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**Reinhard Steurer & Christoph Clar**

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## Is decentralisation always good for climate change mitigation? How federalism has complicated the greening of building policies in Austria

Reinhard Steurer · Christoph Clar

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**Abstract** This paper addresses two related puzzles. The first puzzle is that parts of the environmental federalism literature suggest that federal states are ill-equipped to solve nation-wide or global environmental problems such as climate change, but climate policy scholars usually emphasise the opposite. The second puzzle is that Austria (a federal EU Member State) is regularly praised as an environmental policy leader but has missed its Kyoto target by about 19 %. The paper addresses both puzzles by analysing to what degree federalism is responsible for Austria's poor mitigation performance. Since the nine Austrian provinces are mainly responsible for regulating the building sector that accounts for about 25 % of total energy consumption and 13 % of the greenhouse gas emissions, the analysis focuses on the integration of climate change mitigation in building policies. The empirical core of the paper analyses all major EU, federal and provincial policies that aimed to green the building sector since the signing of the Kyoto Protocol in 1997. After showing that these policy outputs cannot explain considerable sectoral emission reductions, we conclude that Austrian federalism did not facilitate but hinder climate change mitigation because it added a vertical dimension to an already complex horizontal integration challenge. However, since federalism can by far not explain Austria's failure to reach its Kyoto target domestically, we also conclude that it is only one of many independent variables that shape climate change mitigation. Finally, we argue that Austria is neither an environmental policy leader nor a laggard, but an opportunist.

**Keywords** Climate change mitigation · National climate policies · Climate policy integration · Building policies · Federalism · Environmental federalism

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R. Steurer (✉) · C. Clar  
InFER - Institute of Forest, Environmental, and Natural Resource Policy, BOKU - University of Natural Resources and Life Sciences, Feistmantelstr. 4, 1180 Vienna, Austria  
e-mail: reinhard.steurer@boku.ac.at

## An environmental policy frontrunner as a climate policy laggard

For decades, Austria has been and still is regarded as one of the best performers in environmental policy-making, in particular with regard to water and air quality (Knill et al. 2012; Liefferink et al. 2009), and when the country joined the European Union in 1995, a key concern was that EU membership threatens high Austrian environmental standards (Pesendorfer 2007). This legacy contrasts with Austria's performance in mitigating climate change. According to the EU burden sharing decision from 2002 that allocated the EU Kyoto target to its Member States, Austria had to reduce its greenhouse gas (GHG) emissions by 13 % from 78.2 million tons of CO<sub>2</sub> equivalent in 1990 to 68.8 million tons in 2008–2012 (Umweltbundesamt 2012a, 49). Instead, GHG emissions have risen 5.9 % above the 1990 level to 82.8 million tons of CO<sub>2</sub> equivalent until 2011, which is 18.9 % above the Kyoto target (Umweltbundesamt 2013a, 50). Thus, Austria is among the worst climate policy performers in Europe, alongside with notorious environmental policy laggards such as Spain and Italy (EEA 2012, 28). Against this background, the environment minister happily announced in 2012 that Austria was able to offset the Kyoto target gap with cheap purchases of emission certificates worth about 700 Million Euro.<sup>1</sup> This proved to be one of the most significant Austrian “climate policies” during the Kyoto period.

National emission trends are determined by many factors, among them economic cycles, trade balances, weather patterns and the degree to which climate change mitigation has been integrated into GHG emitting sectors such as industry, transport, energy and buildings at all relevant levels of government (here referred to as climate policy integration or CPI). Building policies in Austria make an interesting case for studying the effects of federalism on climate policy-making for at least three reasons. First, the residential sector accounts for about 25 % of total energy consumption (share increasing; OECD 2013, 25) and 13 % of total GHG emissions (Umweltbundesamt 2013a, 25). Thus, the Austrian federal government expected it to contribute substantially to meeting its Kyoto target (Lebensministerium and BMWFJ 2010, 52). Second, the emission reduction potential of the building sector is considerable and realistic because mitigation measures usually represent win–win situations, i.e. they pay themselves off in a few years (Kletzan-Slamanig et al. 2008; Metz 2010). The most prominent measures are thermal refurbishment of old buildings, the renewal or switching of heating systems (e.g. from oil and gas to heat pumps, district heating or solar water heating) and improving the energetic standards for new buildings (Metz 2010, 207; Kletzan-Slamanig et al. 2008; Wunder 2004; Umweltbundesamt 2012b, 67, 79).<sup>2</sup> Third, studying climate change mitigation in building policies promises interesting insights into the role federal political systems play in environmental policy-making (also referred to as “environmental federalism”) because respective responsibilities are fragmented vertically in most federal countries, in particular in Austria. As the remainder of the paper shows in detail, this further complicates an already complex task, requiring coordination and integration not only horizontally between sectors (here climate/energy and building policies) but also vertically between levels of government (here mainly federal and provincial).

<sup>1</sup> <http://derstandard.at/1333528357258/Umwelt-Strategie-Oesterreich-kauft-sich-mit-Emissionszertifikaten-frei-und-kuerzt-Solarfoerderung>; accessed at 7/19/13.

<sup>2</sup> Further options are the integration of climate and energy concerns in regional planning because it affects the transport sector and the efficiency of district heating systems. All options can be pursued with financial incentives (i.e. subsidies or tax breaks), mandatory regulation and informational policies such as awareness raising campaigns (Metz 2010).

Although building policies are important for mitigating climate change, policy analyses rarely address them systematically—neither in unitary nor in federal state settings (for an exception see van der Heijden 2014). The present paper closes this gap by answering the following questions for the Kyoto period (1997–2012):

- How did EU, federal and provincial actors and policies facilitate (or hinder) climate change mitigation in the Austrian building sector?
- To what extent has the building sector actually reduced GHG emissions and what role did public policies play in this regard?
- What role did the Austrian federal system play in greening building policies? Was it hindering, facilitating or irrelevant for cutting sectoral GHG emissions?

We answer these questions based on desk research (of strategy papers, laws, policy documents, assessments, studies, etc.) and 14 semi-structured face-to-face interviews with policy-makers from relevant federal authorities, the provinces of Styria and Upper Austria<sup>3</sup> and non-governmental climate policy experts (for details see Table 1 in “Appendix”). In the interviews, we asked about major EU, federal and provincial mitigation policies and their effectiveness in greening the building sector, the role different actors and coordination efforts played in shaping them, and about strengths, weaknesses and possible improvements of existing climate politics and policies. The interviews were conducted between January and April 2013, and the recordings were compared and interpreted qualitatively in view of the research questions above.<sup>4</sup>

Section 2 introduces the literature concerned with environmental/climate policy integration and environmental federalism. Section 3 briefly outlines the Austrian federal system and reviews all major EU, federal and provincial policies that aimed to curb GHG emissions in the building sector since the signing of the Kyoto Protocol in 1997. Section 4 explores in how far these policies can explain decreasing GHG emissions in the building sector, and it analyses the roles of key actors and governance processes thereby. Section 5 finally summarises how federalism has hampered climate change mitigation in Austria and what this signifies for hopes towards polycentric governance.

