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Climate Policy Integration in Federal Settings: the Case of Germany's Building Policy

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Abstract

This paper analyzes the degree of climate policy integration (CPI) in Germany's building policy. The basic assumption of CPI is that the cross-sectoral and multi-level challenge of climate change necessitates the integration of climate concerns into non-environmental policy fields (horizontally) and across different levels of governance (vertically). There are at least three dimensions in which CPI can be analyzed, namely a conceptual, a procedural, and an output/outcome dimension. We use this distinction and analyze the current status of CPI in Germany's building policy, an area highly relevant for climate change mitigation. In all three dimensions, CPI appears to be at a fairly low level, leaving much room for improvement in terms of prioritization, coordination, and coherence. It seems as if political commitment to climate change mitigation has a rather low impact on everyday policymaking, i.e. when decisions on trade-offs, resources, and reallocations have to be made. In the absence of a comprehensive strategy, current German building policy does not reflect the need for coherent and long-term climate policymaking.

What is the role of federalism in this regard? In section 2, we outline that federalism might impact both positively and negatively on the prospects of CPI, and that there is no uniform relationship between the two. In the specific case of building policy, a number of negative effects of federalism – incoherence, veto players, enforcement deficits – seem to materialize. Even though coordination between federal and *Länder* level is deemed necessary, reality shows that it happens only to a very limited extent. The Länder partly opposing more ambitious policies, a stronger integration and are varying considerably regarding the implementation of federal policies.

On the other hand, potential advantages from federalism for CPI are limited in the field of building policy. Baden-Wuerttemberg's pioneering role in setting standards for renewable heating systems certainly inspired federal legislation, but so far that is mainly restricted to new constructions.

The lacking horizontal CPI across departments in particular as well as the lack of coordination across levels of decision making leads to an argument for more and better coordination between all actors involved, be they federal or state actors. Coordination needs to be firmly embedded in the whole policy cycle, starting with joint target-setting, continuing with agreement on adequate policy instruments, and concluding with an evaluation of effects. Strategic capacities, e.g. dedicated institutions or budgets would be needed to maintain the topic on the agenda as an issue of high priority even after changes in govern-

ment. The finding however, indicates that the low hanging fruits of energy demand and efficiency have not received similar attention as the supply of (renewable) energy.

Contents

1. Introduction

Mitigation of climate change has become a priority issue on governmental agendas. Over the last decades, greenhouse gas (GHG) reduction targets were set in most industrialized countries and on almost all levels of government (Dubash et al. 2013). Statements by high-level authorities suggest that the need for immediate and ambitious action has been recognized. For instance, European Union (EU) Commission President José Manuel Barroso calls climate change "the ultimate test for our generation" (Jordan and Rayner 2010, p. 75), and German Chancellor Angela Merkel declares that "waiting is not an option" (Stonington 2013).

But climate change mitigation is a complicated task that concerns a great number of policy fields which determine or influence GHG emissions. The use of energy, patterns of mobility and consumption, housing, etc. are a result or influenced by many different policy domains and levels. Accordingly, energy, agriculture, transport or building policy, to name just a few, are faced with the challenge of harmonizing their traditional agendas with the long-term challenge of climate change mitigation.

The nature of climate policy as a cross-sectoral and multi-level challenge calls for the integration of climate concerns into non-environmental policy fields (*horizontal CPI*) and across different levels of governance (*vertical CPI*) (Dupont 2011; Urwin and Jordan 2008). However, policy integration is facing a number of challenges arising both from the polity (e.g. the division of institutional responsibilities) as well as the politics (e.g. party preferences) of policy making:

Using the example of building policies in Germany, we analyse if at all and how an integration of climate concerns is actually achieved and in how far relevant policies are coordinated across the different levels of policy making. Building policies in Germany are of particular interest and relevance because:

- The high relevance of buildings for energy use and CO_2 emissions and a commitment to reduce CO_2 emissions.
- Competing interests and policy goals in building policies: The objective to reduce CO_2 emissions, has to compete with other goals in particular the affordability of housing and returns of investments.
- The division of responsibilities in different ministries and between the federal level and the Länder in building policies.

(see section 2 for more details)

In this situation we aim to explore in how far integrated climate strategies are an appropriate and effective mechanism to integrate climate policies in building policies and to ensure a coherence of climate friendly building policies across the different levels of policy making in Germany.

Our study is based on comprehensive desk research and 23 semi-structured expert interviews conducted from February to April 2013.[1] Experts were chosen on the basis of their involvement in the policy processes to be analyzed. They are affiliated with federal or state ministries, political parties, non-governmental organizations, and advisory bodies. More than half of the interviews were conducted in the states of Baden-Wuerttemberg and Hamburg. These were selected on the basis of their outstanding efforts in passing advanced provincial policies to achieve GHG emissions reductions in the building sector. While Baden-Wuerttemberg is the only state with obligatory provisions for the deployment of renewable energy in existing buildings, Hamburg is the only state that further tightened provisions of the federal Energy Savings Ordinance.

2. Building policy in Germany: relevance & responsibilities

Energy consumption in 18 million residential and 1.5 million non-residential buildings accounts for 40 percent of total final energy consumption and about one third of CO_2 emissions in Germany (BMWi and BMU 2010). Heating systems are responsible for the largest share of final energy consumption. In 2010, 61 percent of final energy consumption in buildings used for commerce, trade and services, and 90 percent of final energy consumption in private households was used for space heating and hot water (AG Energiebilanzen 2013b, 25). Heating systems in buildings therefore contribute significantly to the overall amount of energy consumption and CO_2 emissions in Germany.

70 percent of German buildings were constructed before 1978, the year in which first legislation on buildings' energy performance came into force (Dena 2012). Since then, significant efficiency improvements have been achieved in newly constructed buildings. The development of the specific energy demand illustrates the technological achievements: The specific energy demand for heating has declined from ca. 200 kWh/m² in average end of the 1990s to ca. 160 kWh/m² in 2007 (Graichen et al. 2012). The regulatory requirements regarding the energy demand for newly constructed houses developed as follows:

[1] See annex for a list of interviewees.

