

Is the participatory formulation of policy strategies worth the effort? The case of climate change adaptation in Austria

Andrea Prutsch¹ · Reinhard Steurer² · Therese Stickler¹

Received: 23 May 2016 / Accepted: 22 June 2017 / Published online: 28 July 2017
© The Author(s) 2017. This article is an open access publication

Abstract Participation is usually regarded as a good practice in environmental policymaking, but its effects on policy strategies are unclear. Based on literature research, surveys, and interviews with participants, the present paper assesses whether decisional participation in formulating Austria’s National Adaptation Strategy (NAS) was worth the effort. Assessed against the goals of the participation process, we find that it raised awareness for adaptation and facilitated an exchange among the participants and that it improved the content of the NAS. However, regarding the goal of enhancing the acceptance of and commitment to the NAS, we find that this has been achieved among those who participated but not among high-level policymakers who are responsible for implementing the NAS. We conclude that (decisional) participation has its benefits in formulating comprehensive policy strategies but that it is most likely not able to overhaul their well-documented weaknesses, among them weak political commitment and implementation failures.

Keywords Climate change adaptation 1 · Stakeholder involvement 2 · Policy formulation 3

Editor: Marc J. Metzger.

✉ Andrea Prutsch
andreaprutsch@hotmail.com

¹ Environment Agency Austria, Spittelauer Lände 5,
1090 Vienna, Austria

² University of Natural Resources and Life Sciences, Vienna, Austria

Introduction

Although the history of humankind is one of adapting to climate variability, the rapid warming in recent decades and projected future climate changes have forced societies to proceed from reactive (or incremental) to anticipatory (or transformative) adaptation (Field et al. 2014; Wise et al. 2014). Adaptation to climate change is a “process of adjustment to actual or expected climate and its effects” (Field et al. 2014, p. 5) which “moderates harm or exploits beneficial opportunities” (McCarthy et al. 2001, p. 982). In Europe, governments at all levels began addressing this challenge systematically (Termeer et al. 2011). National Adaptation Strategies (NASs) (in some countries, accompanied by national action/adaptation plans (NAPs)) have become the standard approach to govern adaptation across Europe (Bauer et al. 2012; Biesbroek et al. 2010; Casado-Asensio and Steurer 2014; EEA 2014). Like long-established strategies on climate change mitigation and sustainable development, NASs represent comprehensive (or multi-sectoral) strategy processes that aim to cope with highly complex issues (in this case, climate change impacts) that require collaboration among several sectors and levels of government (Casado-Asensio and Steurer 2014; Rayner and Howlett 2009). They “address the perceived shortcomings of previous, more ad hoc, policy regimes” by rationalising multiple goals and the systematic use of policy instruments, so that multiple sectoral policies “support rather than undermine one another in the pursuit of those goals” (Rayner and Howlett 2009, p. 100).

None of these comprehensive policy strategies emerged coincidentally, but they were responses to international and European guidance. The first call for adaptation strategies can be found in the United Nations Framework Convention on Climate Change (UNFCCC 1992), and subsequent UN and EU policy documents specified the purpose of NAS in more

detail (e.g. EC 2007; EC 2009; EC 2013a; UN 2015). These and other policy documents called not simply for a NAS but rather for co-developing it with affected state and non-state stakeholders in participatory ways. As stated in numerous policy documents (EC 2013b; UNFCCC 1992), guidelines (e.g. EC 2013b; Lim and Spanger-Siegrfried 2004; Ribeiro et al. 2009; UKCIP 2007), Intergovernmental Panel on Climate Change (IPCC) reports (e.g. Field et al. 2014), and scientific works (e.g. Bauer et al. 2012; Weaver et al. 2006), involving a broad range of state and non-state actors can be helpful in coping with the complexities and uncertainties of climate change impacts.

Against this background, the Austrian government formulated its NAS and a subsequent NAP¹ together with policymakers from all levels of government (i.e. national, provincial, as well as local) alongside with non-state actors (mainly scientists, interest groups, and businesses). Between summer 2009 and summer 2011, these actors were not simply consulted, but they were given the opportunity to decide on the contents of the Austrian adaptation strategy. However, opening up the formulation of an adaptation strategy also to non-state stakeholders is a rather unique approach (Bauer et al. 2012; Biesbroek et al. 2010; Bizikova et al. 2014; EEA 2014). Most European countries formulated their NAS by means of horizontal coordination through which different ministries cooperated, and public consultation followed later on (Bauer et al. 2012; Termeer et al. 2011).

While research conducted on participation in environmental policymaking has a long tradition (“Methods”), the literature on participation in adaptation policy planning is sparse. Most of the latter addresses participation either in relatively narrow impact or vulnerability assessments (Gidley et al. 2009; Mitter et al. 2014; O’Connor et al. 2000; Ravera et al. 2011; Scherhauser 2014; van Aalsta et al. 2008) or in the context of formulating concrete adaptation options (Burton and Mustelin 2013; Few et al. 2007; Galicia et al. 2015; Kirono et al. 2014; Moser and Ekstrom 2011). Although the second research strand is similar to our case study, the actual effects of participation on adaptation strategies are still unclear. One of the few similar studies assessed the effects of participation in formulating adaptation strategies for the agricultural sector in five OECD countries (Bizikova et al. 2014). It found that the key goal of participation was awareness raising, but like other studies on participation in the context of adaptation (e.g. Bauer et al. 2012; Biesbroek et al. 2010; EEA 2014), they say little about the actual effects on policymaking. Against this background, the IPCC called for more research to be conducted on participatory arrangements in adaptation policymaking (Mimura et al. 2014, p. 890).

¹ The NAP provides further details on adaptation options and measures. Since the two policy documents are closely intertwined, we refer to both as adaptation strategy.

We respond to this call by analysing how successful the currently unique endeavour of decisional participation between non-state actors and national and provincial public administrators has been in influencing the formulation and the implementation of the Austrian NAS. The “Setting the scene and conceptual framework” section sets the scene and develops the conceptual frame for the empirical work, and the “Methods” section summarises the details of the case study method used. The “Case study: formulating Austrian adaptation policies through stakeholder involvement” section is the empirical core of the paper. It describes the formulation of the Austrian adaptation strategy through informative, consultative, and decisional participation. The “Was participation worth the effort? A goal-based assessment” section assesses the decisional participation process based on its own goals, and the “Conclusions” section finally deduces policy-relevant recommendations from our main findings.

Setting the scene and conceptual framework

Through participation, non-state actors, such as non-governmental organisations (NGOs); interest groups; businesses; scientists; and the broad public (also referred to as stakeholders) assume an active role in policymaking (Few et al. 2007; Rowe and Frewer 2000). Policymakers are usually responsible for initiating and organising participation processes, and as the present case shows, they can also combine participation with policy coordination by involving peers from other ministries and/or levels of government alongside non-state actors.

Arnstein (1969) developed a framework that differentiates eight levels of involvement. Many scholars have revisited Arnstein’s “ladder of participation” and developed slightly different frameworks (cf. Reed 2008 for a comprehensive historical outline). Green and Hunton-Clarke (2003), for example, simplified her eight-step ladder to the following three basic levels:

- Informative involvement means that the role of stakeholders is limited to receiving information via one-way communication. This is the most passive or top-down form of involvement.
- Consultative participation means that stakeholders are informed about an issue and asked for their views and perspectives. This may or may not influence policy decisions.
- Decisional participation means that stakeholders are given the authority to decide on policies. (This has been highlighted recently in the engagement literature via concepts such as co-production, co-construction, or co-design).

Since these three levels of participation correspond well with the participation activities assessed here, we use them to structure our empirical section “*Case study: formulating Austrian adaptation policies through stakeholder involvement*”.

Whatever level of participation is preferred, why do policymakers choose to involve stakeholders in policymaking and why do stakeholders participate? The scholarly literature answers this question with numerous potential benefits of participation. Based on Irvin and Stansbury (2004), potential benefits can be organised based on what they are about (or contents) and for whom they are relevant (or actors). Regarding the contents, we distinguish between process- and outcome-related benefits, the latter being concerned with the effects induced by the participation process (Bryson et al. 2012; Mandarano 2008). Regarding actors, we distinguish between those participating and governments as main beneficiaries.

Since comprehensive literature on the potential benefits of participation is available, we summarise them in Table 1 and highlight those that are most relevant for the present case study. The following benefits stand out because they correspond with the goals of the participation process introduced in the “*Methods*” section:

- Building adaptive capacities by raising awareness corresponds with the goal to (i) raise awareness for climate change adaptation and stimulate adaptation actions among affected stakeholders;

- Preventing conflicts or unexpected negative outcomes is incorporated in the goal to (ii) provide a platform to discuss the opinions and experiences, needs and preferences, conflicts, and potential solutions;
- Improving the quality of policies based on knowledge articulated by the stakeholders is reflected in the goal to (iii) improve the contents of the Austrian NAS/NAP through the expertise of stakeholders;
- Finally, increasing the legitimacy, acceptance/ownership of and compliance with policies, as well as enhance long-term support and active implementation correspond with the goal to (iv) increase the acceptance of the NAS/NAP as well as the commitment for its implementation.