## Climate policy integration and environmental federalism

Based on the concept of Environmental Policy Integration/EPI (Jordan and Lenschow 2010), the more focused notion of CPI emerged in recent years. Like EPI, it can be differentiated into conceptual, governance- and output/outcome-oriented dimensions (Dupont and Oberthür 2012, 230; Adelle and Duncan 2013). Conceptually, CPI postulates the aim of integrating mitigation (and adaptation) concerns into a variety of sector policies (here building policies) that are relevant for cutting GHG emissions but usually have other priorities. In particular, in federal states where sub-national policy-makers have considerable responsibilities, realising this kind of “horizontal policy integration” is often impossible without integrating climate policies also vertically across levels of government

<sup>3</sup> We have selected these two provinces because they have a comparable building stock with similar GHG emission reduction potentials (Kletzan-Slamanig et al. 2008; Umweltbundesamt 2012c), and they are among the best performers in Austria (the GHG emissions of households in Styria decreased by 24 % and in Upper Austria by 20 % between 2000 and 2010; see Umweltbundesamt 2012c, 232). If we find that advancing climate change mitigation was difficult here, it was even more so in the other seven provinces.

<sup>4</sup> All interviews were conducted in German. Interview quotes were translated by the authors.

(Gupta 2007; Gupta et al. 2007; Yohe et al. 2007), or diagonally across sectors and levels at the same time (Steurer 2010). The governance dimension of CPI is mainly concerned with the actors and coordination processes that aim to deliver climate change mitigation by minimising trade-offs and maximising synergies between sectors at and across governmental levels. Finally, CPI as output and as outcome captures the consequences of the conceptual and governing dimensions of CPI. While CPI outputs subsume all kinds of mitigation policies adopted in whatever sector at whatever level of government, the main CPI outcome in the case of mitigation is actual GHG emission cuts in a particular sector (Adelle and Duncan 2013).

Regarding the conceptual dimension of CPI, we will show how reluctantly building policy-makers have accepted mitigation targets as relevant for their sector. CPI as output and as outcome does not require further elaboration, but a warning about explaining observed emission reductions inconsiderate as outcomes of policy outputs. A commonplace in the evaluation literature is that policy-unrelated intervening variables (such as economic cycles or technological innovations) can cause considerable distortions between policy outputs and observed outcomes (see, e.g. Crabbé and Leroy 2008). Regarding CPI as governance, our federal case requires a focus on the vertical (or diagonal) interactions between the Federal Environment Ministry (the key advocate of climate policies in Austria) and the provincial units responsible for building policies. Although climate scholars recognise vertical (and diagonal) policy integration across levels of government as important (see, e.g. Gupta 2007; Gupta et al. 2007; Yohe et al. 2007), empirical research usually focuses on mitigation as a multi-sectoral task that challenges the ministerial organisation of governments in similar ways (see, e.g. Mickwitz et al. 2009; Adelle and Duncan 2013). Since empirical climate policy research rarely addresses the vertical or diagonal dimensions of policy coordination, we have to bring in the so-called environmental federalism literature, *inter alia* concerned with the strengths and weaknesses of federal political systems in environmental (or climate) policy-making.

According to the environmental federalism literature, federal political systems can complicate climate change mitigation in at least five ways. First, since federal systems enhance the vertical fragmentation of responsibilities between different levels of government, a lack of effectively coordinating them results in redundant, incoherent or even contradictory policies (Galarraga et al. 2011, 165; Peters 1998, 296; Goulder and Stavins 2010). Second, a larger number of decision-makers and institutional duplicities make it more likely that policy changes are delayed or blocked altogether, both of which often result in higher transaction costs and less effective policies (Tsebelis 2002). Third, federal governments may have difficulties with negotiating or implementing international agreements, in particular, when sub-national entities hold relevant competencies (Compston 2009; Hudson 2012). Fourth, the economic rivalry between two or more provinces can result in a race to the bottom of environmental standards, in particular, when this enhances economic competitiveness (Bußjäger 2007, 89; Wälti 2004, 603). Fifth, an inadequate or unclear allocation of responsibilities can hinder the formulation or the implementation of policies, in particular, in relatively new policy fields such as climate change adaptation (Clar et al. 2013; Kloepfer 2004, 761). However, federalism also bears potential advantages for climate change mitigation (for an overview see Nice 1987; Adler 2005, 139–157). First, fragmented responsibilities and duplicities do not necessarily result in inefficiencies, blockades or races to the bottom, but instead they may trigger experimentation, learning from each other and a positive competition (or a race to the top) by diffusing policy innovations between sub-national entities (Chappell and Curtin 2012; Millimet 2013; Bußjäger 2007, 87; Kloepfer 2004, 761). Second, functionalist and economic approaches

(in particular, the fiscal federalism approach) emphasise that regional autonomy can enhance the flexibility and the fine-tuning of federal policies to regional specifics (Jahn and Wälti 2007, 263; Adler 2005). Finally, federalism can bring policy-making closer to the citizens and thereby improve the acceptance of governmental decisions (Millimet 2013, 34; Pelinka 2007a, 83, 2007b, 124).

Overall, do the advantages or the disadvantages of federalism prevail in environmental policy-making? Since empirical evidence is inconclusive, there seems to be not one but many answers to this question, depending mainly on the characteristics of the environmental problem to solve. The “matching school” of environmental federalism is convinced that “the size of the geographic area affected by a specific pollution source would determine the appropriate governmental level for responding to the pollution” (Macey and Butler 1996, 25). With Esty (1996, 570), we can add, “Whenever the scope of an environmental harm does not match the regulator’s jurisdiction, the cost-benefit calculus will be skewed and either too little or too much environmental protection will be provided” (see also Adelman and Engel 2008; Adler 2005; Oates 2001, 2ff). Obviously, this school regards local and state governments as the ideal match for securing local or regional public goods (such as clean drinking water and clean rivers), and national governments as well as international organisations as the key actors for solving global public good problems such as climate change mitigation (Shobe and Burtraw 2012, 5f; for more details, see (Steurer and Clar 2015)).

Irrespective of both, the inconclusive empirical evidence provided by the environmental federalism literature and the context-dependent explanation put forward by the matching school, many policy analysts are fond of the advantages of federalism for mitigating climate change, in particular, when federal governments have failed to act for decades, as was the case in the USA until recently. Here, the federal system obviously enables progressive states such as California to compensate at least partly for federal inaction. Since this would not be possible in a unitary country, the widely discussed US case suggests that the advantages of federalism in particular and of decentralised or polycentric governance in general prevail over its disadvantages in mitigating climate change (Corfee-Morlot 2009; Lutsey and Sperling 2008; Rabe 2007). This popular perception has been further inflamed by the fact that top-down approaches from national and international levels have failed to deliver around the world. Consequently, the praise for decentralised or polycentric mitigation efforts (see, e.g. Adelman and Engel 2008, 1846ff; Cole 2011) has almost eclipsed the importance of international and (unitary) national climate policies. With this in mind, we now analyse how the Austrian federal system has affected mitigation in the decentralised building sector and in how far this helps to explain the puzzle of Austria being regarded as an environmental policy leader that misses its Kyoto target by far with domestic measures.