- 1. WSchV. 1978: 147 kWh/m²
- 2. WSchV. 1984: 131 kWh/m²
- 3. WSchV. 1995: 107 kWh/m²
- EnEV 2002-2007: 85 kWh/m²
- EnEV 2009: 59.5 kWh/m²

(Graichen et al. 2012).

It can be concluded that energy demand for new houses is far below the average. The stock of buildings is dominated by older buildings. For example two third of one family houses are built before 1978, the share is even higher in multi-family houses, out of which ca. 75% are built before 1978. For the stock of houses, there are also requirements on energy demand. For example, all houses need an energy pass which informs about the specific energy use, some outdated heating systems need to be refurbished, all houses need refitting with roof insulation (except one family houses if the owners have been living in the house before 2002) or if a renovation of the house is planned.

These regulations entered into force in 2009 and have been tightened in 2014 in order to meet the requirements of the European Directive on Energy-efficiency of houses. So far, the stock of buildings falls short of meeting these requirements, partly because there are exemptions or because the deadlines are still to come. Less than 30 percent of houses constructed before 1978 have an insulated facade, and ca. 50% have an insulated roof. Similar figures indicating considerable potential by refitting could be presented for windows or heating systems (Diefenbacher et al. 2010). This indicates the enormous energy savings potential, or renovation backlog, with regard to existing buildings (Bürger 2013). What would be needed to exploit the energy saving potentials? Only 12 percent of heating systems are state-of-the-art, building envelopes are oftentimes not isolated, and windows and other building components are in need of replacing. In order to reach a significant reduction of GHG emissions in the buildings sector, the rate of thermal refurbishments would have to increase from currently one to at least two or three percent (Discher 2010). Furthermore, the use of renewable energies in space heating would have to increase considerably. However, fossil energy sources still dominate heat supply with more than 80 percent (AG Energiebilanzen 2013a, 16; Rodi and Sina 2011, 180). Hence, policymakers face the tasks of increasing thermal refurbishment rates and promoting the use of renewable heat. At the same time, however, they are challenged with building owners' reluctance to invest in modernization measures and tenants' limited capacity to shoulder rent increases as a result of the latter. In Germany, 57 percent of private households live in rented properties (Bürger 2013, 72). Although there are economic saving potentials, the payoffs and the af-

fordability of the necessary investments vary considerably among the different social groups. There is thus a need to balance environmental constraints with sectoral economic interests, social compensation measures and distributional impacts. As one interviewee put it, "the *Energiewende* must remain affordable."

Against this background of energy saving potentials and competing interests and priorities in utilizing

In the following, we describe the policy package which has been introduced to achieve this goal.

3. Climate policy integration in Germany's building policy: strategies and instruments

3.1 Responsibilities

At federal level, three ministries are mainly concerned with the regulation of buildings' energy performance[2]. While the Ministry of Environment (BMU) has overall responsibility for climate policy and all issues regarding renewable energies, the Ministry of Economics (BMWi) is responsible for energy matters in general, and the Ministry of Transport, Building and Urban Affairs (BMVBS) is concerned with all questions of construction and housing. In addition, the Ministry of Finance (BMF) decides on the provision of financial resources for climate protection and energy efficiency measures. In general, the BMU acts as driving force for ambitious energy standards and renewable energy promotion, while BMWi and BMVBS do not demonstrate particular affinity towards these matters (Michaelowa 2008; Wurzel 2008). According to our interviews, climate policy initiatives usually originate from the BMU. The other departments regard energy savings not primarily as a contribution to climate protection, but as a way to reduce energy dependence and costs. On the other hand, they are worried about alienating their stakeholders through costly environmental provisions. According to Fleischer and Hustedt (2012), different problem perceptions and policy goals as well as a turf war mentality in ministerial departments frequently result in modest policy change or even political stalemate. With regard to the relationship between

[2] The empirical data for the paper has been gathered before the 2013 election and the subsequent re-organization of the responsibilities in German government. Therefore, we keep the former acronyms for the ministries. Although there has been some concentration in responsibilities in the new ministry for the environment and construction (BMUB), there is still need for coordination across ministries and departments. We would argue that the conclusions from the paper remain valid.

BMU and BMWi, one interviewee states that the two ministries "have diametrically opposed regulatory ideas, interests, cultural identities, and usually also party political affiliations". The fragmentation of responsibility for climate-related building policy postulates a great need for cooperation and coordination so as to define a common objective and provide the addressees of policies with clear signals about what is being required from them. However, despite rhetoric commitments to the *Energiewende* in all political parties and ministries, governance mechanisms for the coordination of energy matters have not been established so far. On the contrary, existing strategy processes mostly rely on classical inter-ministerial coordination in line with the Joint Rules of Procedure of the Federal Ministries (GGO). Neither the Chancellery nor a Ministry for Energy or a government sub-committee for energy matters plays a central role in aligning the various interests at stake.

Being a federal state further complicates coherent policymaking in Germany. Building policy is not exclusively made at federal level. The German federation consists of 16 semi-autonomous states (*Länder*), each having its own constitution, parliament and government. Even though most climate-related policies are adopted at the federal level, *Länder* may engage in building policy in three different ways (Rodi and Sina 2011). First, state representatives in the second chamber (*Bundesrat*) have to approve all federal legislation affecting their financial and administrative matters. This makes the *Länder* an important veto player in federal building policies. Second, the enforcement and implementation of federal laws, including building standards, falls within the ambit of the states who are free to choose the administrative structure of their enforcement system. Third and finally, states can take own action with regard to certain aspects of climate change mitigation. Even though the main regulations and standards are adopted at the federal level, or even stem from EU legislation, they may adopt additional provisions in fields that are not exhaustively regulated by federal legislation. This applies, for instance, to regulatory standards for the use of renewable heating in existing buildings or the tightening of minimum energy performance standards for new and existing buildings undergoing renovation. In addition, states have the competences for overseeing land-use and urban planning as well as in training and education; they can initiate pilot projects and funding programs for renewable energy, building renovation, housing promotion, or urban development; they engage in research promotion; and they act as role model by enhancing the energy performance of state-owned buildings or adopting a climate-friendly procurement policy (Biedermann 2011). As a result, there is a considerable discretion for own climate related building policies at the Länder level and most interviewees agree that there is a high need for coordination.