The goal-based assessment conducted in section “*Was participation worth the effort? A goal-based assessment*” will scrutinise in how far these benefits (and goals) materialised in the empirical case presented in section “*Case study: formulating Austrian adaptation policies through stakeholder involvement*”.

Some scholars also point out potential problems of participation, among them costs (personnel and financial), power imbalances among participants, frustration or “*stakeholder fatigue*” (in particular, when expectations are not met), delaying decisions, and shaping bad decisions that cannot be implemented (Brown and Harvey 2009; Grothmann et al. 2014; Margerum 2002; Newig and Fritsch 2009; Reed 2008;

Table 1 Potential benefits of stakeholder involvement in (environmental) policymaking (structure adopted from Irvin and Stansbury 2004)

Process-related benefits...		Outcome-related benefits...	
<i>...to stakeholders and governments</i>			
<ul style="list-style-type: none"> ▪ Make policymaking more democratic (Newig 2007; de Bruin et al. 2009; Reed 2008; Beierle 1999; Rowe and Frewer, 2000; Bryson et al. 2012), inter alia by enhancing equity of access to policymaking (Reed 2008; Burton 2009) ▪ Build trust between stakeholders and governments (Rowe and Frewer 2000; Reed 2008; Irvin and Stansbury 2004) and strengthen relationships/collaborations (Reed 2008) ▪ <i>Prevent conflicts or unexpected negative outcomes</i> (de Bruin et al. 2009; Irvin and Stansbury 2004; Rydin and Pennington 2000; Reed 2008; Schively 2007) 		<ul style="list-style-type: none"> ▪ <i>Improve quality/effectiveness</i> of policies (Newig 2007; Beierle 1999, 2002; Burton 2009; Bryson et al. 2012; Innes and Booher 2004) based on knowledge (Charnleya and Engelbert, 2005; Reed 2008), values, and interests articulated by stakeholders (Rydin and Pennington 2000) ▪ <i>Enhance long-term support and active implementation</i> (Newig 2007; Reed 2008) ▪ <i>Build adaptive capacities</i> (Santos et al. 2006; Reed 2008; Burton 2009; Bryson et al. 2012), e.g. by raising awareness (van de Kerkhof 2006; Santos et al. 2006; Schively 2007; Newig 2007), promoting social learning (Reed 2008; Beierle 1999; Schively 2007), and empowering stakeholders (Irvin and Stansbury 2004; Beierle 1999; Reed 2008) 	
<i>...to stakeholders</i>	<i>...to governments</i>	<i>...to stakeholders</i>	<i>...to governments</i>
Stimulate sense of social cohesion/solidary (Burton 2009)	Increase legitimacy (Rydin and Pennington 2000; Renn 2006; Reed 2008; Irvin and Stansbury 2004; Burton 2009; Innes and Booher 2004), <i>acceptance and ownership of and compliance with policies</i> (Newig 2007; Reed 2008; Smith et al. 2009; van de Kerkhof 2006; Rowe and Frewer 2000; Beierle 2002; Pahl-Wostl, 2002; Charnleya and Engelbert 2005)	Influence policies in line with self-interests by articulating subjective values and preferences (Rydin and Pennington 2000; Irvin and Stansbury 2004) and needs (Smith et al. 2009; Irvin and Stansbury 2004; Reed 2008; Innes and Booher 2004)	<ul style="list-style-type: none"> ▪ Maximise synergies between policy options (de Bruin et al. 2009) ▪ Minimise costs of policy implementation (Irvin and Stansbury 2004; Burton 2009)

Benefits most relevant for the present case study are presented in italics

Renn 2006; Santos et al. 2006). In the adaptation policy field, participatory processes struggle in particular with low interest in the topic, often implying that relevant actors do not participate or send representatives with weak mandates (Few et al. 2007; Grothmann et al. 2014). Apart from paying attention to selected benefits highlighted above, we will also revisit the problems typical for adaptation policymaking in sections “Was participation worth the effort? A goal-based assessment” and “Conclusions”.

A key theme in scholarly works and guidance documents is how to design participation processes so that benefits are maximised and problems minimised. Although stakeholder involvement is highly context-specific, scholars tend to agree on the success factors as presented in Table 2.

In the concluding section “Conclusions”, we will revisit the success factors we can confirm with the present case study.

Methods

The aim of this paper is to analyse the influence of the currently unique endeavour of decisional participation between non-state actors, national, and provincial public administrators

Table 2 Success factors for participation processes (based on the literature)

Success factors for participation processes

- Do not use one-size-fits all approaches but rather tailor participation to contextual specifics (Beierle 2002; Few et al. 2007; Newig 2007; Reed 2008; Stoll-Kleemann and Welp 2006)
- Involve stakeholders as early as possible (Conde and Lonsdale in Lim et al. 2004; Gardner et al. 2009; Glicken 2000; Newig 2007; Reed 2008; Stoll-Kleemann and Welp 2006)
- Invite all relevant stakeholders (Conde and Lonsdale in Lim et al. 2004; Few et al. 2007; Glicken 2000; Newig 2007; Reed 2008; Reed et al. 2009; Stoll-Kleemann and Welp 2006) and provide incentives to participate (Irvin and Stansbury 2004; Newig 2007)
- Avoid unrealistic expectations by clarifying the purpose, scope, and rules of participation from the beginning (Conde and Lonsdale in Lim et al. 2004; Few et al. 2007; Newig 2007; Reed 2008; Stoll-Kleemann and Welp 2006)
- Be transparent about process- and content-related issues (Conde and Lonsdale in Lim et al. 2004; Few et al. 2007; Gardner et al. 2009; Glicken 2000; Newig 2007; Reed 2008; Stoll-Kleemann and Welp 2006)
- Do not rely on a single participation method but use a range of methods and tools (Conde and Lonsdale in Lim et al. 2004; Glicken 2000; Reed 2008; Reed et al. 2009)
- Employ professional facilitators to ensure fairness and constructive discussions (Conde and Lonsdale in Lim et al. 2004; Gardner et al. 2009; Irvin and Stansbury 2004; Reed 2008)
- Evaluate and redesign participation continuously (Conde and Lonsdale in Lim et al. 2004; Gardner et al. 2009; Glicken 2000; Rowe and Frewer 2000)

(empirical case study presented in section “Case study: formulating Austrian adaptation policies through stakeholder involvement”) on the formulation and implementation of the Austrian NAS (goal-based assessment in section “Was participation worth the effort? A goal-based assessment”). The methodological debate on how to evaluate environmental policymaking in general (e.g. Crabbé and Leroy 2008; Davidson 2005) or the impacts of participation in particular is not resolved yet (Burton 2009; Mandarano 2008; Pahl-Wostl 2002; Rowe and Frewer 2000). Evaluating the latter is considered as a challenging (Rowe and Frewer 2000), inherently subjective task (Moser 2009) because no widely accepted evaluation approach exists (Bryson et al. 2012). One major methodological issue is concerned with evaluating policies and strategies based on or independent of their own goals (i.e. goal-based or goal-free, see for example Crabbé and Leroy 2008, p. 35; Davidson 2005). We assess the decisional participation process leading to the Austrian adaptation strategy based on its own goals, inter alia because they are ambitious and reflect many expected advantages of adaptation also addressed in the literature (section “Setting the scene and conceptual framework”). The participation process aimed to (i) raise awareness for climate change adaptation and stimulate adaptation actions among affected stakeholders; (ii) provide a platform to discuss the opinions and experiences, needs and preferences, conflicts, and potential solutions; (iii) improve the contents of the Austrian NAS/NAP through the expertise of stakeholders; and (iv) increase the acceptance of the NAS/NAP as well as the commitment for its implementation. These goals were set by the process managers in agreement with the Federal Environment Ministry² who was responsible for formulating the Austrian adaptation strategy. Based on empirical case documented in section “Case study: formulating Austrian adaptation policies through stakeholder involvement”, we will assess in how far these goals have been met in section “Was participation worth the effort? A goal-based assessment”.

Another major methodological issue is concerned with the sources of evidence to be used. As highlighted by Burton (2009) and Yin (2003), robust evaluation and case study designs combine different sources of evidence. The goal-based assessment of the decisional participation process has been based on (i) policy documents, scientific, and grey literature related to the case; (ii) feedback from the participants obtained through two written surveys as well as seven qualitative interviews; and (iii) insights gained by two of the three co-authors who were members of the process management team responsible for designing, organising, and conducting the decisional participation process in close cooperation with the steering group (see Fig. 2).

² Its full name is Federal Ministry of Agriculture, Forestry, Environment and Water Management, abbreviated as BMLFUW.

Regarding the documents analysed, we compared the drafts and final versions of various policy documents and we scrutinised various sectoral studies (e.g. Stickler et al. 2010) as well as an internal review of the implementation of the NAS/NAP (BMLFUW 2015). Regarding the feedback from participants, surveys were conducted at the final event of the decisional participation process in summer 2011 and 1 year afterwards in summer 2012. The first survey was distributed to all 60 participants of the event, and 12 participants (or 20%) answered 12 closed and three open questions. The closed questions focused on the clarity of the goals, transparency, and use of the results. The open questions requested feedback on how well the goals of the participation process have been achieved (section “[Was participation worth the effort? A goal-based assessment](#)” for results) and suggested improvements. In 2012, the meanwhile 100 participants were asked to answer an online questionnaire with ten questions on decision-making procedures, transparency as well as effectiveness of the participation process, and the policy documents finally adopted by the government (response rate 20%). To deepen the overall consistent survey feedback, we conducted seven qualitative face-to-face interviews with participants who knew the process best because they attended all of the workshops matching their expertise (on average, eight out of 16 workshops). These interviews focused mainly on the challenges of participation in formulating the NAS and on the policy documents finally adopted by the government. The interviews were conducted in German and took 60 to 90 min. Notes taken during the interviews were analysed by using a simple coding scheme reflecting the key issues of this paper (for details, see Lexer et al. 2013).

