Comparative Analysis of Projects/Cases Implementing Policy

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Abstract

The twentieth century was the century of population explosion and the burning of fossil fuels, which led to the highest pollution in history causing climate change and biodiversity loss (Helm, 2000). However the pollution and its consequences have only been recognised in the closing decades and environmental policies are now of high priority to society, companies and policy makers (cf. (Helm, 2000)). In the cause of this, governments all over the world have launched projects to improve the climate situation. The problem scope dealt with in this work is concerning climate change and policies dealing with topics like sustainable energy management and renewable energy sources. Many projects pursue the aim of switching from energy sources like fossil fuels or nuclear power to renewable energy sources like solar, wind or water. In this comparative analysis work, projects and cases were presented, which deal with the above named issues and topics and investigate the policies implemented along these projects and analysed in cases.

1. Introduction

1.1. Problem scope

The twentieth century was the century of population explosion and the burning of fossil fuels which led to the highest pollution in history causing climate change and biodiversity loss (Helm, 2000). However the pollution and its consequences have only been recognized in the closing decades and environmental policies are now of high priority to society, companies and policy makers (cf. Helm, 2000). In the cause of this governments all over the world have launched projects to improve the climate situation. The problem scope dealt with in this paper is concerning climate change and policies dealing with topics like sustainable energy management and renewable energy sources. Many projects pursue the aim of switching from energy sources like fossil fuels or nuclear power to renewable energy sources like solar, wind or water. So on the one hand the aim of policies is to replace polluting ways of power production with green technologies and on the other hand to reduce energy consumption by using innovative technologies.

Climate change affects the whole world and is a very huge organisational, technical and also financial challenge which is why industrial countries are expected to take responsibility and initiatives to counteract the current climate development. In the cause of this, these countries may serve as role models for other countries to join in improving the climate situation.

1.2. Scope of paper / comparative analysis

In this paper projectsand cases will be presented which deal with the above named issues and topics and will investigate the policies implemented along these projects and analysed in cases. First, theoretical ground is provided about policy implementation like theories of policy implementation or methods of implementation in order to establish a common understanding of policy implementation. Subsequently

the projects are investigated and analysed via comparative analysis. A framework has been developed for the comparative analysis that supports pointing out major aspects and core information about the projects in order to have a brief overview and to make the projects comparable to each other. The framework provides a set of categories which need to be filled in to describe and analyse the projects, starting from general information like name and time duration of a project and then providing more specific information like theories, methods and tools used in the project (more information is provided in chapter 5).Based on the identified information from the comparative analysis the projects are discussed and compared to each other. Moreover the results and benefits of the projects are described and the possibility of transferring the used approaches to other domains, projects or cases is investigated.

Research questions have been formulated to support and guide the investigation of projects and cases concerning climate change related policies:

- What approaches of policy modelling are used in implementing public policies?
- What are the differences between these approaches?
- Which approaches support which typesof policy implementation projects/cases in the best way (fit for purpose of approaches in policy cases)
- How to measure the implication of approaches in successful policy implementation and what lessons can be drawn from the case analysis?
- How easily can the policy cases/projects investigated be adopted to other countries/domains/thematic areas?

1.3. Outline of the paper

The introduction briefly presents the topic of the paper which is climate change and projects/cases dealing with this issue.Subsequently theoretical grounds and definitions about policy implementation are given in order to provide an overview of methods for policy implementation and theories about policy implementation.Thereafter, the comparative analysis framework is introduced regarding its structure and content. Using this framework, projects and cases of the field are analysed and subsequently discussed and compared to each other. Based on the findings from this chapter, research and practice implications are given which lead to giving recommendations. The paper is then closed by drawing conclusions.

2. Implementing policy: Theoretical grounds and definitions

Policy implementation is the execution of a formulated policy, which means turning theory into practice.When turning policy into practice it is common to observe a gap between formulated and implemented policy as the policy makers hand over the responsibility for the implementation to policy implementers who may have a different understanding of the policy (cf. Buse et al, 2012).The policy formulation is seen as a political and the implementation as technical, administrative or managerial activity. The gap between policy makers and policy implementers causes a lack of control from the policy maker view regarding the way the policy is implemented.

