Universität für Bodenkultur Wien
Department für Wirtschafts- und Sozialwissenschaften

The ambiguity of federalism in climate policy-making: how the political system in Austria hinders mitigation and facilitates adaptation

Reinhard Steurer & Christoph Clar

InFER | Institute of Forest, Environmental, and Natural Resource Policy

Diskussionspapier / Discussion Paper 1-2018

Jänner 2018

University of Natural Resources and Applied Life Sciences, Vienna
Department of Economic and Social Sciences

Diese Reihe ist ein Publikationsorgan von **InFER**, dem Institut für Wald-, Umwelt- und Ressourcenpolitik der Universität für Bodenkultur Wien. Der Inhalt der Diskussionspapiere unterliegt keinem Begutachtungsverfahren, allein die Autorinnen und Autoren zeichnen verantwortlich. Anregungen und Kritik seitens der Leserinnen und Leser sind ausdrücklich erwünscht.

This series is edited by **InFER**, the Institute of Forest, Environmental, and Natural Resource Policy at the University of Natural Resources and Applied Life Sciences, Vienna (BOKU). The discussion papers are not subject to review procedures. Therefore, responsibility for the content lies solely with the author(s). Comments and critiques by readers are highly appreciated.

ISSN 2072-764X

Also published as

Reinhard Steurer & Christoph Clar (2018): The ambiguity of federalism in climate policy-making: how the political system in Austria hinders mitigation and facilitates adaptation; in: Journal of Environmental Policy & Planning: 20:2, 252-265

Bestelladresse / orders to:

Institut für Wald-, Umwelt- und Ressourcenpolitik
Universität für Bodenkultur Wien
Feistmantelstr. 4
A – 1180 Wien
Tel: + 43–1–47 654–73200
e-mail: infer@boku.ac.at

In dieser Reihe erschienene Diskussionspapiere können von folgender Homepage als PDF-Files geladen werden: http://www.boku.ac.at/wiso/infer/publikationen/diskussionspapiere

The papers published in this series can be downloaded in PDF-format from: http://www.boku.ac.at/wiso/infer/publikationen/diskussionspapiere

Eigenverlag des Instituts für Wald-, Umwelt- und Ressourcenpolitik, Universität für Bodenkultur Wien

Published by the Institute of Forest, Environmental, and Natural Resource Policy, University of Natural Resources and Life Sciences, Vienna (BOKU)

ABSTRACT

Although the impacts of federalism on environmental policy-making are still contested, many policy analysts emphasise its advantages in climate policy-making. This applies to the mitigation of climate change, in particular when federal governments (as in the U.S.) are inactive. More recently, federalism is also expected to empower sub-national actors in adapting to local impacts of climate change. The present paper analyses the role federalism in Austria played in greening the decentralised building sector (relevant for mitigation) on the one hand, and in improving regional flood risk management (relevant for adaptation) on the other. In line with the so-called matching school of the environmental federalism research strand we conclude that Austrian federalism proved to be more appropriate for regional flood protection than for mitigating climate change. We highlight that it is not federalism per se but federalism embedded in various contextual factors that shape environmental policy-making. Among these factors are the spatial scale of an environmental problem, the nitty-gritty of polity systems, and national politics (such as federal positions on climate change mitigation).

1. Federalism and climate change

For decades, legal and policy scholars have discussed the effects of federalism on policy-making in general, and on environmental policy-making in particular. Countless federalism-friendly as well as critical arguments were exchanged and the so-called 'environmental federalism' literature emerged from the broader federalism research strand.[1] Nevertheless, it is still unclear whether potential advantages or disadvantages of federalism prevail (for policy-making in general see Erk, 2006, p. 110; for environmental policy-making see Millimet, 2013). Apart from variations between different (environmental) problems (Pelinka, 2007), scholars also found varying relationships over time (Oates, 2001) and between countries (Hudson, 2012; Rabe, 2011), little or no impact of federalism upon environmental performance (Knill & Lenschow, 2000; Scruggs, 2003, pp. 183– 187), or other variables (such as economic wealth and corporatist culture) being more important than federalism (Wälti, 2004).

Despite these inconclusive findings, policy scholars tend to see federalism mostly positive for policies on climate change. With regard to mitigating greenhouse gas (GHG) emissions, scholars praise federal polity settings because they enable regional governments to compensate for federal inaction. A prominent point in case that gave rise to this view is the U.S. where some states (most prominently California) compensated federal inaction level with own mitigation policies (Corfee-Morlot, 2009; Lutsey & Sperling, 2008; Rabe, 2007). Based on the U.S. and similar cases such as Canada, and due to a lack of counter-evidence from countries committed to climate change mitigation (for recent exceptions, see Casado-Asensio & Steurer, 2016; Steurer & Clar, 2015), the impression emerged that federal states have advantages in mitigating climate change compared to unitary ones. The positive perception of federalism is even more pronounced for adaptation policies aiming to improve resilience against climate change impacts. Regional authorities are often seen as the most appropriate actor of climate change adaptation, mainly because impacts can vary considerably locally (Amundsen, Berglund, & Wetskog, 2010; Corfee-Morlot et al., 2009; Farber, 2009; Glicksman & Levy, 2010; Urwin & Jordan, 2008).

This paper challenges the widespread perception that federal states are well-suited to address both climate change mitigation and adaptation with two qualitative in-depth case studies from the same country. The case studies answer the following overarching research question: What effects did the Austrian federal system have on climate change mitigation and adaptation? Are the polity effects similar or different for the two aspects of climate policy-

making? To answer these questions, the cases address decentralised policy issues, i.e. building policies (relevant for mitigation) and flood risk management (relevant for adaptation). While the former are mainly in the hands of the nine Austrian provinces, responsibilities for the latter are shared by national, provincial, and local actors (see Section 2).

Although the two cases have been conceptualised and published independently,[2] they are methodologically and conceptually very similar. Methodologically, they both combine document analyses (drawing mainly on constitutional responsibilities, policy documents, laws, agreements, assessments, and studies), and semi-structured interviews (8 for the adaptation and 14 for the mitigation case). We interviewed relevant sectoral policymakers (e.g. those responsible for flood risk management or building policies) as well as climate policy-makers from federal ministries, selected provinces and municipalities, and non-governmental experts for an outsideview.[3] The interviews for the adaptation case have been conducted between July and December 2011, and those for the mitigation case between January and April 2013. The interviews were conducted in German (interview quotes were translated by the authors), lasted between 25 and 90 minutes, and the recordings of the interviews were analysed qualitatively in line with the research questions deduced from our conceptual foundation (for an overview see Table 1).

