TRANSITIONS TOWARDS SUSTAINABILITY – LEARNING FROM GRAZ AND FREIBURG?

A B S T R A C T

Innovation policies in the European Union increasingly address so-called ‘grand challenges’ such as climate change, resource depletion or aging societies. Such transformations go far beyond conventional product or process innovations and require a restructuring of broad socio-technical regimes, e.g. the built environment, systems of mobility, the energy system or the way we organize processes of production and consumption.

The distributed nature and specific socio-technical dynamics of large-scale transition processes towards greater sustainability makes cities an important arena of infrastructure transformation and a crucial nexus between different levels of governance and strands of socio-political discourse. The article is based on an analysis of the cases of Graz and Freiburg which since at least two decades have been regarded as ‘eco-cities’ and particularly advanced in their environmental policies and actions. It will be investigated to which extent these cities were indeed capable of system innovations and fundamental shifts towards the aim of a “sustainable city“ and ll then some conclusions will be drawn about the ‘room for manoeuvring’ of cities within broader sustainability transitions.

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INTRODUCTION

There is a growing consensus among scientists and politicians worldwide that human-induced climate change and resource depletion are two of the grand challenges our societies currently face. The 2007 Fourth Assessment Report of the Intergovernmental Panel on Climate Change estimates that a reduction of greenhouse gas emissions by 80% (compared to 1990 emission levels) is needed to achieve a stabilisation of world climate within a two degree temperature increase.¹ The situation is hugely aggravated by the global inequality of wealth distribution and economic development, as it is rather obvious that the welfare level with its resource needs and CO₂ emissions of industrialised countries cannot be sustainably expanded to the world population.

The challenge lying ahead of us is thus a radical transformation of our systems of production and consumption, and – as a core part of it – our energy system, the sources of energy generation as well as the modes of energy distribution and use. Proponents of transitioning towards more sustainable infrastructure systems emphasise the significance of cities as an important arena for change. At this level, e.g. energy demand is organized, specific mitigation opportunities manifest themselves and communication with private energy consumers is possible. While megacities clearly have a higher impact on resource-related problems and climate change, small and medium-sized cities should not be neglected as far as their potential role as test-beds for ambitious new governance approaches. The fundamental changes required for such sustainability transitions go far beyond incremental innovations but require systemic innovations in our urban infrastructures and the social practices of using space and consuming resources for mobility, working and living linked to these socio-technical configurations. However, are such changes realistic at an urban scale and are there (at least small-scale) examples for this?

The cities of Freiburg in Germany and Graz in Austria have been perceived as ecological model cities since the mid1980s, as illustrated by various international awards (e.g. European Sustainable City award for Graz in 1996), press coverage and many visitors from other municipal administrations. Both cities are known for their ambitious environmental objectives and have played an important role in pioneering the search for concrete measures that can bring about transitions, particularly towards more sustainable and low-carbon energy and transport systems. Social dynamics have emerged in both cities, which have led to increased activism from local experts and city officials, resulting in ambitious and often successful pilot projects as well as national and international attention.

The cases of Graz and Freiburg can therefore serve as interesting examples of the dynamics and limitations of urban transition processes towards greater sustainability. One can assume that sustainability changes achieved in Freiburg and Graz rather mark the ‘outer boundaries’ of what less environmentally ambitious municipalities may achieve. The two cases are also found interesting because they seem to share some features that make new forms of environmental governance, such as Transition Management strategies², easier to implement: They are medium-sized clearly arranged cities, yet host numerous competent experts, many of which know each other well and meet frequently. They are also both characterized by a relatively active citizenry.

Based on these two cases it will then be discussed what roles cities may play in transformation processes towards sustainable infrastructure systems, how opportunity structures for a greater urban role in such transitions look like and which limitations as well as specific advantages exist at an urban level. A core issue which will be considered in this context is whether one can speak at all of ‘transitions’ at an urban scale, i.e. radical changes of regimes of energy production and use, mobility or built environment, or whether incremental change and adaptation processes are rather being experienced. This leads on to the question, how much room for manoeuvring there is at an urban scale, or whether fundamental changes in energy, transport and construction rather depend on changed conditions at national or even international/global level. The insights in the case studies are drawn from three types of sources: Firstly, our own experiences as commentators and participants in the political debates about energy in Graz and Freiburg. Additionally, a series of interviews in 2009 with major players and critics of these policies and discourses (seven in Freiburg and four in Graz) was conducted. In order to triangulate our perceptions and findings, a brief analysis of press coverage on this topic (local and national newspapers and the municipalities’ bulletins) was conducted.

THE CASE OF FREIBURG

The city of Freiburg has around 220.000 inhabitants and is located in the south-west of Germany. It is surrounded by the slopes of the Black Forest in the east and the Upper Rhine Valley in the west. It serves the region as an administrative and commercial centre and is characterized by an old university, limited industry and a highly service-oriented economy.

Since the early 1990s, Freiburg has been praised by its inhabitants and visitors not only for its outstanding living quality but also for a set of remarkable

environmental policies. The city has also received several awards.³ The city of Freiburg brands itself today as the ‘Green City’, based upon a long history of pioneering solar energy and environmental policies. An important step in the formation of this profile was that Freiburg was awarded the title of the ‘Environmental Capital of Germany’ in 1992.

Pioneering environmental policies

Widely acknowledged achievements in environmental policies in Freiburg can be traced back at least to the 1970s. As a result of urban transport policy with a strong emphasis on environmental and social aspects, parts of the inner city were converted into a pedestrian zone in 1973. Since 1984, a monthly ticket (‘environment protection card’) has been offered, which put an end to decreasing passenger numbers. From 1982 to 1999, the share of public transport in the city’s volume of traffic increased from 11% to 18% and the contribution of cycling from 15% to 28%; the distances driven by motor vehicles decreased from 38% to 30%. As early as 1986, the city council of Freiburg unanimously decided on an ‘energy supply concept’, prioritising energy saving measures (insulating buildings), strong efforts to increase the share of renewable energy (solar, wind, landfill gas) and a rejection of nuclear energy. About 50% of electricity is now generated in efficient combined heat and power (CHP) plants, i.e. in one major plant at an industrial site and 90 small scale CHP plants all over the city. The district heating system (partly fuelled with wood) has been systematically expanded to newly developed districts and is now serving about 12% of the city population. Five wind turbines with a capacity of 1.8 MW each were installed within the boundaries of the city with the support of the city administration. Several small-scale turbines generate hydropower and the capacity of photovoltaic generators now exceeds 10 MW.