2.1. Instruments for climate change policy

For the implementation and application of policies different instruments can be used. Oikonomou & Jepma (2007) present different instruments for climate and energy policy. They acknowledge that

categorizations of policies differ within literature and therefore they make use of general studies from OECD, IPCC, etc. They point out these categories with different instruments:

- *Financial measures* – where the government can change the cost of energy through taxation and subsidy policies. We can distinguish the following types of taxation: - emission charges/taxes, user charges, and product charges/taxes.
- *Legal or regulatory instruments*, where governments can set legal requirements with financial penalties for non-compliance.
- *Organizational measures* are commitments undertaken by power producers or industries in consultation or negotiation.
- *Certificates or marketable* (tradable) *permits or quotas*.

In general, two distinct categories of policy instruments can be pertinent to global climate change. The first category - domestic policy instruments enabling individual nations to achieve their specific national or local targets and goals. The second category – bilateral, multilateral, or global (or in general international) instruments can be employed jointly by groups of nations. The taxonomy of policy instruments for global climate change is well summarized in(Stavins, 1997), where two categories of policy are considered as you can see below:

Domestic instruments

- Command-and-Control and Voluntary Instruments
    - Energy efficiency standards
    - Product prohibitions
    - Voluntary agreements
- Market-Based Instruments
    - Charges, fees, and taxes (carbon taxes, taxes on fossil fuels, other energy taxes)
    - Tradable rights (tradable carbon rights, tradable “emission reduction” credits)

International instruments

- Command-and-Control Instruments
    - Uniform energy efficiency standards
    - Fixed national emission limits
- Market-Based Instruments
    - Charges, Fees, and Taxes (harmonized domestic taxes, uniform international tax)
    - Tradable rights (international tradable permits, joint implementation)

2.2. Policy instruments for renewable energy

Energy policy is closely linked to climate change the energy sector has high potential for reducing greenhouse gas emissions. There is no universal policy prescription for supporting renewable energy. Particular nations are typically unique. The most suitable policy instruments in one country may not be appropriate for another country. Instead of a single policy to achieve all of the policy objectives, it is more useful to consider a policy portfolio approach or a policy tool kit. Policy instruments are means by which policy objectives are pursued. According to (Azuela & Barroso, 2011) and (IPCC, 2012) we can consider these five categories of policy instruments for renewable energy:

- *Regulations and standards* can promote renewable energy via direct support (with policy objectives in removal of non-economic barriers and in increasing demand for renewable energy) and indirect support (with policy objective in restrictions on fossil fuel power).
- *Quantity instruments* – market-based instruments that define a specific target or absolute quantity for renewable energy production.
- *Price instruments* – reduce cost and pricing-related barriers by establishing favorable price regimes for renewable energy relative to other sources of power generation, e.g. fiscal incentives (production/investment tax credits, public investment, loans, or grants; capital subsidy, grant, or rebate; increase in taxes on fossil fuels; reductions in sales, energy, CO2, VAT, or other taxes) and feed-in tariffs (a preferential tariff; guaranteed purchase of the electricity produced for a specified period; guaranteed access to the grid),
- *Public procurement* – governments are often a very large energy consumer, whereby they purchasing and procurement decisions affect the market.
- *Auction*. An auction is a selection process to allocate goods and services competitively, based on a financial offer. Specifically in a "reverse auction", electricity generators bid their supply to distribution companies and the process is designed to select the lowest prices. Auctions can be a very attractive mechanism for attracting new renewable energy supply.

3. Purposes of implementing policy

Implementation of public policy is always serving a purpose and is put in place in order to change things for the better and improve situations that seem to be problematic. There are different ways that decisions for a policy marking process to start take place (Lindblom, 1968). An obvious but not always the most common way is through public demands. These are demands from the general public (known as "bottom up" initiatives) and can be very influential especially for important issues such as public health and safety. Nowadays, the general public is educated and informed at a level that gives them the power to be able to mobilize and in some cases demand changes at a public policy level. Another reason that policy implementation is starting to formulate is pressure from special interest groups that can influence policies promoting public welfare. For example chambers of commerce are typically supporting interest of their business members, while Green Peace will express concerns and will try to address environmental issues, promoting the implementation of public policies for environmental protection (Portney and Stavins, 2000).

