Climate Citizens
– Analysis of roles, experiences, challenges and opportunities using the example of the citizens of Heidelberg/Germany –

Frieder Rubik[1]*, Michael Kress[1]

[1] *Institute for Ecological Economy Research (IÖW), Bergstraße 7, D-69120 Heidelberg/Germany*

* *Corresponding author: frieder.rubik@ioew.de, Tel. ++49-6221-649166*

Topic: Experiences with sustainable/smart cities and communities

Abstract

Germany's government decided to phase out nuclear energy which demands the transformation of Germany's energy system encompassing a process of societal change. This process is characterized by new opportunities for action as well as new responsibilities, on a federal, regional and local level. In particular, cities and communities are asked to act and support "their" citizens. This paper describes different roles of citizens using the example of Heidelberg/Germany. First and preliminary empirical insights are presented and some conclusions are drawn.

Keywords: Energy transition, climate protection, consumption behaviour

1. Introduction

The decision of the German government to phase out nuclear energy demands the transformation of Germany's energy system encompassing a process of societal change. This process is characterized by new opportunities for action as well as new responsibilities, on a federal, regional and local level. In particular, cities and communities are asked to act and support "their" citizens.

This forms the background of this paper. In chapter 2, we describe the background, methods applied and objectives of this paper, which is an outcome of an ongoing research project. Empirical insights are presented in chapter 3 using the example of Heidelberg/Germany. First – preliminary – conclusions are presented in chapter 4.

2. Background, methods and objectives

2.1. Research background

The analysis, interpretation and activation of these roles are the main focus of the ongoing[1] research project Klima-Citoyen" ("Climate citizen"). This project is funded by the German Federal Ministry for Education and Research (BMBF), within its national research program "Transformation of the energy system". It is coordinated by the University of Saarbrucken/DE, and its cooperating partner, the Zeppelin University of Friedrichshafen/DE.

The project examines how citizens become aware, take advantage of, and engage in these new opportunities of active participation within the energy transformation process. The particular approach and challenge of the project lies in considering individual motives, influential local framework conditions and effects of the various roles and parameters with reference to each other - respecting possible interactions and spillover-effects. Partner communities are the cities of Heidelberg/DE, Nalbach/DE and the regions Steinfurt/DE and Altmark/DE.

The aim of the project is to analyze how citizens in the different regions perceive possible roles and options for action differently. Moreover, it seeks to identify stimulating and limiting factors for citizens in seeking to exercise their roles. Furthermore, participation methods in the field of energy consumption and its production will be developed and tested. Finally, a guide for municipalities on how to support and activate their citizens will be developed.

2.2. Citizens and their different roles and scope

As "citizens", we understand persons who actively engage in, and responsibly shape, the transformation process – not just as consumers, but also in new or altered 'roles' such as producers, investors and political protagonists:

- The scope for action and influence linked to the role of the 'energy consumer' implies changes in everyday energy consumption, investment in energy efficient household appliances, consumption of green electricity and strategic investment decisions, e.g. energy-efficient refurbishment. In this role, the share of German private households in Germany's final energy consumption is about one third

[1] The project started in April 2013 and runs until March 2016.

(Graichen et al. 2011). However, more than one third of this demand for energy results in dwelling/living compared to areas such as mobility and nutrition.

- Citizens are able to shape the production side of the energy system taking action in the role of 'investors and producers'. On the one hand, citizens can invest in renewable energy facilities (private or common). On the other hand, they can participate in related infrastructural projects such as electricity network expansion. The concept - energy in citizen's ownership - is being implemented already. Almost 40 % of renewable electric power produced in 2010 can be traced back to individual persons (Trend-research/KNI 2011).
- In either a supportive (or obstructive) way, the political commitment by citizens may influence the development of renewable energy and related changes in infrastructure. Beside financial investments, citizens can influence the expansion of renewables and the associated infrastructure needed, by different types of political engagement.
- "Social" effects, in a broader sense, are seen as a crosscutting issue, insofar as effects spread into other fields of action (i.e. in education and formation of public opinion). Thus, social effects will be considered separately.

The following figure 1 gives an overview of the different fields of action for each role (consumer, producer/investor, political activist) as well as role-specific criteria (heat/electricity and formal/informal participation).

