

Agency for Energy Efficiency – International Experiences

3 different approaches to a common goal

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Abstract—This paper wants to present the experiences and responses several countries have given to the topic of establishing, organizing and running an Agency for Energy Efficiency (AEE). The essential problem is what conclusions can countries who want to establish such an institution draw from the experiences of others and possibly avoid some mistakes others have made. The study will be a comparative study of what countries like Germany, Bulgaria and Serbia have done to give a holistic response to the question of establishing and organizing and AEE. As some time has passed since the establishment of the first AEE the idea of the author was to have a look where we are now and what conclusions are valid. The differences in tasks, organizational structures and approaches to the topic of increasing energy efficiency will be subject of scrutiny. The result will show how different the national approach can be to the same problem.

Keywords—agency for energy efficiency (AEE); energy efficiency (EE); multifunctional expert platform on energy matters; renewable energy sources (RES).

I. INTRODUCTION

Energy efficiency (EE) is the goal of efforts to reduce the amount of energy required to provide products and services. Energy efficiency has proved to be a cost-effective strategy for building economies without necessarily growing energy consumption.

Agencies for Energy efficiencies (AEE) are generally a modern institutional response to the need for energy efficiency. The field of energy efficiency itself is very wide spread going from climate related aspects to energy specific matters (e.g. power grid, energy transport problems, power consumption studies).

As we are looking at a very large field of research and are witnessing efforts by governments and industry to find a holistic approach to the problems the common response was and still is to establish a national institution or agency in each country to tackle the problem.

Although these Agencies for Energy Efficiencies (AEE) are present on this field for more than 30 years there still is need for improvement and different countries have in this respect found different responses, therefore we can conclude that looking comparatively to different ways to establish an AEE is still very relevant as they are countries who still have to give their response to this call.

So here we can conclude that there is still a lot of ongoing research into what response AEE can and should give in the future.

The objective of this study is to look at what responses have been given by Germany, Bulgaria and Serbia to this topic, how they have organised and position their AEE and how countries who would like to follow this example could go about establishing their own AEE.

The 3 countries have been chosen carefully; Germany is a strong economic and Energy player in Europe, whilst Bulgaria is a newer EU member with a totally different evolution concerning Energy Efficiency.

Serbia on the other hand, is not a EU member, but has through efficient cooperation with European institutions successfully implemented many EE measure in a short time this was the reason to include it into the analysis.

Of course many other countries have similar institutions, examples from Switzerland, UK, Austria, Croatia, Slovenia and FYROM have been studied by the author before but because of limitations of size have been left out for the purpose of this paper.

The structure of the paper is that after an introductions showing background and objective of the study the analysis aims to define the most important terms and concepts of the study which in its nature is a comparative study. We would then describe our first approach to the topic and suggestions of an alternative approach would then follow.

A comprehensive comparison and discussion section will follow including the legislative basis of for the different AEE with a description of their visions and outlook as well as their tasks and organisational structures.

The analysis section will then be followed by a separate conclusions and recommendations section summing up the relevant findings.

II. ANALYSIS

To define the most important terms first, it is important to see the picture in terms of **Energy Efficiency (EE)** internationally and on a European level first:

Energy efficiency (EE) offers a powerful and cost-effective tool for achieving a sustainable energy future. Improvements in

energy efficiency can reduce the need for investment in energy infrastructure, cut fuel costs, increase competitiveness and improve consumer welfare. Environmental benefits can also be achieved by the reduction of greenhouse gases emissions and local air pollution. Energy security can also profit from improved energy efficiency by decreasing the reliance on imported fossil fuels. For these reasons, energy efficiency was one of six broad focus areas of the International Energy Agency (IEA) IEA's G8 Gleneagles Programme. The IEA has published 25 policy recommendations for promoting energy efficiency that were updated and endorsed by IEA ministers in 2011. If implemented globally it is estimated that global CO2 emissions could be reduced by 7.6 gigatonnes by 2030.

The IEA promotes energy efficiency policy and technology in buildings, appliances, transport and industry, as well as end-use applications such as lighting. Our analysis identifies best-practice, highlighting the possibilities for energy efficiency improvements and policy approaches to realise the full potential of energy efficiency for our Member countries.