Conceptually, both case studies build not only on key assumptions of the environmental federalism literature (see Section 2). As the remainder of this section (in particular the detailed research questions in Table 1) shows, the design of both case studies is mainly shaped by the policy integration concept. Based on the concept of Environmental Policy Integration/EPI (Jordan & Lenschow, 2010), the more focused notion of climate policy integration (CPI) can be differentiated into a normative, a governance and an output/outcome dimension (Adelle & Russell, 2013; Dupont & Oberthür, 2012, p. 230). Normatively, CPI postulates the need to integrate adaptation and mitigation concerns into a variety of sector policies (here water management and building policies) that are vital for addressing climate change adequately. In federal states, realising this kind of horizontal policy integration across sectors implies integrating policies also vertically across levels of government (Gupta, van der Leeuw, & de Moel, 2007; Yohe et al., 2007). If horizontal and vertical coordination go hand in hand, one can speak of diagonal policy integration (Steurer, 2010; Steurer & Clar, 2015). The governance dimension of CPI is mainly concerned with the actors and (horizontal and vertical) coordination processes that aim to deliver CPI outputs. Finally, CPI as output is concerned with policy changes in all relevant sectors, and CPI as outcome with their effects in terms of enhanced resilience in the adaptation case and emission cuts in the mitigation case (Adelle & Russell, 2013).

Table 1. Detailed research questions.

		Mitigation case study: building policies	Adaptation case study: flood risk mana
Conceptual dimensions	CPI as normative claim	In how far have sectoral policy-makers embraced	nitigation/adaptation as relevant for their work?
	CPI as governance	How did federal and provincial actors and policies facilitate (or hinder) climate change mitigation in the Austrian building sector?	How did federal, provincial and municipal actors coordinate their policies and what role did climate change adaptation play thereby?[a]
	CPI as output and outcome	How did building policies change in recent years and how successful were they in reducing sectoral GHG emissions?	How did flood risk management change in recent years and in how far did this improve resilience? What role did adaptation play in this regard?

[a]The EU is missing here because it hardly interfered with adaptation policies in Members States so far.

How do the two case studies address the three dimensions of CPI (for research questions see Table 1)? Regarding CPI as normative agenda the case studies show how reluctantly both building policy-makers and water managers have embraced climate-relevant concerns. Regarding CPI as governance the federalism setting requires focusing the case studies mainly on the diagonal interactions between the Federal Environment Ministry[4] (the key advocate of climate policies in Austria) and the provincial units responsible for building policies and water management in selected provinces. The mitigation case shows how important yet difficult vertical coordination between national and provincial actors is. Regarding CPI as output the case studies provide a chronology of all major policy changes relevant for CPI. Regarding CPI as outcome, the adaptation case compares flood risk investments as policy outputs and damages caused by two recent floods as outcome proxies. The mitigation case explores in how far emission trends can be linked to policy changes.

The paper is structured as follows: Section 2 introduces the literature on (environmental) federalism, it briefly outlines key features of Austrian federalism, and it highlights key factors that enable us to assess the effects of federalism on CPI. Section 3 summarises the mitigation and Section 4 the adaptation case study. Section 5 finally compares the two cases and draws conclusions on federalism in climate policy-making.

Overall, the comparison is worthwhile for at least two reasons: First, it offers the rare opportunity to compare federal effects on climate change policy-making in a single country committed to both climate change mitigation and adaptation. As outlined above this addresses an important research gap. Second, since its findings partly diverge from those summarised above they enrich our understanding of federalism in the context of climate change policy-making.

2. Federalism in theory and (Austrian) practice

Federalism is a polity setup in which ‘power is constitutionally divided between different authorities in such a way that each authority exercises responsibility for a particular set of functions’ via its own institutions (Keman, 2000, p. 193 who quotes David Robertson). Thus, ‘federal polity is characterized by “sharing power” and by “dividing power” in a vertical fashion’ (Keman, 2000, p. 193). In reality, this characterisation can play out in many different types of federalism, and according to Keman (2000), these types can be differentiated based on who has the ‘right to decide’ and/or the ‘right to act’ on certain issues. While the right to decide ‘refers to the competence to design and pass policies on its own or in cooperation with a superordinated institution’ (Biela et al., 2012, p. 448), the latter is concerned with implementing policies adopted elsewhere (Keman, 2000).

Austria is a centralistic federal state in which the nine provinces (‘Länder’) have considerable responsibilities in a few areas (among them building policies and flood risk management), and substantial informal influence on federal policy-makers, inter alia because all political parties depend largely on mobilisation and party financing in the provinces (Karlhofer & Pallaver, 2013; Sickinger, 2002). For our case studies, it is sufficient to emphasise that the key instruments of building policies (i.e. building standards and subsidy programmes) have traditionally been in the hands of the Austrian provinces, and responsibilities for flood protection are shared between federal, provincial, and even municipal actors. Thus, while the rights to decide and to act in building-related policies are concentrated in provincial hands, those relevant for flood protection are fragmented. In the case studies we show how this polity setup shapes policy coordination and in the comparison we discuss their policy relevance.

The effects of federal political systems on environmental policy-making have been researched in legal and policy studies for decades, and a multi-disciplinary research strand known as environmental federalism evolved. It is mainly concerned with the pro's and con's of federal political systems in solving environmental problems, and the still unresolved controversy about what prevails under what circumstances. On the negative side, federal systems can hinder (environmental) policy-making because they entail a larger number of decision-makers and institutional duplicities, both making it more likely that policy changes are blocked, delayed, or watered down (Tsebelis, 2002). A failure to effectively coordinate the many actors and policies between different levels of government is likely to result in reciprocal blockades, redundant, incoherent, or contradictory policies (Galarraga, Gonzalez-Eguino, & Markandya, 2011, p. 165; Goulder & Stavins, 2010; Peters, 1998, p. 296). The fact that these detrimental effects of federalism (in particular blockades) are difficult or impossible to overcome is what Scharpf (1988) referred to as a 'joint decision trap'. In addition, the economic rivalry between sub-national entities can result in a race to the bottom of environmental standards, in particular when this enhances economic competitiveness (Wälti, 2004, p. 603). On the positive side (for an overview see Nice, 1987; Adler, 2005, pp. 139–157), the fragmentation of responsibilities federalism implies do not have to result in delays or races to the bottom. They may also trigger experimentation, mutual learning and a positive competition (or a race to the top) by diffusing policy innovations between sub-national entities (Chappell & Curtin, 2012; Kloepfer, 2004, p. 761; Millimet, 2013). Second, functionalist approaches emphasise that federalism promotes the flexibility and the fine-tuning of national policies to regional specifics, an advantage particularly important in large and incoherent countries (Adler, 2005; Jahn & Wälti, 2007, p. 263; Keman, 2000). Finally, federalism can also bring policy-making closer to citizens and thereby improve the acceptance of governmental decisions (Millimet, 2013, p. 34).

Environmental federalism schools do not disagree on the existence of these pro's and con's but on what prevails under what circumstances. Two antagonistic schools are particularly relevant here: the so-called dynamic federalism and the matching school. According to the latter, 'the size of the geographic area affected by a specific pollution source would determine the appropriate governmental level for responding to the pollution' (Macey & Butler, 1996, p. 25). With Esty (1996, p. 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 & Engel, 2008; Adler, 2005; Oates, 2001, p. 2ff). This school assumes that there is an ideal governmental level for every environmental problem. While local and state governments are regarded as the ideal match for securing local or regional public goods (such as clean drinking water), international organisations are regarded as the key actor for addressing global problems such as climate change mitigation (Shobe & Burtraw, 2012, p. 5f). In this view, federal systems have advantages in handling regional environmental problems because they provide adequate matches above the local and below the national levels of government.