### **Austrian federalism at work: hesitant climate change mitigation in the building sector through EU impulses, federal coordination and provincial responses**

Austria is a federal state in which the nine provinces have limited formal responsibilities (Schneider and Bröthaler 2012, 13; Erk 2004). Although a relatively large number of issues are explicitly assigned to the federal government and provinces are formally weak veto players, the Austrian provinces cannot be reduced to administrative sub-units or “agents of the federation” (Pernthaler and Gamper 2005, 141), certainly not when the political significance of informal arrangements such as the Conference of Provincial Governors



(*Landeshauptleutekonferenz*)<sup>5</sup> (Karlhofer and Pallaver 2013; Bußjäger 2003), or the provinces' competences regarding building policies are taken into account. In addition, provincial policy-makers are important for federal ones because all political parties depend largely on mobilisation and party financing in the provinces (Sickingner 2002). Since provincial governments and governors are politically strong in terms of agenda setting and informal veto power, federal ministries usually refrain from pressuring provinces towards certain policies. Instead, they seek cooperation via agreements according to article 15a of the federal constitution (Art 15a B-VG) that are binding for both sides (henceforth referred to as federal agreements).

The key climate policy actors at the federal level are the Ministry of Agriculture, Forestry, Environment and Water Management (short: Federal Environment Ministry), the Ministry for Transport, Innovation and Technology, and the Ministry of Economy, Family and Youth (also responsible for energy, short: Federal Economics Ministry). Since none of them has noteworthy responsibilities in the building sector, CPI as governance is here mainly concerned with diagonal interactions between the Federal Environment Ministry (mainly responsible for reaching the Kyoto target) and the various provincial units responsible for different aspects of building policies. The National and the Federal Councils (the latter representing the Austrian provinces at the federal level) are politically weak and play at best marginal roles in most policy fields (Broukal et al. 2009). The following subsections describe the most significant multi-sectoral and sectoral coordination efforts (CPI as governance) and subsequent policies (CPI as output) that aimed to better integrate climate change mitigation in the building sector. They are organised more or less chronologically, so that interdependencies between EU, federal and provincial actions become visible.

#### Federal climate strategy 2002

In 2002, the federal government and the Conference of Provincial Governors agreed for the first time on a common climate strategy that aimed to reach the Kyoto target by defining emission reduction targets and measures for seven priority areas, space heating and small-scale consumption being one of them (Lebensministerium 2002, 8). Although the strategy was the only noteworthy federal policy that was meant to guide provincial, regional and local mitigation policies (Wunder 2004, 27), its political status deteriorated quickly because climate change was neither a priority for the centre-right federal government nor for the provinces. For the building sector, the climate strategy foresaw emission cuts of 27 % until 2010 compared to 1990, mainly to be reached by reforming provincial housing promotion schemes. These schemes represent traditional social policies that were now expected to subsidise not only home ownership but also thermal refurbishment, more efficient heating systems and the use of climate-friendly energy sources in households (Lebensministerium 2002, 17). Since little happened in the following years (AEA and Umweltbundesamt 2005, 18f), the Federal Environment Ministry introduced a programme that was not foreseen in the climate strategy: from 2004 onwards, the *klima: aktiv* programme promoted climate-friendly technologies and services in the areas of buildings, energy consumption, renewable energies and mobility. Regarding buildings, the programme developed voluntary quality standards (*klima: aktiv-standards*)<sup>6</sup>, supported

<sup>5</sup> Twice a year, the provincial governors adjust their positions in order to speak with one voice vis-à-vis federal authorities.

<sup>6</sup> <http://www.klimaaktiv.at/bauen-sanieren/gebaeudedeklaration.htm>; accessed on 8/17/13.



lighthouse projects, promoted the training of building professionals and informed home builders and businesses on climate-friendly options (Bitterling 2010, 116). Since these federal activities complemented rather than substituted provincial policies, the provinces tolerated the programme.

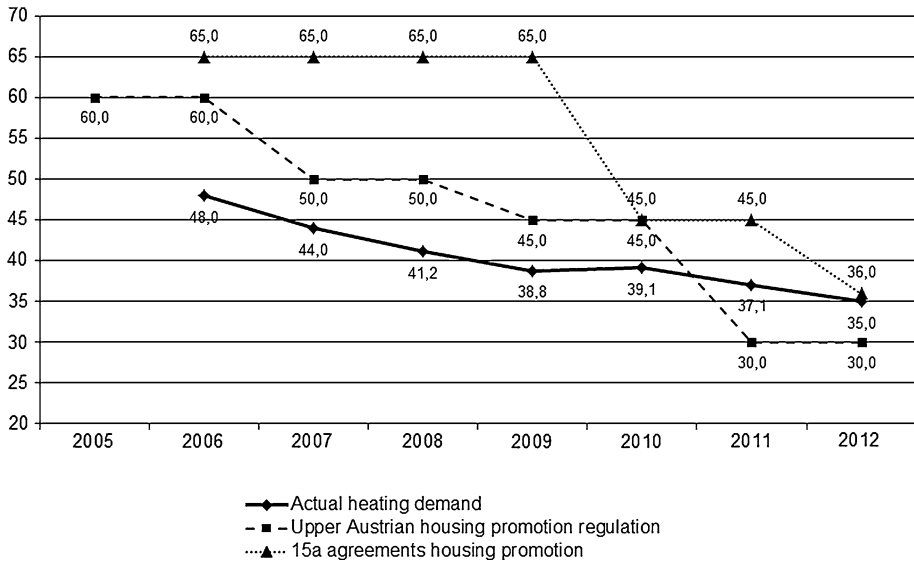
#### Provincial building regulations and housing promotion: modest CPI via EU and federal interventions

Since the provinces embraced CPI in their building policies very slowly in the first half of the 2000s (Wunder 2004, 42; Amann 2010, 4), their building standards failed to meet the requirements of the EU directive on the energy performance of buildings (2002/91/EC). Among other things, the directive required standardised procedures for setting standards regarding the thermal quality of new buildings, the efficiency of heating/cooling systems and energy certificates (RH 2009, 29; Amann 2010, 4). When the EU opened infringement proceedings in 2006, it was a wake-up call for both federal and provincial policymakers. First, the federal government transposed parts of the directive with a federal law mandating energy certificates (Energieausweis-Vorlage-Gesetz/EAVG 2006) that inform potential buyers and tenants about the thermal quality of buildings. Second, the provinces agreed to update their minimum standards for new and the refurbishment of existing buildings in compliance with the standardised procedure set out in the EU directive. They based their new standards on guidelines developed by the Austrian Institute of Construction Engineering (OIB), a provincial coordination platform for building standards (OIB 2007; Amann and Hüttler 2007, 9). Finally, federal and provincial governments concluded a federal agreement (BGBl. II Nr. 19/2006) that aimed to better use provincial housing promotion schemes for improving the thermal quality of new buildings and for promoting thermal refurbishments (Amann and Hüttler 2007, 9). While the EU obviously spurred CPI as governance domestically, the policy outputs were poor: the thermal standards of both the new provincial building regulations and their housing promotion schemes were behind the status quo of new buildings (see Fig. 1)<sup>7</sup> and the housing promotion schemes had only very small effects on refurbishment rates (RH 2009).

