Sustainability **2012**, *4*, 888-916; doi:10.3390/su4050888

OPEN ACCESS

sustainability

ISSN 2071-1050

www.mdpi.com/journal/sustainability

Article

The Integration of Energy Conservation into the Political Goal of Renewable Energy Self-Sufficiency—A German Case Study Based on a Longitudinal Reconstruction

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Received: 10 March 2012; in revised form: 14 April 2012 / Accepted: 17 April 2012 / Published: 4 May 2012

Abstract: Many local governments in Germany aim to reach Renewable Energy Self-Sufficiency (RESS) in their municipalities. In this context, ambitious time horizons for reaching this goal make it necessary to address the question of how less absolute energy can be consumed. The topic of energy conservation in scientific literature is very controversially discussed and in fact it is not clear which measures in the long term contribute to real reductions in energy demand. Therefore, in this paper, we do not determine how energy conservation should be achieved. Instead, we reconstruct, through an inductive longitudinal study, why energy conservation was integrated into the general principles of a municipality that wished to reach "RESS" by the year 2020 and considerably reduce energy demand. At the same time, we looked at the question of how energy conservation was conceptualized by local actors and which strategies, instruments, and activities were used to reach the goal. We found that environmentally concerned citizens brought the idea of energy conservation into the political arena. However, it was not until energy prices rose, regulations developed on a national level, subsidies for energy conservation emerged, and actions addressing the issue were seen by many local actors as adding value to the unique character the municipality gained by their RESS activities, that the actual subject was considered relevant in the municipality.

Keywords: Renewable Energy Self-Sufficiency; energy conservation; inductive longitudinal approach; case study research; energy demand; local value added; regional development; conflicts

1. Introduction

The need for a transformation of the energy system to renewable energies (RE) has been discussed for many years now in Germany, and after the occurrences in Fukushima is a heavily articulated issue today; reaching a virtual consensus in the political arena. However, well before this strong desire for an energy transition on a national level emerged, many initiatives in Germany—and also elsewhere in Europe—formulated the will for a complete supply of RE at regional and local levels [1–4].

As the energy demand in Germany is high, many studies declare that if a big share of RE in the German energy mix or even a 100% RE supply is to be met, a considerable reduction in energy demand is needed [5–7]. In the context of proposed Renewable Energy Self-Sufficiency (RESS) on regional and local scales the issue of energy conservation becomes especially relevant, because often here ambitious goals concerning the time horizon for reaching RESS exist. For example, the district of Lüchow-Dannenberg wants to reach RESS by 2015 and the municipality of Morbach by 2020. Both regions in Germany are well known for their RE and RESS activities.

This paper deals with two issues in the above context. As we will present, the issue of energy conservation has, for a long time, been acknowledged and intertwined only marginally with the goal of RE-expansion in energy concepts at local level in Germany. However, in recent years, the issue has been integrated into an increasing number of energy concepts. As we are interested in the factors which lead to this innovation, we have reconstructed, in an exploratory longitudinal case study in one German municipality, the processes that led to the integration of the goal to save energy into the local strategy to reach RESS. The second issue dealt with in this paper is derived from the synopsis of results gained by multiple scientists working on the issue of energy conservation over the last 40 years: that we as a society are not really sure how to save energy. Rather, a plurality of normative perspectives exists on the issue, based on different assumptions. Taking this into account we argue that an analysis might be interesting of how "energy conservation" is conceptualized by actors involved in a process to reach RESS in terms of policies including regulation, incentives or information-programs and what factors contribute to the shaping of these conceptualizations over time. Finally, by looking at this issue, we want to identify conditions by which the ability to act among actors in the local political and administrative arena concerning the issue of "energy conservation" are ensured, although a plurality of normative visions of appropriate ways exist. In the following, we present a detailed derivation of our two research issues and the corresponding questions that led our research work. In section three, the research design and methodology are described. A case history derived from our empirical data is given in section four. This case history is transformed into a case study by coding the data into categories and relating them to each other. In section five the more abstract results of the conceptualizations of "energy conservation" and the driving forces that shaped these concepts are presented. The findings are discussed

and embedded in related literature in section six. Conclusions concerning the research questions are drawn in the final section.

2. Starting Point of Our Research

2.1. Energy Conservation as a (Former Missing) Element in Regional and Local Energy Concepts

Although for Germany as a whole, as well as for bigger cities, climate protection concepts often existed, which integrated RE-use with energy conservation [4] in energy concepts at local level, until the late 2000s the issue of energy conservation was not prominently addressed, although it seemed to be theoretically important for the transformation of the energy system. Rather, the focus lay on the production of RE, and its interconnection with the topic of energy conservation was, if at all, found at the periphery [4].

However, in recent years, changes in approaching the topic of energy conservation at this level have emerged. In a growing number of local energy concepts the topic of energy conservation is integrated and interlinked with the expansion of RE. For example, the district of Schwäbisch Hall and the municipality of Morbach, in 2006 and 2008 respectively, have explicitly formulated energy conservation as a strategy to reach RESS in their politically-agreed general principles.

Hauber and Ruppert-Winkel [8] have identified factors that lead to the change of the local energy system to RESS in four well-known regions in Germany; Bedenik and Binder [9] carried out similar research regarding Güssing, Austria; Späth and Rohracher [10] in Murau, Austria; and Mårtensson and Westerberg [11] authored three Swedish cases.

However, we did not find literature systematically dealing with the question of why the issue of energy conservation has become integrated into local energy concepts and especially interlinked with RE use in the context of proposed RESS goals.

One purpose of the paper was, therefore, to find out which circumstances lead to the point in which energy conservation becomes important to the transformation process of the energy system at the local level and interlinked with RE use in strategies to reach RESS.

2.2. What Contributes to Energy Conservation and How Can it be Promoted?

The second purpose of the paper was to find out how local actors involved in the process of reaching RESS conceptualized "energy conservation" e.g., in terms of instruments like regulations, incentives or information; different energy use sectors (electricity, heat, mobility); behavioral, organizational and investment related activities; and the relation of energy conservation to other policy fields. Also, the ideas and motivations behind fostering energy conservation were of interest in this context.

This research interest was derived from our analysis of scientific discourses concerning the question of what contributes to energy conservation and what has to be done to reduce energy demand. In the following, we give a short outline of different concepts handled in the sustainability discourse in general and the energy conservation discourse specifically. We underlined the important role of research on rebound effects in these discourses and finally derived that as a society, although aware of the topic of energy conservation for more than 40 years, we do not currently really know how to save

energy and that, rather, a plurality of views exists in science as well as in politics. We then draw a conclusion for our own research approach leading to the introduced second research purpose.

A variety of concepts exist today that contain factors that, in the end, lead to unsustainable high energy demand and environmental threats in general. Based on this analysis, possible ways out of this environmental crisis are described in these concepts [12]. Representatives of more radical ones see the reasons for high energy demand as having stemmed from early industrialized countries and lying in a society that is addicted to economic growth, too much trust in (technical) progress, and competition. For another branch of concepts, these exact properties of modern societies—technical progress and competition—guarantee the solution for the ecological problems by stimulating "green" or "sustainable" growth through invention and distributing environmentally friendly technologies; allowing high standards of living for the whole of mankind.