With the rise of increasingly complex environmental problems such as biodiversity loss and climate change, the matching school was criticised by those who doubt that environmental problems can be matched neatly with a particular level of government. Since even seemingly simple environmental issues (such as pesticide use) can have national or even global relevance, the so-called dynamic federalism school favours the continuous involvement of all levels of government, and it emphasises positive effects from duplicities, experimentation and competition in polycentric governance settings. Obviously, this school is closely aligned with the increasingly popular concept of polycentric (or transnational) governance that 'connotes many centres of decisionmaking that are formally independent of each other' (Ostrom, Tiebout, & Warren, 1961, p. 831; see also Bulkeley et al., 2012).

In the comparison we discuss our findings also in the light of the two environmental federalism schools introduced here. To assess the role of federalism in climate policy-making we analyse whether mutual learning and/or autonomous policy development/diffusion rendered federal coordination obsolete, or whether federalism led to delayed and/or watered-down policies, triggered mainly through federal coordination. In addition, actor constellations are of interest. If federal (or even EU) interventions played a key role in triggering provincial policy changes, we interpret federalism as a hindering factor that was only overcome via coordination from the top. If provincial actors were proactive policy entrepreneurs on their own, we interpret this as a proxy for the opposite. The following two sections provide the empirical basis for this analytical comparison.

3. How Austrian federalism hindered greening the building sector[5]

Austria is often praised as an environmental policy leader, but domestic climate change mitigation does not fit into this picture. Instead of cutting GHG emissions in line with the EU's effort sharing agreement by 13% in the period 2008–2012 compared to 1990, the Austrian government had to offset an emission increase of 5.9% (or a 18.9% deviation from target) with emission certificates worth about 700 Million Euro (Umweltbundesamt, 2013, p. 50).[6] Yet, how did climate change mitigation in the decentralised building sector proceed? As the following chronology of CPI as policy outputs shows, the provinces were very reluctant and the Federal Environment Ministry had difficulties in pushing them (Lebensministerium & BMWFJ, 2010, p. 52; Umweltbundesamt, 2012, p. 8).

3.1. 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 through emission reduction targets and measures for seven priority areas, space heating being one of them (Lebensministerium, 2002, p. 8). 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 social policies promoting home ownership that were now expected to also support energy efficiency in buildings (Lebensministerium, 2002, p. 17). However, the political salience of the strategy deteriorated quickly and greening provincial building policies hardly progressed in the first half of the 2000s (AEA & Umweltbundesamt, 2005, p. 18f; Amann, 2010, p. 4). Thus, the Environment Ministry introduced a federal programme not foreseen in the climate strategy: From 2004 onwards, the klima:aktiv programme promoted climate friendly technologies and services concerned with buildings, energy, and mobility.[7]

3.2. Modest provincial CPI via EU and federal interventions

Not surprisingly, provincial building standards failed to meet EU requirements defined in the 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 for buildings (Amann, 2010, p. 4; RH, 2009, p. 29). When the EU opened infringement proceedings in 2006, federal and provincial policy-makers started transposing the directive. Among other things, they concluded an agreement according to article 15a of the federal constitution (Art 15a B-VG, henceforth referred to as 'federal agreement') that aimed to use provincial housing promotion schemes for improving the thermal quality of new buildings, and

for promoting thermal refurbishments (BGBl. II Nr. 19/2006; Amann & Hüttler, 2007, p. 9). While the EU obviously spurred CPI as governance domestically, policy outputs were poor: the thermal standards of new provincial building regulations and their housing promotion schemes were behind the status quo of new buildings, and the housing promotion schemes had only very small effects on refurbishment rates (RH, 2009).

3.3. 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 & Umweltbundesamt, 2005), the Environment Ministry initiated its revision in 2005 and the federal government adopted it two years later (Lebensministerium, 2007). Although the emission reduction targets for most sectors were lowered to make them more realistic (for the building sector from −27% to −20% until 2010 compared to 1990) (Lebensministerium, 2002, p. 8, 2007, p. 24), the provinces never accepted the revised strategy. This was one of the reasons for why it was politically even more irrelevant than its predecessor was.
After a modest federal agreement on building standards in housing promotion from 2006, the federal government traded the earmarking of housing promotion funds for a new federal agreement on building standards (Streimelweger, 2010, p. 548). While the new federal agreement from 2009 improved building standards slightly (see below), mitigation through housing promotion retreated because the provinces diverted non-earmarked funds to other purposes.[8] Against this background, all climate and energy policy-makers and experts we interviewed called for immediate reforms of provincial housing promotion (see also RH, 2009, p. 45; Amann, 2010, p. 20), so far unsuccessfully.

3.4. Federal intervention substituting provincial policies

Since the provinces geared housing promotion only slowly towards energy efficiency, the federal government intervened also here with a refurbishment programme. Apart from stimulating the then depressed economy, the programme aimed to raise the refurbishment rate from 1% to the 3% demanded in the revised climate strategy (Oberhumer & Denk, 2014, pp. 86–92). In 2009 and between 2011 and 2014, the programme's budget was around €100 million annually (Lebensministerium, 2012a , p. 12; WIFO et al., 2010, p. 5).[9] Surprisingly, the federal intervention did not lift the refurbishment rate above 1% (Oberhumer & Denk, 2014, pp. 88–92). Since the provincial housing promotion for refurbishment projects amount to about €700 million annually (Oberhumer & Denk, 2014, pp. 88–92), why was the effect of the comparatively big federal intervention so small? According to federal representatives, the experts we interviewed, and the Austrian Court of Audit (RH, 2009, p. 45), the desired effect was cancelled out by provincial budget cuts made possible by the abolished earmarking requirement (see also Amann, 2010; Oberhumer & Denk, 2014, pp. 92, 110).[10] Was this zero-sum game of provincial and federal refurbishment subsidies intended? Maybe, but according to a key policymaker, the federal government did not consider the possibility of a zero-sum game and therefore neglected to coordinate its intervention with the provinces. Consequently, the annual refurbishment rate is still around 1% and climate change mitigation in the building sector remains far below its desired potential (Oberhumer & Denk, 2014, p. 88).

3.5. Federal and EU policy updates pushing some provinces

According to all interviewees and the Austrian Court of Audit (RH, 2009, p. 13), the most significant CPI initiative in the building sector so far was the federal agreement that resulted from the fiscal package deal mentioned above:[11] In 2009, the Environment Ministry and the provinces agreed to further improve building standards in 2010 and in 2012. While the agreement improved some minimum standards in all provinces (Amann, 2010, p. 5; see also RH, 2009, p. 3), it did not improve all standards in all provinces. Nevertheless, the agreement can be regarded as the first significant CPI breakthrough in the building sector – one that came very late and that devalued all preceding steps as inadequate.