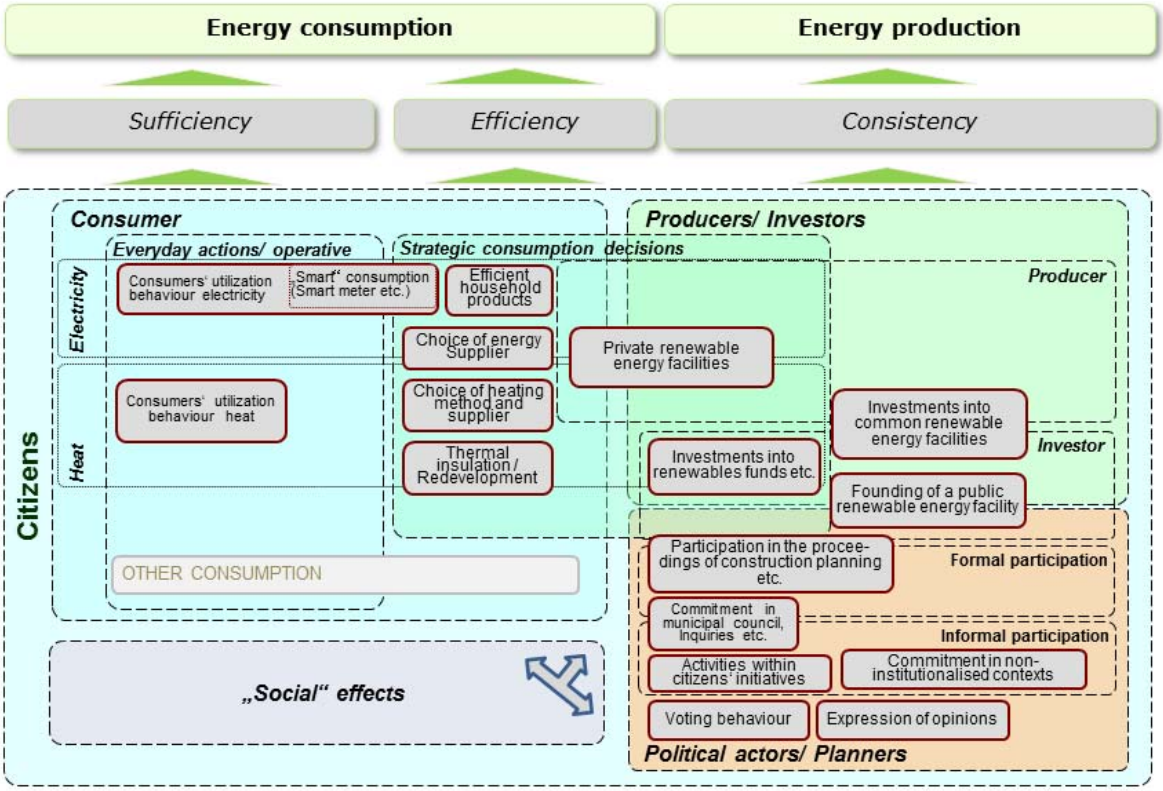

Figure 1: Overview on roles and action areas

As described previously, citizens in their various roles have different capabilities to exert influence on different aspects of the energy transition. In order to ensure a focused analysis, we restrict the scope of the research to:

- Citizens‘ influence on their ‚direct‘ consumption level at home (electricity and heat),
- Citizens‘ influence on the development and expansion of renewable energy.

2.3 Methods applied

The project applies quantitative and qualitative empirical methods:

- Literature review: For each community/region, an extensive document search and analysis has taken place to learn, as far as possible, the current state of debate.
- Stakeholder and expert interviews: A series of face-to-face interviews with local/regional administrations, NGOs, energy consultancies, representatives of potential “handicapped” persons (e.g. migration council, tenant associations) have been carried out to learn opinions and interests.
- In depth interviews with engaged citizens: For the analysis of individual values, opinions and forms of involvement, qualitative interviews had been carried out with engaged citizens from February to April 2014. The choice of participants was based on a questionnaire inquiring as to socio-demographic background and involvement in the respective fields of action. The face-to-face interviews were semi-structured and interpreted applying qualitative content analysis. Furthermore, the analytical categories were generated using both an inductive (data-based), and deductive (theory-based), approach.
- Focus groups: A focus group with 10 participants for each region was conducted in order to complement and reflect on results of the interviews. Additionally, the focus group is seen as a tool with which to highlight issues of group dynamics within particular fields of action. Based on audio recordings and written records of the focus groups, a synoptic content analysis was conducted.
- Survey: In each city/region, a survey was carried out: After selection of districts, a questionnaire was sent by random mail to about 5,000 households per city or region. The return quota was at least 500 answers per region/city, which was judged as reasonably representative. The data was analyzed using SPSS.