According to the policy cycle (Nakamura, 1987) the implementation of a policy follows some basic steps such as agenda setting (problem identification), policy formulation, decision making, implementation and evaluation. The first stage of this cycle where the problem is identified is the stage where the purpose of the policy is formulated and is recognised as the starting point of the cycle. During this agenda setting all stakeholders are or need to be participating and voicing concerns as well as possible remedies for the problem at hand. This stage was typically initiated in the past by government agencies but latest studies (Young and Mendizabal, 2009) show that a number of other entities influence this stage. These could be the media, think tanks, policy research institutes and other academic or business organisations.

The final outcome of the agenda setting stage is a purpose statement where policy makers state the problem as well as the desired outcome of the proposed strategy. Examples of such statements can be

details of a costal policy and its desired outcomes (NZPCS, 2010). The desired outcomes of policy making are always aiming at improving the problem area in question and ultimately improve the welfare of citizens at large.

An important but not always well-executed stage of the policy implementation cycle is that of the evaluation of the policy outcomes. This is the time when the designers of a public policy have finalised the implementation and are in a position to evaluate whether the actions taken improved the situation and contributed to the welfare of the target population. Evaluation is a retrospective assessment of government initiatives and it usually measures the success of activities that they are still taking place and are on-going. Evaluation seems to be a controversial and hard to implement strategy that needs to be based on peoples' perceptions, opinions andjudgments while at the same time needs to be objective enough to provide some insights into the complexities of public interventions (Vedug, 1997)

In the Section, we present the various methods of policy implementation used to materialise public policy interventions.

4. Methods of policy implementation / Approaches to explain policy implementation

Policies can be implemented in different ways and the implementation approaches can be explained in different ways as well. Subsequently four approaches of policy implementation, respectively implementation explanation approaches are presented. They exemplarily point out how policies can be implemented, what actors are involved along the implementation process and how they affect the policy, its implementation and outcome.

Top-down approach:

The top-down approach was developed between the 1960s and 1970s by policy analysts in order to provide policy makers with a better understanding of how to minimize the gap between the formulated and the implemented policy (Buse et al, 2012). This approach describes a linear process from policy formulation to implementation where policies are communicated from policy makers to executing entities like authorities which turn the policy into practice. To successfully implement a policy, the policy goals need to be clearly described and understood by all involved actors. Moreoverthe required resources for the implementation need to be available, a communication and command chain needs to be established and the whole implementation process needs to be controlled (Pressman &Wildavsky, 1984).

The top-down approach may be criticized as it focuses mainly on the decision -and policy makers and does not sufficiently include other involved actors and factors that are part of the policy implementation process. The implementation is seen as an administrative process and does not include the expertise of local experts who eventually implement the policy.Thus, the approach is difficult to apply in situations that are not driven by a single leading actor but where multiple actors participate in the policy implementation process (Buse et al, 2012). Moreover Hogwood and Gunn (1984) formulated ten pre-conditions which should be fulfilled to successfully implement a policy. However it was criticized that hardly all pre-conditions could be fulfilled at once and that policy implementation in reality is too complex and thus cannot be covered with the top-down approach and its pre-conditions (cf. Buse et al, 2012).

Bottom-up approach:

The bottom-up approach was developed from the criticism of the top down approach which focuses on policy makers and neglects the other actors involved in the implementation process. The bottom-up approach focuses on policy implementers as they play an important role in the policy implementation process as active participants who give feedback to the policy makers and have high influence on the actual policy implementation (Buse et al, 2012). Lipsky (1980) studied the behaviourof 'street level bureaucrats' (teachers, doctors, nurses etc.) in relation to their clients in the 1970s (Buse et al, 2012). In his studies he showed that even people in highly rule-bound environments could reshape parts of public central policy for their own ends (Buse et al, 2012). In consequence of these findings, researchers found that even if all pre-conditions for the top-down approach were fulfilled, policies could still be implemented in a way which was not planned by the policy makers (Buse et al, 2012).

