, and sustaining public and administrative support for the strategy.

For more information on Frankfurt's 100% RE policy framework, click [here](#) and [here](#).

100% renewable energy on national level - Denmark

Denmark's energy and climate policy framework includes an ambitious target of meeting 100% of electricity and heating needs with renewable energy sources by 2035 and it aims to phase out fossil fuel use *entirely* in all energy sectors (including transportation) by 2050. The key policy element that enables the success is indeed the integration of the different sectors. By increasing the interconnection between the electricity, the heating/cooling, as well as the transport sectors, renewable electricity is channeled to a wider range of dispatchable end-uses such as in thermal systems, alternative forms of storage, or in electric vehicles. Besides being highly efficient, this approach has added the benefit of being easily turned on and off, which gives it the flexibility needed to work well with an all RE system. Further, district heating infrastructure provides a form of decentralised storage for excess renewable power.

An important factor underpinning Denmark's 100% strategy is the high level of energy and environmental awareness among both its citizens and its politicians. This awareness has been cultivated over several decades since the 1973 oil crisis (and indeed before), helping create and maintain public support for a comprehensive energy strategy based on fully harnessing domestically available renewable energy resources. Denmark also benefits from a relatively small population, a highly educated workforce, and a number of world-class companies and research institutes to support the implementation of its strategy.

Denmark expects that the strategy will save them money over business as usual. Estimates included in the country's future energy plan indicate planned investments of approximately EUR 750 Million (5.6 Billion Danish Krone) by 2020, with expected savings in energy costs of over EUR 920 Million (6.9 Danish Krone) over the same period, making the launch of the strategy a direct saving for the government, businesses, as well as local residents.

In addition to a feed-in tariff and a net metering framework, many of the policy measures rely heavily on fiscal policy, including the use of what are sometimes called 'green taxes' or environmental taxes. For instance, Denmark levies a number of taxes on fossil fuels and has special taxes on environmental externalities such as carbon pollution, which increase the costs of gasoline, diesel, coal, as well as heating oil. Collectively, these taxes serve to make it more attractive to use local, renewable sources of energy instead of continuing to rely on fossil energies. Denmark also offers special tax incentives and in some cases even cash grants to encourage specific technologies, such as electric vehicles. This combined use of regulatory instruments, fiscal instruments, and an overarching national energy strategy represents the core of Denmark's 100% plan. For both its coherence, comprehensiveness and its clarity of purpose, it provides a valuable example for other countries seeking to re-orient their economies toward a more sustainable, renewably powered future.

For more information on Denmark's 100% RE policy framework, click [here](#) or [watch a video](#) on YouTube.

100% Renewable Energy in the Global South – Cape Verde

First political consideration regarding renewable energies in Cape Verde were made in 2006 when the Government adopted a law which sets out licensing procedures for independent power producers and auto-producers. In 2011, Cape Verde determined its renewable energy policy framework in greater detail including a roadmap how to reach 100% renewable energy by 2020. A scientific based discussion on the benefits had preceded this political decision. As Cape Verde by today is dependent on the import of fossil fuels to meet its energy demand high economic benefits derive from a shift to 100% renewable energy – especially as energy demand is predicted to rise in the next years. Besides the huge cost savings, Cape Verde has been converted in a model for zero emissions on a global scale and a knowledge hub for several sub-regions.

Like many other countries around the world, Cape Verde faced a significant lack of a local trained workforce to assist with construction and development of key projects. Partly in response to these initial challenges, certain firms in the country have undertaken a number of training related initiatives in partnership with private sector partners and related research institutes to build the local capacity and train local residents to manage and operate wind parks sustainably in the long-term.

Over the course of the various legislative developments, the Government of Cape Verde worked closely with a range of consulting firms and international research institutes to refine the strategy, and identify future opportunities. The projects are project financed on a 70-30 debt-equity structure. After the 15-year contract period, projects will receive a lower tariff of between 20-30% less than the original tariff value. The contract also includes a 5-year renewable service agreement contract to ensure that maintenance is completed. The Public-Private Partnership (PPP) structure, by bringing together a strong set of local and international partners, was found to be an important component in obtaining the financing for the project.

Significantly, one of the key components for successfully attracting capital to the project was the establishment of a dedicated escrow account. This account ensures that the payments are made on time, and that the funds are clearly allocated, and transparently managed. Additional components that have supported the success of Cape Verde's strategy is that it offers a complete tax exemption for the first five years of each RE project's operational life, with 50% reduction offered for the following five years. The fiscal framework in Cape Verde also involves waiving export duties on certain RE products and components, and some of the projects have also benefited from concessional financing from the Portuguese Government.

Another important dimension of the success of this policy implementation is that public consultations were held in each of the four islands where wind projects were built and comprehensive Environmental and Social Impact Assessments (ESIAs) were conducted. This included a process to engage local landowners in particular in the siting of the projects, and in the designation of the REDZ. This makes Cape Verde a leader not only in terms of its targets and the detail of its overall strategy, but also in its environmental stewardship and citizen engagement efforts. For more information on Cape Verde's 100% RE policy framework, click [here](#) or [here](#).