Reducing energy consumption and eliminating energy wastage are among the main goals of the European Union (EU) and other European countries likewise. EU and national and international support for improving energy efficiency will prove decisive for competitiveness, security of supply and for meeting the commitments on climate change made under the Kyoto Protocol. There is significant potential for reducing consumption, especially in energy-intensive sectors such as buildings, manufacturing, energy conversion and transport. At the end of 2006, the EU pledged to cut its annual consumption of primary energy by 20% by 2020. To achieve this goal, it is working to mobilize public opinion, decision-makers and market operators and to set minimum energy efficiency standards and rules on labelling for products, services and infrastructure.

Agencies for Energy Efficiency (AEE) are the prime agents of the implementation of EE improvements, regulations and support in Europe and internationally.

A. Comparative Examples

To further elaborate the nature of AEEs we would like to present three relevant examples of AEE of Germany, Bulgaria and Serbia who can serve as a practical example of institutionalizing of EE measure and support for them, first giving a short description of these organizations analysing :

- aims, missions,
- organisational aspects, targets,
- modus operandi,
- fields of activity,
- legal basis

B. The German Energy Agency (Dena)

The Deutsche Energie-Agentur GmbH (dena) – the German Energy Agency – is the centre of expertise for energy efficiency, and renewable energies and intelligent energy systems.

Its many objectives include the rational, efficient and thus environmentally friendly production, conversion and use of energy, and the development of sustainable energy systems with a greater emphasis on energy efficiency and renewable energy sources.

Dena's mission is to generate economic growth and maintain prosperity with ever lower energy inputs. If this is to be achieved, energy must be generated and used in both a national and international context as efficiently, safely and economically as possible with the least possible impact on climate.

Dena is developing energy efficiency and renewable energy markets in cooperation with stakeholders from the worlds of politics and business and from society at large. Dena is working not only on consumption-side issues such as buildings, power and mobility, but also on issues of generation, networking and storage. Dena encourages copybook projects, identifies and rewards pioneering work, advises politicians, manufacturers and service providers, cultivates opinion leaders, informs consumers, builds networks, evaluates technologies, analyses foreign markets and models future scenarios. Dena primarily relies on market mechanisms and innovative energy services, backed up by appropriate regulatory policies and promotion programmes.

To this end Dena initiates, coordinates and implements innovative projects and campaigns at a national and international level. It provides information to end consumers, works with all social groups active in politics and the economy and develops strategies for future energy generation, storage and supply. Its shareholders are the Federal Republic of Germany, KfW Bankengruppe (KfW banking group), Allianz SE, Deutsche Bank AG and DZ BANK AG.

As a German limited company, Dena's work is performance-oriented and cost-effective. It finances its projects with the help of a large number of partners from the public and private sectors.

Dena is a performance and profit oriented company and was established with a mission to operate at the interface between politics and business. Consequently it finances its projects with the help of a large number of partners from the public and private sectors.

In 2010 total revenue was 20.6 million Euros. Between 2005 and 2010, 50 per cent of average revenue came from public grants and 50 per cent from cooperation with private partners. In 2010 Dena collaborated with over 800 private partners, particularly with energy supply companies, mechanical and plant engineering firms and the renewable energy sector.

Due to the huge potential energy efficiencies involved, Russia is one of Dena's key cooperation partners. This is why Dena holds a 40 percent stake in the Russian-German Energy Agency (Rudea) which was established in July 2009.

Dena's aims:

- Improvement in the rational use of energy
- Development of renewable energy sources

- Increase in innovative technologies for the rational conversion of energy
- Creation of energy efficiency markets
- Optimisation of energy systems
- Supporting the Energy Revolution as a strategic and market-oriented conversion partner

Dena's customers:

- Specialists (e.g. commerce, industry and trade)
- Politicians
- The end consumer

Dena's fields of activity:

Campaigns & Initiatives which both inform and stimulate thought, and provide concrete examples of how to live and work in an energy-conscious fashion, e.g. the Initiative Energie Effizienz.

Research & Strategies for a sustainable energy economy using energy efficiency, renewable energy sources and innovative, fossil-based power plant technologies.

Pilot Projects & Publications which make the principle of efficiency easy to understand and emulate in a wide range of areas.

Consulting & Contracting which aims to stimulate cooperation between the various social powers and groups.

Labelling & Certification to help the consumer choose suitable products and to improve quality consciousness in the manufacturer, retailer and customer.

Events & Networking which communicate the principle of energy efficiency at a national and international level.