A strategy to reduce greenhouse gas emissions was developed in 1996 with the goal of reducing CO₂ emissions by 25% before 2010. Regular climate protection reports, produced since 2003, indicate that the targets are far from being met. Nevertheless, in 2007, the city council decided to commit the city to a CO₂ reduction of 40% (compared to 1992) by 2030. After several years of debate and following an initiative by experts and some city council members, the administration adopted twelve priority measures in 2007 and the city council decided that ‘tenpercent’ (1.2 million Euro) of the concessions that the regional gas, water and power supply corporation Badenova AG pays to the city will be invested in climate protection projects, especially in the transport and building sectors’, as the administration proudly reports in its 2008 brochure Green City.

The city has been supporting low energy buildings since 1992, using a subsidy program since 2002 and pioneering the enforcement of particularly high insulation standards: For any plot of land sold by the city and for any development covered by a municipal development scheme, the city ensures by contractual arrangement that specific building standards are met, exceeding national requirements by up to 30%-. These so-called 'Freiburg low energy building standards' that the city council approved in 1992 and 2005 induce obligatory investment costs to exceed national requirements by about 5-15% in the beginning: the national standards regularly catch up after 4-5 years. In 2008, the city council decided to tighten the standards again: since then, passive house insulation standards are required for all new buildings, with a few exemptions. The most environmentally friendly energy-supply option (e.g. wood based heating or cogeneration) is usually mandated contractually on the basis of an energy concept provided it can be realised with a cost increase of less than 10% as compared to a standard option, which usually is individual gas heating.

Perceiving itself as a forerunner in environmental policies, the municipality actively promotes this image e.g. at world exhibitions (in 2000 and 2010) and through continuous PR efforts. The city continuously participated in competitions. In 2010 it was awarded a new title again and can now call itself the "German Capital of Climate Protection".

Achievements at the 'hardware' level:

Efforts and successes, but less than expected

While the city praises its achievements, the actual reduction of greenhouse gas emissions in Freiburg is not overwhelming. The decrease in CO₂ emissions by 13.8% per inhabitant between 1992 and 2007 is mainly the result of a few private investments. The biggest decrease came from a big CHP plant at a chemical production site that replaced less efficient equipment and now feeds electricity and heat into the public grid. While several CHP plants had already been installed in municipal swimming pools and schools during the early 1990s, this project in 1998 and a further one in 2001 were the last extensions of CHP capacity to be realised.

While the city loves to call itself a 'Solar City' in a 'Solar Region' and proudly presents the once ground-breaking solar power installations to visitors from abroad, the total capacity of 11.3 MW_{peak} in photovoltaic power plants (equalling 1% of local electricity consumption) has long since been topped by other German cities of a similar size.

The district heating grid and tram lines have been extended to both of the major urban developments from the 1990s in the early stages of construction: To Rieselfeld (now home to some 10,000 inhabitants) and to the so-called model district Vauban (now approx. 5,300 inhabitants). High-energy standards were prescribed for all buildings as part of the private contracts between the city as the final seller of the land and the developers. An obligation to connect all buildings to the district heating network was only disregarded in cases of passive houses with a particularly low heat demand and under the condition that the owners would invest in solar thermal plants.⁴

All the major decisions concerning these large developments were taken in favour of what was perceived as the greenest of all economically feasible options: extending the district heating network and tram lines, setting high insulations standards for buildings etc. Although these decisions were fervently debated among experts and citizens, they were only based to a limited extent on serious and comprehensive assessments of the long-term impacts of these interrelated infrastructural decisions.⁵

After these activities in the 1990s, not much followed except for the long overdue refurbishment of some schools. These, however, were mainly induced by the increased availability of funding from national sources. There are also no major infrastructural projects in the pipeline, which could be expected to significantly improve the greenhouse gas emissions in the near future.

A particular landscape of actors:

Engaged, informally networked experts outside of administration

Freiburg is home to an extensive set of research organisations, companies, lobby organisations and individuals, which deal with renewable energies (mainly solar energy) and environmental technologies and policies. Besides the Fraunhofer Institute on Solar Energy Systems (FHG-ISE) and the Institute for Applied Ecology, the International Solar Energy Society (ISES) has settled its world secretariat in Freiburg along with the European Secretariat of the International Council on Local Environmental Initiatives (ICLEI). Although Freiburg is traditionally not a site of industrial production, PV modules and, more recently, concentrated solar power plants are not only developed but also produced in Freiburg.

The density of individuals and organisations related to energy alternatives in Freiburg is concordantly explained with the history of successful resistance

to having a nuclear power plant. In Wyhl, around 30 km west of Freiburg, nuclear industry firms and the state government planned to build a nuclear power station from 1974. The construction site was occupied by a unique mix of local farmers, students from Freiburg and conservative citizens from the region and was developed into a camp of resistance, vision and self-instruction concerned with, among other issues, alternative energy.

From this experience and milieu, several research institutes, lobby organisations and, later, companies were founded in the subsequent decades, e.g. a regional association for renewable energy was founded in 1993 and, together with partners, set up a regional energy agency in 1999. Many highly informed activists who develop ideas for and comment on the city environmental, energy and climate policies have been recruited from these energy related institutions. Even the municipal administration that is officially in charge of these policies admits that most initiatives and exemplary pilot projects in Freiburg have been invented and accomplished by civil society actors, often amid significant opposition from officials.