Many current scenarios issued by a variety of actor groups in Germany, in the EU, and worldwide tend to frame energy conservation in the second way, as an exchange of existing technologies by modern, more energy efficient ones [13,14]. On a macro-economic scale, it is argued that a relative decoupling of economic growth and energy demand—growing economic activities and much slower growing energy demand—has taken place in the last two decades in the EU and Germany and that also an absolute decoupling—growing economic activities and at the same time sinking absolute energy demand—could be reached with appropriate energy-efficiency policies [15,16]. Technological innovations and their diffusion are seen as major change agents, which lead to reductions in energy demand in these concepts [17]. However, other scientists point out, that—especially in the early industrialized countries—the development of energy consumption and economic growth is still coupled [18]. If a beginning decoupling is observable in some cases between energy use and GDP-development, this is explained by ecological economists as changes in the quality of energy carriers used in national economies [19,20]. In addition, a growing number of scientists challenge the assumptions that, through solid climate policy and specific efforts to increase energy efficiency, the desired decoupling and reduction of carbon emissions and overall energy use can be reached. They refer to empirical as well as theoretical studies, which ascribe observable reductions in CO_2-emissions and energy use in western countries through to the relocation of these emissions and energy demand to other—mostly developing—countries. At the same time, they identify western populations as responsible for growing emissions in these countries by consuming globally traded products [21,22]. These carbon shifts are seen as one type of rebound effect, described in economic research looking at the real savings of measures carried out in order to enhance energy conservation. An increasing number of researchers thus argue that potential energy savings from energy efficiency measures do not lead compellingly to real reductions in energy demand because of different rebounds that, according to Jenkins *et al.* [23], result from "the complex interaction of multifold individual components and the combination of multiple non-linear and reinforcing effects" (p.9). Tracing these effects is very difficult because they often occur with no obvious link to their constituent causes. However, Van den Bergh [24] criticizes actual energy conservation policy in western countries as being "more driven by good intention than by good oversight of all its consequences" (p.45) as "concrete proposals for reducing energy use are (…) very local and partial in nature and do not account for indirect, unintended effects." (p.45).

Due to these rebound effects, a growing number of authors see profound changes in ways of consumption in western countries as necessary for a long-term reduction in energy demand and in this

context, highlight the need for change towards more frugal lifestyles or "sufficiency" [25–27]. However, sufficiency itself might cause rebound effects by making resources available for other uses and user groups [28]. Some authors therefore conclude that only with an absolute cap on CO_2 emissions, and thus fossil energy use, can rebound effects be avoided [23,24,28,29].

Related to the "lifestyle-approaches" of sufficiency, authors identify the necessity to overcome the "economic growth paradigm," as well as the belief in continual societal progress through innovation and the diffusion of technologies, and with this argue for an overall cultural change to more contentment. Connected to reductions in quantity of purchased products, it is also argued that a contraction of supply chains is necessary to save energy in the transport sector [30,31]. For an overview of the topic of a "post-growth society," see [32,33].

When taking into account these different existing perspectives on the topic of energy conservation, and the unintended side-effects of energy conservation policy instruments, it can be derived from the actual knowledge, that we, as a society, are not really sure how to save energy. Rather it can be said that the research on what energy conservation is and how it is promoted (with political instruments) is a scientific and political construction driven forward by a plurality of views and actors, going on for at least 40 years while, in parallel, energy demand is still rising.

2.3. Conclusions for Our Research Questions and Research Approach

Against the presented background concerning (1) the novel way that energy conservation is currently addressed in energy concepts on a local level and interwoven with RESS goals, as well as (2) the very different views on what energy conservation really requires, we do not commit to a specific position in this debate nor a narrow disciplinary approach. We have rather chosen to alter the perspective by looking at how actors dealing with the transition of the local energy system conceptualize the issue of energy conservation. Thus, finally, this study makes it possible to understand (for our case) how the different normative views are arbitrated and how they are reflected in patterns of events, activities, and choices of actors over time, leading to the collective ability to act concerning the issue of energy conservation. These research issues are addressed through three research questions:

(1) Why has the issue of energy conservation been integrated into the local energy strategy in order to reach RESS?
(2) How do the involved actors conceptualize "energy conservation"? Why do they do so in this way? What corresponding goals in the municipality are connected to energy conservation? And, what types of approaches are used to meet these goals?
(3) How is the ability to act among actors involved in the process of change obtained?

3. Research Methodology and Research Design

3.1. The Case

A single case approach [34,35] was used for the study as indicated. The municipality chosen as a research setting is one example of the growing number of municipalities aiming for RESS and energy conservation and held characteristics we thought necessary to gain inspiring insights: (1) The process of changing the energy system to RESS seems to be a "stable", as the members of the municipal council

voted with a great majority for the RESS goals in 2008. Additionally, the municipality is very active in the energy field and has won diverse prizes in the last years. The timeframe for reaching RESS by 2020 is very ambitious, particularly because energy demand in the municipality is rather high, as initial inquiries have shown. (2) The general principles clearly support the will to reach RESS and save energy.

> *"The municipality sets the goal by 2020 to reach energy self-sufficiency, based on renewable energies and reduce CO_2 emissions by at least 50%* (…) *Main attention in this context is paid to the electrical energy production*, *energy conservation and heat production*." ([36], p.1).

(3) Different motivations for reaching RESS and saving energy are given in the general principles, ranging from climate protection issues to sustainable regional development, and indicate a mix of different starting points for research as well as for interpreting actors' motivations.

The municipality is located in the southwest of Germany, consists of 19 local districts, and has about 11,000 inhabitants. The rural region where the municipality is located is classified as "structurally weak" by the federal state. However, the unemployment rate in the municipality is low in comparison to the federal state and difficulties in financing the public sector are not as great as in other German municipalities. This is in part due to one large enterprise located in the municipality, which gives it a sound economic structure, but also a rather high energy demand.

3.2. Data Collection and Process of Analysis

Our research objective included understanding why energy conservation became integrated into the local energy concept and interlinked with the issue of RE-expansion in the context of proposed RESS. Therefore, our basic unit for analysis was a process of innovation. Thus, we were "concerned with understanding how things evolve over time and why they evolve in this way, and process data therefore consist largely of stories about what happened and who did what, when" [37] (p.692).

Starting with the fact that in the municipality's politically agreed-upon general principles, the topic of energy conservation was addressed and interleaved with the RESS goal, we "went back in time" looking for the underlying mechanisms that brought out this phenomenon [38]. In the same way, we traveled from 2008 to the present to see how the topics were handled after this political decision.

As a first step, a descriptive chronological narrative was generated from raw data, which was collected via three different methods applied in parallel: (1) Publicly available records were analyzed (municipal protocols, political resolutions, strategy papers of parties, homepages, and newspaper articles); (2) Participant observations were conducted in the municipality in order to see how the topic of energy conservation is collectively handled between local actors; (3) Twenty interviews were conducted with actors who shaped the RESS process, the conceptualization of energy conservation or both processes. As the resolution to reach RESS and energy conservation was passed in the municipal council and administration was ordered to find possibilities to fulfill these goals, the focus of our analysis was laid on the political and administrative arena, but also included other actors who were shown to be relevant during our analysis. Interviews finally included the mayor and administration staff as well as actors in political parties, citizen groups, architects, craftsmen, energy advisors, and

representatives of firms engaged in the energy sector. These individuals were identified through the document analysis and through snowball sampling: being named by other interviewees. During the interviews, the subjects were asked to label events that they interpreted as important or decisive in order for the topics of RESS and energy conservation to emerge. Besides the identification of events, it was also necessary to conduct the interviews to find out which issues people were contemplating and had not left tracks in the documents accessible for analysis.

Based on the resulting depiction of the development, the longitudinal data were coded into different categories, which were then related to each other and led to a more abstract description, and with it to a transformation of the case history to a case study [38]. We thereby did not use an existing set of conceptual categories but developed our own categories inductively from the data.

To give a better overview of the results gained during the analysis process we used the tool of visual mapping [37] and developed a framework (Figure 1 in Section 5) that represents the categories in a comprehensible form and embeds the processes taking place in the municipality into "the various layers of context in which streams of activity occur." [38] (p.347).

Finally, we generated an abstract central category that merged the developments concerning RESS and energy conservation and also provided a basis to draw conclusions concerning our research questions.

In the following section, a historical outline for the case is given, beginning in the early 1990s—a period which crystallized into an important one as a relevant actor entered the stage of local politics at this time—and ending in 2011, when data collection ended.