Since the evidence stemming from the document analysis, the surveys, and the interviews converged convincingly to the findings presented below, we are confident that our case study is analytically generalizable to similar circumstances (for a discussion on statistical versus analytical generalizability, see Yin 2003, p. 31ff). However, comparing similar cases in order to enhance generalizability (Schively 2007; Yin 2003, pp. 40–47) is not an option because the Austrian case of formulating its adaptation strategy by means of decisional participation is still unique throughout Europe (EEA 2014).

Case study: formulating Austrian adaptation policies through stakeholder involvement

In 2007, the Federal Environment Ministry initiated the formulation of a NAS and a NAP. By doing so, it responded to respective calls from the European Commission (EC 2007) and the scientific community. Since Austria is a federal state in which sub-national provinces hold legislative powers for a number of adaptation issues, the Environment Ministry had to involve not only other federal ministries but also the nine

Austrian provinces. The federal and provincial members of these units did not negotiate in closed circles but were invited to join a decisional participation process alongside non-state stakeholders. Based on scholarly input and recommendations, the Ministry developed a policy paper. By making use of an intense decisional participation process, it then revised the policy paper and developed it further into a draft adaptation strategy (NAS) and a detailed draft action plan (NAP) (sections “[Decisional participation](#)” and “[Was participation worth the effort? A goal-based assessment](#)”). All steps of the NAS/NAP development process were presented at so-called “informational workshops” and documented in the Internet. The Austrian Council of Ministers finally adopted both policy documents in October 2012, and the Conference of Provincial Governors (*Landeshauptleutekonferenz*) did so in May 2013. The approach of adopting NAS and NAP simultaneously is rather unique, and it partly explains the 6-year process.

Like other NASs, the Austrian adaptation strategy aims to enhance resilience regarding climate change impacts through a national framework that specifies expected impacts, goals, and adaptation options (BMLFUW 2012a:124). While the NAS focuses mainly on impacts and goals, the NAP (BMLFUW 2012b) provides details on 132 adaptation measures for 14 themes comprising about 400 pages. For each adaptation measure, it lists responsibilities, instruments to be used for mainstreaming adaptation, time frames, and required resources. Since the NAP has no assigned budget, its implementation depends on mainstreaming adaptation into existing policies and on reallocating existing resources for adaptation purposes (BMLFUW 2012a:124). The NAS also specifies a 3-year reporting cycle. A first report assesses the progress made in implementing adaptation measures with a number of sectoral indicators and an online survey answered by relevant policymakers (BMLFUW 2015; section “[Conclusions](#)”). Based on this report, a first update of the adaptation strategy is envisaged for 2017.

As we show in the following sub-sections, the Austrian government made use of the full spectrum of stakeholder involvement including informative, consultative, and decisional involvement formats. In the sections “[Was participation worth the effort? A goal-based assessment](#)” and “[Conclusions](#)”, we mainly focus on the most ambitious form of stakeholder involvement, the decisional participation process (“[Decisional participation](#)”).

Informative involvement

The Austrian Environment Ministry informed state and non-state actors about the progress made in formulating the NAS with leaflets and reports and, more importantly, in six so-called “informal workshops” hosted between 2007 and 2011 (see Fig. 1). In addition, the Environment Agency Austria (EAA) launched a website

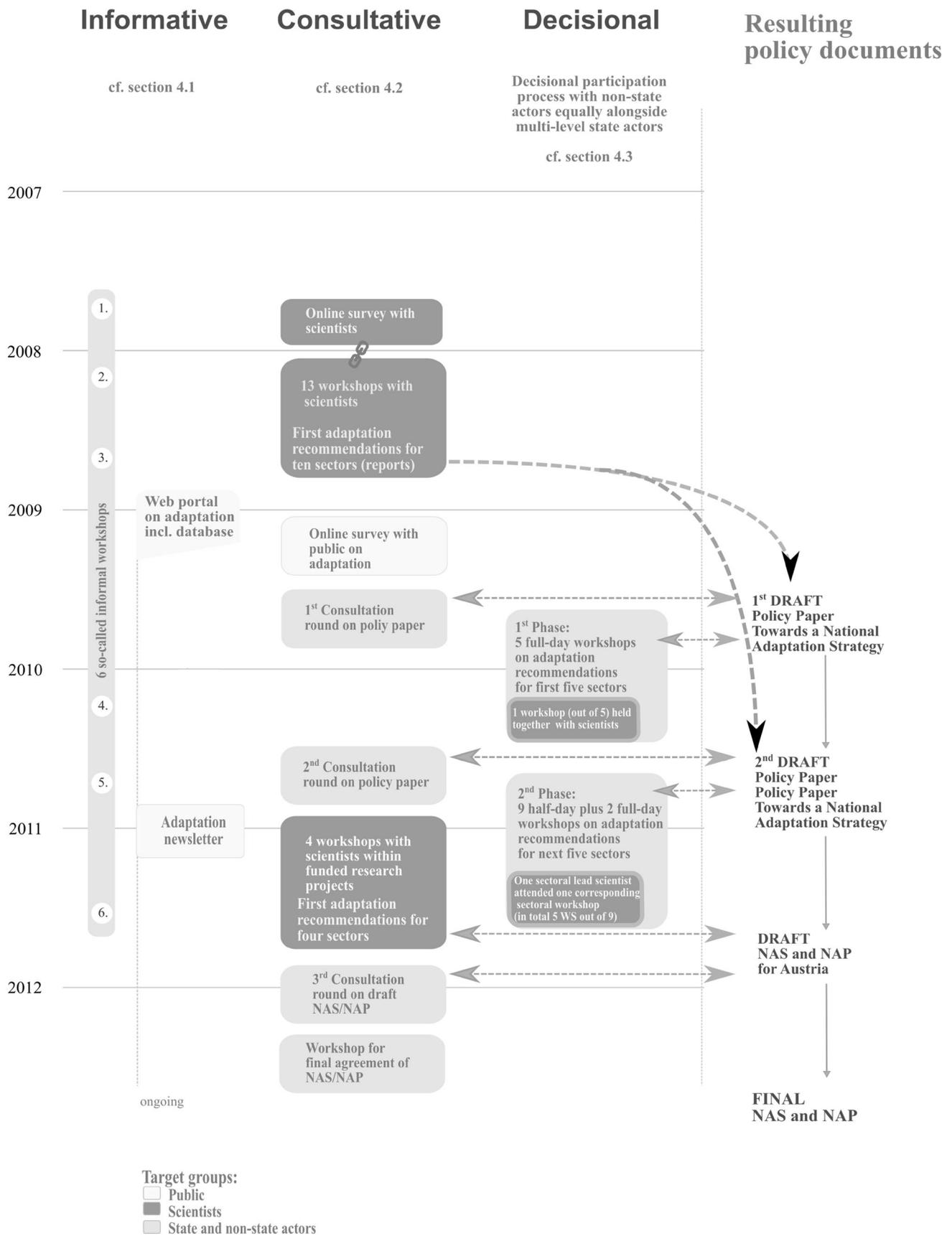


Fig. 1 Stakeholder involvement in formulating the Austrian adaptation strategy

on adaptation in 2009 (www.klimawandelanpassung.at), and it began to circulate an adaptation newsletter three to four times a year starting in 2011. By definition, these activities did not shape the policy documents but they did provide basic information about adaptation in Austria to everyone interested in the topic. Some of these activities were still ongoing at the time of writing in 2017.

Consultative participation

Various actor groups were consulted repeatedly by means of different formats (for an overview, see Fig. 1) Scientists played a key role in the consultative phase, mainly to ensure that other forms of stakeholder involvement and the subsequent formulation of the NAS/NAP are based on sound evidence. For ten well-researched sectors (i.e. agriculture, forestry, water management, energy, tourism, disaster risk reduction, transport, biodiversity/nature conservation, buildings/construction, health), the Environment Ministry commissioned a consortium of three organisations to conduct online surveys among a network of approximately 500 Austrian researchers (i.e. climate scientists as well as other natural, technical, and social scientists from various backgrounds) with the aim to identify first adaptation measures. Ten to 15 scientists were then invited to sectoral workshops in order to develop the survey findings further into sets of adaptation options. The options recommended by scientists were the main input for the policy paper and the decisional participation process in which scientists were involved only marginally (section “Decisional participation”). For four less-researched adaptation themes (i.e. spatial planning, civil protection, urban areas, and economic aspects of adaptation), the Environment Ministry funded thematic research consortia that elaborated adaptation recommendations.