These individuals are not formally organized, but are well informed on each others' activities, as they frequently meet on various occasions. Their vision of an alternative energy system and their positions on energy related matters is shared by many citizens who are not professionally involved in energy issues, but who, nevertheless, are well informed, as proved e.g. by many letters to the editor in the regional newspaper or the success of some ad hoc collections of signatures.

When experts, for example, voiced concern about the green electricity product of the regional energy provider Badenova, more than 4,000 customers of the company changed to a more ambitious and trustworthy provider with no relation to nuclear energy and an image of 'electricity rebels' (Energiewerke Schönaun). This movement was absolutely uncoordinated - as all of the usual suspects assure - and created enough pressure to make Badenova completely overhaul its green electricity product and switch to a more ambitious strategy of electricity procurement.

In general, Badenova plays an important role in implementing the political energy objectives of the city council, administration and citizens. The regional energy supplier was established in 2001 by merging the local suppliers of Freiburg and surrounding areas, securing a slight majority for the municipal shareholders while selling 47% to the Bavarian gas supplier Thyga (owned

by E-on). With some of the money gained by this privatisation, an Innovation Fund for Water and Climate Protection was set up: it is now endowed with 1.84 Mio EUR/y from the company profits. At the time, many local energy experts warned that this fund would have limited effects, but could distract from the fact that the company policy would be dominated by shareholder value orientation instead of climate protection. However, it turned out that the new regional player, Badenova, appreciated the importance of fulfilling the regional customers' expectations of being a green and innovative energy supplier. Consequently, Badenova engaged in many renewable energy and efficiency projects. Today, the shares once privatized and held by the private company Thyga (47%) have been bought back again by a larger consortium of municipalities in order to regain also this half of the annual profits and feed them into municipal budgets.

The local discourse and political culture:

A common green identity, but a revolutionary tradition

The local discourse on energy issues is based on the widely shared consent that nuclear power and fossil fuels are undesirable and that regional policies should aim at reducing dependencies on these energy supply options. Even the most conservative or liberal politicians and citizens agree that Freiburg should act as a forerunner in terms of energy and climate policy. Conflict regularly arises when car-users feel discriminated against (e.g. by the strict management of parking spaces), but the need for innovative and exemplary regulation with regard to energy efficient buildings and energy supply goes largely uncontested. Furthermore, the citizens perceive themselves to a large extent as being in a position to actively shape the local parts of the energy system (as customers or owners of distributed generation capacity) and consequently also demand innovative action by their authorities. This may have to do in part with the collective experience of the socially heterogeneous and finally successful resistance to the nuclear power plant in Wyhl, as assured by all of the interviewees in Freiburg, even with the historical tradition of resisting the authorities in the state capital Stuttgart, as some imagine. As a result, this widespread attitude leads to an extraordinarily vibrant discourse among well-informed citizens and experts in the regional press and at regularly held events, which peaked again after the accident of Chernobyl in 1986. Although this constellation is very challenging for the staff of the municipality who do not always welcome and fully exploit this level of participation, the city obviously greatly benefited from it and proudly presents the outcomes of such debates to visitors and at international competitions and fairs.

Interference with the outer world:

The positive feedback loop of the green image

Since the mid1990s, increasing numbers of visitors from Japan and a multitude of other countries have come to Freiburg mainly to marvel at the environmental initiatives and successes. As a consequence, private actors and the municipality began to actively exploit this image of being Europe's showcase for environmental policy and especially solar energy applications. Being awarded several prizes for innovative policies and continued efforts supported Freiburg in developing a green image. Probably more importantly, the marvellous landscape in sunny south-west Germany makes it very easy to maintain such a positive image despite actual achievements having been lagging behind those of other cities for many years.

As Bernd Dallmann, Chief Executive of the Freiburg Agency on Economy, Tourism and Trade Fairs (FWTM), puts it: 'Apart from science and technology, factors such as culture, climate, landscape, as well as the excellent quality of life in Freiburg complete the profile of the 'Green City' and consequently, attract creative minds, investors and tourists from all over the world.' Many activists and observers of the scene in Freiburg agree that there seems to be a positive feedback loop: The image of the place, 'innovative and green', might attract particularly engaged individuals who, given the chance, opt to live and work in Freiburg: it may also strengthen the organisations and networks actively working for exemplary projects and policies in the city.

Although the specific 'Green City' label was initially opposed by many individuals, local environmentalists now embrace that the city officials present the city as a forerunner for sustainability. They know that they have good arguments for their innovative projects and policy initiatives whenever the discrepancy between the shiny PR product 'Green City' and the actual achievements and policies becomes too big. The authorities then have to face the discontent from the demanding local population.

THE CASE OF GRAZ: SIMILARITIES AND DIFFERENCES

The Austrian city of Graz is only slightly larger in population than Freiburg and is located in a similar landscape at the southern slope of the Alps. With around 255,000 inhabitants, it is the second largest city in Austria and both the capital and administrative centre of the province (Bundesland) of Styria. However, the attractive location of Graz in a basin amidst hills is a major disadvantage

in terms of air quality and particulate matter levels. Culminating in the so-called smog winter of 1988/89, this situation was one of the main drivers for the city to come forward with ambitious environmental targets and programs, described in more detail below. Similar to Freiburg, Graz tried to position itself as an ecological model city and has been awarded various European and international awards for its activities and achievements in this field, such as the Greenpeace Climate Protection Award in 1993. Graz was the first European municipality to be awarded the International Sustainable City Award by the European Union in 1996 and - amongst others - also received the Sustainable Energy Europe Award in 2008.

Using windows of opportunity

Graz did not have a particularly strong environmental record until the end of the 1980s. On the contrary, the city was confronted with an increasing deterioration of its air quality which to some extent was due to residential heating with coal and oil and a high number of commuters coming by car from the outskirts and surrounding regions of Graz, but to an even larger extent was a consequence of its geographical location in a basin leading to a specific micro-climate with little air exchange with the outside area. This culminated in the so-called smog winter of 1988/89 when public pressure mounted to do something about this abysmal environmental situation in Graz. Measures were also taken at provincial level, requiring municipalities located in so-called 'air sanitation areas' (which mainly applied to Graz and a few other places in Styria) to draw up environmental plans with measures to improve the situation.