Macro-Implementation& Micro-Implementation

When governments execute policies in order to influence local authorities, this is called macro-implementation (Berman, 1978). However, local authorities need to transfer governmental policies into their own local policies which is then called micro-implementation. This approach can be understood as a two phase implementation method. In the first phase the overall policy is made by governmental policy makers in order to address certain issues and to pursue defined goals. Local authorities and policy makers then need to adopt the overall policy and transform it into a policy that is manageable and suited for local application. This transformation process may lead to a gap between the formulated governmental policy and the executed local policy, what makes this approach quite similar to the bottom-up respectively top-down approaches.All these approaches carry the risk of a mismatch between formulated and implemented policy.

Principal-agent Theory:

According to the Principal-agent theory, an 'implementation-gap' is the inevitable consequence of the governmental institution structure. Policy- and decision makers ('principals') delegate responsibility for the implementation of policies to their officials ('agents') whom they cannot completely monitor and control. These 'agents' have discretion in how they work on implementing the policy and may also see themselves from a different view than the policy makers. Thereby policy implementers may interpret the policy in a different way than the policy formulators which leads to implementing the policy in a different way than it was actually meant to be implemented (cf. Buse et al, 2012).

Policy implementation is a complex process that is influenced by many actors. From its formulation until its implementation the policy passes different levels of authorities and is handled by different actors. It is formulated by governmental policy makers and then passed on to local policy makers and authorities that have to adapt the overall policy in order to successfully implement it in their local structures. Along this implementation process governmental policy makers are not completely able to monitor and control the implementation, as local policy makers need to take care of local policy peculiarities. Moreover the local policy makers may understand the overall policy in a different way than it is meant to be understood. These factors often inevitable lead to a so called 'implementation gap'. This gap is the consequence of the different understandings and backgrounds of the actors which are involved in the implementation process

of the policy. This issue needs to be addressed in order to minimize the gap between formulated and implemented policy, so that policies are implemented the way they are meant to be implemented.

5. Project/Case Examples

In this chapter projects and cases are presented which implement policies or support implementation process of policies concerning climate change matters. In order to analyse the projects and cases and describe them in detail, a framework has been developed. This framework offers the possibility to point out major aspects and characteristics of the projects and cases and to make them comparable along those. Five projects/cases have been chosen and analysed via the comparative analysis template. These projects/cases are:

- MODEL (Management of Domains Related to Energy in Local Authorities)
- Energy Policy - Analysis of the EU policy package on climate change and renewable
- The German nuclear phase-out
- Kosice Self-Governing Region (Slovakia) Strategy for the use of renewable energy resources
- A case in the RES Cluster - The Cross Border Knowledge Bridge in the Renewable Energy Sources Cluster in the East Slovakia and North Hungary

Projects/Cases **Aspects for comparison**	P/C1	P/C2
Metadata		
Name	Kosice Self-Governing Region (Slovakia) Strategy for the use of renewable energy resources	German nuclear phase-out
Project type	Case, Pilot of the OCOPOMO project	Implementing policy
Abstract	The pilot application in the Kosice self-governing region (Slovakia) aims at supporting the utilization of Renewable Energy Sources (RES), increase energy efficiency and decrease energy consumption. The Kosice policy model focuses on stakeholders views on different alternative renewable sources of energy vs. traditional energy production and consumption, particularly in relation to the policy instruments to establish for promoting the use of renewable energy, the perceived market potential of each specific kind of energy, the barriers hindering a specific kind of energy use for energy generation in Kosice region, and the motivating factors leading citizens and companies towards Renewable	Following the Fukushima disaster in Japan in March 2011, the German government declared a three-month moratorium on nuclear power plants, in which checks took place and nuclear policy was reconsidered. Subsequently, all 8 nuclear power reactors which began operation in 1980 or earlier were immediately shut down. Although the Reactor Safety Commission reported that all German reactors were basically safe with regard to natural or man-made dysfunction, the government decided to shut down the 9 remaining reactors until 2022 and approved construction of new coal and gas-fired plants despite retaining its CO2 emission reduction targets, as well as expanding wind energy. Germany was expected to be dependent on energy imports after the shutdown of the first 8 reactors but it still kept exporting energy as the energy production from wind, solar and hydro keeps growing. So far the use of renewable