Between August and November 2009, the public was invited to file an online survey on adaptation priorities and measures. While most of the 1000 respondents indicated that they were well informed about the causes and effects of climate change, only 50% felt equally well informed about adaptation. Thus, many comments concerned not only adaptation but also mitigation and even other environmental policies. Recommendations on adaptation options were summarised sectorally in a handout and distributed at the events of the decisional participation process (section “Decisional participation”). They inspired the discussions and recommendations of the decisional workshops (for details on the survey, see Stickler et al. 2010).

Between 2009 and 2012, the Environment Ministry invited more than 40 state (federal and provincial public administrators) and non-state (mainly social partners, NGOs, and businesses) actors to give written feedback on two consecutive policy paper drafts and the draft NAS/NAP that was

formulated through decisional participation (section “Decisional participation”). Stakeholder participation was again considerable, although decreasing from round to round. In the first round, 37 organisations commented on the first policy paper draft. Some of the comments entered the draft documents discussed at the decisional participation workshops. In the last round, 30 organisations followed the invitation to comment on the draft NAS/NAP. This led to small changes in the final policy documents.

Overall, the influence of the consultation activities was strongest on the first policy paper draft, and it helped to prepare the ground for more extensive decisional participation, the core of the participatory NAS formulation process.

Decisional participation

The decisional participation of non-state stakeholders alongside governmental actors from federal ministries and the provinces consisted of 16 workshops hosted between summer 2009 and summer 2011 (see Fig. 1). The Environment Ministry commissioned the EAA to design and organise the process, chair the meetings, and communicate with participants (see Fig. 2). The EAA process management team and the professional facilitators it hired were part of a steering group that also involved representatives from the Environment Ministry (head of unit and senior adaptation expert), and the provinces. The steering group discussed and decided all key aspects of the participation process, among them the design of each workshop, the stakeholders to be invited, documents to be distributed, and how to cope with the challenges and (political) issues that emerged during the process. The main goals of the decisional participation process (see section “Methods”) were communicated to all participants early on.

The participants were selected based on existing relations and guided Internet research. High-level representatives of the selected institutions (e.g. heads of departments; in the first phase, 50; in the second phase, 100) were invited to participate by e-mail and phone. Although calling the potential participants was time consuming, personal contact had considerable mobilising effects so that only two institutions finally declined to participate. To guarantee continuity among the participants, all institutions were encouraged to nominate an expert and a substitute, both having the mandate to speak on behalf of the organisation. These nominated representatives were invited to all the general workshops and had the possibility to nominate further experts for specific sectoral workshops. While scientists played a key role during the consultative phase of the participation process in preparing and refining scientifically sound inputs to the decisional workshops (see Fig. 1, for an overview), they only participated marginally as decisional actors in the latter. About half of the participants of the decisional workshops

Organisation of decisional participatory process

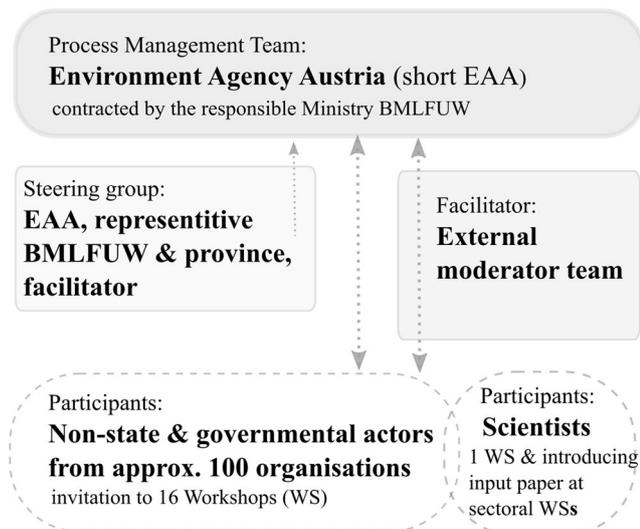


Fig. 2 Organisation of the decisional participation process

represented social and environmental civil society organisations (such as the Red Cross Austria and Global 2000) and social partners (mainly from the Chamber of Agriculture and the Chamber of Commerce). About a quarter were federal, provincial, and local government actors (i.e. Austrian Association of Cities and the Austrian Association of Municipalities), and another quarter were business representatives interested in climate issues (e.g. from the Austrian Hail Insurance).

Since the decisional workshops started about 18 months after the kick-off of the NAS process, namely when the scientific input documents were available (see Fig. 1), they were not able to shape the thematic cornerstones of the NAS. Instead, they decided on the details of sectoral adaptation measures (e.g. instruments for mainstreaming, responsibilities, required resources) based on two policy paper drafts that were strongly influenced by scientists (see section “[Consultative participation](#)”). The policy paper drafts for most sectors were circulated among the participants, and first comments from the consultation rounds were incorporated before the workshop series started (see section “[Consultative participation](#)”). The decisional workshops combined presentations by scientists and other experts, working groups, and plenary discussions on adaptation options. In a first phase, five sectors of the NAS/NAP (i.e. agriculture, forestry, water management, tourism, energy) were discussed in a kick-off workshop, three workshops on adaptation options, and a concluding workshop together with scientists. The discussion of policy options was organised sectorally in parallel sessions. In a second phase, the remaining five themes of the NAP (i.e. disaster risk

reduction, transport, biodiversity/nature conservation, buildings/construction, and health) were discussed in two half-day workshops for most sectors so that the participants could attend them all. At the first sectoral workshops, adaptation options were presented by the lead authors of the scientific input document (see Fig. 1). The up to 30 workshop participants then discussed the adaptation options in self-organised working groups. To give an overview of the discussion results, the working groups of a workshop were joined in a plenary session and all the workshop results were discussed in a concluding conference with 60 participants.

The workshop discussions were documented with minutes, and they led to a revision of the draft policy paper. The sectoral collections of adaptation options were published on a website and forwarded to the Environment Ministry to be included one-on-one in the subsequent NAP that finally underwent political approval.

Was participation worth the effort? A goal-based assessment

Here, we discuss to what degree the participation process was able to meet its own goals, i.e. to raise awareness for and stimulate adaptation activities (“[Raise awareness for and stimulate adaptation activities](#)”), facilitate exchange and consensus finding (“[Facilitate exchange and consensus finding](#)”), improve the contents of the adaptation strategy (“[Improve the contents of the adaptation strategy](#)”), and increase the acceptance of and commitment to these policy documents (“[Increase the acceptance of and commitment to adaptation implementation](#)”). By doing so, we combine stakeholder feedback gathered via two surveys and seven qualitative interviews (for details, see section “[Methods](#)”) with own insights, and the first Implementation Report of the Environment Ministry (BMLFUW 2015).

Raise awareness for and stimulate adaptation activities

When the participation process started in 2009, climate change mitigation was high on the political agenda in Austria but adaptation was not being addressed (Stickler et al. 2010). At the beginning of the participation process, many participants were not able to distinguish between mitigation and adaptation properly. The process management team addressed this knowledge gap with presentations, handouts, and expert interviews in the plenaries. Towards the end of the process, 80% of the participants from all societal segments stated in surveys and interviews that their awareness and knowledge on adaptation issues had increased significantly due to the participation process. This also applies to representatives from the highly vulnerable tourism sector (Steinger et al. 2014). At the beginning,

most key actors were largely unaware of climate change adaptation. In the course of the participation process, the responsible Economic Ministry initiated several research projects on tourism under the influence of climate change (e.g. BMFWF 2013). Other state and non-state participants (in particular, environmental NGOs) even began disseminating information on adaptation options for various sectors through their magazines, newsletters, and websites.

Participation also had significant effects in the nine Austrian provinces where nobody was responsible for adaptation at the beginning of the process. To join the workshops, all provincial governments expanded the responsibilities of their climate change mitigation units to adaptation, and all nine provinces attended most of the workshops with at least one representative. As two interviewees mentioned, this helped to raise awareness for adaptation throughout provincial governments so that eight out of nine provinces have started working on their own adaptation policies. In summer 2013, Upper Austria was the first province to adopt a provincial adaptation strategy, followed by Styria in autumn 2015 and Vorarlberg in spring 2016. Other provinces (Tyrol, Lower Austria, and Vienna) have expanded the scope of their mitigation strategies to adaptation issues. Although pushing adaptation onto the provincial agendas may have been possible with vertical policy coordination between federal and provincial levels as usually employed in a NAS (in particular, in federal countries such as Austria; see Bauer et al. 2012; Casado-Asensio and Steurer 2014), decisional participation had obviously similar effects.

While the participation process succeeded in raising awareness for adaptation and stimulating adaptation activities among those who participated, some of our interviewees criticised a lack of awareness among the key actors who did not participate, in particular, high-level policymakers. The following facts nourish this second-hand assessment: first, high-level policymakers were invited to participate several times but they did not attend personally and instead sent staff members without mandate to represent the institution; second, the political approval process of the NAP on the national level took more than 8 months, although no changes in the policy documents were made; and third, although participants were very concerned about the protracted political approval process (fearing in particular that decisional participation will be overruled politically), high-level policymakers from the Environment Ministry did not address these concerns appreciatively and/or transparently but they simply referred to the Austrian governmental program 2008–2013 that required formulating an adaptation strategy in cooperation with stakeholders (Republik Österreich 2008).