4. Case History: Why and How is the Issue of Energy Conservation Integrated into the Local RESS-Strategy?

4.1. The Ballot Initiative: Campaigning for a New Orientation in Local Policy and Politics

In 1994, the issue of energy conservation was prominently articulated in the municipal council for the first time by a representative of a ballot initiative, which came to be through a controversy concerning the creation of a holiday park in the municipality in the early 1990s. This initiative was present in the local council from 1994 to 2009. The members of this group countered the politicians' and administration's argument that the municipality would benefit economically from this park by highlighting the risks they perceived. These risks included the loss of intact nature as well as the loss of cultural landscape around a castle ruin where the park was to be located. They were also concerned that the water supply for the municipality's villages could be threatened by a new greater consumption of water. Also, doubts and criticisms were raised about the high number of jobs and the terms of expected wage levels which the mayor, administration, and investor said would be created with the installation of the park. The ballot initiative was able to create so much pressure, that the investor backed out in 1994 and the park was not built. The search by the administration for a new investor was not successful.

In addition, the actors in this group—referring to the Agenda 21 decisions of the Rio-Summit in 1992—wanted to bring their long-term views of social and ecological sustainable development to the municipality and local politics, thus trying to overcome political structures that were dominated by the members of the conservative party and a conservative mayor. One of the core topics within their alternative development discussion was the change of the energy system at the local level to renewable

energies. This change, they stated, would contribute to economic benefits in the municipality by substituting renewable energies for fossil fuel, and at the same time would address global socio-ecological problems they had identified, such as climate change, the preservation of natural resources for future generations, and preventing wars over fossil fuel resources. These ideas of an alternative municipal development were also supported by a society, founded in 1993, which was active in the wider region. Here some overlap of actors from the ballot initiative existed.

At the ballot representatives' suggestion, energy assessments of some buildings in the municipality were carried out in 1994. These activities at this time had singular character and did not lead to a constant management of energy demand in the municipality's properties. Additionally, the idea to convert a recently closed U.S.-Army military area in the municipality into a RE-park and thereby generate local jobs, found no resonance in the political arena or population at the time. One major argument articulated by the ballot initiative in the context of this proposal was that this would reduce the power the grid operator and energy supplier—active in the municipality and today still one of the four largest in Germany—held over the municipality and the energy sector as a whole. Another argument was that local production of energy would result in a broad distribution of jobs. This would lead to a more diverse financial basis for the municipality and people and reduce the dependence on one big firm located in the municipality. It was said that this firm had the power to enforce its interests—specifically concerning the location of an intended additional factory finally built in an industrial area on a hill in 1996—by threatening municipal actors with the move to another location. This would not be possible if the jobs-base was broader.

4.2. Beginning RE Production and Use

In 1997 a new mayor—a member of the conservative party—was elected in the municipality. In contrast to his predecessor, he was able to avoid crucial votes in his term in office and was seen as sociable and open by politicians and administration staff. After his election, the topic of renewable energy use found its place in the municipality. The ballot's representative was able to convince council members to install an incentive program for renewable energies in 1999. Measures such as the installation of biomass heating systems or solar thermal systems for roofs were supported by the municipality for the local population.

However, although the beginnings of a new way of thinking concerning the issue of "energy" were emerging among political actors and administration, this was not a contingent development at the time. For example, an oil-fired boiler was installed in a local museum. The ballot initiative in this context had strongly argued for a wood-fired system, but as it was somewhat more expensive, the initiative was rejected by the council. Nevertheless, the continuous thematization of the energy topic by these local pioneers continued to pave the way for an important step in the municipality in 2002, when an energy park was created. Only with the building of this park can the history of the emergence of the politically-agreed RESS goal and the goal to save energy be understood.

As indicated, the creation of a holiday park in the municipality floundered through the resistance measures of some citizens in the early 1990s. However, the idea to build a holiday park came up again after the election of the new mayor and in the context of discussions concerning potential uses for the former military area. However, no investor could be found for the building of a holiday park—a

circumstance the mayor, before his re-election in 2005, named as the most annoying development in his first term in office.

In spring of 2001, the local administration brought forth the idea to convert the area into an energy park, referring to an already existing scientific study, which showed, for the wider region and especially for the municipality, that RE-potentials were rather high. The council thereafter formulated an order to the administration to check the realization of this idea. In cooperation with an external scientific consultant—well known in Germany today for its activities in material flow analysis and management at local level—a sketch was drawn that combined different forms of renewable energy in the energy park. The consultant and the ballot initiative members strongly argued in favor of the park not being built by the rather large grid operator, but by smaller firms. These actors hoped that with such an arrangement, the park could become a prototype that others could visit in order to gather ideas and knowledge from and imitate in their own forms of energy production. The park was created in 2002 by a pioneering renewable energy company and the scientific consultant who worked together with political and administration actors and firms located in the municipality.

Besides the high RE-potential, another important trigger for the administration's motivation to create this energy park was that energy investors were looking in Germany at the time for wind turbine sites, and it was thought that farmers in the municipality could let out their land for wind energy production. To prevent a "wild spreading" of these turbines and defacement of the countryside, the municipal council finally declared that wind turbines could only be installed in the conversion area of the communal district.

In addition to the use of wind energy, a biogas plant has produced electricity in the energy park since 2005 and uses its industrial waste heat to dry wood pellets in a neighboring firm. Different photovoltaic systems are also used in the area. For these fast developments in the energy park, as well as other RE-installations which were done in the municipality, the installation of the German Renewable Energy Act in 2000 and its renewal in 2004 according to the actor's statements were a vital driving force.

4.3. Emergence of RESS and Energy Conservation as Political Goals and Their Role in the Municipal's Development Strategy

4.3.1. Aiming at RESS and Integrating the Population

Parallel to these developments in the energy park, the administration and mayor, in cooperation with the scientific consultant, searched for possibilities to expand the use of renewable energies from the energy park by the local public and initiate a process of becoming renewable energy self-sufficient—a goal prominently advocated by both the consultant, engaged in regional material flow analysis and management, as well as the pioneering RE-firm. The consultant and the mayor thereby pointed out that it would be possible through the use of innovative technologies and the intelligent steering of energy flows to cut back the drain of money to foreign countries through the use of RE and energy conservation, creating "local value added", simultaneously reducing environmental harms, and to protect people in the municipality from rising and fluctuating energy prices for fossil fuels.

In this context, the consultant came up with the idea in 2005 to submit an application to an EU incentives program that supported municipalities in developing a sustainable energy system. Specifically,

citizens could receive money from the program for home insulation, replacement of windows, or replacement of fossil fuel heating systems with renewable energy technologies. For the municipality's application to the program, citizens had to submit declarations stating their intentions to conduct measures that raised the production of renewable energies or to save energy in their homes. Thus, for the first time, citizens of the municipality were deeply involved in the process of becoming renewable energy self-sufficient and nearly 800 of the 6,100 municipal households showed interest in participating in the program.

Although the application to the program was unsuccessful, the wish to support energy conservation and renewable energy did not disappear. In fact, the idea for an incentive program was cast at the municipal level and especially in the person of the mayor. Money gained from leasing the former military area to the operator of the energy park is, in the main, transferred to the population through this program and has supported citizens in carrying out energy modifications in their homes since 2008. The program details were worked out by an expert panel responsible for building. This panel consisted of administration staff and local experts from the municipality, such as like architects, and was founded in 2006, during the establishment phase of a "location marketing process", an issue that we will go into in detail later. The initial blueprint for this program had been worked on by an employee in the building department administration working here since 2000.

The incentive program still functions today and supports insulation measures that lead to reductions in heating energy demand of at least 20%. These reductions have to be certified by approved energy advisors. The methods of calculating energy savings are based on the German Energy Conservation Act, in existence since 2002. However, although possible, the municipality in its urban land use planning does not integrate standards which go beyond national legal requirements concerning the energy efficiency of buildings. Rather, people are encouraged with financial incentives and information about saving energy.

