3sCE417P3

Introduction of Regional Energy Concepts

“How to” templates and guides

publicity

- ❑ **public**
- ❑ **internet**
- ❑ **print**
- ❑ **non public**

29th of September 2014, EEE Ltd.

This project is implemented through the
CENTRAL EUROPE Programme co-financed by the ERDF

1. Introduction

The commitment of Austria regarding the Europe 2020 targets is a reduction of greenhouse gases by 16% in relation to the emissions of 2005, a reduction of primary energy use by 20%, based on the same reference year and a share of 34% of renewable energy regarding the gross energy consumption.

Südburgenland is one of the 3 regions of Burgenland on NUTS III level. The relevant document regarding the Europe 2020 targets is the "Energiestrategie Burgenland 2020", which is elaborated for the whole Burgenland. This means, that not all requirements of the Europe 2020 targets can be applied to each NUTS III level region, but have to be seen in the context of all regions of Burgenland together and, beyond that, on the national level. For example, the potential for efficiency and reduction of greenhouse gases in the transport sector is much bigger in the north of Burgenland, where, due to the closeness to Vienna, a very good infrastructure for public transport is given, which is not the case in the south. On the other hand, there is a very big potential of ligneous and herbal biomass for energy use in the south, which cannot be found in the north. Thus, even if measures because of differing strengths and weaknesses of neighbouring regions, in the whole context they can reach the targets together, without the need to fulfil them perfectly in each individual region.

2. Methodology

The first step of the energy concept is the assessment and evaluation of the current structure of energy demand and energy supply in the region. The template is containing:

- assessment of the recent energy demand of the concept region (from the total energy consumption and the final direct consumption),

- assessment of the structural distribution of the direct energy demand by main energy consuming sectors, and finally

- assessment of the structural distribution of the different energy sources – also including renewable energy sources - used to satisfy the direct final energy demands.

- assessment of the potential conditions (theoretical, convertible, sustainable and realisable potentials) of the different local energy sources that is potential energy supply that may serve the energy demand of the concept region and beyond.

The second step, then, is the elaboration of the regional energy balance.
After the regional energy balance (local deficit or surplus complemented with trade) has been derived from the energy demands and the energy source conditions in the regional energy economy the introduction of the different types of energy supply systems may follow that describes one after another mainly the traditional energy transmission and distribution networks (wires and pipelines), thus the natural gas network, the high pressure pipeline network of crude oil and crude oil derivative products, then the secondary energy networks gained by transformation, thus the electricity network (in order of the hierarchy of the voltage level) and the heat energy (district heating and cooling) supply systems. Besides these the recently developing decentralised electricity network system/smart grid initiatives incorporating mainly various renewable energies are also to be described.

The need of a common European economy – and within this energy cooperation initiated the need of establishing major international energy network systems and the therewith realisable energy trade between countries of better potential conditions (supply) and countries which have to import energy. This is done mainly by the gradual construction of natural gas and electricity transmission systems.

In order to assess recent conditions territorial data are indispensable, which are available at the following institutions and organisations:

- The maintainer of the domestic general territorial database is the Austrian Central Statistical Office (Statistik Austria), which besides the „national" data also holds „country ("Land" = NUTS II) level", and regional (NUTS III) level data. There are also data available on "district level" (administrative unit below NUTS III) and on municipality level. The biggest part of the available data is free, some of them need to be purchased.

- The main national level sectoral economic data are also given by Statistik Austria annually. The statistical surveying, evaluating and defining of the conditions of use of the „energy sector" has been adapted to European requirements from 2005 on.

- The collection of statistics of realised renewable energy utilisations: usually only the results of the surveying work of special organisations (e.g. Austrian Wind Energy Association (IG Windkraft), Austrian Solar Energy Associations (Austria Solar, PV-Austria), Austrian Biogas Association (Arge Kompost & Biogas), Austrian Biomass Association (Österreichischer

Biomasse-Verband), Austrian Small-Hydropower-Association (Kleinwasserkraft Österreich), are utilisable (usually prepared with not uniform methodologies).

- General regional and complex (main and sub-sectoral) territorial data in Austria can be obtained from various national and transnational development plans and the prescribed federal (9 "lands") country planning concepts, which are official in the form of decrees.

- The preparation of Regional Development Plan Programs is the duty of the Land government. The data of these are usually up to date, because the mid- and long-term programs and the project proposals are based upon this. In the concept region, Südburgenland, relevant development plans, as for example the "Landesentwicklungsprogramm" (Land development program) and the Energiestrategie Burgenland 2020 (Energy Strategy Burgenland 2020)

- Valuable and up to date data and network maps can be obtained from the various regional energy distribution companies unless they are classified as commercial secrets. These are the regional electricity and, natural gas supply system (network) owners and local energy suppliers working on a settlement level, e.g. enterprises supplying district heating.

- The basic data and long-term development intentions of production sectors like the different industries and among these the energy production industries: mining and the primary energy transforming plants (power plants, heating plants, oil refineries, etc.) may be requested from the competent Ministries and the Austrian Association Of Electricity Economy (Verband Österreichs Energie) .

- Data on agriculture and forestry can be retrieved from the Central statistical office (Statistik Austria), the statistic offices of the Lands and, in particular, from the Agricultural Chamber, which is publishing an annually "green report" regarding also biomass utilization for energetic purposes on Land level.