In light of the fragmentation of responsibilities between departments and levels of government, the overall need for coordination and coherence becomes apparent. In the following, the emergence and objectives of the main climate-related policy approaches in German building policy are described both for the federal level as well as the States of Baden Wuerttemberg and Hamburg. The first part deals with the most recent climate and energy strategies, i.e. the 2007 Integrated Energy and Climate Program (IEKP) and the 2010 Energy Concept as well as the respective strategies in the Länder. It is examined how the strategies deal with the issue of energy performance in buildings, which targets they derive from the problem analysis, and which options for action they consider. The second part of the section focuses on the implementation and introduces the main policy instruments currently in place for reducing GHG emissions from energy use in buildings. The present policy mix is based on three pillars, namely regulatory standards, financial incentives, and information (Amecke and Neuhoff 2011).

3.2 Strategic approaches to building policy

German governments with various coalition partners have acknowledged the relevance of buildings' energy performance for the overall reduction of GHG emissions. The issue was extensively addressed in the federal government's 2007 "Integrated Energy and Climate Program" (IEKP), so far the most comprehensive climate mitigation strategy in Germany (Bundesregierung 2007; Hierl 2011). The IEKP was adopted by a great coalition between Social Democrats and Conservatives under Chancellor Merkel. Its principal aim was to ensure a 40 percent domestic GHG reduction by 2020 compared to 1990 levels, a goal that Germany had unilaterally set in order to pioneer in climate change mitigation and stimulate greater EU and international efforts in this field. In essence, the IEKP was an action plan, covering a broad range of policy sectors in which GHG emissions occur. It contained 29 federal measures derived from a brief problem analysis and underpinned by either qualitative or quantitative targets. Six of these measures specifically dealt with energy performance improvements in buildings. Among others, a Renewable Energy Heat Act (EEWärmeG) was introduced with a view to increasing the share of renewables in heat generation from 6 to 14 percent by 2020. Furthermore, minimum requirements for new buildings' primary energy demand prescribed by the Energy Savings Ordinance (EnEV) were tightened by 30 percent; the "CO_2 Building Refurbishment Program", a federal funding scheme for energy improvements in buildings, was consolidated; and a program for energy-efficient retrofitting of public buildings was announced (Bundesregierung 2007). In the following, we describe the process of legislation and implementation to achieve these ambitious goals.

Overall, building policy plays a central role in the government's strategy for climate change mitigation. However, the IEKP contained a number of gaps and flaws that prevented it to become a comprehensive strategy for energy efficiency improvements in buildings that provides guidance and legitimacy for further legislation. First of all, it lacked clear and reliable long-term targets for the building sector, such as maximum energy consumption rates or minimum annual refurbishment rates. The only quantifiable target was stated with regard to the share of renewable energies in heat generation (14% by 2020). Second, the IEKP document as drafted by the BMU did not entirely survive the process of legislative implementation. For instance, the IEKP draft stipulated that minimum rates for the use of renewable energies in heating systems of existing buildings would be introduced. However, this claim was rejected by a number of actors and eventually did not enter the 2009 Renewable Energy Heat Act (see below). Third and finally, the IEKP has never been monitored, making it difficult to estimate its actual effect. In 2007, the federal government estimated that a total of 45 million tons of CO_2 equivalents could be avoided until 2020 through the reduction of energy use in buildings and the employment of renewables in the heating sector (Deutscher Bundestag 2007, 66). However, it can be doubted whether these potentials can be still realized because not all measures provided in the IEKP were implemented (e.g. funding for energy improvements in buildings varied annually), and some were even revoked at later stages (e.g. mandatory replacement of electrical night storage heating (Zeit Online 2013)).

After the change to a conservative-liberal government in 2009, and an associated shift of priorities, the IEKP's relevance for guiding climate policy development declined and the focus of climate related energy policies shifted to electricity from renewable energies and the controversial debate on nuclear power. This became manifest in the "Energy Concept for a clean, reliable and affordable energy supply" presented in September 2010 (BMWi and BMU 2010). With regard to GHG emissions, a long-term 80 to 95 percent reduction target until 2050 in conjunction with interim steps for 2030 (minus 55 percent) and 2040 (minus 70 percent) was stated. Even though the 2011 nuclear disaster in Fukushima, Japan, led to a policy change on the nuclear question, the Energy Concept is still the main strategy document for a transition to a low-carbon economy by 2050. Like the IEKP, the Energy Concept also emphasizes the need for energy improvements in buildings. It states that the "energetic refurbishment of existing buildings is the central key to modernizing energy supply and to achieving the climate policy objectives." (BMWi and BMU 2010, 22) The overall target is a "largely climate-neutral buildings stock" by 2050, meaning that buildings will consume much less energy than today, and remaining energy use should be renewable. To reach this objective, annual thermal insulation rates should double from 1 to 2 percent,

heat demand should decrease by 20 percent until 2020, and primary energy consumption in the buildings sector should decrease by 80 percent until 2050 (BMWi and BMU 2012, 68). In contrast to the IEKP, however, the Energy Concept does not contain any specific measures designed to achieve the stated targets. Even though the necessity of "suitable and reliable framework conditions, time and money" (BMWi & BMU, 2010, p. 22) is acknowledged, the proposed measures are rather vague and oftentimes not linked to financial commitments. A "long-term renovation roadmap" was announced as a central instrument for incentivizing widespread renovation activity. However, that roadmap has not been adopted until today, and some interviewees doubt that it will ever have the desired effect. Hence, while targets have been stated more clearly than before, the Energy Concept's actual impact on their achievement is presumably limited because of a lack of commitment regarding implementation (see also Germanwatch 2010).