	Energy Sources (RES), and increasing energy efficiency.	sources is quite expensive and shouldered by tax payers and consumers. Moreover it is dependent on wind and sunlight which are not always available.
Reference(s)	http://www.ocopomo.eu/in-a-nutshell/piloting-cases/kosice-self-governing-region-slovakia	http://www.dw.de/power-exports-peak-despite-nuclear-phase-out/a-16370444 , http://www.bmu.de/en/topics/climate-energy/transformation-of-the-energy-system/general-information/ , http://www.bmu.de/en/topics/climate-energy/transformation-of-the-energy-system/faq/general-issues/ , http://www.bmu.de/en/topics/climate-energy/transformation-of-the-energy-system/faq/nuclear-energy/
Duration	01/01/2010 - 30/04/2013	06/2011 - 2022
Discipline(s)	Policy modelling	
Domain	Climate change (Renewable Energy sources)	Energy policy - Nuclear phase out
Implementing which policy	Renewable Energy resources policy	Energy policy (nuclear phase out, renewable energies)
Users / Stakeholders	Region of Kosice	German politicians, energy providers, citizens
Objectives	Implement RES-policy: - regional energy development should prioritize the development of renewable resources - Policies should focus on building renewable friendly infrastructure and establishing renewable energy goals	- accelerate the transformation of Germany's energy system (nuclear power as 'bridging technology') - Shut down all nuclear power plants in Germany (until 2022) ○ Shutdown dates for remaining reactors: 2015, Grafenrheinfeld; 2017, Gundremmingen B; 2019, Philippsburg 2; 2021, Grohnde, Gundremmingen C and Brokdorf; and 2022, the three youngest nuclear power stations, Isar 2, Emsland and Neckarwestheim 2. - find reliable alternatives to coal power plants which are still needed to close energy gaps ⇨ switch to renewable energy (sources) (solar, wind, hydro)
Complexity		high
Theory(s) used	Complexity Theory	
Method(s) used	Scenario-building & simulation	Calculation + Scenario building (by greenpeace) (http://www.greenpeace.de/fileadmin/gpd/user_upload/themen/atomkraft/Hintergrundpapier_Atomausstieg_2011_02.pdf)

Technology (s) used		
Model(s) used	Policy development process (Kosice policy model)	
Tool(s) used	- Collaboration and Scenario Editing tools (CSET) - Content Management Server/System (CMS) - Consistent Conceptual Description Tool (CCD Tool) - Simulation environment (SE)	- Monitoring system to monitor the policy implementation (annual reports on progress and examination by expert commission)
Supporting framework	Eclipse Modelling Framework	
Project outcome	- generate clean power using regional resources - reducing COx - new job opportunities, cost savings and health benefit - increase energy efficiency and decrease energy consumption ⇨ Integration of new heating technologies (cogeneration, heat pumps) ⇨ Retrofitting of buildings ⇨ Switch to a natural gas fuel for public transport buses ⇨ Investment in municipal boiler house with integrated cogeneration unit fuelled by biomass ⇨ Advisory services for citizens and their awareness raising ⇨ Cooperation with private companies and local actors on the development ⇨ and the implementation of a city energy strategy	- Germany will become one of the world's most efficient, most innovative and greenest economies - shutdown of nuclear reactors - growing engagement in renewable energy (source) development - Germany is setting standards with its energy concept for the EU and the whole world
Links to other projects	http://www.ocopomo.eu/in-a-nutshell/piloting-cases/campania-region-italy , http://www.ocopomo.eu/in-a-nutshell/piloting-cases/greater-london-authority-gla	- Climate Energy - Renewable Energy (http://www.bmu.de/en/topics/climate-energy/renewable-energy/general-information/) - Transformation of the energy system - "Energiewende" (http://www.bmu.de/en/topics/climate-energy/transformation-of-the-energy-system/general-information/)
Transferability of solutions and techniques	Basic approach should be transferable to all participating cities	Germany can be a role model for other countries on a way to a cleaner and sustainable energy system
Concluding recommendat	- set up clear priorities (heat energy savings, refurbishment of public buildings, use of local	- very complex project which requires very extensive and accurate planning

ions of the project	renewable energy sources etc.) and focus more intensively on the energy saving issues - Cooperation with experts from the energy domain - city membership in the Association of Sustainable Energy Municipalities - CITENERGO facilitated the exchange of experiences and cooperation with other Slovak cities active in the energy field.	