At the same time of environmental problems making it on the municipal political agenda a group of people was on the way to become more active in the field of urban environmental and energy policy. Most of these people were active in the social-democratic party, however, mostly at the margins, e.g. as a group called "critical socialists". Although not in central positions of city politics or the local social democrats, this network of actors and its affiliates was strategically well positioned and distributed including the city councillor responsible for waste and energy (an architect and planner), a member of the town parliament and energy expert and other activists belonging to the energy group within the physics department of the Technical University. Two professors in this department – one a member of city parliament and the second one later director of the Austrian Energy Agency – had been very active in the late seventies in fighting against nuclear energy generation in Zwentendorf which finally was decommissioned as consequence of a public referendum.

This group solicited one of the former graduates of the department as head of the energy unit and later then as head of the municipal environmental department. In the energy unit he was followed by a further graduate of the same university department. Until then the environmental department in Graz was an unimportant technical unit with almost no staff. This situation changed dramatically with the new department head, his collaborators and the network they could draw upon.

Summing up the main characteristics of this start phase of eco-city development of Graz: There was growing external pressure on city administration and politics from outside (public demand and legal obligations for environmental policies) which created a window of opportunity for personal and institutional changes within the city administration (need of new personnel and new competencies). This window of opportunity could be seized in a partly contingent processes by a small but well positioned and environmentally engaged group of actors who set up a base for further environmental activities and established crucial nodes of a network spanning across municipal policy, administration and groups outside the municipality (research, environmental groups).

On the way to an eco-city: innovative programs and initiatives

The centre of environmental politics was seized by the new head of the environmental department who became an entrepreneur within the municipal administration. The major environmental initiatives and innovative programs were set up in the first half of the 1990s: the 'Eco-City 2000' program as the first Austrian 'Local Agenda 21' program, the 'Municipal Energy and Climate Concept' and various other initiatives such as 'Eco-Profit' or 'Eco-Drive'. At that time Graz also became the first Austrian member of the 'Climate Alliance of European Cities' (Klimabündnis) with a greenhouse gas emission reduction target of 50% until the year 2010 (with 1987 as baseline).

The programs and concepts set up during this time had a number of common characteristics which were then still rare in environmental policy:

- Both, the environmental and the energy program had a comprehensive and integrative perspective, involving various departments of the city administration and treating energy and environmental issues as cross-sectional policy issues. Moreover, the documents produced were not so much traditional policy documents with policy targets and measures for the city administration, but action plans targeting a broad range of

actors and making detailed suggestions for implementation of various activities.

- In contrast to earlier urban planning practice these programs and initiatives were not written by the city administration but were ‘outsourced’ to research institutes and young, engaged researchers though in close contact with the administration. This helped to provide an informed and comprehensive outside perspective on municipal environmental policy and raised the legitimacy of the suggested measures.
- Much emphasis was put on stakeholder participation processes in developing the action plans. The municipal energy and climate concept, for example, was developed in seven thematic stakeholder forums with participants from NGOs, companies, research, municipal utilities etc. Moreover, citizen participation processes were organised and environmental initiatives and organisations were involved and given public fore to present themselves (e.g. an annual fair of environmental organisations spread all over the town centre).

Many of the initiatives were advanced in other aspects, too. To name a few of the measures and projects, Graz was one of the early movers to implement energy demand side management programs (with direct input from US experiences of Tennessee Valley Authority etc.) with energy contracting models for the refurbishment of buildings and the switch to district heating or renewable fuels, a ‘solar initiative’ supporting the feeding-in of solar thermal energy into the district heating system in summer, etc. As a consequence of the municipal energy concept an energy agency was set up in Graz which meanwhile also operated outside the city area.

With respect to the built environment Graz put the main emphasis on the refurbishment of buildings – only recently plans for newly constructed ‘environmental city districts’ became part of the agenda. Efforts to make buildings more energy efficient on the one hand focused on municipally owned buildings (e.g. schools, administrative buildings) and e.g. continuous monitoring of energy consumption as well as using necessary refurbishment of these buildings as a window of opportunity for additional thermal insulation and other environmental improvement measures. On the other hand, a so called ‘contracting-program’ (‘Thermoprofit’) was designed and implemented which would offer comprehensive building refurbishment packages to public and private clients. These packages included an analysis of environmental improvement potential for these buildings, planning and oversight of the refurbishment process as well as financing of the investment costs and

eventual payback through reduced heating costs. The Thermoprofit program was administered by the energy agency of Graz which set up collaborations with banks, energy experts and construction companies and thus also became a centre of expertise for energy-efficiency building refurbishments.

Another salient sub-program that was gradually adopted by many other cities internationally was the Ecoprofit program, a corporate environmental protection program offering companies consultancy services on the economic evaluation of environmental measures, certifying companies implementing these measures, awarding the best performers in this respect and finally creating a network with continuous activities and events for Ecoprofit companies. Company participation in this program was high and the idea of win-win measures and environmental protection out-of-profit motives was enthusiastically embraced by politicians and the city administration. A national 'Cleaner Production Centre' was set up in Graz and facilitated worldwide cooperation projects on Ecoprofit programs between European countries and China, Tunisia etc. Recently, these international activities resulted in a public scandal for the city of Graz with charges of fraud and other criminal offences and, consequently, the dismissal of the head of the municipal environmental protection department. The Ecoprofit program in Graz, however, was not directly affected by these developments and continues to operate.