#### Federal climate strategy 2007 and a fiscal package deal, both at the expense of CPI

After a critical evaluation of the 2002 climate strategy (AEA and Umweltbundesamt 2005), the Federal Environment Ministry initiated its revision in 2005 and the federal government adopted it 2 years later (Lebensministerium 2007). Although the emission reduction targets for most sectors were lowered (for the building sector from  $-27$  to  $-20$  % until 2010 compared to 1990) (Lebensministerium 2002, 8; Lebensministerium 2007, 24), the provinces never agreed on the strategy. According to federal interviewees, they disagreed with the new target for the building sector because they were dissatisfied with federal climate policies in other sectors (in particular transport). In contrast, provincial representatives argued that they were bypassed in the revision process, which is why, how one of them put it, “no one should be surprised that the provinces did not ratify this version”. In official

<sup>7</sup> Own figure based on data from <https://www.bmf.gv.at/budget/finanzbeziehungen-zu-laendern-und-gemeinden/Klimabericht.pdf?3vtkfo>; accessed on 8/8/13; [http://www.land-oberoesterreich.gv.at/cps/rde/xchg/ooe/hs.xsl/34867\\_DEU\\_HTML.htm](http://www.land-oberoesterreich.gv.at/cps/rde/xchg/ooe/hs.xsl/34867_DEU_HTML.htm), accessed on 8/8/13; OÖ-Eigenheim-Verordnung 2003; OÖ-Eigenheim-Verordnung 2005; OÖ-Eigenheim-Verordnung 2008; e-mail of the Upper Austrian housing department. For Styria, the actual heating demand is not available.



**Fig. 1** Heating demand standards in comparison with actual heating demand of new buildings in Upper Austria between 2005 and 2012 (in kWh/m<sup>2</sup>)

statements, the provinces pointed out that the Federal Environment Ministry “did not take the provinces’ assessment regarding realistic reduction potentials into account” (RH 2009, 13). While the provinces participated in a working group on mitigation measures in the energy and space heating sector (which were fed into the draft strategy; see Lebensministerium 2011), the Federal Environment Ministry suspended negotiations on reduction targets due to insoluble differences. Although formally adopted by the federal government, most interviewees agreed that the revised climate strategy was politically even more irrelevant than its predecessor was (see also Warnstorff 2011, 29).

Above we have seen that the federal agreement from 2006 hardly improved CPI in provincial housing promotion schemes. Only 2 years later, the federal government traded the earmarking of federal contributions to provincial housing promotion for a new federal agreement on building standards (Streimelweger 2010, 548). While the new federal agreement adopted in 2009 brought only slight improvements from 2010 onwards (see below), the provinces used their flexibility to divert considerable sums from housing promotion to other purposes (including high-risk securities transactions). This newly acquired subsidiarity resulted not only in less social support for homeowners but, as all experts we interviewed agreed, also in diminished potentials for mitigating GHG emissions.<sup>8</sup> As the Styrian interviewees confirmed, financial pressures forced them to re-focus housing promotion on social purposes. While representatives of the Upper Austrian housing promotion unit declined to be interviewed, the responsible government member criticised in a newspaper interview that “housing is, so to say, the climate protection garbage can that should achieve what is not achieved elsewhere”.<sup>9</sup> In contrast, all climate and energy policy-makers and experts we

<sup>8</sup> See also <http://wirtschaftsblatt.at/home/life/immobilien/1227532/index>; [http://www.ots.at/presseaussendung/OTS\\_20130314\\_OTS0093/endlich-konsens-bei-der-zweckbindung-der-wohnbauforderung](http://www.ots.at/presseaussendung/OTS_20130314_OTS0093/endlich-konsens-bei-der-zweckbindung-der-wohnbauforderung); both accessed on 7/28/13.

<sup>9</sup> <http://derstandard.at/1350261175743/Manfred-Haimbuchner-Der-Wohnbau-ist-der-Klimaschutz-Mistkuebel> (own translation); accessed on 4/22/13.

interviewed called for immediate reforms of provincial housing promotion, including a revival of federal earmarking for mitigation purposes (see also RH 2009, 45 and a statement by the Austrian Economic Chambers.<sup>10</sup>)—so far unsuccessfully (Amann 2010, 20).<sup>11</sup>

#### Federal refurbishment cheque: complementing or substituting provincial efforts?

Among many other things, the government programme for the period 2008–2013 intended to (1) increase the annual refurbishment rate and enhance the energy efficiency of new buildings, (2) expedite the refurbishment of federal buildings, (3) modify the residential law so that single owners cannot block the refurbishment of buildings with multiple owners and (4) adopt a climate protection law (Bundeskanzleramt 2008; see also Adensam et al. 2011). So far, only the first and the last intentions entailed policies (for the law see below). As part of an economic stimulus package countering the recession in 2009, the federal government launched a “refurbishment cheque programme” (“Sanierungsscheck”) to increase the annual refurbishment rate. In 2009, it provided € 61 million for the refurbishment of residential and almost € 40 million for commercial buildings (WIFO et al. 2010, 5). This resulted in a very modest increase of refurbishment projects by 0.5 % (WIFO et al. 2010, 5). Since the provincial housing promotion subsidies for refurbishment projects amount to roughly € 700 Million, why was the overall effect of the comparatively big federal programme so small? According to federal representatives, the experts we interviewed, and the Austrian Court of Audit (RH 2009, 45), the effect was cancelled out by a parallel downscaling of provincial refurbishment subsidies. Although our interviewees from Styria and Upper Austria denied this, Austria-wide figures confirm this explanation: according to Amann (2010), the provinces did cut their housing promotion budgets in recent years (e.g. between 2011 and 2012 by 100 Million).<sup>12</sup> According to one interviewee, the federal government did not consider this possibility and therefore neglected to coordinate its intervention with the provinces. Without explanation, the federal government suspended the refurbishment cheque programme in 2010 (Lebensministerium 2012, 12) and re-introduced it for the period 2011–2014 with similar annual budgets<sup>13</sup>—again without provincial coordination. Obviously, the fact that the federal government intervened unilaterally in a provincial domain led not to less emissions but to a “federal zero-sum game” of climate change mitigation.

#### Federal and EU policy updates pushing some provinces

According to all interviewees and the Austrian Court of Audit (RH 2009, 13), the most important CPI initiative in the building sector so far was the federal agreement that resulted from the fiscal package deal mentioned above.<sup>14</sup> Building on the 2006 agreement, the

<sup>10</sup> <http://oe1.orf.at/artikel/242762>; accessed on 7/28/13.