Projects/Cases Aspects for comparison	P/C3	P/C4
Metadata		
Name	Energy Policy: Analysis of the EU policy package on climate change and renewables	MODEL (Management of Domains Related to Energy in Local Authorities)
Project type	Implementation / Simulation	Implementation
Abstract	In 2009 the EU decided to reduce greenhouse gas emissions at least by 20% in 2020 compared to 1990 and to supply 20% of energy needs by 2020 from renewable energy sources. This paper uses an energy model coupled with a non-CO2 greenhouse gas model to assess the range of policy options that were debated to meet both targets. Policy options include trading of renewable targets, carbon trading in power plants and industry and the use of the Clean Development Mechanism to improve cost-efficiency. The models also examined fairness by analysing the distribution of emission reduction in the non-emission trading sector,the distribution of CO2 allowances in the emission trading sector and the reallocation of renewable targetsacross Member States. The overall costs of meeting both targets range from 0.4% to 0.6% of GDP in 2020 for the EU as a whole. The redistribution mechanisms employed significantly improve fairness compared to a cost-effective solution.	Energy Cities is coordinating the MODEL (Management of Domains Related to Energy in Local Authorities) project which aims at reducing the energy gap in the European Union and beyond by helping volunteer local authorities become models for their own citizens and other municipalities. MODEL has started in 2007 with the support of the Intelligent Energy Europe programme and has set up a common framework methodology that was implemented in 43 pilot cities from New Member States and Croatia.

Reference(s)	http://147.102.23.135/e3mlab/papers/Energypolicy.pdf	http://www.energymodel.eu/spip.php?page=index_en
Duration	2007 - 2020	01/09/2007 - 28/02/2010
Number of people involved	27 EU member states	- 43 pilot cities from 10 new member states (http://www.energymodel.eu/IMG/pdf/List_of_MODEL_pilot_cities_2009.12.02.pdf) - Association Municipal Energy Efficiency Network EcoEnergy, Bulgaria - Center for Energy Efficiency (EnEffect), Bulgaria - Energetski Institut HrvojePozar (EIHP), Croatia - PORSENNA o.p.s., Czech Republic - SocialasEkonomikasFonds, Latvia - Kaunas Regional Energy Agency, Lithuania, Norway - Association of Municipalities Polish Network "EnergieCités" (PNEC), Poland - AsociatiaOra_eEnergieRomânia, Romania - RazvojnaAgencijaSinergijad.o.o., Slovenia
Discipline(s)	Scenario building / modelling	
Domain	Climate change (emissions and renewable energy sources)	Sustainable energy
Implementing which policy	Energy policy	Energy policy
Users / Stakeholders	European Commission, 27 EU member states, Industry, public	See "Number of people involved"
Objectives	- reduce unilaterally GHG by 20% in 2020 compared to 1990 levels (including an offer to increase this target to -30% given a sufficiently ambitious international agreement) - supply 20% of energy needs by 2020 from renewable energy sources (RES), including the use of 10% renewable energy in transport - give priority to energy efficiency in all energy domains	supporting 43 local authorities from 10 New Member States and Candidate Countries to become models for citizens and other municipalities regarding energy management
Complexity		
Theory(s) used		
Method(s) used	Scenario Modelling/Simulation (cross-modelling of interacting targets) ⇨ 150 energy scenarios with different carbon and RES values were investigated by using the	- planning, implementing and evaluating activities to improve local energy efficiency (with focus on overall Process management) - establishing a Common Framework Methodology for the development,