Regarding the first aim, we conclude that the participation process raised awareness for adaptation among those who participated but that it was not possible to achieve this goal

among high-level policymakers who did not participate—this is a key weakness of many participation processes (Ernst and van Riemsdijk 2013; Few et al. 2007; Glicken 2000; Irvin and Stansbury 2004). The lack of awareness for adaptation among high-level policymakers now limits the implementation of the NAS (section “[Increase the acceptance of and commitment to adaptation implementation](#)”). We can only speculate that a stronger political commitment would have motivated at least some participants to send high-level rather than low-level representatives who could have acted as negotiators rather than as listeners or watchdogs (Grothmann et al. 2014).

Facilitate exchange and consensus finding

Stakeholder feedback expressed in surveys and interviews valued the positive and constructive working atmosphere of the participation process when working on draft versions of the NAS/NAP. Nevertheless, controversial discussions that were difficult to appease emerged repeatedly, particularly when stakeholders tried to protect their self-interests. Two controversies highlighted by the interviewees illustrate this “pitfall of participation” (Grothmann et al. 2014; Lebel et al. 2010) as follows: first, stakeholders from the building sector often acted as lobbyists that aimed to protect home owners and tenants from any new requirements (such as increasing the rate of building refurbishment). This made it difficult to find consensus on meaningful adaptation measures in the building sector, and other participants we interviewed criticised this as inadequate behaviour. Second, a controversy emerged on addressing biodiversity prominently in a stand-alone chapter of the NAS or not. Representatives of the agriculture and forestry sectors wanted to address biodiversity as a cross-cutting issue in several chapters because (according to one interviewee from another sector) they feared that “the adaptation strategy could be used to pursue biodiversity policy through the backdoor”. The agriculture and forestry sector representatives also criticised the input document on biodiversity as “too academic”. The facilitator then initiated and moderated an ad hoc dialogue between critics, lead scientist, and the Environment Ministry. The dialogue led to a toned-down draft chapter on biodiversity that contained 13 instead of 23 adaptation recommendations, and they were finally agreed upon by all participants.

The biodiversity example raises the question of how to best integrate scientific evidence in a participation process. Since some participants criticised the scientific input papers as too scientific (or detailed) and others as too vague, we conclude that consulting scientists separate from decisional stakeholder participation made it difficult to tailor the input of the former to the expectations of the latter. Based on this and similar findings in the literature (Bauer et al. 2012; Hanger et al. 2013; Lemos et al. 2014), a stronger science-

policy interface would have eased a more efficient drafting of adaptation options and recommendations. Nevertheless, the stakeholders surveyed were overall satisfied with the role science played in the participation process and its outputs: they regarded scientists as very active and the formulation process as science-driven in a positive sense.

A unique feature of the case study is that the political coordination between ten federal ministries and all nine provinces took place together with the involvement of non-state stakeholders: they all cooperated in the course of the decisional participation process. When other countries involve non-state stakeholders, they do this not only separately from policy coordination but usually limit it to consultation on politically coordinated policy documents (Bauer et al. 2012; EEA 2014). An advantage of the setup employed in Austria was that awareness raising among a broad variety of stakeholders and policy coordination was accomplished efficiently in parallel in a single process. A disadvantage was that high-level controversies over who is responsible for what were difficult to solve in the “public arena”. Two thirds of all responses to the questionnaires ($n = 21$) and two interviewees pointed out that an inter-ministerial working group and a vertical coordination mechanism would have helped solving responsibility disputes more easily. Another disadvantage was that the participation process seemed to absorb the need for a separate policy coordination unit. While inter-ministerial coordination units emerged in many other countries and usually accompany not only the formulation but also the implementation of adaptation strategies (Bauer et al. 2012), the implementation of the Austrian NAS lacks institutionalised coordination (section “Conclusions”).

Already during the participation process, it became obvious that institutions with strong financial backing (such as the Chamber of Commerce) contributed generally more personnel resources than those with limited budgets (such as social and environmental NGOs). Furthermore, the majority of the participants came from Vienna (the venue of most of the workshops) because no reimbursement for travel was offered. Those who did not follow the invitation to the workshops were asked to comment on draft versions of the policy paper in writing, but only two organisations did so. This shows that a lack of reimbursement (for time and/or travel) limits the circle of participants not necessarily to those who can contribute and/or learn the most.

Overall, we conclude that participation facilitated exchange and consensus finding among a broad variety of stakeholders, but with some problems along the way that could have been avoided. First, the circle of participants could have been widened by offering reimbursement. Second, the interaction between scientists and the decisional participants could have been improved by better integrating the former as participants in the decisional workshops (e.g. by applying knowledge brokerage strategies such as co-

production; Michaels 2009). Third, merging policy coordination with participation in the formulation phase should not imply a lack of coordination once the participation process is terminated. Nevertheless, the participation process helped to establish an “adaptation community” that still interacts regularly, albeit often through Environment Ministry invitations (e.g. to support NAS monitoring and the self-assessment, as well as to get the latest information on the NAS/NAP process at informal workshops).

Improve the contents of the adaptation strategy

According to the surveyed and interviewed participants, the contents of NAS and NAP have improved through the participation process, and they are generally satisfied with the final policy documents. They confirmed that most stakeholders “contributed on the technical level as experts and not as official representatives” (for exceptions, see section “Facilitate exchange and consensus finding” on the building sector).

We agree that the participation process improved the content of the NAP, although rather in terms of details added than substance altered. We can illustrate this assessment with a typical example from the forestry sector. The scientific input document on adaptation in forestry suggested 11 (partly redundant) measures presented in relatively brief tables on few pages. In the first draft of the policy paper prepared by the Environment Ministry, the 11 measures were re-clustered to nine measures without losing contents. Furthermore, the measures were elaborated in a more detailed running. The first written consultation round enriched the nine measures with further details, and another measure was added. In the decisional participation process, the measures were enriched one more time with further details and “re-organised” to eight measures, again without altering their original substance. The second and third consultation rounds led to minor editorial improvements. The final NAP contains the eight measures more or less as suggested by the decisional participation process. All this improved mainly the detailed description rather than the substance of the measures originally proposed by scientists.

Apart from such improvements, some sectoral differences can be noted. Although participation helped to raise awareness for adaptation in the tourism sector (see section “Raise awareness for and stimulate adaptation activities”), it nevertheless failed to develop adequate adaptation options. This was due to a comparatively weak scientific input that focused mainly on mitigation instead of adaptation, and a lack of expertise among workshop participants. Unfortunately, sectoral representatives (such as the Austrian hotel association) were not interested in participating in the decisional participation process or attended only one workshop (e.g. Austria Tourism, Chamber of Commerce/Tourism). Those

who participated were representatives of the Ministry of Economy/Tourism and actors from provinces. Consequently, they proposed only three adaptation options for the tourism sector. Since the formulation of the NAP relied solely on scientific input and the participation of sectoral actors without top-down interference, the final NAS/NAP does not go beyond these three options. This is remarkable because tourism (in particular, snow-dependent winter tourism) is one of the most important and, at the same time, most vulnerable sectors of the Austrian economy (Steininger et al. 2014). Based on this example, we conclude that the performance of participatory processes can only be as good as the expertise of those participating and the (scientific) input provided to them. If both domestic scientists and sectoral participants fail to address adaptation adequately, the only solution is to contract additional scientists from other countries (e.g. Switzerland) that can provide the lacking expertise. Facilitating this solution was in the hands of the process management team, but it failed to do so because it realised the problem too late in the process.

Besides the expertise of the participants, group dynamics also resulted in sectoral performance differences. Although the same methods were employed across all workshops, the latter differed in terms of atmosphere and conflict handling (for examples, see section “[Facilitate exchange and consensus finding](#)”). These differences required flexibility in deviating from standard formats, e.g. by using additional methods. Even when a method is used successfully in dozens of workshops, additional approaches may be needed in others to secure satisfactory outputs (Reed 2008). This need for flexibility in managing human interactions is rarely emphasised in the participation literature (Wesselink et al. 2011).

Overall, we conclude that the participation process enriched the contents of the NAS/NAP. However, as the tourism sector demonstrates, meagre output cannot be avoided without top-down intervention when both scientists and stakeholders lack expertise on climate change adaptation in a particular sector. With regard to the more productive workshops that enriched long lists of measures on more than 400 pages in the NAP, all interview partners see their accomplishment also as their main weakness: since the long lists of measures lack clear priorities, they may inspire but, at the same time, hinder the implementation of concrete measures. This brings us to the final goal of the participation process that is closely intertwined with the three others.

Increase the acceptance of and commitment to adaptation implementation

Based on the overall positive stakeholder feedback and the conclusions in the literature (see section “[Setting the scene and conceptual framework](#)”), participation can be expected to facilitate not only the formulation but also the

implementation of policies, inter alia by increasing the acceptance of and commitment to the measures agreed upon. However, this assumption is difficult to examine for at least two reasons. First, the stakeholder feedback has nothing to say about implementation because it was collected prior to the formal approval of the NAS. We solve this by drawing on own observations and by analysing a first Implementation Report published by the Environment Ministry (BMLFUW 2015). Second, it is impossible to determine whether implementation would have been similar without participation. Nevertheless, we can review a few significant implementation activities and discuss their linkages to participation.