3.3 The current policy mix: standards, incentives, and information

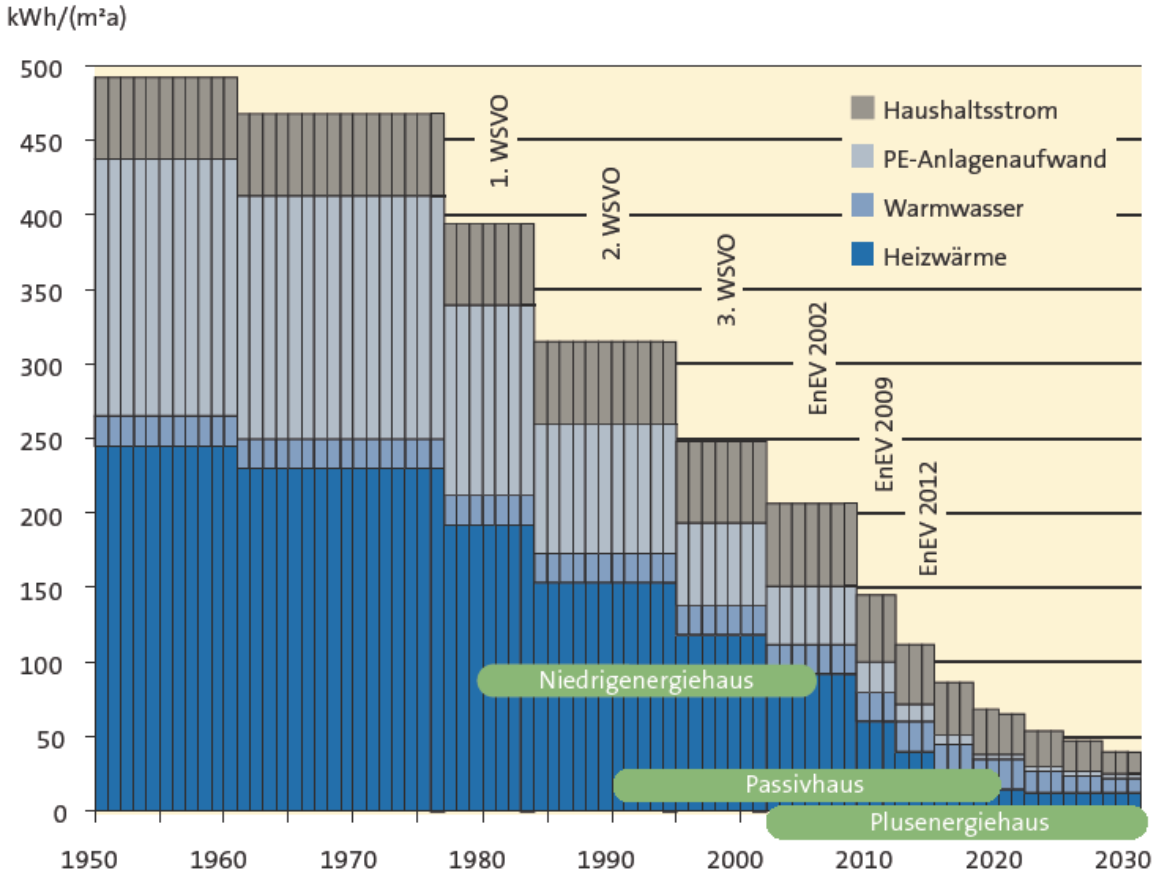
Specific targets and goals are important elements of a long-term strategy for energy improvements in the German buildings stock. However, they have to be complemented by instruments suitable to bring about their attainment. This section provides an overview of the current policy mix that is meant to improve the energy performance of buildings in Germany. It is difficult, if not impossible to attribute which of the policy instruments was introduced because of the strategies in place; which of them would have been taken anyway and which are caused by other processes, in particular European legislation. Our interview partner gave some insights on this which is reported in the following, however, these questions would have required a detailed process tracing which was out of the scope of the study. The policy mix is based on a threefold approach: regulations set minimum standards, funding incentivizes voluntary activity, and information raises awareness of home owners and tenants.

3.3.1 Regulatory standards

In response to the oil crises of the 1970s, the German Energy Savings Act (*Energieeinspargesetz*, hereafter EnEG) was adopted in 1976. It includes the power to issue statutory federal legislation for energy savings in the buildings sector. On its basis, the first Heat Insulation Ordinance (WärmeschutzV) was adopted in 1977, followed by an Ordinance for Heating Systems (HeizAnlV) in 1978. In 2002, both regulations were combined. Since then, the Energy Savings Ordinance (*Energieeinsparverordnung*, hereafter EnEV) represents the most important regulatory instrument in German building policy (Dena 2012). It stipu-

lates minimum requirements for the energy performance of buildings as well as building components. It was revised in 2009 and once more in 2014.

The development of the requirements is depicted in the following graph:



(Source: Schulze Darup 2009)[3]

It has to be noted, however, that not all aspects of energy use for housing are addressed in a similar way. The relevant ordinance using different indicators (for example, until 2002 the demand for heating energy was subject of regulation, since then it is the primary energy demand), the different aspects are addressed by different policies (e.g. the standards for passive houses are requirements to receive KfW subsidies loans rather than obligatory requirements). Furthermore, energy use for water and electricity is addressed by technical norms only. The graph shows, however, that the level of ambition of standards increased considerably. It has to be noted, however, that until 2009 the standards covered only newly constructed buildings, since then the stock of buildings is also covered in case of major

[3] The latest EnEV ordinance was planned for 2012, but actually adopted only in 2014. Therefore, the graph refers to an EnEV 2012.

renovations. In such cases, the affected building components (e.g. walls, windows, roof) have to meet specific heat transmission coefficients (so-called "component procedure"). Alternatively, home owners may choose a different method of compliance, i.e. demonstrating that annual primary energy demand after renovation does not exceed the limit values for comparable new buildings by more than 40 percent (so-called "balance procedure"). These standards are obligatory and regardless from possible subsidies. Besides the standards in terms of energy use, the regulations set related framework conditions, for instance with regard to the issuance and display of energy performance certificates.