Since 2008, an energy adviser, hired by the consumer advice center of the federal state, has given free advice to citizens on how to better deal with energy in their homes. This cooperation was initiated by the same employee in the administration responsible for the incentive program. The topics discussed in the counseling sessions pertained to the modernization of private homes in terms of energy efficiency. As of 2009, a new version of the German Energy Conservation Act has been in place, which defines energy standards for new buildings and the modernization of existing buildings in cases where a building license is needed. Also, during both the renting of houses as well as in the case of selling a house, an energy pass has to be shown to the contractual partner. Within the counseling sessions, topics initiated by the German Energy Conservation Act, such as the energy pass, were very relevant.

The implementation of the obligation to have an energy pass available, which is made by a certified energy advisor, led to the decision by many planners, architects, and chimney sweeps in the municipality, to participate in programs of advanced education in order to become certified and then offer these services to local clients, thus not giving this business field up to external firms. A further step to integrate people into the process of reaching RESS was a recent project in the municipality, a local heat supply system based on wood that began in 2009. The issues of energy conservation and energy production from renewable energies were strongly connected in this project. Planners, politicians, and the administration stated that the more people insulated their homes, the more other houses could be connected to the new heat supply grid in the future.

This heating grid has not been built because the municipal council did not approve the tender exercise at the beginning of 2011. After the rejection, a new working group was established to search for starting points that target the heating sector in the municipality. In this working group, it was argued consensually that without energy conservation, the RESS goal would not be achievable.

4.3.2. Basing the Municipality's Marketing Strategy on the Topic of Energy

Running in parallel, but strongly interwoven with the aforementioned developments, was the so-called "location marketing process". In 2006, a parliamentary group of "free voters" in the municipality put forward a motion in the council to find ways to counteract the demographic changes taking place in Germany as a whole and in the municipality especially. A detailed study by an external service contractor showed that overall developments in Germany—people becoming older, fewer babies being born, and many people moving from structurally weak to more attractive areas—could already be partly recognized in the municipality and would subsequently show up as a decline in the number of inhabitants by the beginning of 2015. Added to that, the danger of falling into a spiral of indebtedness was also becoming visible in the municipality, as other German municipalities had already done. Moreover, the danger was seen that more and more infrastructures provided by the federal state would be lost in the municipality as with the closure of the forestry commission office in 2003 and road maintenance depot a few years earlier, highlighted by the local actors. To avoid or at least cushion these developments and maintain or advance general wellbeing, the "location marketing progress" was initiated and supported by public funds from the federal ministry of environment. With the process, the competitiveness of the municipality should be enhanced, and by enabling the municipality to persist in the struggle for the purchasing power of inhabitants, tourists, firms, jobs, and subsidies, its "future viability" secured.

Four expert panels were created by the administration together with the external consultant and staffed by local actors, which held special competences in various sectors. Under the leadership of an administrative employee, the panels dealt with the topics of "economy", "social affairs", "building", and "energy/environment". In the "economy" panel, a close cooperation between administration and the local trade- and traffic-association, measures were worked out to bind purchasing power in the municipality. For example in 2009, the council decided to primarily procure products for the administration from local suppliers if possible. From the work of this panel, an initiative was also founded to create a regional brand; we will come to this again later. The panel of "social affairs" worked on topics such as the elaboration of concepts of childcare in the municipality to better enable a combination of job and family life and the creation of an integrated school. Both issues are seen as important "location factors"—as repeatedly emphasized by the mayor—to be attractive for families. In the "building" panel, the program details for the aforementioned energy incentive program were shaped. It was also discussed how city planning could be adapted to avoid the "bleeding" of village centers. This means that due to an older and shrinking population as well as the enduring fact that people tend to build houses in developing areas, rather than buy and renovate houses in village centers, a growing number of houses in the centers were unoccupied. Besides not being attractive as places to purchase, village centers with empty houses were also seen as problematic in terms of infrastructure provision. The more houses that were empty due to demographic developments, the fewer people there were to

finance the maintenance of water systems and streets. Therefore, in recent years, demolishing old buildings and constructing new ones in village centers, instead of creating new development areas has been a major topic for discussion. In this context, in 2008, members of the panel elaborated an incentive program of the municipality to support renovating, demolishing and rebuilding in village centers. For this program and the RE and energy conservation programs, an annual and specific sum was decided upon by the council. In 2010 and 2011, and especially for 2012, the council and administration made the decision to shift some money from the energy program to the program for strengthening the village centers, because this program is seen as a very important "location factor" as other municipalities cannot afford such programs.

In the panel "energy/environment", further development of the energy park and RE use in the municipality as well as the topic of energy conservation were discussed. The panel was led by an employee who had been working in the administration since 2000 and mainly responsible for coordinating activities the administration carries out in the RESS process. Actors were involved in this panel, many of who were active in the development of the energy park. In addition, a representative from grid operations and an engineer from the green party were involved. In the panel, a draft of the municipality's general principles to reach RESS was developed. The idea to formulate the intention to reach RESS and legitimize it by the council was put forward by the above-mentioned scientific consultant. The consultant argued that the municipality would be better able to participate in competitions concerning local climate protection, RE use or RESS, if it could be shown that political actors agreed on energy policy goals. Such ensuing competitions won by the municipality include: "Climate Protection Project Prize 2009" and the "European Solar Prize 2009". The text of the general principles was mainly formulated by the scientific consultant in coordination with the municipality's administration. The aspect of energy conservation was integrated into these principles and was conceptually rooted in the already existing efforts to reduce energy demand for heating, supported by the municipality's incentive program.

The activities concerning the field of "energy" during the location marketing process as well as the location marketing process itself aimed to strengthen and communicate the unique character and high profile the municipality had already acquired through the development of the energy park. As local climate protection and RE use began to attract more interest in the political arena in Germany and at higher levels and as competitions and funding programs emerged, actors in administration and politics identified the issue of becoming a RESS municipality as a good label for the future development of the municipality, including the enhancement of "energy-tourism". Additionally, the topic of "energy" was transferred to other subject matter and bundled in the municipal marketing process. This is reflected in slogans like: "Shape the future with energy", "Create jobs with energy", "Save the environment with energy", and "Grow old with energy".

Correspondingly, energy-efficient building refurbishments—as well as RE measures—by administration, politicians, and craftsmen were seen as a new business field. For the administration and especially the mayor, this issue—conceptualized as "local value added"—was seen as an important aspect as to why to support energy conservation measures in private buildings with the incentive program. The success of this program was correspondingly measured by investments induced rather than by energy saved.

4.4. RESS and Energy Conservation in the Electricity and Traffic Sector

As can be seen from the unfolding case history so far, there was a strong focus on energy conservation in the heating sector. Some reasons for this have already been named, but there are specifics associated with the electricity and traffic sector which have also contributed to this circumstance.

Actually, there is a very uneven distribution of electricity demand in the municipality. While electricity production from RE in the energy park is theoretically sufficient to cover household demands, the goal of a full supply in the industry-sector is difficult to reach, because the already mentioned large industry accounts for two thirds of the electricity demand. Therefore, actors in politics and administration see savings of electricity in administration and households in fact as desirable but also as marginal in comparison with the high electricity demand by this one actor. Indeed, a new transformer station has to be built because electricity demand in the last decade, especially in this industrial firm, has increased and further increases are predicted. Essentially, electricity demand is, in fact, rising and not sinking in the municipality's territory and also in the municipality's own properties because here savings induced by use of energy efficient appliances are offset due to growing equipment.

Connected to the economic development of the big firm as well as the expansion of a regional airport is the rising amount of goods transported into, through, and out of the municipality, leading to greater traffic volume and high energy use in the mobility sector. This rising energy demand in transportation is seen by the majority of actors as normal and accompanied by desirable economic development.

Also, the spatial structure of the municipality and the areas of settlement enhance traffic volume in the municipality. There are many single family homes in low density. Additionally, in the last few decades a concentration of jobs and possibilities to buy things for daily demand has emerged. In combination with a poor public transportation system people have to use cars for mobility. As distances between villages are large and the area is hilly, cycling is difficult. Moreover, not enough safe cycle ways exist between villages. Proposals made by a member of the green party in the council to build cycle ways were unheard. Cycle ways are only ever addressed in political discussions concerning the integration of the municipality to supra-regional cycle way infrastructure to raise accessibility of the municipality for cycling tourists. Correspondingly, actors do not see possibilities to reach the RESS goal in this sector until 2020.