C. Energy Efficiency Agency – Bulgaria

Background and Status:

The Energy Efficiency Agency (EEA) is an executive Agency of the Minister of Economy and Energy, according to the enforced in March 2004 Energy Efficiency Act (EEAct). The basic EEA activities cover the implementation of broad spectrum of energy efficiency (EE) and renewable energy sources (RES) programs, projects and measures in all public sectors. The Agency develops and implements the EE and RES programs and projects, creates and supports the respective national informational data base, renders institutional and expert assistance and support to ministers and heads of administrations and governments at central and local level, as well as to all institutions and organizations (NGOs inclusive) regarding the efficient and renewable energy usage and the environment preservation. According to EEAct, the EEA has important responsibilities on training and information for separate experts and target groups, as well as for the large public on different energy effective and renewable technologies, energy audits and investigations and EE and RES international programs and projects.

Expertise:

EEA has a permanent staff of 70 persons who are working in three specialized directorates:

1. Projects, programs and international cooperation
2. Information and Control functions
3. Legal and administration

There are 13 regional units all over the country, located in important economic centers.

The activities of Agency are large scale ones, giving possibilities to cooperate with the sector ministries and regional authorities, branch chambers and industrial enterprises, municipalities, NGOs, etc.

The EEA:

- Elaborates and applies the legislation in the EE field;
- Elaborates, coordinates, controls and submits for approval to the Minister of Economy and Energy the National long-term, short-term and target EE programs;
- Manages the implementation of EE projects and measures according to these programs;
- Prepares annual analysis of the results of the implemented EE programs;
- Executes control of the development of EE in accordance with the lists of facilities to be rendered compliant with the EE requirements;
- Establishes and maintains an Informational System for the current situation of EE, including keeping of two Registers of building certification and audits of industrial facilities.
- Organizes the timely information of the public about the results of the implemented EE measures in different agricultural sectors;
- Takes part in the implementation of international programs and projects;
- Takes part in the process of preparation and accession of Bulgaria to the European Union related to the development of the energy sector and the environment.

Services:

- Drafting Energy legislation and Strategic National, Regional and Sector planning • EE Programs structural and organizational design and management
- EE Control on mandatory measures for EE
- Education, Accreditation and Registration on Energy investigation & Certification Expertise
- Interaction with different National and international authorities, professional, educational and financial organizations & institutions, programs and NGOs

- Informational and Mass media Public activities

Customers / Clients:

Principal and frequently contacted Customers / Clients of the EEA include:

- Central, Regional and local authorities
- Energy utilities and supply companies
- Energy Agencies and Companies
- Professional, research and educational institutions
- Different Mass media Management and representations

Skills – Strategic Studies

The EEA Skills on elaboration of EE Strategies and Strategic Policy Analysis Studies are based on its activities on Energy Indicators determination and application in the framework of the respective EU Project activities. These elaborations are partly used incorporated in the current modifications of the specialized National EE and RES general and secondary legislation.

Skills – Technical Assessment and Program Management

The EEA initiated, elaborated, co-elaborated and/or managed a number of National and regional EE related Programs, namely in the Building and Transport Sector, Industry, SMEs, RES and others. This activity is permanent for the EEA, especially concerning all Regional Short-term and Target EE Programs.

Skills – Technology Transfer and Dissemination

The EEA is involved in Technology transfer and Dissemination as far as its bilateral and/or multilateral Agreement and Project activities include such components. Great deal of its Informational and Public awareness activities directly or indirectly provoke EE and RES respective Technology Transfer and Dissemination. Moreover, the EEA is the authorized National coordinator of the EC's European Campaign to raise awareness and change the landscape of Energy, named "Sustainable Energy Europe 2005-2008", also actively participate in the EU Municipal "Display" campaign – individually and via the "Eco-Energy" Municipal networking activities.

D. Energy Efficiency Agency – Serbia (SEEA)

Energy Efficiency Agency of the Republic of Serbia (SEEA) was formed by new Energy Law put in force on 1 August 2004 and the new one in 2011. Energy Law defines the establishment (Article 146), duties (Article 147) and beginning date of the regular operation of the Agency (Article 167).

Energy Efficiency Agency is formed as special republic organization meaning separate legal entity. The Agency is registered in the Trade Court in Belgrade on 4 October 2004. The Agency started regular operation by the same day.

The managing of the agency is carried out by director who is appointed by the Government of the Republic of Serbia. The Agency responds for the operation to the Government of the Republic of Serbia. The Agency submits annual programme

and report on the operation to the Government of the Republic of Serbia.

The operation of the Agency is financed through the budget of the Republic of Serbia. The Agency is direct user of the republic's budget. Serbian Energy Efficiency operation is co-founded by the European Union through the European Agency for Reconstruction.