It has to be noted, that the recent amendments and the introduction of energy performance certificates cannot be attributed to the national strategy, but rather to the transposition of the EU Energy Performance of Buildings Directive (EPBD)[4]. During the transposition, EnEV was amended in 2004 and 2007, but regulatory standards were not tightened. This led the state of Hamburg to issue its own Climate Protection Ordinance (*Hamburgische Klimaschutzverordnung*, hereafter HKVo) in 2008 (Hamburger Bürgerschaft 2007, 40). HKVo increased performance requirements for both new and existing buildings and abolished the less demanding balance procedure. Hamburg could do so because EnEV explicitly allows German *Länder* to issue stricter requirements (Freie und Hansestadt Hamburg 2013). As part of the federal government's IEKP, a 2009 EnEV amendment tightened the standards for maximum allowable primary energy by about 30 percent. The new standards are nearly identical with the ones set in Hamburg, so that currently both EnEV and HKVo apply, and whichever norm is stricter in a respective case has to be met. Yet another tightening of standards was foreseen in the IKEP for 2012. However, this intention has been delayed. Nevertheless, an amendment was adopted in the fall of 2013 as a result of the new EU EPBD[5]. The new EnEV becomes effective in May 2014 and thus about two years later than announced. Among others, it entails a further 25 percent decrease for maximum primary energy demand in new constructions by 2016, and a 20 percent tightening of permitted transmission heat loss by the same year(BMVBS 2013b). However, it does not stipulate stricter requirements for existing buildings, a decision widely criticized by environmental organizations and opposition parties (e.g. Grüne Bundestagsfraktion 2013; NABU 2013).

[4] Directive 2002/91/EC

[5] Directive 2010/31/EU

Despite being one of the central regulatory instruments for GHG emissions reductions in German buildings, EnEV is confronted with two major points of critique. First, experts claim that regulatory standards are not sufficient for the stated climate protection targets (Ecofys 2010; Klinski 2009). Since it contains a cost-efficiency rule – implying that costs for modernization measures must be compensated by lower expenditures for energy consumption "within reasonable time"– Rodi and Sina (2011, 192) claim that overly ambitious standards are already precluded from the start. Second, a significant enforcement deficit is being criticized as EnEV's "Achilles Heel" (Weiß and Vogelpohl 2010, 18). Non-compliance is estimated to reach at least 25 percent, presumably however even much more. Interviewees confirm that there is a significant lack of enforcement which results from staff shortages in the *Länder*. The federal government can do little to change that situation but appeal to Länder administrations to better their enforcement record (Bundesregierung 2012).

A second regulatory standard for home owners concerns the use of heat from renewable energies. Before federal legislation was agreed upon, the state of Baden-Wuerttemberg set an example in 2007 by adopting a Renewable Heat Act (*Erneuerbare-Wärme-Gesetz*, hereafter EWärmeG) for the obligatory use of heat from renewable energies in residential buildings. The law came into force in 2009. EWärmeG applied to newly constructed buildings as well as to existing buildings when the central heating system was due to be exchanged. According to EWärmeG, newly constructed buildings have to cover an average 20 percent of annual heating requirement from renewable sources. The requirement varies depending on the type of energy source (lowest for solar and highest for biomass, geothermal and ambient air). For existing buildings, this value is lowered to 10 percent. The act foresees a number of alternative compliance measures, for instance energy performance that exceeds current EnEV standards by 15 percent.

EWärmeG was adopted in an almost all-party consensus in the Baden-Wuerttemberg parliament and backed by all members of the state government. The former conservative Environment Minister Tanja Gönner (2008, 20) justified the state law by pointing to the building sector as Germany's "sleeping giant" with regard to GHG emissions. She consequently called for comparable standards at federal level. However, Gönner's lobbying activities posed a dilemma for her fellow party members in Berlin (Bruns et al. 2009, 462). Thus far, they opposed regulatory standards for renewable heat. Even though a Renewable Energies Heat Act (*Erneuerbare-Energien-Wärme-Gesetz*, hereafter EEWärmeG) was announced in the federal government's climate change strategy (IEKP) in 2007, subsequent negotiations between departments and coalition parties were tough. While BMU and Social Democrats

pushed for demanding standards, BMWi, BMVBS and Conservatives were eager to ensure economic viability and respect property rights. The main issue of conflict was the question of whether standards for existing buildings should be included in the law. For the sake of agreement, and through mediation of the Chancellery, this contentious point was decided in favor of the less ambitious advocacy coalition (Bruns et al. 2009, 459; Hierl 2011).

When the federal EEWärmeG came into force, Baden-Wuerttemberg's EWärmeG provisions for new buildings were automatically invalidated. However, EWärmeG still applies to existing buildings in Baden-Wuerttemberg because EEWärmeG deliberately allows *Länder* regulation in this regard. Baden-Wuerttemberg is currently preparing a revision of EWärmeG, increasing the requirements from 10 to 15 percent and including non-residential buildings under the law. Furthermore, the state government is planning to introduce a complementary mechanism. Home owners can "buy" their way out from the heating standards if they commission a refurbishment concept that entails potential energy efficiency measures for the whole building and its components (Umweltministerium Baden-Wuerttemberg 2013). With this approach, Baden-Wuerttemberg goes far beyond federal standards. Even though home owners should not be forced to undertake renovation measures, a refurbishment concept emphasizing potential energy (and money) savings might prove to be an important informational measure for incentivizing home owners to undertake renovation measures, even though they are not directly forced to do so.

The federal EEWärmeG faces similar points of critique as EnEV. First and foremost, it is being criticized for its lack of ambition and for being the "weakest element" of the IEKP (Futterlieb 2011, 88). Next to the variety of compensation measures, it is especially the absence of standards for existing buildings that presumably limits EEWärmeG's impact. As Gönner (2008, 18) put it, this is a "serious blemish" in the law. Consequently, a BMU status report submitted in 2012 calls for the integration of standards for existing buildings in EEWärmeG (BMU 2012). However, our interviews confirm that BMWi and BMVBS are still reluctant in this regard. Second, EEWärmeG is equally impeded by a significant enforcement deficit. Until 2012, only half of the German *Länder* have determined which authority is responsible for enforcing the act (BMU 2012, 84).

Furthermore, the parallel validity of two interrelated standards in different legislative texts that both require interpretation is a source of complexity for home owners and constructors. According to our interviews, BMU intentionally designed EEWärmeG as a counterbalance to EnEV, for which BMWi and BMVBS are responsible. The law provides the BMU opportunities to exert pressure on increasing ambitions for efficiency standards. However, the integration of EnEV and EEWärmeG has been demanded by a number of experts (c.f.

interviews and Ecofys 2010, 24) and states (Bundesrat 2010, 15). Even the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV) has called for a harmonization of regulations because of "substantial overlaps" (BMELV 2012, 9). The federal government, however, defends the current division into two legislative provisions (Deutscher Bundestag 2010, 12). Interviewees suspect that integration is unrealistic as long as competencies for energy matters are shared between the three ministries.