<sup>11</sup> <http://diepresse.com/home/politik/innenpolitik/1376824/Wohnbaufoerderung-spaltet-die-Koalition>; accessed on 7/28/13. <http://diepresse.com/home/politik/innenpolitik/1376824/Wohnbaufoerderung-spaltet-die-Koalition>; accessed on 7/28/13.

<sup>12</sup> <http://derstandard.at/1378249110083/Eigenheim-ohne-Foerderung-im-Trend>; accessed on 9/16/13. <http://derstandard.at/1378249110083/Eigenheim-ohne-Foerderung-im-Trend>; accessed on 9/16/13.

<sup>13</sup> [http://www.umweltfoerderung.at/kpc/de/home/umweltfoerderung/fr\\_private/energiesparen/](http://www.umweltfoerderung.at/kpc/de/home/umweltfoerderung/fr_private/energiesparen/); accessed on 7/28/13. [http://www.umweltfoerderung.at/kpc/de/home/umweltfoerderung/fr\\_private/energiesparen/](http://www.umweltfoerderung.at/kpc/de/home/umweltfoerderung/fr_private/energiesparen/); accessed on 7/28/13.

<sup>14</sup> BGBl. II Nr. 251/2009: *15a-Vereinbarung zur Emissionsreduktion im Gebäudesektor*.

provinces agreed to uphold the unambitious standards for 2009 but to raise the bar in 2010 and 2012 (see Fig. 1). According to Amann (2010, 5), the agreement conveyed minimum standards that exceeded existing ones in all provinces (see also RH 2009, 3). However, as Fig. 1 shows for Upper Austria, the agreement did not improve all standards in all provinces: in Upper Austria, for example, the minimum standard that was agreed upon for 2010 had already been in place since 2009, whereas the 15a standard for 2012 was less demanding than Upper Austria's standard as of 2011 (LGBI 28/2008). More importantly, Fig. 1 also shows that the agreement on the 2010 standard for single-family homes was lagging far behind the status quo of new buildings, and only the one for 2012 closed the gap. Although the agreement led to a slight improvement of building standards from 2012 onwards, the Upper Austrian standard for single-family homes built from 2011 onwards is obviously the only standard we encountered so far that exceeds the status quo.

In 2010, the EU directive 2010/31/EU updated and extended the general framework for calculating the energy performance of buildings, required more nearly zero-energy buildings and updated the requirements for energy performance certificates. The federal government transposed the latter with the federal law on energy certificates in 2012.<sup>15</sup> To meet the other requirements, the provinces agreed to update the OIB guideline from 2006 (OIB 2011). The new guideline adopted the new calculation requirements and outlines a road map for nearly zero-energy standards in new buildings until 2020. So far, all provinces except for Salzburg updated their building regulations accordingly.<sup>16</sup>

#### Federal climate protection law—and still not done with vertical coordination

Since the federal climate strategies failed to cut GHG emissions, the Federal Environment Ministry saw the need for a climate protection law with sectoral targets and sanctions for missing them. Announced already in the government programme of 2008 (Bundeskanzleramt 2008, 77f), it took the federal and provincial governments 3 years to negotiate a seriously flawed law that stated neither emission targets for sectors or levels of government, nor concrete measures, nor sanctions for missed targets (Klimaschutzgesetz 2011; BGBl. I Nr. 106/2011). When the Austrian National Assembly adopted the law in October 2011, the minister said that “with regard to climate protection the previous ‘can’ turns into a ‘must’”, and that Austria will join the UK as a European frontrunner in climate change mitigation.<sup>17</sup> Considering the flaws mentioned above, this was either wishful thinking or deception of the public.

Well aware of the loopholes in the law, the Federal Environment Ministry tried to close them in additional rounds of negotiations with other ministries, the provinces and the four social partners<sup>18</sup> immediately after its adoption. Although the amended law states detailed emission reduction trajectories for six sectors until 2020 (Novelle Klimaschutzgesetz 2013, BGBl. I Nr. 94/2013) and the federal government as well as the provinces approved an action programme in 2013, the improvements are merely symbolic for two reasons. First, since the provinces (and the social partners) regard some sectoral targets as too demanding

<sup>15</sup> EAVG Energieausweis-Vorlage-Gesetz 2012: Bundesgesetz über die Pflicht zur Vorlage eines Energieausweises beim Verkauf und bei der In-Bestand-Gabe von Gebäuden und Nutzungsobjekten.

<sup>16</sup> <http://www.oib.or.at/>, accessed on 9/25/13.

<sup>17</sup> [http://www.parlament.gv.at/PAKT/VHG/XXIV/NRSITZ/NRSITZ\\_00124/ SEITE\\_0261.html](http://www.parlament.gv.at/PAKT/VHG/XXIV/NRSITZ/NRSITZ_00124/ SEITE_0261.html), accessed on 9/25/12.

<sup>18</sup> The social partners include the Austrian Economic Chambers, the Chamber of Labor, the Chamber of Agriculture and the Austrian Trade Union Federation.

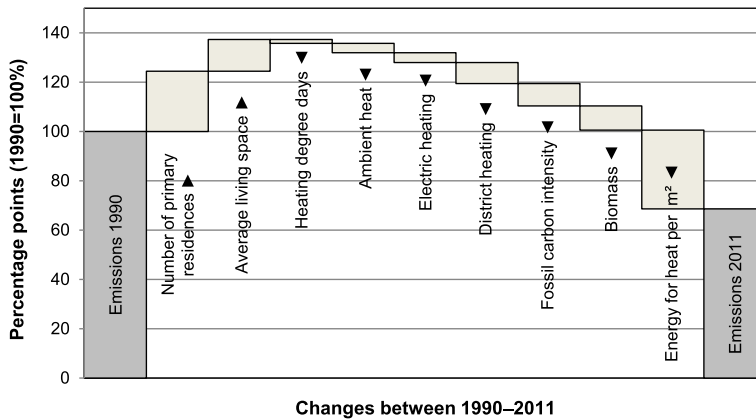
(in particular the one for the building sector that foresees emission cuts of 13.5 % between 2013 and 2020), they rejected the entire amendment (Oberösterreichische Landesregierung 2013; Landesregierung Steiermark 2013). Second, despite lengthy negotiations with the provinces, the Federal Environment Ministry was not able to find a consensus on how to share the costs for emission certificates in case sectoral targets will not be met. Consequently, the provinces cannot be sanctioned in case they fail to meet the disputed building sector target. This also hampers the prospects of the work programme that was formulated in parallel to the amendment.