- The basic data of commercial, touristic and other communal services sectors is published annually by Statistik Austria and the statistical offices of the Lands. Their energy need can be estimated by appropriate methods.

4.6.1 „How to" templates and guides

- The above outlined data collection may be complemented by information on development and investment intentions and local data gained during thorough local research including consultations with local energy experts and NGOs.

The attached flow chart (see Figure…) depicts the ANALYSIS OF THE CURRENT SITUATION work phase that was necessary for the development of the „REGIONAL ENERGY CONCEPT" of the Austrian concept region in order to achieve the outlined energy objectives.

3. Assessment of the economic – financial incentives environment necessary for the regional energy concept

For the preparation of the optimal regional energy utilisation concept that builds on the regional energy demand and supply conditions and source potentials described in the situation assessment, it is indispensable to know the RES incentive/support system of the country in question and possibly other countries as well so as to propose and apply good practices.

- It is expedient to identify and propose RES supply investments along a systemic economically soundly based approach.

- It is also expedient to identify and assess RES investors along a systemic approach.

- When outlining mid-term RES investment proposals, the RES incentives environment has also to be taken into account.

- The energy concept preparation workflow chart complemented with economic-financial considerations contains the essential contents and relations of the situation assessment, so a regional energy concept can be elaborated. The text blocks in the blue fields are indicating contents of WP3 and WP4 whereas the texts in the green field are belonging to partly to WP4 and WP5.

4. Recommendations

4.6.1 „How to" templates and guides

The presented methodology is useful for assessing and evaluating the basic data for the development of an energy concept. It is leading to a thorough analysis of the current situation regarding energy demand and energy supply as well as transfer potentials, including the essential frame conditions for the development of a customized energy concept. Based upon all the considerations, a general development strategy and a defined development path, including relevant measures and projects, can be defined.
In order to collect the relevant data, the observation of guidelines as elaborated in WP 3 and 4 of the CEP-REC project, as well as the use of the templates is recommended.
A simplified flow chart for the whole development of energy concepts, including also the tasks of WP 5, which must be seen in a strong interaction with WP 3 and WP 4 is given in the image below.

5. The "Ökoenergieland" as an example for a conceptual approach towards energy efficiency and the utilization of RES

The "Ökoenergieland" ("ecoEnergyland") is an association of currently 18 municipalities with the goal to maximize energy efficiency in all sectors and to replace fossil energy carriers in the long run by RES. It was established in …. In the first year of the project, an energy concept, based on an almost similar methodology as used in CEP-REC was developed, containing an anylysis of problem areas in demand and supply. Subsequently to the analyses, a development strategy for the region, as well as an action plan (a number of project proposals),have been elaborated.
The assigned priorities in this action plan are energy efficiency, energy saving measurements thermal insulation etc.), extension of the energy production and supply based on renewable energy sources as well as the establishment of a center of communication for the ecoEnergyland–member municipalities.
Regarding to these priorities the main objectives are development of a reclamation concept in each ecoEnergyland–municipalityity, the increasing energy efficiency in public buildings (e.g. by training courses for facility management), energy efficiency in households (e.g. by info-pages in community papers) and in companies (e.g. by electricity-efficiency-check). In addition the improvement of the availability of feedstock, the creation of regional jobs and the increasing of regional added value, the long-term availability of resources for energy plants, the development of a detailed basis of decision-making for constructor and operator

of energy plants, fast and efficient construction of new energy plants, creation of new financing models (e.g. citizen involvement), creation of a working-group composed of one energy representative of each municipality, the development of infrastructure and a sustainable financement for the model region–manager, forced communication and information–exchange by internet-performance or info-campaign, as well as further development of the ecoEnergy-tourism.
The integration of the resident population should be reached by different infocampaigns, internet-performances("ecoEnergyland–forum"), info-pages in community papers, study visit packages in the context of the ecoenergy tourism, open council, energy round table and events (e.g. Energy day).

From the beginning the task of the model region-manager as a kind of a coordination point of the ecoEnergyland is important for the implementation in all working-steps.
When it comes to energy efficiency as well as energy production new measures should be connected to the already existing infrastructure of the region, for example the replacement of current street lighting by LEDs in each municipality.
The communication strategy is a main part of the implementation concept. It is covered by 5 measures, which are planned in the course of this project: Establishment of energy task forces, special interest workshops, events, internet and print media and through all these activities the sustainable funding of the model region manager. The key person - model region manager - is responsible for the process management of public relation, which guarantees knowledge transfer between research and development, companies, municipalities and resident people.
Internal evaluation and result checking are the main tasks of the energy task force. The quarterly proceedings give the possibility to check the working progress. Based on the defined measures and initiatives first of all the heat supply from renewable energy sources should be increased. Background is the initiative around the regional feedstock associations, where unused and mainly non-identified sources of communities should be activated (e.g. tree-cut, shrub-cut, pruning of vines, timber of waterside and others).
The next step would be the production of electricity from renewable energy sources, respectively photovoltaic and biomass. The main cornerstones are to form photovoltaic systems in each community (also based on citizen participation) which is currently put into effect.
The field of mobility is the third phase, which was a problem in rural areas so far. Particularly with the implementation of waste gasifiers, biogas plants and different methanisation

processing plants the part of renewable fuels should be increased during the next years. The methanation unit for the conversion of wood gas to natural gas quality is already existing. Detailed information about measures and projects already put into effect until 2012 can be found in the report on WP 4.2.