3.3.2 Financial incentives

Financial incentives for modernization measures are the second pillar of Germany's climate-related building policy. Through the provision of loans with subsidies interest rates and other subsidies, funding programs are intended to incentivize home owners to invest in energy efficiency improvements of their buildings. In general, applicants have to overachieve the standards provided by the above mentioned regulations. A central actor in this regard is the publicly owned KfW Bank (*Kreditanstalt für Wiederaufbau*) which, inter alia, carries out the "CO_2 Building Refurbishment Program" (*CO_2-Gebäudesanierungsprogramm*). The latter supports energy saving measures in residential buildings. Its total amount of annual funding varied between 0.85 billion Euros in 2007 and 2.2 billion Euros in 2009 (Dena 2012, 115). In 2012, the federal government declared that 1.5 billion Euros will be provided in the years from 2012 to 2014 (Bundesregierung 2012). However, critics call for a much higher amount of funding. According to a study undertaken by Prognos (2013), at least three to five billion Euros are needed annually in order to significantly increase thermal refurbishment rates as envisaged by the government's 2010 Energy Concept.

The introduction of renewable heating systems in existing buildings is supported by means of a Market Incentive Program (*Marktanreizprogramm Erneuerbare Energien*, hereafter MAP). It provides investment grants for small installations and soft loans for commercial investments in large plants. According to EEWärmeG, MAP funds should amount to up to 500 million Euros annually. In practice, however, total funding varied between 155 million Euros in 2010 and 418 million Euros in 2009 (Bürger 2013, 74).

On top of the mentioned federal programs, *Länder* set up their own funding mechanisms for energy savings and renewable heating, usually carried out by their regional banks (*Landesbanken*). This can take the form of "cheapening" KfW grants by providing additional resources for existing federal programs, thereby making an investment even more profitable. In addition, *Länder* set up their own funding programs that allow them to emphasize own priorities, e.g. with regard to certain types of renewable energy. The large pool of funding possibilities is critically seen by a majority of interviewees. They complain that

it has led to a „funding jungle" that confuses potential private investors and energy consultants. However, coordination of support schemes is regarded difficult by actors from both levels. According to a federal representative, "*Länder* want to have a say in everything, but they never want to pay." *Länder* representatives, on the other hand, declare that it is important to maintain autonomy in the federal system. Furthermore, they defend the excessive use of the instrument, because agreement on funding schemes is mostly free of conflict while at the same time generating high publicity effects.

In recent years, the federal government intended to introduce an additional financial incentive for building refurbishments, namely a tax deductibility of renovation costs over ten years. However, the bill was vetoed by German *Länder* in the *Bundesrat*. Publicly, social democrat-led state governments declared that they could not bear revenue losses in light of the upcoming debt ceiling which stipulates that all states must have a zero deficit by 2020. Interviewees, however, suspect that partisan considerations were at least as important for the *Bundesrat* decision, which was taken only nine months before the 2013 federal elections. Social democrats in *Länder* governments apparently did not want to reach a compromise. The veto is strongly criticized by the majority of interviewees because the instrument promised to be a means to significantly increase thermal refurbishment rates of privately owned houses.

3.3.3 Informational policies

A third pillar for increasing energy efficiency in German buildings are persuasive instruments. Home owners should be provided with information about options and benefits for investments into energy efficiency. Three measures, all of them issued at the federal level, are particularly worth mentioning. First, energy performance certificates reveal the energy performance of a building and highlight potential options for improvement. Such certificates are obligatory since 2014 when buildings are sold or rented. Their introduction is a result of the EU Energy Performance of Buildings Directive. Even though the impact of the instrument is so far limited, it is potentially a low-cost instrument for saving energy and reducing CO_2 emissions, respectively (Amecke 2011). Second, energy audits are an important device for supporting building owners in their decision on retrofits. Energy audits for SMEs and private house owners are subsided by the federal government. For the implementation, regional energy agencies are important actors. According to one interviewee, regional energy agencies are central pillars of a successful energy transition, but their distribution, resources and effectiveness vary from state to state. Third and finally, the federal government has announced a "renovation roadmap" for the existing building stock

that is supposed to serve as an orientation tool for home owners until 2050. Home owners should voluntarily comply with the roadmap that is linked to financial support. However, even though the roadmap was supposed to be published in 2012 (BMWi and BMU 2010), this has not happened so far. For that reason, the mechanisms are yet unclear and an evaluation of its potential impact is not possible at this point.

Over the last decades, Germany has continuously expanded its policy mix. The main activities have been undertaken at the federal level. Few Länder have tightened the federal regulatory standards, several Länder have set up funding schemes and implemented energy agencies that assist in energy audits. Nevertheless, experts doubt that the current policy mix is sufficient for reaching Germany's climate policy targets, namely doubling thermal refurbishment rates and reaching climate-neutrality by 2050. According to Bürger (2013, 80), "there is no alternative to the necessary tightening of regulatory requirements, coupled with a substantial increase in the accompanying support programs." A study conducted by the renowned Institut Wohnen und Umwelt (IWU) goes one step further. It concludes that current instruments will have to be complemented by an energy tax that incentivizes thermal refurbishments and generates revenue to be used in support programs (BMVBS 2013a). The lack of ambition is partly a result of the fragmentation of responsibilities between the federal and the state level. Furthermore, the different departments responsible for building policies pull in different directions. As a result, it is debatable whether Germany has a comprehensive and integrated sector-specific strategy for reducing GHG emissions in the buildings sector. While targets have never been so clear, most interviewees agree that the current policy mix is not a strategy in the most literal sense, but rather a random set of measures not suitable to achieve long-term objectives.

4. Assessing the degree of climate policy integration in Germany's building policy

What do the empirics tell us about the degree of climate policy integration (CPI) in Germany's building policy? As set out in section 2, three dimensions of CPI can be distinguished, namely a conceptual, a procedural, and an output/outcome dimension. The following analysis will be guided by this distinction, first estimating the degree of CPI in Germany's building policy for each of the dimensions separately, and then recombining them in order to gain an overall picture.