The work programme 2013/2014 details mitigation measures for the six sectors specified in the law. The measures were formulated by sectoral working groups that involved representatives from seven federal ministries, all nine provinces, the four social partners, the Environment Agency Austria and interest groups (such as the Federation of Austrian Energies). Among the provinces, informal coordination took place between sectoral policy-makers and non-state experts, often without involving the provincial climate policy coordinators. According to provincial interviewees, sectoral policy-makers bypassed the coordinators deliberately to limit their interference. Ahead of the working group meetings, also provincial and federal sector representatives coordinated their positions informally, and in particular, the employer side of the social partners was repeatedly able to influence policy formulation via privileged access to one of the federal key players in CPI, the Federal Economics Ministry. The working group on the building sector agreed, *inter alia*, to further improve (1) the energy efficiency of public buildings, (2) minimum standards for new buildings, (3) thermal refurbishment through provincial housing promotion, the federal refurbishment cheque and finally changes in the residential law (foreseen already in the government programme 2008) (Lebensministerium 2013). Although these measures are vague, lack estimates on reduction potentials and are not attuned with the sector target stated in the amended law, the work programme specifies at least the political levels and units responsible for their implementation. Since many of the measures on buildings require federal and provincial collaboration, it is no surprise that the work programme foresees “negotiations on a new 15a agreement regarding measures in the building sector” (Lebensministerium 2013, 10)—“Groundhog Day” in Austrian federalism. Obviously, the amended law and the work programme both fell into one of the many (joint-decision) traps of federal politics they wanted to defuse.

### **Climate policy integration as outcome? Understanding the mitigation performance of the building sector**

While Austria's annual GHG emissions rose by 5.9 % between 1990 and 2011 (Umweltbundesamt 2013a, 50), the emissions of the building sector decreased by 25.5 % (Umweltbundesamt 2013a, 70), i.e. 9 % beyond the target of the Climate Strategy 2007 (Lebensministerium 2007, 24) the provinces had rejected as too demanding. If we take into account that more and bigger residences have increased the GHG emissions of the sector (see Fig. 2), this reduction is even more impressive. However, what looks as a clear success of CPI as outcome has to be qualified in view of more detailed data, and the findings on CPI as output summarised above.

As Fig. 2 shows, about half of the reduction is due to replacing oil- and coal-based heating systems with those using biomass (mainly wood), gas (which has a relatively low carbon intensity), ambient heat, electricity and district heating. But is not all this a policy success? Two limitations come into play: first, since emissions from electricity and district



**Fig. 2** Factors behind the emission reductions in space heating between 1990 and 2011 (Source: Umweltbundesamt 2013a, 84, own translation)

heating are accounted for in the GHG inventories of the energy sector (Umweltbundesamt 2013a, 73), they have statistically shifted GHG emissions into another sector. Second, although some of the policies reviewed above indeed subsidised the renewal of heating systems, non-political drivers played nevertheless a major role (Umweltbundesamt 2012b, 67; Umweltbundesamt 2013a, 79). One of them was the oil price surge from 30 US \$ per barrel in the early 2000s to 80 US \$ in 2008 and above 100 US \$ since 2010 (Umweltbundesamt 2013b, 51). Due to these market signals, also technological innovations accelerated (WIFO et al. 2010). As Fig. 2 also shows, only about half of the emission reductions are due to improved thermal building standards (see also Bräuninger et al. 2012), and they are only partially due to public policies: as Fig. 1 shows, the status quo of building standards was most often ahead of minimum requirements (see also Bräuninger et al. 2012). In addition, a closer look at the data shows that this factor decreased 1990 emissions by about 20 % in 2008 (Umweltbundesamt 2010, 75) and by about 30 % in 2009 (Umweltbundesamt 2011, 82) and the following years. Since there was no major policy change between 2008 and 2009 that could explain this decline, it reflects most likely a change in calculation methods.<sup>19</sup>

In how far can the residual emission reduction be interpreted as an outcome of CPI? Given the fact that only one of the federal agreements on building standards exceeded the status quo of new buildings and that most other federal and provincial mitigation efforts were either politically irrelevant (both climate strategies, the climate protection law and its amendment) or resulted in a federal zero-sum game (refurbishment cheque), the policy outputs reviewed above cannot nearly explain the emission decline in the building sector (for a similar but more cautious assessment, see Umweltbundesamt 2012b, 67; Umweltbundesamt 2013a, 79). We conclude that market forces rather than public policies were the main drivers behind the positive developments dismantled in Fig. 2. If oil prices remained stable but taxes raised them by 200 % in the same period, there would also be no doubt about the primacy of this intervention compared to the actual CPI outputs reviewed above. To further substantiate this claim and to resolve the two puzzles raised at the outset

<sup>19</sup> While an expert responsible for the calculation confirmed the possibility of considerable changes from one year to another by email, he was not able to quantify the statistical effect.

of the paper, we now critically analyse the instrumental scope of the policy outputs reviewed above, the roles different actors played thereby and the governance of their interactions.

The instrumental scope of both federal and provincial CPI outputs encompasses informational policies, financial incentives and building regulations (for an overview see Table 2 in “Appendix”). More specifically, the provinces greened their housing promotion schemes for new and old buildings, and they improved their thermal regulations for new buildings, both cautiously in a series of very small steps that were usually responses to federal and EU requirements. Apart from negotiations with the provinces (see below), the federal government harmonised and advertised standards for passive and zero-energy buildings via the promotional *klima: aktiv* programme, it introduced federal subsidies for thermal refurbishment, and it aimed to change user behaviour through information (*klima: aktiv*) and energy certificates for buildings. EU directives triggered the latter, and they also played a role in improving the energy standards for new buildings. Other measures such as a refurbishment-friendly residential law and considering mitigation in spatial planning emerged occasionally in policy documents but have never been implemented systematically. Since the provincial housing promotion schemes still subsidise urban sprawl by ignoring spatial planning and mobility issues, they thwart their own mitigation efforts implemented hesitantly so far.<sup>20</sup>

Regarding actors, most of the interviewees agreed that the Federal Environment Ministry is the only federal actor who promoted climate change mitigation comprehensively. When other ministries address CPI, their prime concerns are usually related issues such as energy autonomy/security and economic stimulus in the case of the Federal Economics Ministry or creating jobs (e.g. via refurbishment projects) in the case of the Federal Ministry of Labor. Although the chancellery could play a leading role in CPI because one of its tasks is to coordinate cross-sectoral issues, some interviewees from the federal level noted that the current chancellor does not have “any interest in climate policy at all”. In addition, all interview partners agreed that the National Assembly is a dormant actor: Members of Parliament of the governing parties adhere to their party positions and rarely push anything independently. In the provinces, greening the building sector is mainly in the hands of those in charge of building policies, and sometimes they deliberately bypassed climate policy coordinators. Since the former prioritise their sectoral concerns (such as building safety, architectural aesthetics and social support of homeownership) above environmental ones, they usually reject mitigation as irrelevant until they are either pressured to change (e.g. by EU directives) or they recognise the changes demanded by climate policy-makers as consistent (or at least not as conflictual) with their sectoral interests (such as affordable housing and heating). This suggests that the conceptual dimension of CPI did not overcome an initial opportunistic stage. Since the federal government has very limited means to pressure provincial actors (see Sect. 2), protracted coordination efforts were indispensable. Several EU directives have played important facilitating roles, but oftentimes their transposition did not occur directly and immediately through provincial policies but indirectly and delayed via federal laws or agreements. This re-emphasises the passive stance of the provinces towards CPI, and it brings us to the interactions that evolved between them and their federal counterparts.