2.4. Conceptual background[2]

In the field of consumer science, consumers are regarded as occupying different roles in society and its markets (Reisch 2004), in which they hold different spheres of influence as well as incentive structures. On the one hand, these structures trigger possible behavior change in consumers. On the other hand, consumers are classified into different types, (such as the „trusting“, the „vulnerable“, and „responsible“ consumer), each reflecting different modes of behavior, modes of consumption, and related competencies (Micklitz et al. 2010).

These classifications are practically relevant insofar as the above mentioned roles determine judgments about conditions, decision-making and related motives. If energy policies want to be successful, each consumer group needs to be approached differ-

[2] Based on a contribution by Lucia Reisch to the project background paper (unpublished).

ently in terms of incentives and arguments (Dolan et al. 2012). These consumer types represent archetypes. In fact, respective modes of behavior might co-exist in different fields of consumption.

However, activities of citizens are partly individual decisions, meaning that one person is responsible for decision-making processes due to intra-individual impulses. We have to consider that social (group) norms act on processes of individual decision-making. Individuals either try to assimilate with, or dissociate themselves from, social norms (Bänsch 2002). Thus, individual decisions stand next to collective decisions. According to Kirchler (1989), decisions can be expected to be collective, if a product or a service affects various persons, is socially prestigious (i.e. for a family) or rarely purchased.

The above mentioned fields of practice on the actors' level are subject to several individual motives, social norms and daily routines as well as external conditions and influences. Each scientific perspective offers different models to describe these diverse factors using discipline-specific variables and methods, which in turn influence possible intervention strategies.[3] The model of environmentally relevant everyday behavior introduced by Matthies (2005) offers a practical approach to condense the various factors of influence (motives, norms, routines etc.). It extends the insights of intervention research with a practical psychological analysis of environmentally relevant behavior, thus enabling a discourse with practitioners in the realms of politics or environmental protection activism. Matthies' framework is grounded in the theory of moral decisions by Schwartz/Howard (1981), and, in parts, supplemented by the theory of planned behaviour (Ajzen 1991). Thus, it takes individual as well as social norms (i.e. expectations of others) and other motives such as benefit expectations into consideration. As for that matter, political instruments that want to change consumer decisions need to consider different modes of behavior, motives as fields of action or possible constraints. Consequently, the maxim of "one size fits all" for designing political intervention seems obsolete. Instead, instruments are required to address the potential target group and to anticipate empirical outcomes. Finally, instruments need to be evaluated on a regular basis (Hübner/Müller 2012; Reisch/Renn 2012).

[3] A range of psychological models tries to explain human behavior and its motives. One of the most popular approaches is the theory of planned behavior (Fishbein/Aijzen 1975) and the norm-activation framework by Schwartz/Howard (1981). Contrary to most frameworks, the HABIT-Modell (Habit assessment and behaviour intervention typology) does not focus on conscious decision-making but on daily routines and habits, as exemplified by everyday energy consumption patterns (Heijs 2007).

3. Case Study Heidelberg[4] - First and preliminary results

3.1 Framework of citizens' participation in Heidelberg

Some time ago, Heidelberg introduced a local concept of citizens' participation for all policy fields (Stadt Heidelberg 2012). A culture of open public communication supports the development of citizens' participation. In the long run, regular lively discussions between political stakeholders, the local government and the citizens will be institutionalized. By doing this, and apart from concrete projects of citizens' participation, a public discourse on sustainable urban development will be ensured and implemented.