3.6. Federal climate protection law: still not done with vertical coordination

Since the federal climate strategies from 2002 and 2007 failed to cut GHG emissions, the Environment Ministry aimed to negotiate a climate protection law with concrete targets and sanctions for missing them. Announced in 2008 (Bundeskanzleramt, 2008, p. 77f), it took three years to adopt a weak law that stated neither emission targets for sectors or levels of government, nor concrete measures, nor sanctions (Klimaschutzgesetz; BGBL. I Nr. 106/2011). The Environment Ministry tried to close these gaps in additional rounds of negotiations with immediately after its adoption. Although the amended law states detailed emission reduction trajectories for six sectors until 2020 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 (in particular the one for the building sector that foresees emission cuts of 13.5% between 2013 and 2020) they rejected the amendment (Landesregierung Steiermark, 2013; Oberösterreichische Landesregierung, 2013). Second, despite lengthy negotiations with the provinces, the Environment Ministry was not able to find a consensus on how to share the costs in case sectoral targets are not met. Consequently, the provinces cannot be sanctioned for missed targets they reject. Obviously, the amended law and the action programme both fell into one of the many joint decision-traps of federal politics (Scharpf, 1988) they aimed to defuse.

3.7. CPI as outcome

Since only one of the many federal agreements on building standards came close to the status quo of new buildings while most other federal CPI efforts were either politically irrelevant (both climate strategies, the climate protection law and its amendment) or resulted in a ‘federal zero-sum game’ (refurbishment programme), the policy outputs reviewed above cannot nearly explain why building sector emissions decreased by 25.5% (Umweltbundesamt, 2013, p. 70), i.e. 9% beyond the target of the Climate Strategy 2007 (Lebensministerium, 2007, p. 24) the provinces rejected as too demanding. As we show elsewhere in more detail, market-forces rather than public policies were the main drivers behind this development (Steurer & Clar, 2015). In short, it took building policy-makers a long time to hesitantly embrace the normative idea of CPI, and CPI as governance was mainly driven by federal and EU interventions, generating modest policy outputs. As the following section shows, this contrasts starkly with federalism in flood risk management.

4. How Austrian federalism helps tailoring flood risk management to local circumstances[12]

According to the Federal Environment Ministry, '[w]ithout flood protection Austria's river valleys would be uninhabitable in wide areas' (Lebensministerium, 2006, p. 2). Although flood protection has a longstanding history in Austria, Lower Austria experienced a considerable increase of extreme floods in recent years (Haas et al., 2008): In 2002, floods of the Danube and smaller rivers caused nine deaths and damages of approximately Euro 3 billion in the province (Land Niederösterreich, 2006, p. 5). In 2013, Lower Austria was struck again by a centenary flood with damages of approximately Euro 150 million.[13] Besides anthropogenic changes in the river landscapes (mainly river regulations, the installation of hydro power plants, and additional settlings in flood-prone areas), some scientists also see climate change as a cause for the increase of extreme flood events in Europe in general (EEA, 2012, p. 213ff), and in Lower Austria in particular (Land Niederösterreich, 2007, p. 1). However, the link between climate change and floods in Austria is anything but clear. On the one hand, some scientists expect a rise in average temperatures and a higher intensity of precipitation for Lower Austria (Land Niederösterreich, 2007). Although they acknowledge that local impacts are difficult to model (Lebensministerium, 2009, p. 17), they nevertheless highlight the need to adapt flood risk management to possible climate change impacts (Land Niederösterreich, 2007; Lebensministerium, 2009). On the other hand, a study on 'Adaptation Strategies to Climate Change for the Austrian Water Sector', commissioned jointly by the federal and provincial units responsible for flood protection, argues that long-term flood trends in Austria cannot be related to climate change (Blöschl et al., 2011; Schöner et al., 2011). Consequently, the normative dimension of CPI in Austrian flood risk management is a tricky issue.

4.1. Normative CPI: flood risk in the age of climate change

Most flood risk policy-makers we interviewed from across Austria agree with those who doubt that climate change influences floods. They therefore reject climate change adaptation as irrelevant for their work.[14] While a local actor acknowledged paradigmatically, 'there has been a trend during the last few years regarding floods: Before 2002, it was very quiet', he warned that 'natural variations are much stronger than those related to climate change, but I cannot tell what the underlying cause is'. Similarly, another local representative said, 'sporadically, precipitation does occur more intensely, but you cannot tell that more water is coming down from the sky because of climate change'. One of the provincial policy-makers added that academic debates on climate change are not relevant for his work because he has to act based on facts, 'not speculations'. Since all interviewees from different levels of government had a consistent view on a controversial issue, we conclude that their positions are well attuned despite vertical fragmentation.

This conclusion is reaffirmed by the Austrian adaptation strategy that aims to better integrate climate change adaptation into various sectors across levels of government (Lebensministerium, 2012b). Despite their scepticism about climate change causing floods, Austrian water managers participated in formulating the Austrian adaptation strategy between 2009 and 2012 (Lebensministerium, 2011, p. 97f). As a representative of the climate protection unit put it, the adaptation and the flood risk protagonists were able to find 'a common language' that allowed them to include water management in the adaptation strategy as one of 14 key chapters. However, the chapter on flood risk management does not resemble a policy strategy. Above anything else, it repeatedly emphasises uncertainties and research needs. In order to underline its position on flood risk management and climate change on its own terms, the department of water management framed the commissioned study that sees no link between floods and climate change as its sector-specific adaptation strategy. Although the publication is a scientific study, its title reads 'Adaptation Strategies to

Climate Change for the Austrian Water Sector' (Schöner et al., 2011). The short version of the study even adds the subheading 'Aims and Conclusions for the Federation and the Provinces' (Blöschl et al., 2011), as if it was a policy document. Again, the coherence between federal and provincial water managers on this issue is remarkable.

4.2. Overcoming vertical fragmentation via co-funding and cooperation

Flood risk management in Austria is characterised by fragmented responsibilities and a co-funding rationale that helps to overcome fragmentation. In close cooperation with the municipalities, the provinces list and assess flood risk management projects eligible for co-funding. The list is then submitted to the Federal Environment Ministry. Since the municipalities are formally responsible for actual flood protection measures, they then apply for funding at the federal level. Based on provincial assessments, the federal ministry takes funding decisions and informs the provinces and the municipalities (Nordbeck, 2014, p. 15f). Several of our interviewees were not only convinced that provincial assessments are the crucial bottleneck in the co-funding procedure. Furthermore, they also emphasised that provinces support municipalities on a continuous basis (mainly because they often lack technical and legal capacities), and sometimes even encourage municipalities to initiate local planning or infrastructure projects.