While the participation process has raised awareness for and stimulated adaptation activities among participants (in particular among provincial administrators, see section “[Raise awareness for and stimulate adaptation activities](#)”), the same does not apply to those who did not participate. Since this latter group usually comprises high-level policymakers who are responsible for implementing adaptation measures, the fourth goal of the participation process was partly beyond reach. As we have shown in section “[Raise awareness for and stimulate adaptation activities](#)”, high-level policymakers lack awareness about adaptation necessities and have demonstrated that limited commitment to the NAS more than once. Regarding the literature reviewed in section “[Setting the scene and conceptual framework](#)”, we can confirm that one of the main challenges of participation is how to involve the most relevant stakeholders, in particular high-level policymakers (Ernst and van Riemsdijk 2013; Few et al. 2007; Glicken 2000; Brown et al. 2009; Grothmann et al. 2014; Margerum 2002; Newig and Fritsch 2009; Reed 2008; Renn 2006; Santos et al. 2006; Irvin and Stansbury 2004). What we cannot confirm is that participation can delay decision-making (Grothmann et al. 2014; Reed 2008; Renn 2006). Our case suggests that it was not participation but the non-participation of high-level policymakers that delayed decision-making (see also section “[Raise awareness for and stimulate adaptation activities](#)”).

The first Implementation Report published by the Environment Ministry (BMLFUW 2015) gives cursory insights about the implementation of the NAP since 2012. According to the report, the implementation of adaptation measures is the most advanced in spatial planning, water management and energy, and the least advanced in civil protection, urban areas, and tourism. Considering that the tourism sector remained inactive even though it was addressed rather unsuccessfully in the participation process (see section “[Improve the contents of the adaptation strategy](#)”) and that spatial planners began addressing adaptation concerns although they did not participate in the decisional workshops (for an explanation, see section “[Consultative participation](#)”), we conclude that further assessments would be required to assess the influence

of participation on policy implementation in the case of the Austrian NAS/NAP. We can only suspect that involving high-level policymakers (see above, see also Webler et al. 1995) would have increased acceptance and commitment for making actual implementation decisions.

Overall, these findings confirm what has been found for all kinds of multi-sectoral policy strategies across Europe: with regard to sectors reluctant towards a particular policy integration claim (here climate change adaptation), multi-sectoral strategies can at best serve as communication and awareness raising instruments that are usually not in the position to significantly change policies of non-environmental sectors (Casado-Asensio and Steurer 2014, 2015; Nordbeck and Steurer 2016). What we add here is that in the Austrian case, decisional participation cannot change this, at least not when it fails to engage high-level policymakers (as it often does) or fails to build the momentum among those participating to develop bottom-up pressure on high-level policymakers.

Conclusions

This paper describes various forms of stakeholder involvement that began in 2007 and that led to the Austrian NAS/NAP in 2012. We analysed in particular to what extent the decisional participation process between 2009 and 2011 met its own goals, i.e. to (i) raise awareness for and stimulate adaptation activities, (ii) facilitate exchange and consensus finding, (iii) improve the contents of the adaptation strategy, and (iv) increase acceptance of and commitment for implementation. We conclude that the participation process met the first three goals at least in some sectors but had problems with the most ambitious fourth goal, inter alia because it was not possible to raise awareness for adaptation issues also among high-level policymakers by engaging them in the participation process. As our literature review in section “Setting the scene and conceptual framework” shows, this is not a case-specific but a common challenge of participation (Ernst and van Riemsdijk 2013; Few et al. 2007; Glicken 2000; Irvin and Stansbury 2004). An important question for future research is whether this is a common design flaw that could be corrected or whether it is a genuine weakness of participatory policymaking virtually impossible to overcome. If exceptionally good practices suggest that the former is the case, the subsequent question to explore is how to improve the process design accordingly. If the latter is the case, the subsequent question to explore is how those managing participation processes should handle this weakness. In the remainder of this section, we now draw three conclusions from the main findings that may also be helpful in improving the implementation of adaptation policies formulated through decisional participation.

First, adaptation policymaking is challenging, inter alia because its multi-sectoral character requires effective coordination horizontally across many sectors and vertically across levels of government (Bauer et al. 2012). As our case study suggests, policy coordination can be achieved in the context of a decisional participation process that also involves non-state actors. However, the price to pay for joining the two distinct tasks is that resolving political controversies tends to become more complicated in the “public arena” and that formal coordination between government actors stops with the participation process because it was not institutionalised otherwise. Of course, policy coordination (horizontal and/or vertical) could have been established in parallel to or after the participation process, but the fact that this did not happen suggests that policymakers regarded coordination as accomplished via decisional participation. Since participation ended with the formulation phase, this implies that ongoing coordination is absent in the implementation of the adaptation strategy. In concurrence with Bizikova et al. (2014), we conclude that participatory and coordinative governance mechanisms should not substitute but rather complement each other at each stage of the policy cycle because they serve different purposes.

Second, how to establish an effective science-policy interface is a key challenge often addressed for policymaking in general (Dilling and Lemos 2011; Moser 2009; Reinecke et al. 2013) but not for participatory adaptation policymaking in particular. Should scientists be involved as one among many stakeholder groups, should their expertise be used to prepare the ground for participation, or can these two options be combined (see section “Facilitate exchange and consensus finding”)? What if scientific input is inadequate (see section “Improve the contents of the adaptation strategy”)? Regarding the first question, we have shown that the distinct role scientists played in the Austrian case by preparing scientific input papers has been well received by the participants, but the separation of science from the participation of practitioners made it sometimes difficult to tailor scientific input towards the expectations of the participants. Our findings suggest basing participation processes on scientific evidence and also closely involving scientists as key stakeholders in decisional participation so that they can explain and adjust their input. So-called co-production processes between stakeholders and scientists aiming to develop “usable information” which is tailored to the needs of users and that contribute directly to the design of policies (versus “useful information” which is defined by the scientists’ perception of users’ needs) (Lemos Morehouse 2005; Lemos and Rood 2010) would have been able to solve this issue. In case scientific inputs are inadequate, we conclude that those managing the participation process have the responsibility to intervene in time (e.g. by organising additional input from other scientists), even if this causes delays. As

we have shown, not addressing this problem has serious repercussions not only for the formulation but also for the implementation of policies.

Third, we can confirm several of the success factors of participation summarised in Table 2 in section “[Setting the scene and conceptual framework](#)”, and we can add our own recommendations to two of them. We can confirm that transparent procedures, clear rules, and roles are important for successful participation, in particular with regard to managing expectations and stakeholder satisfaction. However, we also found that rule-based participation should not suppress flexibility that may be necessary to cope with conflictual situations on an ad hoc basis, but that adjusting participation formats to particular stakeholder needs and ensuring fairness at the same time requires professional facilitators. We can also confirm that mobilising and involving all important stakeholders is another important success factors. What we add is that this may require financial support, in particular when key stakeholders (such as NGOs) cannot afford to participate.

Overall, we conclude that (decisional) participation in the context of a NAS had noteworthy effects in terms of awareness raising, capacity building, and facilitating exchange, but that it was not able to overhaul the well-documented weaknesses of enhancing the implementation of multi-sectoral policy strategies. Among them are foremost a lack of coordination beyond the environmental domain and a lack of effective policy implementation (e.g. Casado-Asensio and Steurer 2014, 2015; Nordbeck and Steurer 2016). Perhaps the benefits of participation could be extended beyond the policy formulation phase, but this may require extending participation itself into new forms of “participatory implementation”. The fact that even advanced forms of participation are usually limited to formulating non-binding policies or strategies suggests that high-level policymakers have reservations regarding serious interventions about what they actually do.

Acknowledgements Open access funding provided by University of Natural Resources and Life Sciences Vienna (BOKU). Andrea Prutsch and Therese Stickler thank the Climate and Energy Fund for funding the decisional stakeholder involvement process and other formats accompanying the making of the NAS. We are grateful to all the stakeholders for participating in the decisional participation process. Reinhard Steurer thanks the ACRP for funding the ASAP project (B566475) concerned with “Adaptation strategies and policies at different levels of government”. The ASAP project produced insights on the limitations of (national) adaptation strategies that enriched the present paper substantially. Furthermore, we like to thank the two anonymous reviewers for their comments and suggestions that helped us to improve this article.