In the time of virulent energy issues, the elaboration process of the "Master plan 100% climate protection" (Stadt Heidelberg 2014) has been supported by six different working groups and three public conferences. Within this project, citizens have been actively involved in developing and implementing short-term as well as medium-term measures. In addition to that, a stakeholder forum of about 90 groups accompanied this process.

3.2 Activities and motives of active citizens in Heidelberg

Options of action and motive structure

Active citizens are committed to diverse actions and roles while also showing different biographical and normative backgrounds. They have a clear idea of how the goals for a successful energy transition should be implemented. According to their opinion, a sustainable energy system should exclusively focus on renewable energy sources (apart from biomass, whose promotion has been criticized) while being decentrally organized. Furthermore, a sustainable energy system should pursue aims of sufficiency and be citizen-owned.

In the field of **energy consumption**, conscious consumerism, the usage of green energy in the household plus changing routines (e.g. conscious use of electronic equipment, avoidance of stand-by mode) as well as investment in energy-efficient and durable technologies, are seen as possible options of action. Concerning energy efficiency and energy saving, financial as well as ecological motives play a role. In addition, active citizens want to act as role models for others.

Compared to energy consumption the field of **sustainable investment and (energy) production** is perceived as even more influential by active citizens (although the target group necessarily entails having enough financial resources). Existing options for

[4] Heidelberg is a city of about 150,000 inhabitants. Its university is among the top German universities. Heidelberg has a modest share of industrial production. 87% of employed persons work in the tertiary sector. The city Council is dominated by a left wing-green majority, whereas the mayor has been nominated by the conservatives/right wing parties. Heidelberg is a city of lively debate.

In 2006, Heidelberg produced an amount of 21 GWh electricity and 46 GWh thermic energy from renewable resources, which is 2.6 % of the total electricity consumption and 2.3 % of the total heat consumption (Eisenmann 2008 and personal communication from 6.12.2013). In June 2014, the City Council proposed a strategy to reduce its greenhouse gas emissions by 95% by 2050 compared with 1990 and to cut its energy consumption by 50% in the same period. Although Heidelberg started its climate protection activities in the 1990ies, the implementation of the master plan will start in 2014 and continue in the following years.

activities in the field of investments are energy-efficient house-building. Besides, active citizens invest into individual or community renewable energy facilities, options which several of the respondents are involved in. Financial resources and home ownership (except for community facilities) are perceived as limiting conditions. Regarding investments, financial motives slightly outweigh ecological ones. For community facilities, social and local aspects such as strengthening the region seem especially important, but also affinity for technology and technical independence.

Active citizens are ambivalent about their influence as **politically committed persons**. On the one hand, political engagement on an individual and societal level is considered necessary. On the other hand, people are disappointed, due to a lack of feedback and assessability of effects for past projects. Citizens as political protagonists are involved in party work, elections, participation programs in Heidelberg, the work of associations, demonstrations and other forms of public activities. Politically committed citizens are mostly ecologically motivated (interest in climate issues and sustainability) when pursuing their visions. Moreover, they want to make a difference as being part of a collective movement. Time resources, the social environment, and (infra-) structural conditions are considered as important external factors. Next to their political involvement, citizens of Heidelberg also perform a role as socially committed persons. Socially committed citizens reinforce their role through social interactions and discussions with family members, friends or neighbours. In the past, some of the socially committed people were confronted with skepticism towards energy issues that brought about a more cautious strategy in approaching others. Rather, socially committed people bring up energy issues if they perceive a good opportunity to do so. Also, they prefer being a role model to inspire potential imitators.

Interaction between the different roles and fields of action

Some respondents describe the different roles as entangled. They do not strategically plan activities in the fields of energy consumption, investments or political engagement. However, single decisions can at some point cause a behaviour which then, triggers new decisions that have no obvious reason at first sight. Keeping this in mind, behaviour in one field of action can possibly influence a person's actions in other contexts. One female respondent, for example, describes that individual behaviour, once visible to others, can also shape political processes.

In addition, an external view of citizen biographies reveals further interactions: At the beginning, some of the respondents are committed to one activity, complemented by other activities in other areas of action at a later point in time. Although one cannot draw any causal conclusions from that, it seems plausible that the respective behaviour affected behaviour in other contexts (i.e. through social norms).