Conceptually, CPI entails that non-environmental policy sectors have to take account of climate mitigation targets and contribute towards their achievement. For building policy in

Germany, this raises the question of whether climate policy objectives are adequately considered in policymaking, and whether climate change mitigation has become a policy guideline in non-environmental departments. It appears, however, as if integration is at a very low level here. Even though strategy documents acknowledge the relevance of energy efficiency in buildings for climate change mitigation, a strategic approach for an ambitious and coherent policy mix has not been developed. The lack of a coherent strategy is however not surprising in light of continued low interest in climate change mitigation in non-environmental departments. According to our interviews, increased rhetorical commitment over the last decade has not led to the incorporation of climate change mitigation in the general guidelines of ministries other than the BMU. The predominance of sectoral interests explains why negotiations only result in modest policy change. An illustrative example is the legislative process preceding the adoption of EEWärmeG, where demanding standards for existing buildings were successfully prevented by BMWi, BMVBS and others (Bruns et al. 2009, 459). Regarding the German *Länder*, commitment to GHG emission reductions in buildings seems to be equally superficial. Even though both EnEV and EEWärmeG allow stricter provincial rules for existing buildings, only Hamburg and Baden-Wuerttemberg have made use of this.

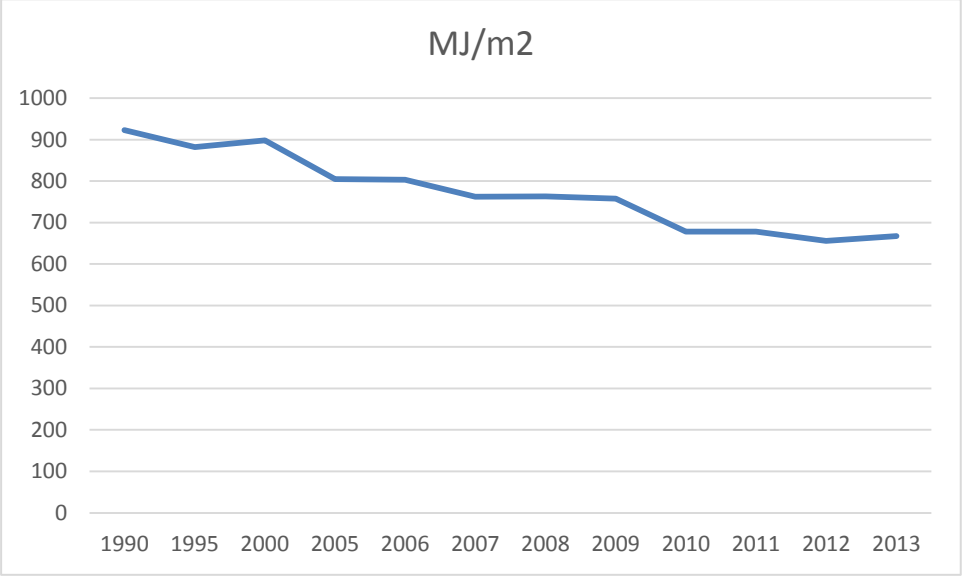
Procedurally, CPI implies that organizational structures and procedures for horizontal and vertical coordination have to be established so as to enable the cooperation of various distinct actors for climate policymaking. Are there adequate administrative structures and procedures for horizontal and vertical coordination in German building policy? Do they prevent redundancy and incoherence? Again, the answer is negative. Horizontal coordination mainly takes place in line with the Joint Rules of Procedure, but distinct bodies for climate and energy matters have not been established. Responsibilities for building policy remain divided between departments that are characterized by widespread inertia and a narrow focus on the self-interests of stakeholders. Current climate governance is characterized by a disability to strategically cooperate with each other (Fleischer and Hustedt 2012). This turf war mentality is particularly evident between BMU on the one hand, and BMWi and BMVBS on the other. BMU intentionally designed EEWärmeG as opposition to EnEV, because BMU regards EnEV provisions as too undemanding. On the other hand, BMWi and BMVBS are anxious to keep standards low so as to enable cheaper constructions and renovations. From their point of view, EEWärmeG requirements are yet another unnecessary burden for home owners and constructors (Futterlieb 2011).

Vertical coordination and coherence is equally at a low level in procedural terms. Even though federal and state representatives frequently meet to discuss climate-related issues,

for instance in the context of the biannual Conference of Environment Ministers (*Umweltministerkonferenz*), within issue-specific working groups (*Bund-Länder-Arbeitsgruppen*), or on sporadic, issue-specific summits (e.g. *Energiegipfel*), there is no institutional framework that requires coordination or cooperation (Rodi and Sina 2011). As a result, funding programs are not synchronized, provincial enforcement of federal standards is carried out half-heartedly, and co-legislation makes things even more complicated. Overall, the division of responsibilities and the absence of coordination bodies seem to impede coherent policymaking.

With regard to outputs and outcomes, we must ask how effective current strategies and instruments are in improving the overall energy performance of the German building stock. Experts agree that the potentials are not utilized and Germany is not on the track achieving its own ambition of a CO2 neutral stock of buildings by 2050. To achieve this, different possibilities can be considered to improve the energy performance of buildings, namely increasing the energetic standards for new constructions, thermally refurbishing existing buildings, and renewing heating systems or switching to renewable heat supply. Energetic standards for new constructions have been tightened on several occasions since the late 1970s, and exceeding them is financially supported by KfW grants. The EU Energy Performance of Buildings Directive, adopted in 2010, requires that newly constructed buildings have to be “nearly zero-energy buildings” by 2021, meaning that they consume only a very low amount of energy that is covered to a significant extent by renewables. Since EU legislation has to be transposed into national law, the provision has a strong impact on the further development of standards for new buildings in Germany. Regardless of where the initiative came from, newly constructed buildings will have to meet highest energy standards by 2021 at the latest.

A different picture emerges with regard to the energy performance of the existing building stock. As a matter of fact policy interventions have brought about some improvement. The energy use for heating of private households has been decreased from 923 MJ/m2 in 1990 to 677 MJ/m2 in 2013.



(based on data AGEB 2014).