However, the development was not as smooth as it looks at a glance. Many measures of the programs were not implemented comprehensively. As the new head of the environmental department pointed out, the programs on the one hand were mainly used as a resource for ideas and new suggestions within the department and on the other hand as legitimisation of activities and suggestions of the department in negotiations with members of the city council, the mayor and other departments for funding or legal measures at city government level. A further important element for the actor dynamics were the international environmental awards and the public attention they drew to Graz – even though many of the prizes were rather based on the ambitious programs than on the more moderate implementation. Nevertheless, the awards were success stories for politicians and set in motion a self-reinforcing process with the department head “getting anything he wanted”, as one of the interviewees expressed. In the end, still a significant number of measures could be implemented (e.g. the substantial extension of the district heating network, energy efficiency and pollution reduction in companies, refurbishment of municipal buildings) and along with national regulations (e.g. requiring catalytic inverters in cars) the environmental situation in Graz improved considerably.

Summing up this second phase, an interesting characteristic of the dynamics of building up momentum for environmental change in Graz is the role of the environmental department as part of the municipal administration. The department very much acted like a strategic intermediary⁶, mediating and negotiating between the municipal policy level, other parts of the administration, environmental NGOs and initiatives and research organisations with the strategic aim to transform urban infrastructures. Basis for the success of such momentum building for sustainability transition were not so much changes at the material, technological level or level of policy outcomes, but rather the discursive dynamics of a group of people introducing innovative concepts, international recognition and awards and public appreciation of the identity as an eco-city. Nevertheless, this discursive dynamic made many changes at material and institutional level possible as well, though these dynamics of change were much slower, more patchy and controversial.

2000 and beyond: The eco-city in reverse?

Around the turn of the century environmental change in Graz had lost much of its momentum. The initial phase of new programs and initiatives was followed by the more unspectacular work of eventually getting these measures implemented (e.g. making municipal buildings more energy efficient and setting up energy monitoring schemes; negotiating with the financial and other departments etc.), though at the same time international recognition and awards could still be reaped.

Due to several reasons – originating from within and from outside the urban realm - much of the dynamics of change eventually subsided:

- Personnel changes in the environmental department: As part of the effort to internationally market the municipal eco-profit program to support the environmental and energy improvement of industry, the head of the environmental department became caught up in a corruption scandal in Tunisia and lost his job. The scandal revealed a severe lack of control and supervision by the municipality – not least a result of the success of the environmental department and its head who was trusted unconditionally. Moreover, the head of the energy unit also quitted, feeling inhibited in his ambitions by the newly elected city councillor for environmental affairs.
- A second reason resulted from changes at the national and European level, particularly the liberalisation of the electricity markets which led to the partial privatisation of the municipal utilities (for fiscal reasons) and the prohibition of cross-subsidies between e.g. the electricity business and urban public transport. This coincided with a general decrease in

public attention on climate policies in other countries such as Germany.⁷ Moreover, the focus of city marketing and politicians in Graz shifted to projects in the run-up to the “European Cultural Capital 2003”, e.g. new buildings such as a museum of contemporary arts, a new concert hall, etc.

- Finally, the issue of particulate matter became more and more prominent at national and European level and soaked up much of the remaining energy of the environmental department. Due to its geographical situation in the basin, Graz regularly exceeded threshold values for particulate matter which was rather damaging for the perception of Graz as a ‘green city’. The issue turned out to be highly complex to handle and the implementation of measures was inhibited by conflicts about the responsibility of provincial or national government and regulations required at these levels to give Graz effective levers for action against particulate matter.

In retrospect, the main success factors of environmental change in Graz, namely the entrepreneurial spirit of a few key persons in the city administration and the self-reinforcing image creation and discourse about Graz as a model eco-city, turned out to be an Achilles heel for further development – the entrepreneurs had left and the eco-city image was replaced in search of something more fresh and new. Nevertheless, significant infrastructural and institutional changes (the energy agency, a much more powerful environmental department, various programs) remained in place, even with part of the momentum gone. With the recent coalition of the green and the conservative party in city government and energy and climate change high up on the public agenda again it remains to be seen whether a new phase of eco-city development in Graz is about to commence.

While the governance capacity to move energy issues in Graz was critically shaped by the establishment of a network of ambitious ecological entrepreneurs spanning policy, administration, research and citizen initiatives, our case study also demonstrates the dependence of its success on the interaction between different levels of governance: the provincial ‘air sanitation plan’ initially putting pressure on municipal environmental activities; the re-enforcement of the eco-city image and political momentum by international awards and national attention of Graz as an eco-city – which also helped gain financial support for new initiatives- and finally also the effects of new regulations (‘energy market liberalisation’) at national and EU level which inhibited municipal ability to influence the urban energy system (through control over utilities, cross-subsidies etc.).

DISCUSSION

What do the two case studies of the eco-cities Freiburg and Graz tell us about the dynamics and room for manoeuvring of cities to achieve fundamental transformations of their infrastructures towards greater sustainability? Obviously both cities have made headway in making their building stock more efficient, integrating renewable energy sources in their systems of energy provision or improving the traffic situation. But are these indeed fundamental sustainability transitions or rather incremental improvements towards more sustainable urban infrastructures? Let us look at some core elements of the transformation processes in Freiburg and Graz as set out in the introduction to this paper before trying to answer this question.

Experimentation and social learning for sustainability

Experimentation with new sustainable city configurations – whether social or technological – and learning from these pilot projects and experiments is seen as a core element of radical transition processes. Indeed, Graz and Freiburg have created protected spaces to try out and implement environmental technologies – whether photovoltaic programs, core elements of a hydrogen infrastructure or municipal bus fleets running on bio-diesel from household oil residues. While such niche technologies may in the long term become part of radically different infrastructures systems, the main environmental improvements in the two cities rather come from the implementation of less advanced technologies – extension of the district heating network, increased deployment of de-central, combined heat and power generation, thermal refurbishment of buildings, gradual improvement of environmental building standards etc. Experimentation and learning with these technologies appears to be especially relevant with respect to new business models and organisational forms of implementing such products, the design of dissemination and implementation programs, or setting up of intermediary organisations such as agencies, network managers or contracting organisations which develop into knowledge hubs for environmental improvements in the city. It is thus not so much the new technologies but rather the organisational and institutional changes required to socially embed environmental improvements which is characteristic for the environmental progress in the two cities and which has the main potential for long-term impacts.