Due to these actor constellations, most CPI as governance and coordination took place between the Federal Environment Ministry and the provincial building policy-makers. When provincial climate policy-makers played a role, they were concerned with putting

<sup>20</sup> Der Standard, 14/15 December 2013, 18.



mitigation on provincial political agendas more generally. Thus, it is more accurate to speak of diagonal and not of vertical CPI (see Sect. 2). So far, however, the Federal Environment Ministry initiated more flawed than successful diagonal coordination and policy outputs. First, the climate strategies from 2002 to 2007 (and an energy strategy from 2010 not mentioned above; BMWFJ and Lebensministerium 2010) never became tangible governance processes for various reasons. While the first climate strategy had the formal backing of the provinces but failed to gain political support, the second climate strategy was a victim of federal politics (and the energy strategy of party politics within the federal government). Second, the climate protection law from 2011 had too many loopholes to be effective from the start, and neither the amendment nor the action programme 2013 was able to fill them. Negotiations within and between federal and provincial authorities leading to the action programme were strongly sectorally focused—and more informal than originally planned. While the sectoral focus has been helpful in securing sectoral commitment, informal coordination has been advantageous for the social partners representing employer interests because of their privileged access to the Federal Economics Ministry (another federal key player besides the Federal Environment Ministry). As some interviewees acknowledged, the Federal Economics Ministry adopted positions of the Economic Chambers and the Federation of Industries long before negotiations with other ministries or the provinces started. While this privileged access hampered CPI in most sectors (several interviewees noted that all social partners are usually lobbyists against climate change mitigation), the building sector was an exemption: since construction businesses benefit from subsidising thermal refurbishment, the Austrian Economic Chambers have supported respective policies repeatedly.<sup>21</sup> The third flawed federal policy output was the federal refurbishment programme introduced in 2008. It was flawed because the federal government neglected to coordinate it with the provinces, with the effect that the latter did not complain about the federal intervention in their policy domain but simply cut their own programs. Finally, the two federal agreements on building standards were only partly successful in promoting CPI. While the first agreement from 2006 pushed the topic at least on the agenda, the agreement from 2009 foresaw standards exceeding the status quo for the first time from 2010 onwards (see Fig. 1). As noted above, this breakthrough was due to a fiscal package deal concluded in 2008, to the EU directive 2002/91/EC on the energy performance of buildings, and we can only assume that the worldwide peak of the climate change discourse in 2008 also played a role. If we consider that this came almost 15 years after the same actors concluded the first federal agreement on the same issue that also confirmed the state of the art in construction (Steurer 1999), we can conclude that noteworthy CPI as output obviously takes a while, in particular, in federal state settings that require diagonal coordination.

Overall, integrating climate change mitigation modestly in Austrian building policies required a complex pattern of CPI as outputs and as governance at and across EU, federal and provincial levels of government. Thereby, sectoral efforts (such as EU directives and federal agreements) were more effective than comprehensive multi-sectoral strategies. The amended climate protection law had the potential to become the first effective multi-sectoral CPI measure (not least because its implementation is organised sectorally), but its non-binding nature will most likely enqueue it in the line of federal policy output failures.

<sup>21</sup> <http://www.kleinezeitung.at/allgemein/bauenwohnen/2293480/wirtschaftskammer-macht-sich-fuer-thermische-sanierung-stark.story>, accessed on 3/5/13.

## Conclusions

The present paper has analysed CPI in the Austrian building sector since the signing of the Kyoto Protocol in 1997. It was concerned with multi-sectoral coordination (such as climate strategies, programmes and a climate protection law) and with sectoral approaches aiming to integrate climate change mitigation into building policies. As noted in the introduction, building policies make an interesting case for studying CPI in federal state settings because mitigating GHG emissions here is usually economically beneficial and because provinces hold key competences in Austria and in many other federal states (for Switzerland, see Casado-Asensio and Steurer 2013). The fragmentation of responsibilities requires coordination and integration not only horizontally between sectors (here climate and building policies) but also vertically between levels of government (here federal and provincial). Yet, how does the Austrian federal system interfere with climate change mitigation?

Since the decentralised building sector is one of the few sectors in Austria that has reduced its GHG emissions, a quantitative study would most likely be misled to conclude that the Austrian federal setting facilitated mitigation. In contrast, our qualitative analysis shows that it was a major obstacle for greening the building sector in at least three intertwined respects. First, the number of sceptical actors complicated CPI as governance. While integrating climate change mitigation horizontally into other sectors is always challenging (Peters 1998; Steurer 2007), it was particularly difficult in the Austrian federal setting because the only driving force (the Federal Environment Ministry) was confronted not with one or two critical ministries but also with nine (often adversarial) provinces. Instead of experimentation, learning from each other and positive competition (or a race to the top) between sub-national entities, we found overall passive (or obstructive) provinces usually doing only what is required by EU policies and federal agreements. Of course, the Federal Environment Ministry would have struggled with greening building policies also in a unitary state setting because respective responsibilities would have been in another ministry. However, the challenge of horizontal policy integration between two ministries within the same government seems parsimonious compared to negotiating CPI diagonally with nine provincial governments. This is particularly the case because each one of them is also prone to other political deliberations, which leads us to the next point. Second, CPI in the building sector sometimes became subject to federal politics games: the provinces delayed or hindered CPI not necessarily because they disagreed with objectives and measures proposed by federal actors but because of turf wars, power struggles and resource allocation conflicts not even related to climate issues. Third, while Hudson asserted that “[f]ederal systems present more difficulties for international treaty formation than perhaps any other form of governance” (Hudson 2012, 1), we found that Austria had no difficulties in negotiating and adopting the Kyoto Protocol but in implementing it afterwards. Since the federal government had adopted the Kyoto Protocol and the EU burden sharing agreement on its own, the provinces had no reason to contribute to targets they neither negotiated nor approved.

Overall, our findings and other cases (such as the decentralised implementation of the early EU Emission Trading System<sup>22</sup>) suggest that federal (or decentralised) political

<sup>22</sup> As van Asselt (2010) shows, the decentralised allocation of emission certificates through Member States resulted in an over-allocation driven by national competitiveness concerns. The European Commission still seeks to resolve the repercussions of this through centralisation.

settings can be disadvantageous in solving global public goods problems such as climate change mitigation (Oates 2001; Adler 2005). Since this finding is in clear contrast to the US climate policy history (see Sect. 1), we cannot generalise it for all federal countries and settings, but we can highlight that the relationship of federalism and mitigation policy-making is more complex as climate policy scholars usually assume. Consequently, we caution against high hopes assuming that decentralised or polycentric governance can fully compensate for failed international and national climate policies. Polycentric governance arrangements can certainly be effective, but according to our findings, decentralised policy-making is not necessarily the ideal way to solve global environmental problems.