From a psychological viewpoint, the different roles seem to harmonize with each other. Existing time and financial resources might determine the degree of involvement. With the aid of projective methods (i.e. using symbols), participants in the focus group used particular items to show positive and negative entanglement of roles. Positive effects were described as spillover effects, insofar as one behaviour impacted positively on another. However, participants mostly described negative effects such as classical rebound effects or licensing effects. Licensing effects occur for example, if people who produce their own energy show higher levels of consumption. Having solar panels

on the rooftop does not legitimize underfloor heating, as one participant ironically noted. Others reaffirm that view, saying that acting sustainably does not free somebody to cause ecological damage in another context instead (in other words, that you use green energy, but still take a plane to your next holiday destination).

3.3 Attitudes and potential of activation of citizens in Heidelberg

In the representative household survey in Heidelberg (n=524), we looked – among others – for the allocation of responsibility to contribute to local energy measures. The community is attributed most responsibility (86%), whereas the policy/legislator level is attributed 83%. The degree of responsibility for energy suppliers is rated with 82%, whereas the accountability of the federal state amounts to 83%. The branches of local economy and industry are seen to have slightly less responsibility. According to the participants of the survey, other citizens are seen to impact even less on contributions regarding energy activities (74%). Similar to this statement, a self-assessment regarding possible contributions to the transformation of the energy system also revealed that participants rate themselves as least able to exert influence on energy issues (64%).

Households have been asked to rank their motives for conscious energy consumption, for investments and for acting as politically committed persons. They should also declare, which framework conditions would improve their chances of acting in each role.

Concerning energy savings, participants mainly pursue economic and ecological motivations: Respondents mention the will to save money (83.6%), giving a contribution to the field of climate protection (87.2%) as well as the general will to save resources (89.5%). The social environment (friends, relatives) exerts less of an impact on individual saving behavior (7.6%).

Investments in renewable energy are mainly motivated by a contribution to climate protection (73.9%) and a general preserving of the environment (72.4%). Saving money as well as independence from energy suppliers are equally valued as motives (58.6%), followed by the wish to strengthen the local economy (34.9%). Investments in own energy production mainly depend on homeownership, and whether the construction of the house (static of the roof, south facing roof) supports it i.e. installing a solar system. Furthermore, the presence of information on renewable energy issues given by the media and specialized information centers is seen as an important factor. In addition, financial capital and legal parameters are highly important.

Moreover, motivations for political engagement in the field of renewable resources are the preservation of the environment as well as a perceived contribution to climate protection. Both motives have mainly been mentioned by persons less than 39 years old. About half of the respondents would participate to actively shape local development and to make use of their civil rights of participation.

Households were also asked which of the different roles would contribute most effectively to a transformation of the energy system. About 76% ranked the role as conscious energy consumer as the most important one, followed by the other roles which were ranked on nearly the same level, namely as investor in own energy production installments (19%), as investor in community energy production installments (20%) and as politically committed person (18%)

4. Conclusions

The background of this paper is still a current research project. Therefore, we must restrict ourselves to some preliminary conclusions/impressions based on the current state of research.

In general, the transformation of the German energy system seems to have “arrived” at the local level: A strong majority of citizens agree to this transformation and also to local production using renewables. If the latter is true, the often highlighted shifting strategy “Not in my neighborhood” (NIMBY) might have changed. Is this a new corridor of acceptance?

It is interesting to notice the hierarchy of responsibility which favours local, regional and federal policy structures which might conflict with the perception and ranking of the different roles. We conclude that self-commitment to act as consumer is an accepted role. Only a small minority of people believe in greater self-responsibility. The general responsibility is – still – allocated to government institutions, to energy providers and to business.

To activate and establish these different roles, the financial bottleneck should be overcome, e.g. by increasing financial incentives (e.g. by subsidies) or by more own capital. The improvement of personal information and knowledge has also been highlighted as an important tool to overcome role limitation.

Altogether, the dimension “encourage”, “enable” and “engage”[5] should be strengthened to activate citizens, both with regard to a single role to interaction between roles. By doing so, households/consumers have to be treated in different ways considering the “trusting“, the „vulnerable“, and „responsible“ consumers.

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[5] This is based on the 4-E model developed bySDC/NCC (2006).

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