The co-funding scheme standing behind flood risk management projects in Austria reflects the varying fiscal capacities of the three levels of government involved. According to the Federal Environment Ministry, the ratio of federal, provincial and municipal funds spent on flood protection is on average around 60–23–17.[15] However, since other actors present diverging figures (Nordbeck, 2014, p. 24f) they are not fully reliable, mainly because respective budgets are part of thematically broader natural hazards funds that lack theme-specific monitoring. Irrespective of varying co-funding ratios, all interviewees emphasised that neither federal nor provincial funds for flood risk management have been scarce, in particular not since the 2002 floods: Between 2000 and 2013, flood protection expenditures in Austria have more than doubled, and in Lower Austria they have increased more than fivefold (from € 17 Mio to more than € 91 Mio) (Nordbeck, Löschner, & Steurer, in press). Since flood risk managers are sceptical about climate change impacts (see above), this budgetary expansion is the response to recent floods rather than CPI as policy output.

The main municipal responsibility relevant for flood risk management besides initiating and co-funding flood protection projects is concerned with local spatial planning (Wessely, 2010). Since flooding damages have increased not only due to more frequent and severe floods but also due to socio-economic developments in flood-prone areas (Nordbeck et al., in press), the provinces urged municipalities to be more restrictive when redesignating farm land into building land, and the latter responded accordingly. Interviewees also underlined that especially smaller municipalities depend on provincial cooperation when implementing flood risk management projects (such as building retention areas), not only because they usually lack technical and financial resources but also expertise. Often, the provinces even take over the implementation of local projects in close cooperation with municipalities.

All in all, co-funding schemes and continuous vertical cooperation between all three levels of government created a dense network of like-minded flood risk managers across Austria. They were able to expand their policy output considerably in recent years, irrespective of controversial climate change impacts. There certainly are potentials to improve the fragmented governance of flood risk management in Austria (e.g. via a federal flood risk strategy and more transparent co-funding decisions based on accountable criteria), but federalism does not seem to be the key issue here – at least not when compared with the slow progress in greening provincial building policies (see Sections 3 and 5).

4.3. CPI as outcome?

Episodic data suggests that the expansion of policy outputs has enhanced resilience against floods.[16] Since this is the desired outcome of both flood risk management as well as climate change adaptation, and because flood risk managers did not embrace the latter yet, we conclude that CPI as outcome has been achieved because of overlapping aims with flood risk management per se. Since adaptation to climate change is usually in the self-interest of a sector, overlapping policy goals are rather common in this policy field. Thus, we conclude that federalism is comparatively unproblematic in climate change adaptation, at least as long as adaptation aims overlap with sectoral policy aims (i.e. as long as CPI is preoccupied with vertical coordination only). Regarding the CPI concept, this implies that its three dimensions are neither necessary nor sufficient conditions for each other. They are not compelling steps of policy-making but parts of a heuristic construct that helps to systematically analyse and better understand multi-sectoral policy-making processes (see also Section 5). The obvious question we cannot answer here is whether the (long-term) outcomes of flood risk management could be improved if flood risk policy-makers embraced climate change adaptation proactively.

5. Comparison and conclusions

After selectively introducing the environmental federalism literature, the present paper has shown that Austrian federalism has hindered the greening of provincial building policies but did not stand in the way of expanding flood protection across all three levels of government. By recalling the well-known fact that, under different political circumstances, federalism can also facilitate climate change mitigation (see Section 1) we conclude that federalism in climate policy-making is ambiguous in various respects. This final section further explores this ambiguousness by comparing the two cases in more detail.

In the adaptation case study, the strong vertical fragmentation of responsibilities in flood risk management was not in the way of stepping up respective policies for several reasons. First and foremost, the problem of flooding was pressing and the federal polity setup matched comparatively well with the regional variations of flooding events (the same applies to all kinds of climate change impacts). Second, all relevant actors from whatever level of government were from the same sector (water management), and they shared a strong common interest that was identical with the adaptation agenda, i.e. strengthen resilience by preventing damages from future floods. Third, a federal polity setup characterised by co-funding facilitated intense coordination and cooperation among like-minded experts instead of reciprocal blockades or joint decision-traps. Consequently, the fragmentation of responsibilities in flood risk management was offset by a dense network of cooperation and a strong consensus on policy contents. This finally fostered experimentation, mutual learning, and a race to the top rather than the opposite.

In the mitigation case, the detrimental effects of federalism were not offset but amplified by the following factors. First and foremost, climate change is a global problem that requires policy changes at all levels of government, but Austrian provinces showed little interest in the issue, inter alia because the federal government adopted national obligations without consulting and/or compensating them for provincial contributions. In other words, the global problem structure and national target setting both mismatched with the federal polity setup of the building sector. Second, CPI in the Austrian building sector required not only vertical coordination between levels of governments but also horizontal coordination between environmental and building policy-makers. Since the latter are not interested in environmental issues, this diagonal polity setup is far more demanding than the purely vertical one in flood risk management. For climate change mitigation in Austria and

Switzerland we conclude elsewhere that federalism further complicated an already complex (horizontal) coordination challenge by adding a vertical dimension (Casado-Asensio & Steurer, 2016; Steurer & Clar, 2015). Third, while the fragmented polity setup in the water management case enhanced interdependencies and coordination between levels, the decentralisation of building policies made it difficult for federal policy-makers to push CPI. While co-decision-making provides venues for promoting CPI top-down, federalism in the sense of regional autonomy shuts the national level (and its mitigation targets) out. Consequently, provincial building policies were not greened via bottom-up experimentation, mutual learning, and an innovation-friendly race to the top but through a series of piecemeal national and EU interventions.

Overall, at least three analytical conclusions can be drawn from these findings. First, the comparison of the two cases shows that matching or mismatching government levels and problem scales is an important (see Section 2) but not the only explanation behind diverging policy performances. Other key factors are national political positions (see Section 1), the concurrence (or conflict) between climate and sectoral policy aims, problem characteristics (e.g. local and visible versus global and abstract), and the degree of interdependence embodied in the federal polity setup (i.e. co-decision-making versus provincial autonomy). Thus, it is not federalism per se but certain types of federal polity setups in combination with various contextual factors that determine policy outputs and outcomes.

Second, since the (mis-)matching of governmental levels and problem scales proved to be important for policy outputs/outcomes, our cases contradict the key assumption of the dynamic federalism school, i.e. that every level of government is equally important for solving any environmental problem. While federalism enables subnational mitigation in countries where federal governments are inactive (see Section 1), the Austrian case shows that provincial building policies were inadequate to meet national mitigation obligations. Sub-national mitigation policies are certainly better than the federal standstill, but they are far from an ideal government response to a global problem. In the words of the matching school, 'the cost–benefit calculus will be skewed and either too little or too much environmental protection will be provided' (Esty, 1996, p. 570) in the case of mismatches. As the Austrian mitigation case also illustrates, mismatches are difficult to rectify, among other things because they are usually historically grown (the provinces were put in charge of building policies long before climate change was an issue), and because governmental levels do not relinquish responsibilities easily.