Can the obvious disadvantages of federalism in climate change mitigation also resolve the puzzling fact that Austria as an alleged environmental policy leader is lagging far behind in curbing GHG emissions? Federalism obviously hindered climate change mitigation in the building sector, but considering that emission trends have been worse in other, centrally governed sectors such as transport, we must not overestimate the importance of federalism. Since federalism is only one of many independent variables that shape policymaking, less of it does not automatically entail more climate change mitigation. Obviously, other variables such as the popularity of climate change in multiple societal arenas or streams such as businesses, the media, the electorate, government and opposition parties at federal and provincial levels (Carter 2014; Carter and Jacobs 2014), the availability of technological (win–win) solutions, economic or fiscal wealth are as (or more) important as political system features such as federalism (see also Wälti 2004). This requires alternative explanations for why an alleged environmental policy leader lags far behind in climate change mitigation, and we solve this puzzle by questioning the too simplistic leader-laggard scale used in most comparative studies. Since Austria demonstrates environmental leadership when it is geographically opportune (e.g. high ratios of hydropower and organic farming, both also owed to alpine landscapes) and economically promising (e.g. clean air and water as prerequisites for tourism) but lags behind in many other instances, we regard it neither as a leader nor as a laggard but as an “environmental policy opportunist” that oscillates somewhere between the two poles. In concurrence with the case study presented above, the following story from the transportation sector illustrates the rationale of what we coin as an “environmental policy opportunist” very well: Austria borders to eight countries with higher fuel prices. The “fuel tourism” triggered by the price differences accounts not only for almost 1/3 of the sector’s GHG emissions (or for about 7 % of total domestic GHG emissions); it also resulted in 1.3 billion Euro of annual tax revenue. If we compare this amount with the 700 Million Euro for emission certificate purchases for the entire Kyoto period, as the Austrian Transport Minister (later Chancellor) did publicly,<sup>23</sup> the opportunistic rationale for not adequately curbing GHG emissions in the transport sector is evident.

How can the Austrian and other federal governments overcome the deficiencies of federalism in climate change mitigation? What we have found empirically is that protracted coordination can lead to modest progress in the long term. What we did not find empirically is that a federal government can centralise respective responsibilities (in particular, if it were strongly committed to climate change mitigation). Given the long history of failed political system reforms in Austria, this is a very unrealistic option. A more realistic way forward is to synchronise international (or European) effort sharing

<sup>23</sup> <http://www.oemtc.at/?id=2500%2C1394632%2C%2C>; accessed on 7/19/2013; <http://derstandard.at/3145423>; accessed on 9/25/2014.

agreements domestically, so that sub-national governments are obliged to meet own targets. As the Austrian case shows, first agreeing on targets internationally and later trying to share them domestically is easy prey of federal politics: why should provinces share efforts they never agreed upon? However, the fact that a federal country such as Austria has not negotiated its Kyoto (and post-Kyoto) targets with its provinces before accepting them internationally suggests that mitigation target setting has not been taken seriously so far. As long as federal governments can ransom themselves relatively cheaply from achieving targets domestically, there is obviously no point in discharging the provinces timely on their duties—at least not for countries we suggest to reclassify as environmental policy opportunists.

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## Appendix

See Table 1 and 2.

**Table 1** Overview of the interviews conducted in January/February 2013

Organisation	Date
<i>Non-governmental experts</i>	
Austrian Society for Environment and Technology (ÖGUT)	1/8/13
Austrian Court of Audit; Division 2B3 Comprehensive Environmental Protection/ Agriculture and Forestry	1/29/13
Austrian Institute of Economic Research (WIFO)	4/4/13
<i>Federal policy-makers</i>	
Federal Ministry of Agriculture, Forestry, Environment and Water Management; Division V/2 Environmental Economics, Energy Policy	1/15/13
Federal Ministry of Agriculture, Forestry, Environment and Water Management; Division V/4 Air Pollution Control and Climate Protection	
Federal Ministry for Transport, Innovation and Technology; Division III/I 3 Energy Technologies and Environmental Technologies	1/22/13
Federal Ministry of Agriculture, Forestry, Environment and Water Management; Division V/4 Air Pollution Control and Climate Protection	1/29/13
Federal Ministry of Economy, Family and Youth; Task Force Klima	1/29/13
Federal Chancellery; Division IV/2 Environment, Sustainability, Transport	1/31/13
National Assembly; Committee on the Environment	2/6/13
<i>Provincial policy-makers</i>	
Office of the Styrian Provincial Government; Climate Protection Coordination	2/13/13
Office of the Styrian Provincial Government; Energy Officer	2/13/13
Office of the Styrian Provincial Government; Energy and Housing Department	2/13/13
Office of the Upper Austrian Provincial Government; Climate Protection Officer	2/14/13

**Table 2** Policies aiming to cut GHG emissions in the Austrian building sector

Year	Policy	Origin		Type of instrument	Sectoral scope	Aims
		EU	Federal Provinces			
2002	Climate strategy	×		Policy paper	Multi-sectoral	Reform provincial housing promotion schemes (thermal refurbishment, improved standards for new buildings)
2002	EU directive on the energy performance of buildings	×		Binding directive	Sectoral	Improve thermal standards
2004	Klima: aktiv		×	Informational and promotional program	Multi-sectoral	Introduce energy certificates for buildings Establish quality standards Fund lighthouse projects Train professionals
2006	Energy performance certificates law	×		Binding law	Sectoral	Campaign climate change mitigation
2006	15a agreement on housing promotion schemes and subsequent provincial policies	×	×	Binding agreement; binding standards	Sectoral	Introduce energy certificates for buildings Promote thermal refurbishment
2007	Updated climate strategy		×	Policy paper	Multi-sectoral	Increase refurbishment rate to 3 % Promote renewable energies in households Improve thermal standards Integrate energy efficiency in spatial planning
2009	Refurbishment cheque	×		Subsidy	Sectoral	Promote refurbishment projects
2009	15a agreement on emission reductions in the building sector and subsequent provincial policies	×	×	Binding agreement; binding standards	Sectoral	Improve thermal standards of buildings
2010	EU directive on the energy performance of buildings		×	Binding directive	Sectoral	Improve thermal standards of buildings Increase number of nearly zero-energy buildings Improve energy certificates

**Table 2** continued

Year	Policy	Origin		Type of instrument	Sectoral scope	Aims
		EU	Federal Provinces			
2011	Climate protection law	×		Binding law with many loopholes	Multi-sectoral	Define sectoral emission reduction targets Formulate sectoral mitigation measures
2012	Amendment to the climate protection law	×		Binding law with many loopholes	Multi-sectoral	Define sanctions for missed targets Define sectoral emission reduction targets Formulate sectoral mitigation measures
2012	Action programme for the years 2013 and 2014	×	×	Policy paper	Multi-sectoral	Define sanctions for missed targets Define actions for each sector to reach the emission reduction targets

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