It has to be noted that the data entails both the existing stock as well as the newly constructed buildings. The achievements can be partly attributed to an (economically motivated) modernization since substantial standards for the existing buildings have been introduced only with the 2009 EnEV and tightened in the 2014 reform. Since the 2009 regulations, however, no substantial achievements can be observed. The energy efficiency is not improving, but remains stable. Nevertheless, interviewees and experts claim that there is still an enormous untapped energy savings potential in existing buildings (Bürger 2013; Weiss, Dunkelberg, and Vogelpohl 2012). Almost every instrument is being criticized for lack of ambition and enforcement deficits (EnEV and EEWärmeG), varying monetary endowment (federal funding programs), or complexity (interrelated standards; parallelism of state and federal funding). Furthermore, new instruments like the tax deductibility of renovation costs or the renovation roadmap for the building stock have been announced, but not adopted so far. Refining the policy mix for exploiting the energy savings potential in existing buildings is the most pressing challenge at the moment. It is estimated that sixty percent of energy consumption for heating could be saved by consequentially refurbishing the current building stock to the level of EnEV 2009 standards (Graichen et al. 2011, 5).

Finally, renewable heating faces the same dilemma as thermal refurbishment. While the use of renewable heating is obligatory in new constructions, the renewal or switching of heating systems in existing buildings is progressing only slowly. The use of renewable heating systems is only mandatory in Baden-Wuerttemberg, and even though the federal EEWärmeG deliberately allows provincial legislation in this regard, other states are so far reluctant to follow. Like the federal government, they rather rely on subsidies. The federal

Market Incentive Program (MAP) has attracted almost 260,000 applications for investment subsidies for solar panels, biomass boilers, and heat pumps in 2009 (Weiss, Dunkelberg, and Vogelpohl 2012, 410). The number of approvals was even higher in 2009, because applications from the former year received approval as well. The program is estimated to have a high impact in terms of CO_2 reduction as well as investment (MURE 2011). Still, one should not overestimate the leverage effect of funding. Studies show that funding programs primarily influence home owners that are already highly motivated to act (Weiss, Dunkelberg, and Vogelpohl 2012, 411). Overall, one can conclude that current strategies and instruments certainly do have an effect, but they are so far not effective enough so as to improve the energy performance of buildings in line with the targets for 2020 and 2050.

What are the potentials of increased Climate Policy Integration (CPI)? The findings of the paper suggest that competition between the relevant departments prevails on the federal level. While BMU puts more emphasis on climate protection and increasing efficiency of buildings, BMVBS and BMWi are concerned with the costs and putting a brake on more ambitious targets and measures. The same holds for coordination between federal and Länder level. The Länder developed own programs for funding and for energy audits. However, despite of few exemptions, most notably Hamburg and Baden-Wuerttemberg, the Länder are hesitant to tap their potentials in regards of regulatory standards and their implementation. It appears as if the Energiewende in Germany focuses largely on the supply of energy, while the low hanging fruits of energy demand and increased efficiency receive much less attention in the German strategy. Despite rhetorical commitments to climate change mitigation and Energiewende, a comprehensive sectoral approach for GHG emissions reductions in the building sector has not been developed. On the contrary, the current policy mix has evolved rather incrementally and still features a number of gaps and inconsistencies, for instance with regard to its regulatory focus on new constructions, whereas existing buildings are actually the ones with the biggest energy savings potential. Coordination between involved actors mainly takes place within existing administrative structures, which further impedes coherent policymaking. With a lack of strategic capacities which ensure that the concerns of climate protection remain on the political agenda and receive sufficient attention vis a vis other policy goals. However, it appears as if traditional, sectoral objectives like cost-efficiency and competitiveness still predominate over climate change concerns, both in the federal executive (except BMU) and in most states.

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Annex: List of interviewees

No.	Name	Position/Organization	Location and date (2013)
		Federal Level	
1	Harald Kohl	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)	Berlin, 4 March
2	Annegret Niehuss	Federal Ministry of Economics and Technology (BMWi)	By phone, 13 February
3	Wolfgang Ornth	Federal Ministry of Transport, Building and Urban development (BMVBS)	Berlin, 20 February
4	Harry Lehmann	Federal Environment Agency (UBA)	Berlin, 18 February
5	Julia Reuss	CDU/CSU Parliamentary Group	Berlin, 18 February
6	Frank Schwabe	Member of Parliament, SPD spokesperson on climate policy	Berlin, 15 March
7	Ralf Sitte	SPD Parliamentary Group	Berlin, 4 March
8	Christian Hey	Secretary General of the German Advisory Council on the Environment (SRU)	Berlin, 26 February
9	Martin Bornholdt	Deutsche Unternehmensinitiative Energieeffizienz e.V. (DENEFF)	By phone, 6 February
10	Ulf Sieberg	Nature and Biodiversity Union (NABU)	Berlin, 13 February
		Baden-Wuerttemberg	
11	Tanja Gönner	Environment Minister 2005-2011	Berlin, 18 March
12	Christine Wolf, Sibylle Hepting-Hug, Jürgen Gaus	Ministry of State	Stuttgart, 10 April
13	Martin Eggstein	Ministry of the Environment, Climate Protection and the Energy Sector, Baden-Wuerttemberg	By phone, 24 April
14	Karl Greißing	Ministry of the Environment, Climate Protection and the Energy Sector, Baden-Wuerttemberg	Stuttgart, 10 April
15	Ulrich Müller	CDU Parliamentary Group; Environment Minister 1998-2004	Stuttgart, 10 April
16	Volker Kienzlen	Climate Protection and Energy Agency, Baden-Wuerttemberg (KEA)	By phone, 17 April
		Hamburg	

17	Friederike Mechel	State Ministry for Urban Development and the Environment, Hamburg	Hamburg, 18 April
18	Benno Hain	Hamburg Coordination Centre for Climate Issues (LSK)	By phone, 16 April
19	Rainer Scheppelmann	Hamburg Coordination Centre for Climate Issues (LSK)	Hamburg, 18 April
20	Jens Kerstan	Chairman of the GAL Parliamentary Group	Hamburg, 18 April
21	Monika Schaal	SPD Parliamentary Group, Spokesperson for environmental policy	By phone, 23 April
22	Manfred Braasch	Friends of the Earth Hamburg (BUND)	Hamburg, 18 April
23	One interviewee wants to remain anonymous.		