4.5. (Productive) Conflicts Concerning Environmental and Economic Issues

During our analysis, we recognized that there were some conflicts in the municipality concerning environmental and economic issues that ran parallel to the developments of the energy park and the emergent RESS process. These conflicts in turn had both an impact on developments in the energy sector due to actors becoming involved in the process. They also firmly showed how considerations about energy conservation were integrated into political structures. The way the conflicts were finally decided shows that, in cases of conflicting goals between economic development and environmental issues in general and energy conservation in particular, the decisions are made in favor of cheaper solutions or solutions which promise economic growth. We go into this later. Furthermore, these

conflicts show in contrast with some more recent developments, that in the municipality some changes emerged. In turn, environmentally concerned actors, who brought up some of these changes, commented positively on the progress made in the municipality over the last decade because they have seen, particularly in the RE-activities, some of their seeds grow, although they were outvoted on many decisions concerning environmental and economic issues, as the following remarks will show.

4.5.1. The Airport

One of these conflicts resulted from the plan to develop a regional airport that bordered the municipality. In 1993 the airport was established as part of a conversion project to change the airport from military to civil use. Since 2003 the plan to extend the runway and the requested permission for night flights by the airport's operators has been a controversial topic and heavily discussed in the municipality. A citizen group formed and argued that the noise in the night would disturb people's sleep and affect quality of life. The value of homes would be reduced due to the noise, a large area of natural land would have to be closed off for the extension, and the planned low budget airlines would encourage people to go on "shopping trips" which members of the citizen group saw as ecologically counterproductive. Another argument against the development plans was the possibility to host cargo flights using the longer runway. The transportation of goods like "flowers from Columbia to Germany" was seen as absurd and a waste of energy. Also, the possibility for a "remilitarization" of the airport because of the longer runway—today it is used for military flights by the U.S. Army—was criticized, as well as the available subsidies from the federal state for the project. However, the citizen group could not convince the council to vote against the airport project. It was passed at the end of 2003. The main argument held by the majority of the council members—except the representative of the ballot initiative, who voted against the project—was that the municipality would profit economically from tourists, which could use the airport to come to the region, as well as from firms that might settle in the municipality because of the newly created possibility of cargo air transport.

From the citizen group against the airport project, the green party in the municipality was built and a representative was elected to the local council in 2004. Since his election he has regularly introduced the topic of energy conservation every year. Thereto he was stimulated by the engineer, who was later active in the panel "energy/environment" as well as in the energy working group founded in 2011. In 2004 the representative of the green party argued in the budgeting session that the municipality should not only be a pioneer in renewable energy production, but also have a very low energy demand. He proposed energy management plans for the municipal buildings. His main argument for this proposal was high heating energy costs for the municipality, which were rising with rising energy prices, especially as of 2004, as well as the need to prevent climate change. The mayor agreed to this proposal. The consumption of heating energy by the municipal properties, given in the following, was systematically collected, beginning in 2005.

4.5.2. The New Road

People in the local green party, as well as the members of the ballot initiative with representatives on the council, have argued against a large transportation project since 2004—a new road across the municipality and an associated large scale bridge in a neighboring municipality—would have the

potential to greatly increase the traffic volume into, out of, and through the municipality in their view. They stated that a loss of intact landscape would go hand-in-hand with this infrastructure project, too much money would be invested in a new road instead of repairing existing streets, and individual car mobility as well as street transportation of goods should, in general, be minimized and not encouraged because of environmental issues. This conflict went on until the spring of 2011 when the final approval for the project was given. Here too, the main argument made by the majority of the municipal's council members was that this infrastructure project would bring economic benefits to the municipality, which—from their point of view—had poor traffic connections with national and international transport infrastructures and with this to international markets. Upgrading the road infrastructure, particularly around the growing regional airport, would allow room for "sustainable development of the economic area" the council stated in a resolution in 2006.

4.5.3. The New City Hall

From the beginning of 2001 until 2008, a project was carried out which also displayed some discord between environmental and economic proponents. In 2001, the administration and the mayor came up with the plan to build a new city hall. The old hall was in a poor state of repair. From the perspective of energy consumption, the building was also seen as insufficient. As oil prices peaked and heating costs for the city hall were very high in 2000, administration ordered a thermograph of the building and presented these pictures to the council. The office manager of the administration, in this context, also delivered the actual numbers of heating oil consumption and heating costs to the parliamentary groups. Both the office manager and the mayor argued that the operational costs for the city hall could be greatly reduced by building a new hall. In 2003 most of the local political parties voted for a new city hall to be built. After this decision, there was dispute in the council and in the population as to which material to use for the building. The ballot initiative argued that it should be made of wood grown in the region and facilitated by local firms to have both "local value added" and a building requiring a low energy demand, both in construction as well as eventual use. As a corresponding comparison between two alternative plans showed, a completely wooden building would have been somewhat more expensive than a building made of steel and concrete, with a much smaller share of wood. Finally, the council followed the recommendations of the committee for urban planning, where the issue was discussed and the cheaper variant voted for.

Finally, it turned out that the costs of constructing the building rose because of the associated higher energy prices and therefore, steel prices also rose strongly in 2004. The pre-calculations from the planners—one of them a member of the conservative party—were no longer valid. Encouraged by the committee of urban planning, the planners conducted conceptual modifications to the building plans to keep costs within the accepted budget. The roof insulation in particular was abandoned and with it, a component that affects the issue originally associated with building a new hall—energy demand. The representative of the green party commented during the budget sessions of 2005 that due to the money-saving modifications the innovative aspects of the building were erased. Finally, the anticipated costs were exceeded by more than 10%, even though the modifications were carried out. The greater costs were manageable because the municipality had a high income during these years from local business taxes, particularly from the above-mentioned large firm.

However, while the town hall was not made from wood, in 2009 an extension was added to the elementary school and built by local firms as a timber construction. In addition, a new kindergarten, which had to be built in the municipality to fulfill parents' legal entitlement to have their children cared for from the age of two, would be fully constructed from wooden parts produced by a local firm. There were two alternative building plans made for this building by the engineering bureau commissioned to undertake the task—also responsible for the town hall and the elementary school. The wooden building seemed to be too expensive at first, but cooperation with an institution of the federal state was established and additional subsidies were received. The argumentation from the Ministry of the Environment for the additional subsidies was that the construction method was highly energy efficient and saved transport energy as well as energy that would have been used for the production of alternative materials and also local value would be added. The majority of municipal politicians and administration staff highlight the last issue, because some local firms are conducting the project.

4.5.4. The Food-Discounter

During 2003 and 2004 there was also dissent among local politicians concerning the settlement of a new discount food outlet at the edge of the town. On the one hand it was criticized by the ballot initiative that this business and stores were planned to be built in "greenfield" area, causing land consumption and higher individual car mobility, and on the other hand that suppliers often became fully dependent on such discounters leading to unfair conditions in supply. It was also argued that purchasing power would not grow constantly and there might be a replacement of shops in the city center by the new shopping possibilities. Especially in line with this argument were a group of local retailers who spoke against the project. The majority of local politicians countered that the "consumers" in the municipality wanted the discounter and that the new commercial zone would attract additional people from outside the municipality to buy in the area. Negative effects on the shops in the city center would stay minimal, if the substantial number of free parking spaces there were maintained. In the spring of 2004, the council agreed by a large majority to the land use plan and with this enabled the building of the shops.