Third, despite the advantages of the matching school over the dynamic federalism school it is important to note that single levels of government cannot address complex environmental problems adequately, even not if their spatial scales match. On the one hand, climate change mitigation requires international frameworks, followed up mainly by national but also by sub-national (even municipal) targets and policies in whatever polity system (Bulkeley et al., 2012; Gupta et al., 2007). On the other hand, climate change adaptation largely depends on local policies, but it also requires national and even international assessments, guidance, and (co-)funding (see e.g. Urwin & Jordan, 2008). Thus, we finally conclude that neither the matching nor the dynamic federalism school provides accurate accounts of contemporary environmental governance, but rather a blending of the two. As Figure 1 illustrates, hardly replaceable key actors exist for each problem scale (black dots), but their abilities to solve environmental problems also depends on the collaboration with other levels of government (grey dots). If a key actor fails to address a problem the consequential governance gap can hardly be filled by others.

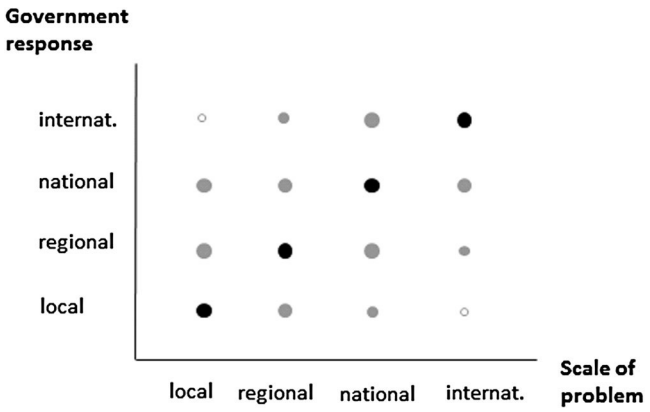

Figure 1. Contemporary environmental governance and problem scales (own illustration; copyright R. Steurer).

Note: The darker/bigger the dots are, the more important an actor is for solving a problem.

Since the present paper summarises findings from two case studies on the same country, our conclusions can be generalised analytically to similar cases but not empirically or statistically (Yin, 2003). Based on a similar mitigation case study on Switzerland that produced similar findings (Casado-Asensio & Steurer, 2016) we are confident that the mitigation case can be replicated for most federal countries that adopted climate change mitigation targets but failed to share them with sub-national authorities. Thus, future research should explore in particular various issues of climate change adaptation in federal settings.

Notes

1. For an overview, see the virtual special issue of “Publius: The Journal of Federalism” on “U.S. Federalism and Environmental Policy”; http://www.oxfordjournals.org/our_journals/pubjof/vi_environmental_policy.html; accessed on May 26, 2015.
2. Large parts of the two original case study publications have been used here without quoting or referencing them because this would make the text unreadable. For further details on methods and findings on the mitigation case see Steurer and Clar (2015), for the adaptation case see Clar and Steurer (2014).
3. The mitigation case study focuses on two provinces (Styria and Upper Austria) that are among the leaders in this field so that the situation in most other provinces is likely to be worse. The adaptation case study focuses on the province of Lower Austria because it was prone to heavy flooding in recent years. For further methodological details, see Steurer and Clar (2015), Clar and Steurer (2014), and the online supplementary Annex.
4. Note that its full name is Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management.
5. This section is a summary of Steurer and Clar (2015). where further details on methods and findings can be found.
6. http://derstandard.at/1333528357258/Umwelt-Strategie-Oesterreich-kauft-sich-mit-Emissionszertifikaten-frei-und-kuerztSolarfoerderung; accessed at July 19, 2013.
7. http://www.klimaaktiv.at/bauen-sanieren/gebaeudedeklaration.htm; accessed on August 17, 2013.
8. See http://wirtschaftsblatt.at/home/life/immobilien/1227532/index; http://www.ots.at/presseaussendung/OTS_20130314_ OTS0093/endlich-konsens-bei-der-zweckbindung-der-wohnbaufoerderung; accessed on July 28, 2013;
9. http://www.umweltfoerderung.at/kpc/de/home/umweltfrderung/fr_private/energiesparen/; accessed on July 28, 2013. http://www.umweltfoerderung.at/kpc/de/home/umweltfrderung/fr_private/energiesparen/; accessed on July 28, 2013.
10. http://derstandard.at/1378249110083/Eigenheim-ohne-Foerderung-im-Trend; accessed on September 16, 2013. http:// derstandard.at/1378249110083/Eigenheim-ohne-Foerderung-im-Trend; accessed on September 16, 2013.
11. BGBl. II Nr. 251/2009: 15a-Vereinbarung zur Emissionsreduktion im Gebäudesektor.
12. This section is a shortened version of Clar and Steurer (2014), and it is also based on Nordbeck et al. (in press).
13. http://noe.orf.at/news/stories/2593765/, accessed on April 10, 2015.
14. Representatives of the protective water management unit in the Federal Environment Ministry even declined to be interviewed on climate change adaptation.
15. http://www.lebensministerium.at/wasser/schutz_vor_naturgefahren/finanz_hws.html; accessed on October 10, 2013.
16. In Lower Austria, total damages of the 2013 flood were only a fraction of those in 2002 (€150 million versus 3 billion) although the water levels of the Danube were nearly the same. See http://noe.orf.at/news/stories/2593765/, accessed on May 16, 2014; http://noe.orf.at/news/stories/2587009/, accessed on July 1, 2014; http://kurier.at/chronik/niederoesterreich/hochwasser-noe-aufatmen-und-verzweiflung-an-der-donau/14.697.472, accessed on July 1, 2014.

Acknowledgements

The CLIP-IN project (No. K10AC0K00054) led to the mitigation case study; the projects FAMOUS (No. K10AC0K00004) and Flood-Adapt (No. KR14AC7K11809) led to the adaptation case study.

Disclosure statement
No potential conflict of interest was reported by the authors.

Funding

We thank the Austrian Climate Research Programme (ACRP) of the Austrian Climate and Energy Fund for financing the following three projects that led to this article: (i) CLIP-IN (Project No. K10AC0K00054); (ii) Flood-Adapt (Project No. KR14AC7K11809); and (iii) FAMOUS (K10AC0K00004).

Notes on contributors

Reinhard Steurer is Associate Professor at InFER, the Institute of Forest, Environmental and Natural Resource Policies at BOKU Vienna. His research and teaching is concerned with governance and policy analyses on climate change (both mitigation and adaptation) and sustainable development in Europe, usually in a comparative perspective. Reinhard has published more than 60 journal articles, book chapters and books on these topics.

Christoph Clar is a post-doc researcher at InFER, the Institute of Forest, Environmental and Natural Resource Policy at the BOKU University of Natural Resources and Life Sciences Vienna. His research and teaching focuses on the politics of climate change and natural resources.

References

Adelle, C., & Russell, D. (2013). Climate policy integration: A case of Déjà Vu? Environmental Policy and Governance, 23(2013), 1– 12.

Adelman, D. E., & Engel, K. H. (2008). Adaptive federalism: The case against reallocating environmental regulatory authority. Minnesota Law Review, 92, 1796–1850.

Adler, J. H. (2005). Jurisdictional mismatch in environmental federalism. NYU Environmental Law Journal, 14, 130–178.