The Energy Efficiency Agency of the Republic of Serbia is permanently interfering with other subjects in the society and the State to rationally use energy, i.e. carry out activities from their jurisdiction in order to secure energy efficiency of Serbian industry and the conversion of energy that would affect the growth of the gross domestic product. They conduct their mission through information dissemination, promotion and education, realization of demonstrational projects, creation of sustainability studies, recommendation and preparation of legislation and supporting measures and implementation of other activities.

Their mission is to cooperate with the public, business and civil sector with the goal to support and promote the improvement of energy efficiency and the wider use of renewable energy sources. As the advisory body, they support and improve energy efficiency in Serbia. This primarily refers to all aspects of sustainable development that result from the rational treatment of energy end energy resources.

The mission is achieved through information dissemination and education, as well as the realization of projects within the overall energy policy that is defined by the Ministry in charge of regulating the field of energy. By proposing supporting measures for the improvement of energy efficiency and promoting the importance of energy efficiency, as well as by managing programs and projects for rational use of energy and enhanced use of renewable energy sources, as one of the key factors of sustainable development, they help the improvement of socially responsible approach to energy in all structures of the State and society. In this way, we improve the indicators of efficient use of energy, which indirectly supports the effectiveness of the national energy system and the energy security of the State.

Since 2007 the Agency is the official partner of the European campaign to raise awareness and change the landscape of energy entitled "Sustainable energy in Europe". SEEA is working on the affirmation of the principle of voluntary use of energy efficiency measures in industry, as well as in municipalities, building stock and education, with the goal to continually conduct the information and dissemination campaign in order to influence the institutions to implement the legislation in this field.

SEEA cooperates with over 100 municipalities and industrial enterprises, as well as numerous domestic and international institutions and subjects. We are responsible for the introduction of new study courses on energy efficiency and renewable energy sources in vocational schools of electronics, as well as certain elementary schools in Serbia.

Finally SEEA has become an important factor in the implementation of the Strategy of energy development in

Serbia and, in a wider sense, the National strategy of sustainable development.

III. CONCLUSIONS OF THE COMPARATIVE ANALYSIS OF THE CONCEPTS AND CHARACTERISTICS OF AES

The three examples indicate that two agencies are purely specialised agencies of their respective governments, whilst the German Dena is a limited company owned by the government and private companies as a private public partnership also striving for profit.

The organisational and ownership feature is one of the most important differences.

The German 'model is clearly incorporating private ownership and is therefore seen as a service platform for businesses and less for the government, whereas the Bulgarian and Serbian agencies are driven by state interest first and then provide support and service for businesses and the public.

Another advantage of the German Dena system is that through its shareholder structure it is largely balanced out towards single political or industrial influence.

However, it is apparent that in all 3 examples there is a function of interconnecting government and business on matters of Energy efficiency, which appears to be one of the reasons for their success from the outset of their establishment.

All three AES invest a lot in education, expertise, advisory functions and implementation of new improved legislation and also on the implementation of this legislation.

All AES work in projects to increase awareness about EE measures.

All AES are organisations predominantly active on the strategic level, working both nationally and internationally usually in the form of distinct projects.

All AES consider that the development of Renewable Energy sources (RES) are inseparably linked to ES and therefore to the mission of AES.

AES in all states can show good progress and a successful track record since their establishment and have proved to assist in all the aspects of ES and RES and therefore are a proven measure for countries who did not yet establish their own AES.

All AES examples show an intrinsic function to also act as national energy think-tanks for strategic studies and research. Therefore in countries which do not have such an institution

yet they can be of very valuable service to the state, private business and the public.

All AES are working nationally, locally, regionally and also internationally and therefore act strongly edge as catalysers of knowledge transfer and sustainable development.

Most importantly in our opinion is that AES are multifunctional expert platforms for education, study, research, technology transfer and information on virtually all matters relating to EE, RES and other energy matters. These platforms are apparently the main drivers of development in this field in countries who have established such agencies. Such AES seem fit to provide the reply to more complex energy problems which are in front of any country or community.

Moreover, it is interesting that there is no information indicating that the concept of installing AES in any country had harmful effects on Energy development in that particular country.

The exception of this finding was only that the international Energy Agency in Paris has dramatically failed in global energy predictions and caused harm in this way .However national AES appear to be much more precise in their predictions provided their independence is guaranteed.

Finally, in the opinion of the author, it is recommended to countries that do not have such an institution to establish it as soon as possible. It is to be hoped that this paper can act as a first spark in that direction

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