	PRIMES model for the period 2005–2030 for all Member States	implementation and evaluation of Municipal Energy Programmes - - implementing Municipal Energy Programmes and annual Action Plans
Technology / Instruments (s) used	- An amendment of Directive 2003/87/EC so as to improve and extend the EU GHG emission allowance trading system (EU-ETS) - A decision on the effort of Member States to reduce their GHG emissions which covers targets for those sectors not included in the EU-ETS - A directive on the promotion of use of renewable energy sources	- Guidelines (Guideline Framework) guiding the preparatory phase, the development phase and the implementation / monitoring and evaluation phase
Model(s) used	PRIMES model, GAINS (Greenhouse gas - Air pollution Interactions and Synergies) model	Common Framework methodology (CFM)
Tool(s) used	Simulation tool (PRIMES energy system model)	See technologies
Supporting framework		
Project outcome	- 11 scenarios with different starting positions and influences - Analysis of the different scenarios	Common Framework methodology (CFM) implemented by participating cities in order to adopt energy programmes. Raised awareness and engagement in sustainable energy management amongst all pilot cities
Links to other projects		http://ec.europa.eu/energy/intelligent/ , http://www.energy-cities.eu/spip.php?page=index_en
Transferability of solutions and techniques		The Common Framework methodology (CFM) is adoptable and adjustable for interested cities. It provides a guideline to implement sustainable energy management.
Concluding recommendations of the project	- Meeting the targets in the EU is an ambitious effort and requires considerable adjustments in how energy is consumed and produced. - Energy efficiency improvement is clearly the most cost-effective way for meeting the targets and must be the main driver of changes - RES are of crucial importance to implement the policy - The compliance cost to meet both targets is estimated to be in a range between 0.4% and 0.6% of GDP of the EU in 2020	It is important to convince responsible representatives of the benefits sustainable energy management can provide, since it may be difficult to realize and time consuming.

Projects/Cases	P/C5	

Aspects for comparison		
Metadata		
Name	The Cross Border Knowledge Bridge in the RES Cluster in the East Slovakia and North Hungary	
Project type	Reports, Toolboxes, Cases	
Abstract	The KNOWBRIDGE project brings a chance to increase the capacity and strengthen the research potential of two cross border and convergence regions (Košice self-governing region in Slovakia and Borsod-Abaúj-Zemplén region in Hungary) by supporting the development of new innovative cross border research-driven cluster in the area of Renewable Energy Sources (RES) and associating research entities, enterprises and regional authorities. The KNOWBRIDGE project is focused on the enhancement of research driven cluster in the area of renewable energy sources (RES) in two cross border regions Košice Self-governing Region in Slovakia and Borsod-Abaúj-Zemplén County in Hungary. Specific project objectives are primarily focused on analysis, mentoring, integration of research agendas and definition of Joint Action Plan. The KNOWBRIDGE project is one of the three agreed initiatives of the cross-border HU-SK region. That implies support of regional authorities, interest of the private companies operating in the RES branch and interest of the research and development institutions, which is a good basis for triple helix concept.	
Reference(s)	http://www.knowbridge.eu/index.php http://cordis.europa.eu/result/report/rcn/54725_en.html	
Duration	07/2009-12/2012	
Number of people involved	- Office of Košice Self Governmental region (coordinator) - Technical University of Košice - Agency for the Support of Regional Development Košice - Východoslovenskáenergetikaa.s. - Solarklima, spol. sr.o.	

	- NORDA North-Hungarian Development Agency - Miskolc Holding Zrt. - Univerzita Miskolc - ENIN Ltd. - Nagy-ferenczi Ltd. - Envirolink Northwest Ltd. - CARTIF - ZTSVVU	
Discipline(s)		
Domain	Renewable Energy Sources	
Implementing which policy	Renewable energy sources policy	
Users / Stakeholders	Slovak and Hungarian regional politicians (Košice Self-Governing Region and North Hungary Region), energy providers, citizens	
Objectives	- to increase the overall capacities of regional players in Northern Hungary and Eastern Slovakia in enhancing science and technology based development in cross border context, - to improve links between regional authorities, research entities and local business community in two cross border regions, - to promote development of specific goals for regional and cross border RTD policies, - to enhance common partnership of regional authorities, research entities and business community in national and European initiatives, - to foster trans-national (cross border) cooperation between regional partners, - to further develop research driven cluster in the area of renewable source of energy - to develop join actions plan in order to increase regional economic competitiveness through research and technological development activities in defined area, - to exploit synergy between regional national and Community programmes for research and economic development in cross border environment,	