AEA Austrian Energy Agency & Umweltbundesamt. (2005). Evaluierungsbericht zur Klimastrategie Österreichs. Evaluierungsbericht gem. EZG, im Auftrag des Lebensministeriums.

Amann, W. (2010). Wohnbau und Gebäudesanierung als Wirtschafts- und Klima-Turbo; Im Auftrag des Grünen Parlamentsklubs, IIBW Institut für Immobilien, Bauen und Wohnen.

Amann, W., & Hüttler, W. (2007). Rahmenbedingungen. In K. Lugger, & W. Amann (Eds.), Ökologisierung der Wohnbauförderung im mehrgeschossigen Wohnbau (pp. 8–14). Vienna: Institut für Immobilie, Bauen und Wohnen.

Amundsen, H., Berglund, F., & Wetskog, H. (2010). Overcoming barriers to climate change adaptation – a question of multilevel governance? Environment and Planning C. Government and Policy, 28(2), 276–289.

Biela, J., Hennl, A., & Kaiser, A. (2012). Combining Federalism and Decentralization: Comparative Case Studies on Regional Development Policies in Switzerland, Austria, Denmark, and Ireland. Comparative Political Studies, 45(4), 447–476.

Blöschl, G., Schöner, W., Kroiß, H., Blaschke, A. P., Böhm, R., Haslinger, K. … Viglione, A. (2011). Anpassungsstrategien an den Klimawandel für Österreichs Wasserwirtschaft – Ziele und Schlussfolgerunden der Studie für Bund und Länder. ÖWAW – Österreichische Wasserwirtschaft, 63(1–2), 1–10.

Bulkeley, H., Andonova, L., Bãckstrand, K., Betsill, M., Compagnon, D., Duffy, R., … VanDeveer, S. (2012). Governing climate change transnationally: Assessing the evidence from a database of sixty initiatives. Environment and Planning C: Government and Policy, 30(4), 591–612.

Bundeskanzleramt. (2008). Regierungsprogramm 2008–2013. Gemeinsam für Österreich.

Casado-Asensio, J., & Steurer, R. (2016). Mitigating climate change in a federal country committed to the Kyoto protocol: How Swiss federalism further complicated an already complex challenge. Policy Sciences, 49, 257–279.

Chappell, L., & Curtin, J. (2012). Does federalism matter? Evaluating state architecture and family and domestic violence policy in Australia and New Zealand. Publius: The Journal of Federalism, 43(1), 24–43.

Clar, C., & Steurer, R. (2014). Mainstreaming adaptation to climate change in a federal state setting: Policy changes in flood protection and tourism promotion in Austria? ÖZP Österreichische Zeitschrift für Politikwissenschaft, 2014(1), 23–47.

Corfee-Morlot, J. (2009). California in the greenhouse: regional climate change policies and the global environment (PhD dissertation). London: Geography Department, University College London.

Corfee-Morlot, J., Kamal-Chaoui, L., Donovan, M. G., Cochran, I., Robert, A., & Teasdale, P.J. (2009). Cities, climate change and multilevel governance (OECD Environmental Working Papers N° 14). Paris: OECD.

Dupont, C., & Oberthür, S. (2012). Insufficient climate policy integration in EU energy policy: The importance of the long-term perspective. Journal of Contemporary European Research, 8(2), 228–247.

Erk, J. (2006). Does federalism really matter? Comparative Politics, 39(1), 103–120.

Esty, D. C. (1996). Revitalizing environmental federalism. Michigan Law Review, 95(3), 570–587.
European Environment Agency (EEA). (2012). Climate change, impacts and vulnerability in Europe 2012 (EEA Report No 12/2012).
Farber, D. A. (2009). Climate adaptation and federalism: Mapping the issues. San Diego J. Climate & Energy L., 259(2009). Retrieved from http://scholarship.law.berkeley.edu/facpubs/412
Galarraga, I., Gonzalez-Eguino, M., & Markandya, A. (2011). The role of regional governments in climate change policy. Environmental Policy and Governance, 21(3), 164–182.
Glicksman, R. L., & Levy, R. E. (2010). Climate change adaptation: A collective action perspective on federalism considerations. Environmental Law, 40, 1159–1193.
Goulder, L., & Stavins, R. N. (2010). Interactions between state and federal climate change policies. Fondanzione Eni Enrico Mattei Working Papers, 487.
Gupta, J., van der Leeuw, K., & de Moel, H. (2007). Climate change: A 'glocal' problem requiring 'glocal' action. Environmental Science, 4(3), 139–148.
Haas, W., Weisz, U., Balas, M., McCallum, S., Lexer, W., Pazdernik, K. … Schwarzl, I. (2008). Identifikation von Handlungsempfehlungen zur Anpassung an den Klimawandel in Österreich: 1. Phase, 2008, AustroClim, Bericht im Auftrag des Lebensministeriums.
Hudson, B. (2012). Federal constitutions and global governance: The case of climate change. Indiana Law Journal, 87, 1455–1515. Jahn, D., & Wälti, S. (2007). Umweltpolitik und Föderalismus: Zur Klärung eines ambivalenten Zusammenhangs. In K. Jacob, F. Biermann, P.-O. Busch, & P. H. Feindt (Eds.), Politik und Umwelt (pp. 262–279). PVS – Politische Vierteljahresschrift, Sonderheft 39/2007.
Jordan, A., & Lenschow, A. (2010). Environmental policy integration: a state of the art review. Environmental Policy and Governance, 20(3), 147–158.
Karlhofer, F., & Pallaver, G. (2013). Strength through weakness: State executive power and federal reform in Austria. Swiss Political Science Review, 19(1), 41–59.
Keman, H. (2000). Federalism and policy performance. In U Wachendorfer-Schmidt (Ed.), Federalism and policy performance (pp. 190–227). London: Routledge.
Kloepfer, M. (2004). Föderalismusreform und Umweltrecht. Natur und Recht, Heft 12, 759–764.
Knill, C., & Lenschow, A. (2000). On deficient implementation and deficient theories: The need for an institutionalist perspective in implementation research. In C. Knill & A. Lenschow (Eds.), Implementing EU environmental policy. New directions and old problems (pp. 9–35). Manchester: Manchester University Press.
Landesregierung Steiermark. (2013). Novelle des Klimaschutzgesetzes (KSG). Begutachtungsverfahren, Stellungnahme. Abteilung 15 Energie, Wohnbau, Technik, Graz.
Land Niederösterreich. (2006). Amt der NÖ Landesregierung. Gruppe Wasser (Ed.), Hochwässer in Niederösterreich. Ursachenforschung am Beispiel der Donau und der Traisen, St. Pölten.
Land Niederösterreich. (2007). NÖ Klimastudie 2007. Auswirkungen des Klimawandels in Niederösterreich, St. Pölten.
Lebensministerium. (2002). Strategie Österreichs zur Erreichung des Kyoto-Ziels. Klimastrategie 2008/2012.
Lebensministerium. (2006). Hochwasserschutz in Österreich.
Lebensministerium. (2007). Anpassung der Klimastrategie Österreichs zur Erreichung des Kyoto-Ziels 2008 – 2013. Vorlage zur Annahme im Ministerrat am 21. März 2007.
Lebensministerium. (2009). FloodRisk II. Vertiefung und Vernetzung zukunftsweisender Umsetzungsstrategien zum integrierten Hochwassermanagement. Synthesebericht.
Lebensministerium. (2011). Beteiligungsprozesse des Lebensministeriums. Eine Praxis-Dokumentation. Lebensministerium. (2012a). Umweltförderungen des Bundes 2011.