Open Access This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

References

- Amstein SR (1969) A ladder of citizen participation. *JAIP* 35:216–224. doi:[10.1080/01944366908977225](https://doi.org/10.1080/01944366908977225)
- Bauer A, Feichtinger J, Steurer R (2012) The governance of climate change adaptation in 10 OECD countries: challenges and approaches. *J Environ Pol Plan* 14(3):279–304. doi:[10.1080/1523908X.2012.707406](https://doi.org/10.1080/1523908X.2012.707406)
- BMLFUW (Eds.) (2012a) Die österreichische Strategie zur Anpassung an den Klimawandel. Teil 1 – Kontext, Wien
- BMLFUW (Eds.) (2012b): Die österreichische Strategie zur Anpassung an den Klimawandel. Teil 2 – Aktionsplan, Wien
- BMLFUW (Eds.) (2015): Anpassung an den Klimawandel in Österreich: Fortschrittsbericht, Wien
- Beierle T (1999) Using social goals to evaluate public participation in environmental decisions. *Policy Studies Review* 16(3):75–103
- Beierle T (2002) The quality of stakeholder-based decisions. *Risk Anal* 22:4. doi:[10.1111/0272-4332.00065](https://doi.org/10.1111/0272-4332.00065)
- Biesbroek GR, Swart R, Carter T, Cowan C, Henrichs T, Mela H, Morecroft M, Rey D (2010) Europe adapts to climate change: comparing national adaptation strategies. *Glob Environ Change* 20:440–450. doi:[10.1016/j.gloenvcha.2010.03.005](https://doi.org/10.1016/j.gloenvcha.2010.03.005)
- Bizikova L, Crawford E, Nijnik M, Swart R (2014) Climate change adaptation planning in agriculture: processes, experiences and lessons learned from early adapters. *Mitig Adapt Strateg Glob Change* 19:411–430. doi:[10.1007/s11027-012-9440-0](https://doi.org/10.1007/s11027-012-9440-0)
- Brown A, Harvey A (2009) Learning from stakeholders: some lessons from participatory research and climate change adaptation in practice. *IOP Conf Ser* 6:392014. doi:[10.1088/1755-1307/6/39/392014](https://doi.org/10.1088/1755-1307/6/39/392014)
- Bryson JM, Quick KS, Slotterback C, Crosby BC (2012) Designing public participation processes. *Public Adm Rev* 73:23–34. doi:[10.1111/j.1540-6210.2012.02678.x](https://doi.org/10.1111/j.1540-6210.2012.02678.x)
- Burton P (2009) Conceptual, theoretical and practical issues in measuring the benefits of public participation. *Evaluation* 15:263–284. doi:[10.1177/1356389009105881](https://doi.org/10.1177/1356389009105881)
- Burton P, Mustelin J (2013) Planning for unavoidable climate change: is public participation the key to success? *Urban Policy Res* 31(4): 399–415. doi:[10.1080/08111146.2013.77819](https://doi.org/10.1080/08111146.2013.77819)
- Casado-Asensio J, Steurer R (2014) Integrated strategies on sustainable development, climate change mitigation and adaptation in Western Europe: communication rather than coordination. *J Publ Pol* 34(3): 437–473. doi:[10.1017/S0143814X13000287](https://doi.org/10.1017/S0143814X13000287)
- Casado-Asensio J, Steurer R (2015) Bookkeeping rather than policymaking: national climate mitigation strategies in Western Europe. *Clim Pol* 16(1):88–108. doi:[10.1080/14693062.2014.980211](https://doi.org/10.1080/14693062.2014.980211)
- Chamleya S, Engelbert B (2005) Evaluating public participation in environmental decision-making: EPA’s superfund community involvement program. *J Environ Manag* 77:165–182. doi:[10.1016/j.jenvman.2005.04.002](https://doi.org/10.1016/j.jenvman.2005.04.002)
- Conde C, Lonsdale K (2004) Engaging stakeholders in the adaptation process. adaptation policy frameworks for climate change. Adaptation policy framework for climate change: developing strategies, policies and measures, Edited by Lim B, Spanger-Siegfried E, Burton I, Malone E. L, Huq S, Cambridge University Press. 207–223. ISBN 0 521 61760
- Crabbé A, Leroy P (2008) The handbook of environmental policy evaluation. Earthscan, London, 202 p. isbn:978-1-84407-618-5
- Cuppen E, Breukers S, Hisschemöller M, Bergsma E (2010) Q methodology to select participants for a stakeholder dialogue on energy options from biomass in the Netherlands. *Ecol Econ* 69:579–591. doi:[10.1016/j.ecolecon.2009.09.005](https://doi.org/10.1016/j.ecolecon.2009.09.005)
- Davidson EJ (2005) Evaluation methodology basics: the nuts and bolts of sound evaluation. Thousand Oaks: Sage. doi:[10.4135/9781452230115](https://doi.org/10.4135/9781452230115)

- De Bruin K, Dellink RB, Ruijs A, Bolwidt L, Van Buuren A, Graveland J, De Groot RS, Kuikman PJ, Reinhard S, Roetter RP, Tassone VC, Verhagen A, Van Ierland EC (2009) Adapting to climate change in the Netherlands: an inventory of climate adaptation options and ranking of alternatives. *Clim Chang* 95(1–2):23–45. doi:10.1007/s10584-009-9576-4
- Dilling L, Lemos MC (2011) Creating usable science: opportunities and constraints for climate knowledge use and their implications for science policy. *Glob Environ Chang* 21(2011):680–689. doi:10.1016/j.gloenvcha.2010.11.006
- EC – European Commission (2007) Green paper from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: adapting to climate change in Europe—options for EU action, 354 final. Commission of European Community, Brussels
- EC – European Commission (2009) Adapting to climate change: towards a European framework for action, White Paper, 147, Brussels
- EC – European Commission (2013a) An EU strategy on adaptation to climate change. COM (2013) 216 final. Communication from the Commission, Brussels
- EC – European Commission (2013b) Guidelines on developing adaptation strategies. Staff working document 134 final, Brussels
- EEA (2014) National adaptation policy processes in European countries—2014. Technical report 4/2014
- Ernst KM, van Riemsdijk M (2013) Climate change scenario planning in Alaska's National Parks: stakeholder involvement in the decision making process. *Appl Geogr* 45:22–28. doi:10.1016/j.apgeog.2013.08.004
- Few R, Brown K, Tompkins EL (2007) Public participation and climate change adaptation: avoiding the illusion of inclusion. *Clim Pol* 7(1):46–59. doi:10.1080/14693062.2007.9685637
- Field C. B, Barros V. R, Dokken D. J, Mach K. J, Mastrandrea M. D, Bilir T. E, Chatterjee M, Ebi K. L, Estrada Y. O, Genova R. C, Girma B, Kissel E. S, Levy A. N, MacCracken S, Mastrandrea P. R, White L. L (eds.) (2014) Climate change 2014: impacts, adaptation, and vulnerability. Part A: Global and Sectoral Aspects Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change
- Gardner J, Dowd A-M, Mason C, Ashworth P (2009) A framework for stakeholder engagement on climate adaptation. CSIRO Climate Adaptation Flagship Working paper No 3.
- Galicia L, Gómez-Mendoza L, Magaña V (2015) Climate change impacts and adaptation strategies in temperate forests in Central Mexico: a participatory approach. *Mitig Adapt Strateg Glob Change* 20:21–42. doi:10.1007/s11027-013-9477-8
- Gidley J, Fien J, Smith JA, Thomsen D, Smith T (2009) Participatory futures methods: towards adaptability and resilience in climate-vulnerable communities. *Env Pol Gov* 19:427–440. doi:10.1002/eet.524
- Glicken J (2000) Getting stakeholder participation 'right': a discussion of participatory processes and possible pitfalls. *Environ Sci Pol* 3:305–310. doi:10.1016/S1462-9011(00)00105-2
- Green AO, Hunton-Clarke O (2003) A typology of stakeholder participation for company environmental decision-making. *Bus Strateg Environ* 12:292–299. doi:10.1002/bse.371
- Grothmann T, Prutsch A, Schauser I, McCallum S, Swart R (2014) Identify and cooperate with relevant stakeholders. In: Prutsch A, Grothmann T, McCallum S, Schauser I, Swart R. *Clim Change Adapt Man*, Routledge ISBN-13: 978-0415630405
- Hanger S, Pfenninger S, Dreyfus M, Patt A (2013) Knowledge and information needs of adaptation policy-makers: a European study. *Reg Environ Chang* 13(1):91–101. doi:10.1007/s10113-012-0317-2
- Innes JE, Booher DE (2004) Reframing Public Participation: Strategies for the 21st Century. *Planning Theory and Practice* 5(4):419–436. doi:10.1080/1464935042000293170
- Irvin RA, Stansbury J (2004) Citizen participation in decision making: is it worth the effort? *Public Adm Rev* 64:55–65. doi:10.1111/j.1540-6210.2004.00346.x
- Kirchhoff CF, Lemos MC, Dessai S (2013) Actionable knowledge for environmental decision making: broadening the usability of climate science. *Annu Rev Environ Nat Resour* 38(3):1–22. doi:10.1146/annurev-environ-022112-112828
- Kirono D, Larson S, Tjandraatmadja G, Leitch A, Neumann L, Maheepala S, Barkey R, Achmad A, Selintung M (2014) Adapting to climate change through urban water management: a participatory case study in Indonesia. *Reg Environ Chang* 14:355–367. doi:10.1007/s10113-013-0498-3
- Lebel L, Grothmann T, Siebenhüner B (2010) The role of social learning in adaptiveness: insights from water management. *Int Environ Agreements* 10(4):333–353. doi:10.1007/s10784-010-9142-6
- Lemos MC, Morehouse B (2005) The co-production of science and policy in integrated climate assessments. *Glob Environ Change* 2005(15):57–68. doi:10.1016/j.gloenvcha.2004.09.004
- Lemos MC, Rood R (2010) Climate projections and their impact on policy and practice. *WIREs Clim Change* 1:670–682. doi:10.1002/wcc.71
- Lemos MC, Kirchhoff CJ, Kalafatis SE, Scavia D, Rood RB (2014) Moving climate information off the shelf: boundary chains and the role of RISAs as adaptive organizations. *Weather Clim Soc* 6(2):273–285. doi:10.1175/WCAS-D-13-00044.1
- Lexer W, Stickler T, Prutsch A (2013) Analysis of adaptation policies, governance systems and the science-policy interface in alpine countries and regions: Austrian assessment report. Deliverable within the ETC Alpine Space project C3-Alps. Capitalising climate change knowledge for adaptation in the Alpine space
- Lim B, Spanger-Siegfried E (2004) Adaptation policy frameworks for climate change: developing strategies, policies and measures. UNDP/Cambridge University Press, Cambridge
- Mandarano LA (2008) Evaluating collaborative environmental planning outputs and outcomes restoring and protecting habitat and the New York–New Jersey Harbor Estuary Program. *J Plan Educ Res* 27:456–468. doi:10.1177/0739456X08315888
- Margerum RD (2002) Collaborative planning: building a distinct model for practice. *J Plan Educ Res* 21(3):237–253. doi:10.1177/0739456X0202100302
- McCarthy J, Canzianni O, Leary N, Dokken D, White K (eds)(2001) Climate Change 2001: Impacts, adaptation, and vulnerability—contribution of working group II to the third assessment report of the intergovernmental panel on climate change. Cambridge University Press
- Mimura N, Pulwarty R. S, Duc D. M, Elshinnawy I, Redsteer M. H, Huang H. Q, Nkem J. N, Sanchez Rodriguez R. A (2014) Adaptation planning and implementation. In: Climate Change 2014: impacts, adaptation, and vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field C. B, Barros V. R, Dokken D. J, Mach K. J, Mastrandrea M. D, Bilir T. E, Chatterjee M, Ebi K. L, Estrada Y. O, Genova R.C, Girma B, Kissel E. S, Levy A.N, MacCracken S, Mastrandrea P. R, White L.L (eds.) (2014)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 869–898
- Mitter H, Kirchner M, Schmid E, Schoenhart M (2014) The participation of agricultural stakeholders in assessing regional vulnerability of cropland to soil water erosion in Austria. *Reg Environ Chang* 14(1):385–400. doi:10.1007/s10113-013-0506-7
- Moser S (2009) Making a difference on the ground: the challenge of demonstrating the effectiveness of decision support. *Clim Chang* 95:11–21. doi:10.1007/s10584-008-9539-1
- Moser S, Ekstrom J (2011) Taking ownership of climate change: stakeholder-intensive adaptation planning in two California