Discourses and visions across governance levels

A second crucial element in sustainability transitions is the development of long-term visions for a sustainable city and the solidification of new problem

perceptions and discourses around sustainability. Regarding our case studies, one can see that the actors share a vision of working towards a green and clean energy system. Especially in the case of energy futures, there is a broad consensus about certain cornerstones such as increased energy efficiency, the use of renewable energy, the need to move away from nuclear and fossil fuel energy generation and the promotion of sustainable lifestyles and behaviour. This general vision is rarely articulated in detail in terms of a specific socio-technical future to be realised at a certain point in time, specific pathways to be followed or trade-offs to be encountered. Instead, there is a general consensus about the direction in which to move. There were a few occasions in which ideas and objectives had explicitly been discussed in larger collectives such as energy related Agenda 21 working groups or round table discussions (EnergieTische).

On the other hand, programmatic documents such as municipal energy and climate protection plans often work with rather detailed guiding visions about sustainability targets, pathways to get there, policy measures, etc. In some cases, such as with the municipal energy and climate plan in Graz, this vision has even been collectively developed, involving city officials as well as stakeholders and the wider public. In terms of the ideas of transition management, these are exactly the guiding visions needed to orient and integrate collective action. In our case studies, however, this orienting and integrating role was instead played by the implicit, general visions mentioned above.

The interrelation of municipal processes with other levels of governance

Although the discourses on environmental policies in Graz and Freiburg focus heavily on the opportunities given at the municipal level, the main actors do consider the repercussions of their local actions at other levels of governance. If the head of the regional energy agency in Freiburg sees a need to protest against a cutback in a national support scheme for energy efficient refurbishment, he quickly mobilises a so called ‘climate alliance of the solar region of Freiburg’, which, for this example translates into a list of 39 local organisations supporting his open letter to the federal minister for economic affairs.

The relatively small cities studied are probably not important enough to try to get special deals or even a mandate to manage transitions as has been observed in the case of world cities such as London. Nevertheless, both cities are highly active in national working groups and representative bodies of municipalities

and also participate in international networks of municipalities that try to put pressure on decision makers at national and international level, such as ICLEI, the climate alliance, and the covenant of mayors; a manifesto for intensified climate protection. We know of no attempts of the two municipalities to directly influence federal legislation, but they explicitly aim at acting as national models, e.g. by enforcing superior building standards, and thus influence the national debate on what is achievable.

The cities see themselves as being in a national or international competition trying to attract economic investments, particularly in ‘clean’ companies, as well as organisations’ headquarters and tourists. Administrations promote a green image as an asset in this competition. Some national and international organisations exploit these tendencies and try to organise a race to the top with regard to environmental standards and policies (see e.g. the European Green Capital Award). Sustainability policies of municipalities are also appreciated and strategically supported due to their educational function, playing on the local government relatively direct contact with the mood of its citizens.

Regarding the contribution that smaller cities can make to socio-technical transitions, our cases indicate that the relationship to the state level is of particular importance: The success in re-shaping the local energy system configurations in both case studies has been limited due to a lack of cooperation with and support by the government at the state level. In Freiburg, for example, the local efforts to develop sites for wind turbines were sometimes blatantly opposed by authorities at the state level and the buildings and heat generation capacities under state control were not accessible for a synergistic integration into a joint heat network. While a wish for cooperation seems to exist in the Freiburg municipality, it did not for long seem to exist in relevant parts of the government at the state level. In Graz, there also seems to be a feeling that the capital city should develop an energy policy independently from initiatives at the provincial level. We see that a culture of non-cooperation can be rooted in various preconditions. A very recent debate about the planned relaxation in the regulation of urban sprawl in the countryside around Graz reminds us that the municipality has little influence, even on matters that strongly affect the immediate neighbourhood of the city and what is achievable for the agglomeration in terms of sustainable land use patterns and infrastructure.

The role of external pressures

The potential contribution of cities to broader transitions thus is highly dependent on supportive framework conditions. Actor networks probably

need to span beyond the municipal level for substantial changes to be achieved and the municipal dynamics can only be fully exploited if resources (money, authority) are not too scarcely allocated to the municipalities from central government levels. If these conditions exist, however, even smaller cities can play an important role as test beds and showcases of new configurations, also having a significant impact on national and international discourses and policies.

The developments in the two cities also point to the importance of external pressures to destabilize the existing regimes of energy and mobility. Local environmental degradation (e.g. the abysmal air quality situation in Graz), traffic congestions but also strong public sentiment against nuclear energy, an increased awareness of the need to mitigate climate change and reduce dependence on fossil fuels turned out to be important drivers for changes in Freiburg and Graz. At the same time, national and international developments such as the 'liberalisation' of energy systems created new opportunities for change – in both directions. Consumer choice of the electricity supplier forced Badenova, the main supplier of Freiburg, into offering more green electricity products, while at the same privatization of public utilities meant that municipalities such as Graz had fewer options in directly influencing the electricity supply infrastructure.

All in all, the capacity to shape municipal infrastructure transitions hinged on external drivers and developments. However, to which extent these external pressures, regulatory and national policy changes could be exploited as windows of opportunities by different cities apparently depended a lot on the local situation – the existence of institutional entrepreneurs, pressure from civil society organisations or legitimization of environmental policies by broadly shared long-term visions of a sustainable city.

Creating and maintaining momentum for transitions

Even a rough assessment of environmental progress in Freiburg and Graz makes clear that the environmental impact of key (energy) infrastructures has improved but certainly not radically changed over the past twenty years. This is not surprising that even if successful infrastructure transformations in the past is taken into account – the creation of electricity networks or the move from horse carriages to cars – took place over periods of at least 30-50 years. The more relevant question thus is, whether Freiburg and Graz are on stable and maybe even irreversible paths towards more sustainable cities, i.e. whether sufficient momentum towards sustainable infrastructures has been built up, or

whether ‘eco-city’ has rather been a temporal identity and brand for marketing urban policies without really having had a long-lasting effect.