Lebensministerium. (2012b). Die österreichische Strategie zur Anpassung an den Klimawandel.
Lebensministerium & BMWFJ Bundesministerium für Wirtschaft, Familie und Jugend. (2010). EnergieStrategie Österreich. Maßnahmenvorschläge.
Lutsey, N., & Sperling, D. (2008). America's bottom-up climate change mitigation policy. Energy Policy, 36(2), 673–685.
Macey, J. R., & Butler, H. N. (1996). Externalities and the matching principle: The case for reallocating environmental regulatory authority. Yale Law School Faculty Scholarship, Paper 1447, Yale: 23–66.
Millimet, D. L. (2013). Environmental Federalism: A Survey of the Empirical Literature. IZA (Discussion Paper, No. 7831), Leibniz. Nice, D. (1987). Federalism: The Politics of Intergovernmental Relations. New York: Macmillan.
Nordbeck, R. (2014). Klimawandel und vorsorgender Hochwasserschutz in Österreich: eine entwicklungsdynamische Analyse der Anpassungskapazitäten (2002–2012). Vienna: InFER Diskussionspapier/Discussion Paper 2–2014.
Nordbeck, R., Löschner, L., & Steurer, R. (in press). The future orientation Austria's flood policies: from flood control to anticipatory flood risk management. Under review.
Oates, W. E. (2001). A reconsideration of environmental federalism. Washington: Resources for the Future.
Oberhumer, A., & Denk, D. (2014). Zahlen, Daten, Fakten zu Wohnungspolitik und Wohnungswirtschaft in Österreich. Vienna: FGW - Forschungsgesellschaft für Wohnen, Bauen und Planen.
Oberösterreichische Landesregierung. (2013). Bundesgesetz, mit dem das Klimaschutzgesetz geändert wird; Regierungsvorlage – Stellungnahme. Amt der Oö. Landesregierung, Linz.
Ostrom, V., Tiebout, C. M., & Warren, R. (1961). The organization of government in metropolitan areas: A theoretical inquiry. American Political Science Review, 55(4), 831–842.
Pelinka, A. (2007). Bundesstaatlichkeit in Europa. In F. M. Steger (Ed.), Baustelle Bundesstaat. Perspektiven der Weiterentwicklung des politischen Systems (pp. 77–84). Vienna: Braumüller.
Peters, B Guy. (1998). Managing horizontal government: The politics of co-ordination. Public Administration, 76(3), 295–311.
Rabe, B. (2007). Beyond Kyoto: Climate change policy in multilevel governance systems. Governance, 20(3), 423–444.
Rabe, B. (2011). Contested federalism and American climate policy. Publius: The Journal of Federalism, 41(3), 494–521.
RH Rechnungshof. (2009). Wirkungsbereich der Bundesministerien für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft sowie Justiz: Klimarelevante Maßnahmen bei der Wohnbausanierung auf Ebene der Länder. Bund 2009/7.
Scharpf, F. W. (1988). The joint-decision trap: Lessons from German federalism and European integration. Public Administration, 66(3), 239–278.
Schöner, W., Böhm, R., Haslinger, G., Blöschl, G., Kroiß, H., Merz, R. … Kreuzinger, N. (2011). Anpassungsstrategien an den Klimawandel für Österreichs Wasserwirtschaft. Studie der Zentralanstalt für Meteorologie und Geodynamik und der Technischen Universität Wien im Auftrag von Bund und Ländern.
Scruggs, L. (2003). Sustaining abundance: Environmental performance in industrial democracies. Cambridge: Cambridge University Press.
Shobe, W. M., & Burtraw, M. (2012). Rethinking environmental federalism in a warming world (pp. 1–39). Washington: RFF DP, Resources for the Future.
Sickinger, H. (2002). Überlegungen zur Reform der österreichischen Parteienfinanzierung. ÖZP Österreichische Zeitschrift für Politikwissenschaft, 2002(1), 73–90.

Steurer, R. (2010). Sustainable development as an integrative governance reform agenda: Principles and challenges. In R. Steurer & R. Trattnigg (Eds.), Nachhaltigkeit regieren: Eine Bilanz zu Governance-Prinzipien und -Praktiken (pp. 33–54). München: Oekom.
Steurer, R., & Clar, C. (2015). Is decentralisation always good for climate change mitigation? How federalism has complicated the greening of building policies in Austria. Policy Sciences, 48(1), 85–107.
Streimelweger, A. (2010). Wohnbauförderung – eine Bestandsaufnahme. Wirtschaft und Gesellschaft, 36. Jahrgang, Heft 4, 543– 562.
Tsebelis, G. (2002). Veto players: How political institutions work. Princeton: Princeton
University Press.
Umweltbundesamt. (2012). Klimaschutzbericht 2012.
Umweltbundesamt. (2013). Klimaschutzbericht 2013.
Urwin, K., & Jordan, A. (2008). Does public policy support or undermine climate change adaptation? Exploring policy interplay across different scales of governance. Global Environmental Change, 18(1), 180–191.
Wälti, S. (2004). How multilevel structures affect environmental policy in industrialized countries. European Journal of Political Research, 43(4), 599–634.
Wessely, W. (2010). Örtliche Raumplanung als Instrument des Umweltschutzes. In N. Raschauer, & W. Wessely (Eds.), Handbuch Umweltrecht, 2. überarbeitete Auflage (pp. 609–628). Wien: facultas.wuv.
WIFO Österreichisches Institut für Wirtschaftsforschung; Wegener Zentrum für Klima und Globalen Wandel & KWI Consultants. (2010). Thermische Gebäudesanierung nutzt Umwelt und Wirtschaft. Erfahrungen mit dem Sanierungsscheck 2009 und Perspektiven für eine Fortsetzung.
Yin, Robert, K. (2003). Case study research: Design and Methods (Third Edition Vol. Applied Social Research Methods Series, Vol. 5.). Thousand Oaks/CA: SAGE Publications.
Yohe, G. W., Lasco, R. D., Ahmad, Q. K., Arnell, N. W., Cohen, S. J., Hope, C. … Perez, R. T. (2007). Perspectives on climate change and sustainability. In M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden, & C. E. Hanson (Eds.), Climate change 2007: Impacts, adaptation and vulnerability. Contribution of working group II to the fourth assessment report of the intergovernmental panel on climate change (pp. 811–841). Cambridge: Cambridge University Press.