- communities. *J Environ Stud Sci* 1:63–74. doi:10.1007/s13412-011-0012-5
- Newig J (2007) Does public participation in environmental decisions lead to improved environmental quality? Towards an analytical framework. In: CCP1: 51–71. Link: <http://www.ssoar.info/ssoar/handle/document/43196>
- Newig J, Fritsch O (2009) Environmental governance: participatory, multi-level—and effective? *Env Pol Gov* 19:197–214. doi:10.1002/eet.509
- Nordbeck R, Steurer R (2016) Multi-sectoral strategies as dead ends of policy integration: lessons to be learned from sustainable development. *Environ Plann C Gov Policy* 34(4):737–755. doi:10.1177/0263774X15614696
- O'Connor RE, Anderson PJ, Fisher A, Bord RJ (2000) Stakeholder involvement in climate assessment: bridging the gap between scientific research and the public. *Clim Res* 14:225–260. doi:10.3354/cr014255
- Pahl-Wostl C (2002) Participation and stakeholder based policy design, evaluation and modeling processes. *Integr Assess* 3:3–14. doi:10.1076/iaij.3.1.3.7409
- Ravera F, Hubacek K, Reed M, Tarrasón D (2011) Learning from experiences in adaptive action research: a critical comparison of two case studies applying participatory scenario development and modelling approaches. *Environ Pol Gov* 21(6):433–453. doi:10.1002/eet.585
- Rayner J, Howlett M (2009) Introduction: understanding integrated policy strategies and their evolution. *Pol Soc* 28(2):99–109. doi:10.1016/j.polsoc.2009.05.001
- Reed MS (2008) Stakeholder participation for environmental management: a literature review. *Biol Conserv* 141:2417–2431. doi:10.1016/j.biocon.2008.07.014
- Reed MS, Graves A, Dandy N, Posthumus H, Hubacek K, Morris J, Prell C, Quinn CH, Stringer LC (2009) Who's in and why? A typology of stakeholder analysis methods for natural resource management. *J Environ Manag* 90:1933–1949. doi:10.1016/j.jenvman.2009.01.001
- Reinecke S, Bauer A, Pregernig M, Tony A, Pistorius H. T, Hogl K (2013) Scientific climate policy advice: an overview of national forms of institutionalization. Discussion Paper 2–2013
- Renn O (2006) Participatory processes for designing environmental policies. *Land Use Policy* 23:34–43. doi:10.1016/j.landusepol.2004.08.005
- Österreich R (2008) Regierungsprogramm für die XXIV. Gesetzgebungsperiode, Wien
- Ribeiro M. M, Losenno C, Dworak T, Massey E, Swart R, Benzie M, Laaser C (2009) Design of guidelines for the elaboration of Regional Climate Change Adaptations Strategies. Final Report, Study for European Commission—DG Environment—Tender DG ENV. G.1/ETU/2008/0093r, Ecologic Institute, Vienna
- Rowe G, Frewer LJ (2000) Public participation methods: a framework for evaluation. *Sci Technol Hum Values* 25(1):3–29. doi:10.1177/016224390002500101
- Rydin Y, Pennington M (2000) Public participation and local environmental planning the collective action problem and the potential of social capital. *Local Environ* 5:153–116. doi:10.1080/13549830050009328
- Santos R, Antunes P, Baptista G, Mateus P, Madruga L (2006) Stakeholder participation in the design of environmental policy mixes. *Ecol Econ* 60:100–110. doi:10.1016/j.ecolecon.2005.11.025
- Scherhauser P (2014) Bridging the gap between the theory and practices of stakeholder participation in integrated vulnerability assessments of climate change. *Syst Pract Action Res* 27(5):449–463. doi:10.1007/s11213-013-9294-8
- Schively C (2007) A quantitative analysis of consensus building in local environmental review. *J Plan Educ Res* 27:82–98. doi:10.1177/0739456X07305794
- Smith JB, Vogel M, Cromwel JE (2009) An architecture for government action on adaptation to climate change. An editorial comment. *Clim Chang* 95:53–61. doi:10.1007/s10584-009-9623-1
- Steininger K, König M, Bednar-Friedl B, Kranzl L, Loibl W, Prettenhaler F (eds) (2014) Economic evaluation of climate change impacts. Springer, Berlin
- Stickler T, Prutsch A, Balas M (2010) Klimawandelanpassung in Österreich. Ergebnisse der Internet-Befragung im Rahmen des Beteiligungsprozesses zur Begleitung der Unterstützung der Erstellung der österreichischen Strategie zur Klimawandelanpassung. Umweltbundesamt REP-0266, Wien
- Stoll-Kleemann S, Welp M (eds.) (2006) Stakeholder dialogues in natural resources management. Theory and Practice. Springer, Berlin. ISBN 978-3-540-36917-2
- Termeer C, Dewulf A, van Rijswijk H, van Buuren A, Huitema D, Meijerink S, Rayner T, Wiering M (2011) The regional governance of climate adaptation: a framework for developing legitimate, effective, and resilient governance arrangements. *Clim Law* 2:159–179. doi:10.3233/CL-2011-032
- van Aalsta MK, Cannon T, Burton I (2008) Community level adaptation to climate change: the potential role of participatory community risk assessment. *Glob Environ Chang* 18:165–179. doi:10.1016/j.gloenvcha.2007.06.002
- van de Kerkhof M (2006) Making a difference: on the constraints of consensus building and the relevance of deliberation in stakeholder dialogues. *Policy Sci* 39(3):279–299. doi:10.1007/s11077-006-9024-5
- UK Climate Impacts Programme (UKCIP) (2007) Identifying adaptation options. UKCIP, Oxford
- UN – United Nations (2015) Paris Agreement. Reference: C.N.63.2016.TREATIES-XXVII.7, Paris
- UNDP (2010) Designing climate change adaptation initiatives. A UNDP Toolkit for Practitioners. UNDP Bureau for Development Policy, New York
- UNFCCC – United Nations Framework Convention on Climate Change (1992) United Nations, New York
- Weaver PM, Haxeltine A, Van De Kerkhof M, Tabara JD (2006) Mainstreaming action on climate change through participatory appraisal. *Int J Innov Sust Dev* 1(3):238–259. doi:10.1504/IJISD.2006.012425
- Wesseling A, Paavola J, Fritsch O, Renn O (2011) Rationales for public participation in environmental policy and governance: practitioners' perspectives. *Environ Plan A* 43(11):2688–2704. doi:10.1068/a44161
- Wise RM, Fazey I, Smith MS, Park SE, Eakin HC, Van Garderen EA, Campbell B (2014) Reconceptualising adaptation to climate change as part of pathways of change and response. *Glob Environ Chang* 28:325–336. doi:10.1016/j.gloenvcha.2013.12.002
- Yin RK (2003) Case study research: design and methods, 3rd edn. Sage, Thousand