However, a few years later, the administration introduced an idea to the "economy" panel of the location marketing process, which had previously shown considerable opposition toward considerations brought up during the discussions surrounding the settlement of the discounter years earlier. The proposition was made to the panel members to take an excursion to a region in Austria where a famous regional brand had been established during the previous few years. Out of this visit in 2009, the idea was born to start an initiative to establish a regional brand for the region. The initiative is strongly supported by the administration—in the form of a member also leading the location marketing process and employed in the municipality since 1996—which is trying to enhance cooperation among firms in the municipality as well as with surrounding municipalities in the hope of establishing a stable process. Here, the regional brand is seen, on the one hand, as a tool to create new product lines with high quality and higher prices and, thus, creating and accessing new markets; on the other hand, especially in the food sector, the project is seen as emancipatory by local food producers, because it hopes to reduce their dependence on big food discounters by establishing farmer-to-consumer direct marketing.

Environmental factors in the initiative are only treated peripherally, but were, for example, highlighted by a farmer who was previously active in the ballot initiative and a pioneer in using RE in the 1990s, as well as one of the farmers willing to use his land for the construction of wind turbines. He argues that with more local fodder production for cattle and the local food supply, high transportation energy demands and costs associated with soy-imports might be reduced and deforestation associated with soy cultivation in southern countries avoided.

5. Case Study Results

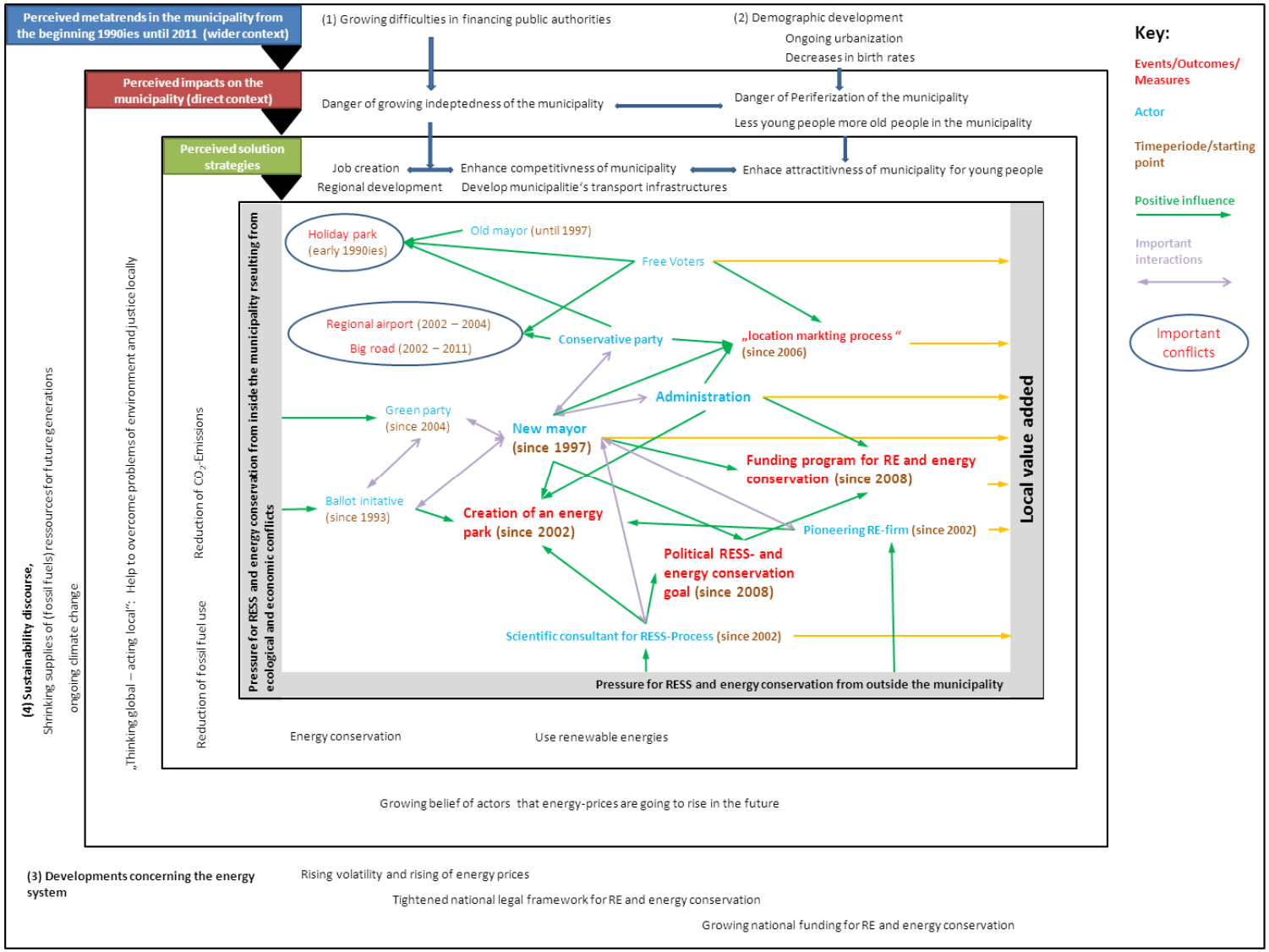
5.1. The Developed Framework

As shown in section three, we transformed the case history into a case study by coding data into categories and relating them to each other. It turns out that there were various interwoven processes, which together shaped the local RESS process and why and how energy conservation became (and in some contexts did not become) integrated in political discourses in general, and in RESS strategy in particular. We identified the conceptual category "context" as an important one, which itself consists of a wider context (perceived meta-trends) and a context which is directly connected to the municipality (perceived impacts on the municipality). The developments in the wider context were categorized into four perceived co-evolving meta-trends. These categories build the first frame in Figure 1. These meta-trends are, in a specific way, perceived by actors as affecting the municipality (second frame). These actors according to their sensitivity to different topics more or less process these developments following their perceived solution strategies (third frame). The inner frame contains the categories "actors", "events/outcomes/measures" as well as "interactions". The last category is expressed by the arrows between actors, including arrows show which actors had important "influence" on different events/outcomes/measures. We have also integrated three boxes into the framework which show that there are "actors from inside" the municipality who pushed the topic of RESS and energy conservation and "actors from outside" who were relevant for the processes. Also, the goal "local value added" which brings actors together behind the ideas to reach RESS and to save energy is integrated in the framework. Time is regarded by using process terms in the categories' names (e.g., "Growing difficulties in financing public authorities") and in the inner frame by adding the points in time when actors became involved to processes and when events/measures/projects appeared or were carried out.

This method of the visual mapping of processes "may be biased toward the representation of certain types of information and against others." [37] (p.702). However, it is a good method in our case to show explicitly the importance of the context and thus indicates that the results gained might be relevant for other municipalities which in their efforts to reach RESS and save energy might also incorporate reactions to similarly perceived meta-trends.

We now detail the context (in the following numbers 1 to 4 of the perceived meta-trends) and thereafter present an abstract central category we found to explain how the developments in the context on the macro-level and the developments at the micro-level in the inner frame of Figure 1 are connected.

Figure 1. Perceived meta-trends and how and why the respective local administrators have shaped and integrated energy conservation into the local strategy to reach RESS.



Although, in comparison to others, the municipality was and is seen as being in a sound economic situation, (1) local politicians and the administration wanted to prevent falling into a spiral of debt as many other German municipalities had already done, especially in the federal state where the municipality is located [39]. Interwoven with the problem of finances was the (2) anticipated threat posed by the overall demographic developments found in Germany, which among other things consisted of decreased birth rates and a growing share of elderly individuals in the population [40,41].

Both, the financial as well as the demographic situation posed, in the eyes of the local actors, the threat of peripheralization to the municipality (see for this discussion in [42]). To counteract such developments and overcome the status of a "structurally weak" region, the desire for local economic growth and job creation was formulated. For a large majority of actors in local politics this included an expansion of the transportation infrastructure in order to better connect the region to international markets.

Another (3) perceived threat was connected to the impact that the structure of and developments in the current (inter)national energy system had on the municipality: Due to the purchase of fossil energy sources from outside by actors situated in the municipality, buying power flows out. As shortages of fossil fuels, associated increased volatility, and rising energy prices were anticipated or felt by local actors, measures were developed as how to minimize any negative effects on the municipality. Perceived threats to the energy system intensified in 2000 when energy prices began to rise, and with the construction of the energy park in 2002, consideration of the significance of a secure energy supply began.