	- to promote reduction of CO2 emissions in two cross border regions..	
Complexity		
Theory(s) used		
Method(s) used	- planning, implementing and evaluating activities to develop research-driven cluster in the RES sector - establishing a Joint Framework Methodology for analysis and benchmarking of local RES sector and for Joint Action Plan and Business Plans - Implementing Joint Action Plan and Business Plans for cross-border cluster	
Technology / Instruments (s) used	Guidelines (Guideline Framework) and reports	
Model(s) used		
Tool(s) used	Methodological Toolbox for Joint Action Strategy and for Business Plan preparation	
Supporting framework		
Project outcome	- Report on best practices and trends in the area of national and regional economic and technological development focused on RES sector - Methodological toolbox for Joint Action Plan and Business Plan preparation - Report on best practices and trends in the area of national and regional RTD support policies; financial tools and approaches for RTD funding - Report on energy efficient technologies and technological development in RES sector - Report on best practices and trends in the area of knowledge creation, transfer between business entities through networking - Report on energy solution responding to SMEs specific energy demands in the region - SWOT analyses in local RES sector - Joint Action Plan for cross-border cluster in RES sector	

	- Mutual learning models elaboration	
Links to other projects	http://www.arr.sk/?projekty&gid=19 http://www.cogitaproject.eu/index.php/en/ http://www.huskroua-cbc.net/en/	
Transferability of solutions and techniques	Methodological toolbox for analysis and benchmarking and Methodological toolbox for Joint Action Plan and Business Plan is adoptable and adjustable for other cross-border activities in this area	
Concluding recommendations of the project		

6. Comparison and lessons from analysis

The projects and cases described in the table above are mainly focused on renewable energy sources. Besides, the change from fossil fuels and nuclear power to renewable energy sources is a topic, as well as the responsible handling and consumption of energy.

The central aim of the presented projects and cases is the advancement of use of renewable energy sources, the simultaneous decrease of energy consumption and thereby the improvement of the overall energy efficiency. These aims are pursued on the one hand by developing concepts and strategies on a policy making level and on the other hand by actively supporting cities and communities in improving their energy efficiency. Some projects clearly define goals with dates and figures to be accomplished, like shutting down all nuclear reactors in Germany until 2022, or reducing CO_2 emission by 20% until 2020 while increasing green energy production by 20% simultaneously. Other projects like the Kosice Self-Governing region or the MODEL project present long-term strategies for the continuous improvement of energy efficiency and change of energy sources which are actively carried out to interested communities and guided via frameworks for the practical application. So there are projects which aim to pursue precise goals and projects that investigate issues and possible scenarios and action alternatives to solve these problems. Based on these simulations and analysis, new action plans can be elaborated to achieve formulated goals.

The comparative analysis template proves to be well suited to analyse and compare projects and cases implementing policies. It provides a quick and compact overview and the essential core facts can be compared to each other. However it turned out to be rather difficult to clearly define what technologies, theories, methods, models, tools and frameworks are/were used in the projects and cases when those were not named in the project/case description.

7. Research and practice implications, recommendations

Today there are various alternatives for environmental-friendly energy production like solar, water or hydro for example. Unfortunately the awareness of the benefit that these technologies offer seems to be to small so that many governments, authorities and policy makers are not convinced to foster the use of

them. A reason for that may that these technologies are very expensive so far and a way needs to be figured out, how to lower the costs and thereby make these technologies more attractive for use.

A big step in progressing the counteraction of climate change may be to stronger involve citizens. In that way the awareness about the situation can be raised and everyone can actively participate and support the step to the use of renewable energy sources.

8. Conclusions

Climate change is a very serious issue that affects all forms of life on earth and the awareness of this situation is bigger today than ever before. To counteract pollution, global warming and the resulting climate change, policy makers and researchers develop strategies, programs and policies that support a greener energy production and consumption.

The plan is to switch from fossil fuels and nuclear power to greener energy production which can be realized by using renewable energy sources such as wind and water for example. There are projects that have role model character like the German nuclear phase-out or, the MODEL project or the knowbridge-project, showing that switching to renewable energy sources is possible and sustainable. Unfortunately this development goes on rather slowly and is not accepted in many parts of the world. So there is still a great necessity to carry out the dialogue about climate change and possibilities to counteract it, across the whole world. Moreover the financial issue concerning greener energy production and consumption needs to handled. So far, the use of renewable energy sources is very expensive and funded by tax payers and consumers which might also be a reason for the slow progress.

9. References

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