The slowing pace of environmental policies in Graz clearly shows the dangers of such a short-term orientation. Environmental change apparently depended to a significant extent on a small group of policy entrepreneurs within the city administration and the ‘eco-city 2000’ vision gave way to brandings of the city as ‘Cultural Capital of Europe’, or more recently, ‘City of Design’. At the same time, we can observe that even without public visibility organisations and institutions created during the eco-city heydays such as the energy agency, a significantly strengthened municipal department for environment, programs such as Thermoprofit or Ecoprofit, remained in place and continued to be important drivers for urban change towards sustainability. Without doubt, changes in the material infrastructure such as the extension of the district heating system also make it unlikely to reverse past environmental achievements. Momentum as a constant driver for further change, however, rather results from institutional adaptations such as stricter standards and the creation of new intermediary organisations, such as Ecoprofit consultancies and theme-specific agencies.

Moreover, the case of Freiburg shows the huge change potential of a strong and environmentally engaged civil society. Without constant pressure from engaged citizens, NGOs and environmental expert organisations, municipal actors in Freiburg might have - similar to those in Graz - lost part of their drive towards environmental change in the early 2000s.

CONCLUSIONS:

SUSTAINABILITY TRANSITIONS AT AN URBAN SCALE?

In this article, the dynamics underlying the largely successful positioning of the cities of Graz and Freiburg as environmental forerunners have been analysed. These municipal level processes turned out to be driven by a heterogeneous set of non-governmental actors or by entrepreneurs within the city administration rather than by strategic actions from municipal governments. These actors aligned on the basis of localized, informally shared, yet remarkably stable visions of a sustainable energy future in these cities. Still, in both cases, there was clearly no overarching and integrative process for setting long-term targets, implementing activities and monitoring. If there had been such strategizing, many contingent factors, actor constellations etc. would probably still have played quite an important role and it remains questionable to which extent

a centrally managed process of transition towards sustainable infrastructures would be possible at all.

In the two cases studied, non-governmental policy entrepreneurs were highly influential, exploiting windows of opportunity for the mobilisation of resources, such as shifts in public opinion in favour of environmental policies (smog winter for Graz, an anti-nuclear struggle in the 1970s and Chernobyl for Freiburg). Particularly in Freiburg, expert activists were supported by an interested and demanding citizenship, expressing their preferences e.g. in letters to the editor of the local press, perhaps influencing officials to finally adopt innovative policies and programmes. In the case of Graz, municipal energy policy has rather been shaped by an informal network of individuals who had previously been committed to sustainable energy options at the Technical University. However, as it turned out, such a narrow network that is focused largely on a few persons within the administration is more vulnerable to disruptions such as the loss of a few central individuals. In the case of Freiburg, the network was more deeply rooted in civil society and more widely distributed across societal spheres. Main experts and activists could not or did not want to join the administration itself. Relationships of municipal actors and external experts therefore remained relatively distant.

But in both cities networks of individuals, either outside or within the administration, who shared a vague vision of how a sustainable city could look like and were supported by many or a few engaged citizens designed and successfully implemented a number of innovative environmental programmes to improve the environmental quality of the building stock, increase the use of renewable energies, extend the district heating network and promote energy efficiency in companies. Whether all this will lead to a fundamental and irreversible transformation of urban infrastructures towards sustainability remains an open question. As pointed out above, the creation of new institutions (e.g. low-energy building standards in Freiburg), intermediary organisations (e.g. energy agencies) and programs such as Ecoprofit which develop their own dynamics for further change, appears to be more important in the long-term than some isolated and fancy pilot projects which create visibility but no structural change. Furthermore, the involvement of citizens in infrastructural decisions and programs fostered environmental awareness and created a very positive image for ambitious policies and a more or less durable self-image of being forerunners towards sustainable city development.

However, the case studies also teach us how limited the margin of manoeuvring for city administrations can be. They may create visions and act as facilitators for various projects, but they also heavily depend on external resources, national regulations, laws and companies such as electricity utilities or national electricity regulators which often are far beyond their reach. Despite these limitations, smaller cities also can serve as important models and network nodes within multi-level governance systems: they may facilitate changes in national legislation (e.g. building standards), they may shape national and international discourses about the viability of sustainable city concepts and lend more legitimacy to subsidies and policy changes towards these aims, and not least they are the locations where changes in infrastructures have to be implemented and enacted, even if this depends on many outside conditions.

Our case studies thus support the assumption that even cities of little economic and political power can gain importance for systemic change in socio-technical constellations as places of innovation and experimentation and as aggregations of energy customers with significant market power. Even if Freiburg and Graz demonstrate that radical infrastructure transformations towards sustainability cannot be achieved at the city level alone, they also vividly give evidence of the importance of the urban level within broader transition processes towards sustainable systems of energy, mobility or built infrastructure.