A last (4) perceived trend on the meta-level was the on-going threat of environmental degradation and global injustice of resource use. These concerns were expressed in the sustainability discourse beginning in the early 1990s, which, according to the local advocates of these issues, is in part related to the energy system discourse, specifically climate change induced by burning fossil fuels.

By identifying this cocktail of perceived meta-trends and its respective local administrators who developed and pursued solution strategies, the municipality's history, including the process toward RESS, as well as the will to save energy, could be determined.

5.2. Emergence of Two Parallel Branches of Economic Development

As we have stated in section two, we are interested in how the ability to act is created among actors on a local level concerning the issue of energy conservation. We think that with the "emergence of two parallel branches of economic development", we have derived an abstract central category, which makes it possible to find answers to this question. This category makes it possible to understand the process of change toward RESS and the politically agreed goal to save energy in the municipality, as well as get some insight into how the two goals are related to each other.

Finally, all actors involved have a specific interest in keeping the municipality attractive for people and firms and by doing so ensure the wellbeing and future viability of the "social fabric of the municipality". There are many local firms that depend on functioning infrastructures, a certain number of consumers to buy their products and services (e.g., local retailers organized against the settlement of the discounter), and also well trained and flexible workforces (e.g., need for childcare, education). In addition, the administration staff are dependent on a prospering municipality, because public jobs are

only needed if the total population of the municipality does not shrink. Additionally, the mayor, with the need to further his career (voted district chief executive in 2011), has some interest in helping the municipality prosper. Correspondingly, administration cooperated intensively with local firms (e.g., in the location marketing process) and many actors bridged the political and economic arenas by being both politicians and entrepreneurs (head of conservative party owning an engineering bureau, local retailers), thus being able to influence municipal politics and policy.

Persistent attempts to create local economic growth in order to create jobs, income, and enhance the municipality's attractiveness to people and firms can be followed in a chronological line of events, beginning with the proposed holiday park in the early 1990s, followed by the established industrial area in 1996, the plan to create a holiday park in the former military area in the late 1990s, the extension of the airport in 2003, the support for a large road during the whole decade after 2000, and the permission given to a discounter to settle in 2004, to the institutionalization of systematic reasoning about economic development in the municipality's "location marketing process" in 2006. The majority of actors supported the large infrastructure projects (airport, road) in particular, in order to meet the dangers of peripheralization head-on. A great number of the projects mentioned clearly show that environmental concern and energy demand in particular are not necessarily priority criteria in decision-making. We called this the "classic" growth model.

However, under the pressure of the perceived meta-trends and the actions taken to process them locally, there emerged a 'softening' following the "classic" growth model and a digression toward more of a second economic development branch in recent years. This complementary economic development branch is characterized by the RESS process, including the wish to strengthen local firms by promoting energy conservation through energy efficient refurbishment, as well as by the intention to build a regional brand and promote more local economic cycles.

This "softening" developed due to changes coinciding in several of the categories we have identified. It can, in large part, be attributed to a change in the constellation of actors in the municipality's political arena. The conflicts surrounding the holiday park and the airport can be seen as one source of this change and as a way that with new actors, new ideas emerged. Beginning in the early 1990s, there was constant pressure from actors within the municipality (ballot initiative, green party) to discuss possible development alternatives which would subsist with environmental protection and energy conservation. These political actors strongly supported the RESS goal, the wish to save energy, as well as the recent initiative to build the regional brand and support more local economies. In part, these pioneers were responsible for initiating all of these processes as shown. This change in the constellation of actors inside the municipality's political arena was complemented by a change of actors in the administration, in particular the employee responsible for the development of the energy park, the person responsible for the incentive program, and the one for the "location marketing process" and the establishment of the regional brand, and also including the mayoral election in 1997. These actors were both open to new ideas and brought in new ideas themselves. With his staff behind him, the mayor was able to integrate representatives of different approaches of regional development due to his visionary, entrepreneurial, and mediating style of politics—a style becoming more widely relevant in Germany in recent years [43]—leading to a policy that was seen as constructive by all coalitions of actors in counteracting the four perceived major threats.

Actors from outside the municipality also intervened and supported the idea of more "sustainable" economic growth. As indicated, the actors who met during the excursion to Austria were important in making concrete the idea to create a regional brand and "local value added", including local RE use and energy conservation due to refurbishments. The scientific consultant dealing with material flow analysis in a regional and municipal context as well as the cooperation with a pioneering RE firm supported the idea of this alternative development, maintaining that it was possible to create added value through green technology use and an intelligent steering of energy flows while reducing environmental harms. This framing by many actors in the municipality corresponds very well to the decoupling strategy already mentioned [15] and the idea of ecological modernization as a basis for regional development in general [44].

As a result, each group of local actors had the feeling that its concerns were respected in actual policies, even though different worldviews and priorities existed. The capacity to act was created and maintained and topics could be found which all local coalitions could support. This arrangement still led to the prioritization of measures that create economic growth or save money. Thus, the "classic" growth strategy was not replaced. Rather, many actors connect the "classic" thoughts of development to the new emerging branch of development.

In this context, it was significant that an adequate narrative could be construed among the actors: "local value added". By collectively translating the originally "green" issues of RE use and energy conservation into the language of economics, the topic spanned discourses and fulfilled a dominating desire held by a majority of local actors.

Beside the changes in the actor constellation and the emergence of a shared narrative, the surrounding legal framework was also vital for the development of a new branch in the regional development strategy. The Renewable Energy Act from 2000 and its renewal in 2004 was an incentive instrument and very important in accounting for the increased use of RE, as other municipality cases also show [8]. In the sector of energy conservation, the German Energy Conservation Act was crucial in promoting conservation measures in the heating sector. The increasing transparency of energy demand, due to new methods to identify technical energy-saving potentials (due to methods of calculation prescribed by the Act in combination with newer technologies like thermography), was one important issue that enabled actors to quantify the loss of money due to waste of energy. Also, on the one hand the law forced some changes in firms active in the construction sector in the municipality; on the other hand it enhanced the possibility for firms to create income through energy advising, and energy efficient building and refurbishment. Firms in the municipality have modernized their competencies and offer appropriate measures, from on-site energy consultations to planning, to constructing energy efficient buildings, as well as energy efficient refurbishments and the provision of adequate building materials. Without modernization of their skills, orders might have been lost.

Since the municipality had the financial leeway to install an energy conservation incentive program for the public, it was further possible to let citizens, which have to pay for the refurbishments, profit due to faster rates of return for measures taken to enhance energy efficiency in their buildings. Moreover, as Kuckshinrichs *et al.* [45] show for incentive programs at the national level in Germany, such programs can be very profitable for public budgets, making the "green" or "sustainable" economy desirable.

Through the marketing of the energy park, success of the municipality in the RE and local climate protection community grew, and as energy prices rose, the perspectives held by more conservative

actors changed and they also came around to the idea of the new branch of economic development. Consequently, with a large majority, the political RESS goal was set and a local marketing strategy based on the topic of "energy" initiated.

Accordingly, especially after the year 2000, due to these parallel developments, it can be said that a period began in which two strategies towards economic development in the municipality existed. On the one hand, economic growth was supported by "classic" measures like trade, an export-oriented industry, infrastructure development, and encouraging industry to settle in the area and, on the other hand, by alternative measures that promoted "green" or "sustainable" growth, thus, nurturing economic growth in the municipality while relieving the environment.

6. Discussion

In this section we want to discuss our results from two different angles. Although it might be interesting, due to lack of space we will not go into the innovation process of RESS and energy conservation as a goal itself. Instead, we here focus on the normative aspects which, as introduced in section two, play an important role in discourses concerning the issue of energy conservation. Thus, we look at the developments found in our case study from the perspective of a "post-growth-society". Furthermore, we derive conclusions for further research concerning the issue of energy conservation in the context of RESS at the local level.