NOTES

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- 2 D. Loorbach, *Transition management: new mode of governance for sustainable development* (Utrecht: International Books, 2007).
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- 3 See I.Hagemann, „*Solarsiedlung am Schlierberg*“, (Freiburg (Breisgau), Germany; 2007). <http://www.pvupscale.org/IMG/pdf/Schlierberg.pdf> (accessed 11 May 2010), and D. Hopwood, „Blueprint for sustainability?: What lessons can we learn from Freiburg's inclusive approach to sustainable development?“ *ReFocus* 8 (2007): 55.
- 4 P. Späth, „District heating and passive houses - Interfering strategies towards sustainable energy systems“, eds. *ECEEE 2005 Summer Study proceedings*. (Stockholm: ECEEE, 2005).
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- 6 W. Medd and S. Marvin, "Ecology of intermediation." in *Industrial Ecology and Spaces of Innovation*, ed. K. Green and S. Randless (Cheltenham: Edward Elgar, 2006).
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KARAVAN KOLEKTIVI: URBANO EKOLOŠKO IZGNANSTVO U MILITANTNE MARGINALNE PROSTORE

Lisiunia A. Romanienko

Žestina kojom siromaštvo istrajava u novim državama članicama EU predstavlja značajan izazov za one koji su zainteresovani za zalaganje za stambene probleme onih u urbano nepovoljnom položaju. Postkomunističke zemlje poput Poljske su stekle nezavidno nasleđe ruševnog komunističkog stanovanja u blokovima koje predstavlja svaremene uslove koji obuhvataju koncentraciju nasilnog kriminala, napada na estetske senzibilitete i ozbiljne smetnje za održivi život. Druge stambene alternative su projekti masivne izgradnje stambenih objekata koje sprovode strani graditelji velikih novogradnji, što dovodi do lažne oskudice i spiralnih troškova. U odgovoru na ove štetne uslove, anarhistički aktivisti ljubitelji ekološkog života su izašli sa naprednim predlogom još jedne alternative za stambenu krizu putem mobilne arhitektonske anarhije. Recikliranjem mobilne arhitekture u obliku modifikacije napuštenih železničkih vagona i putovanja u malim materijalno-neopterećenim zajednicama, ove grupe ili karavani često naginju neformalnom naseljavanju ili skvotiranju u perifernim, odbačenim ekološkim oblastima u gradovima da bi unapredili nezavisni održivi način života poznat kao stvaranje urbanog doma porodice. Ovi pioniri migrirajućeg stanovanja, poznati i kao novi hobosi, su prigrlili svoj potčinjeni status, prihvatili svoj identitet građana bez državljanstva u stalnom izgnanstvu, i unapredili nehierarhijski održivi način života. Analiza će dati studiju slučaja posmatranjem uz participaciju u poljskoj eko anarhističkoj karavan zajednici, opisaće prepreke za kolektivni postupak, i daće okvir za ovaj fenomen u svetlu korišćenja marginalnih teritorijalnih skvotiranja da bi inspirisao evropsku stambenu politiku da proširi ovo egalitarno stambeno rešenje za gradove u budućnosti.

KLJUČNE REČI: ODRŽIVI ŽIVOT, URBANO SKVOTIRANJE, EVROPSKA STAMBENA POLITIKA, PROTIV
VELIKE STAMBENE NOVOGRADNJE

URBANE TRANZICIJE U PRAVCU ODRŽIVOSTI - UČITI IZ GRACA I FRAJBURGA?

Harald Rohrachera, Philipp Späthb

Inovacione politike u Evropskoj Uniji se sve više bave tzv „velikim izazovima“ kao što su klimatske promene, iscrpljivanje izvora ili starenje društava. Takve transformacije daleko prevazilaze inovacije konvencionalnih proizvoda ili procesa i zahtevaju restruktuiranje širokih društveno-tehnoloških režima, na

pri., izgrađenog okruženja, sistema pokretljivosti, energetskog sistema ili načina na koji organizujemo procese proizvodnje i potrošnje.

Podeljena priroda i specifične društveno-tehničke dinamike tranzicionih procesa velikih razmera u pravcu veće održivosti čine gradove važnom arenom infrastrukturnih transformacija i ključnom vezom između različitih nivoa vlasti i lanaca društveno-političkih diskursa. Ovaj članak se bazira na analizi slučajeva Graca i Frajburga koji se već najmanje dve decenije smatraju „eko-gradovima“, a posebno su napredovali u svojim politikama i postupcima u zaštiti prirodne sredine. Istraživaćemo u kojoj meri su ovi gradovi zaista bili sposobni za sistem inovacija i osnovne pomake prema cilju „održivog grada“ i zatim ćemo izvesti neke zaključke o „manevarskom prostoru“ gradova u okviru tranzicija šire održivosti.

KLJUČNE REČI: TRANZICIJE ODRŽIVOSTI, EKO-GRADOVI, INFRASTRUKTURE, URBANA POLITIKA

ARHITEKTONSKO PROJEKTOVANJE U NOVOM DRUŠTVENOM PORETKU: PONOVRNO ISTRAŽIVANJE RAZLOGA ZA PRIMENU PROSTORNIH STANDARDA

Vladimir Mihajlov

Suština problema u ovom radu se prepoznaje u pogoršanju javnih i stambenih prostora u gradu, nakon deregulacije arhitekture u neoliberalnom kontekstu. Ovo polje je obeleženo rastućim nedostatkom pravila – posebno prostornih standarda u arhitektonskoj praksi. Potrebno je zato da se izvrši ponovno istraživanje primene prostornih standarda u modernom kontekstu. Stoga ovaj rad pokušava da da odgovor na sledeće pitanje: zašto savremena arhitektonska praksa više ne insistira na standardima za projektovanje i planiranje?

Pošto na proizvodnju prostora u neoliberalnom kontekstu utiču moćni pojedinci koji streme ka tome da budu jedinstveni i pokažu svoju moć, korišćenje prostornih standarda u arhitekturi nije dobrodošlo. Međutim, neo-marksističko usmerenje pokušava da oživi kritički odraz stvarnosti i njegov glavni zadatak je da definiše standarde i tipove izvedene iz prostornog konteksta.

Različiti pristupi, teoretski i praktični, su neophodno potrebni u struci. Jasno vidljiva metoda je neophodna za rešavanje problema. Šira populacija bi trebalo da utiče na arhitektonsku teoriju i praksu zajedničkim skupom kriterijuma/standarda. Na kraju, obe pomenute ideološke usmerenosti se baziraju na onima koji proizvode gradski prostor a ne na onima koji spekuliraju njim.

KLJUČNE REČI: STANDARDI, KONTEKST, POTREBE, KVALITET, NEOLIBERALIZAM, NEO-MARKSIZAM.