6.1. The Developments under the Lens of a "Post-Growth-Society"

Looking at the local developments that our study revealed through the lens of a concept of a "post-growth-society", one may say that connecting factors for guidelines such as "sufficiency" could hardly be identified because former environmental issues may possibly be seen as partly colonized by reasoning found in categories of "economic growth" and "enhancing competitiveness", accompanied by political decisions in favor of big infrastructure projects and a missing thematization of lifestyle issues in the local discussions. Thus, although changes in addressing the issue of RE-use and energy conservation have emerged in the past 20 years, decision-making in the municipality is dominated by economic reasoning and the desire to create good conditions for industry, trade, and citizens, including soft location factors like the expansion of childcare and the creation of an image and unique characterization. This is underpinned in our case study by the fact that no regulations, for example for building standards, exist or are discussed. Thus, as the findings of Bielitza-Mimjähner [46] who undertook a study on German municipalities' efforts undertaken for local climate protection under conditions of globalization and liberalization, support "local authority's role as planner and regulator generally take a backseat or are under conditionality" (p.343). Also, Kern *et al.* [47] (p.12) assert that climate protection has "hardly made it in the 'hard regulatory core' of municipal politics" in Germany. However, while these authors explain these findings in the global context of justification of climate protection and the need for situation-specific adaptation, against the background of the conceptualization of RESS and energy conservation found in our case study, this seems to be more reason to avoid the risk that citizens or companies are put off. However, as the current mode which municipalities in the federal state are in, is the "struggle for inhabitants", because the German financial constitution rewards high population numbers [48], it might be comprehensible that it would be

difficult for one municipality to veer from this. Thus, indicated by our case study as well as by existing literature, changes of communal politics in terms of self-limitation would also need changes in institutions at higher levels.

6.2. Conclusions for Research on Energy Conservation in the Context of Proposed RESS on a Local Level

Answering what can be derived from the results of our inductive, longitudinal approach chosen for research on energy conservation in the context of proposed RESS goals, we think that it is necessary to consider how developments at higher levels and their processing on the local level, in different policy fields, and by different actors with their own interests and the corresponding modalities of policy-making are interrelated. Here it might be fruitful to look at different actor groups in detail, using, for example, a theoretical perspective which intermediates structure and agency, as for example done by Pamme [49] for the issue of sustainability in administrations of German cities.

When referring to instruments that promote energy conservation, many local actors in politics and administration in our case study finally held views which—spoken with the words of Wilhite *et al.* [50]—"focus on engineering design, provision of technological information, (and) incentive subsidies for equipment" (p. 8447). A fact Gruber *et al.* [51] (p.132) have also described.

Thus, on the one hand, while many processes have emerged over the last two decades that induced and shaped the process of energy conservation as a goal, as well as many processes that in turn shaped the development of physical energy demand in our municipality, on the other, reversed, this process-character is not recognizable in the reasoning behind how energy demand occurs and which strategies should be used to save energy. Thus, trying to understand why this is the case could be fruitful.

As shown, characteristics of energy demand in the mobility sector led to a situation where energy conservation was not prominently discussed in the municipality. This had to do with complex changes in the municipality during recent decades. As concentrations of jobs, shopping possibilities, and services to a few villages in the municipality emerged, causing lifestyles which were very energy-intensive, as Life-Cycle-Analysis in general can reveal [52]; individual car-mobility was, in the end, seen as necessary. Moreover, these complex changes were accompanied by great developments within the industrial sector in the municipality studied and a rising demand for the transportation of goods. Hence, it looked as if a socio-technical path dependence for individual mobility (see [53]) and transportation regimes had emerged that hardly seemed changeable from an actor's point of view. The exercised restraint of the municipality to take actions in the traffic sector as well as already described in the planning sector fits well with the findings of Bulkeley and Kern [54] in their comparison of climate protection policies between Germany and the United Kingdom. Alternatives to car-mobility, through the building of cycle ways, were addressed in political discussions in the case study municipality, but were, for the majority of actors, not related to everyday traffic, but concerned the integration of the municipality into a supra-regional cycle way infrastructure in order to raise the accessibility of the municipality for cycling tourists and create "local value added". Thus, in addition to lock-ins in socio-technical-systems of individual car mobility, "mental infrastructures" [55] might

be concluded, making this issue an interesting one for further research, especially in connection with analyzing the role that the thread of peripheralization plays in this context.

As we, as a result of our analysis, come to the question of whether energy conservation and RESS are instruments for publicity or a separate ecological issue in and of themselves, it might be fruitful to go deeper into the issue, for example, through the use of a discourse analysis approach [56] and see if a framing of the topics as "local value added" and the use of business language at local level becomes hegemonial. This framing and use of language has already been described in discussions about sustainability at national and international levels [57].

Although we argued that aspects like "sufficiency" and "changes to more frugal lifestyles" do not play a major role in the process of change in our case study and we draw somewhat conservative conclusions concerning the connectability of such concepts to actual local discourses, we were impressed by the ability of the studied municipality to function as a multiplier for RE-use and energy efficiency ("energy tourism"). Thus, deeper research concerning the role model and multiplication function of such municipalities may be interesting because even representatives of more radical concepts of sustainability argue that without RE-use and enhanced energy efficiency, a transformation to sustainability is not possible.

As this paper is based on a single case study, it is just a small extract from the great number of municipalities trying to reach RESS. In these other municipalities, there are different conditions present, especially concerning the amount of energy consumption and its strong connection to the economic situation in the municipalities. Thus, there may be other factors than the ones identified in our case, which shape how energy conservation is treated in the context of proposed RESS on a local level, and perhaps answer why.

7. Conclusions

The municipality in our case study set the goal to reach RESS by 2020 in order to prevent any negative economic consequences that high amounts of energy consumption could have. Fossil fuels (especially heating oil), can affect the purchasing power of the municipality and contribute to its imminent peripheralization. RE use and energy conservation were local answers to perceived shortages of fossil fuels by actors in politics, administration, and local firms. Environmentally concerned people brought the idea of energy conservation into the political arena during the 1990s, but it was not until energy prices rose, regulations developed on a national level, subsidies for energy conservation emerged, and actions addressing the issue could be seen as adding value to the unique character that the municipality gained by their RE and RESS activities, that the actual subject was considered relevant in the municipality and thereafter mainly interlinked with the heating sector. During the nearly two decades encompassed by our longitudinal case study, a "classic" growth model could be identified, which consisted of projects carried out in the municipality contributing to higher energy demand in the mobility and electricity sectors. Environmental concerns expressed by a minority of actors during conflicts concerning some of these projects were repeatedly countered with reasons for economic development and job creation in the municipality, characterized as "structurally weak" by the federal state. However, due to the environmentally concerned actors from inside the municipality and some actors from outside, a deviation in the economic development model emerged in more recent

years and ran parallel to the "classic" agenda. This new departure included the RESS process, the desire to save energy (in the heating sector), and an initiative to create a regional brand for stronger, local economies. Representatives of this strategy saw a decoupling of economic development and environmental harms, including a reduction in (fossil) energy use, if possible. The elected mayor was able to balance the interests of various coalitions during his term in office, and due to the adoption of new ideas and modernization, the parallel development branch stabilized in the following decade. Contributing to these developments was the dominating narrative "local value added", which as construed among the actors, brought representatives from different modes of economic development together and, thus, created the capacity to act.

Acknowledgments

We want to thank our colleagues and participants from Sessions IV and V at the conference for "Changing the Energy System to Renewable Energy Self-Sufficiency (RESS)—An inter- and transdisciplinary approach" and Georg Winkel for his invaluable comments that greatly improved our article. A special thanks goes to the Federal Ministry of Education and Research (BMBF), which provided the financial support to conduct the research within the scope of the project: "Renewable Energy Regions—Socio-ecology of self-sufficiency".

Conflict of Interest

The authors declare no conflict of interest.

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