

What European governmental actors may expect from residents in adapting cities to climate change

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Abstract

An emerging literature discusses roles and responsibilities of public and private actors in climate change adaptation. This literature has, hitherto, devoted relatively limited attention to the roles of residents. Residents can be expected to be important actors, because their initiative or consent is often necessary to take private property level adaptation measures (e.g. to adapt their behaviour, decrease the amount of hardened surface in urban areas, make homes flood resilient). Arguments for engaging them in climate change adaptation in urban areas can be substantive in nature (e.g. only residents can act, or they can act more efficiently than other actors), but they can also be instrumental (e.g. to legitimise measures planned by local governments) or normative (e.g. enhancing the democratic legitimacy of adaptation actions). However, an overview of the full spectrum of residents' possible roles in climate change adaptation, the rationales underlying these roles and the corresponding possibilities for actors at various levels of government to anticipate on or use these roles in order to get climate adaptation measures realised is lacking. This paper addresses this gap. Based on a review of literature from the fields of environmental governance and sustainable consumption, it structures the debate by distinguishing eleven roles of residents, divided over three forms of commitment: (a) residents as citizens falling under the jurisdiction of various levels of government; (b) residents as consumers on the market; (c) residents as members of civil society. The roles and their underlying rationales are illustrated with concrete practical examples from the domains of flooding and heat stress in urban areas in Western Europe. Each role has different implications for the corresponding role of (local) governmental actors. In some roles, residents can be directly addressed (e.g. as citizens with rights and responsibilities). But with regard to roles that are more market- or civil society oriented, the role of governmental actors will more likely be a facilitating, stimulating or regulating one. The paper concludes that there is still unexploited potential for engaging residents in climate change adaptation in urban areas. A research agenda is sketched for developing knowledge on how to exploit this potential.

1. Introduction

Both in research and practice, the governance of adaptation has received increasing attention over the past couple of years (Urwin and Jordan 2008, Biesbroek et al. 2010, Carter 2011, Juhola and Westerhoff 2011, Mees et al. 2012, Mees et al. 2014, Uittenbroek et al. 2013). An emerging literature discusses the roles and responsibilities of public and private actors in adaptation governance (Mees et al. 2012, 2013, Tompkins and Eakin 2011). However, explicit attention for the roles and responsibilities of residents has hitherto been limited, and where these roles have been addressed, this has often been done so implicitly and in a fragmented way. For instance, Runhaar et al. (2012) discuss various climate adaptation measures related to flooding and urban heat stress which have implications for residents, including measures at building and quarter level but they do not explicitly discuss and compare residents' roles. Other authors focus on changing social contracts between state and citizens, arguing that these should be made explicit in order to smooth pathways to effective and legitimate adaptation (Adger et al. 2013, O'Brien et al. 2009). Again other studies

deal with the role of direct democracy in climate change policy (Stadelmann-Steffen 2011) or policy holders in the case of flood insurance schemes (Aerts and Botzen 2011). Tompkins and Eakin (2011) have made an important step by showing that private parties, including residents, in many cases can be important providers of adaptation goods. Besides private adaptation goods (e.g. buying sand bags to limit home flood damage) they can also deliver public adaptation goods (e.g. by reducing the amount of hardened surface on their properties, residents can contribute to the water buffering capacity of urban areas). What is still missing, though, is an overview of the full spectrum of potential residents' roles in climate change adaptation, including residents' rationalities for pursuing these roles as well as the possibilities and reasons for governmental actors to take these roles into account.

The lack of such an overview can be considered a pitfall, because residents have become increasingly articulate actors in society (Featherstone 1991, Giddens 1991, Spaargaren and Oosterveer 2010, Hajer 2011). In other domains than adaptation, residents have been shown to be driving forces for desired changes as well as important actors in hindering them (Spaargaren and Oosterveer 2010, Spaargaren 2003, 2011; Van Vliet 2012). More specifically in the adaptation domain, we argue that there are at least three types of reasons for governments to have an active orientation on residents (see also: Glucker 2013):

- A *substantive reason* is that several measures can only or more efficiently be taken by residents (e.g. decreasing the amount of hardened surface in urban areas, making homes flood resilient). Their initiative, participation or consent is often necessary for private property level measures (Mees et al. 2012, Tompkins and Eakin 2011). Also, if residents take measures themselves, these can be tailored in terms of technical (im)possibilities, specificities of climate risks and the individual needs of residents. On the other hand, residents have also been found to take adaptation measures that are seen as undesirable by governmental actors (e.g. making illegal cross connections between one's own well and the municipal water network so as to have access to both (for permanent use and/or as a back up) (Wamsler and Brink, forthcoming));
- An *instrumental reason* is that governmental actors can in principle take measures, but that these actions need to be legitimised (e.g. there are examples of residents protesting against or obstructing adaptation actions (Uittenbroek et al. 2013, Wamsler and Brink forthcoming));
- A *normative reason* is that governmental actors can adhere to the principle that residents should be able to co-decide about adaptation actions in which they have a stake, for instance to maintain democratic legitimacy.

This paper aims to provide an overview of the potential roles of residents in climate change adaptation in urban areas, to explore the ways in which governmental actors at different levels could anticipate, address and make use of these roles, and to outline a research agenda on relations between residents and governmental actors in climate change adaptation. The paper does so by providing a review of literature from the fields of environmental governance and sustainable consumption providing insights into potential roles of residents. This literature is structured using a theoretical framework outlined in section 2, resulting in eleven roles for residents in climate change adaptation in urban areas. Each role is illustrated with empirical examples from the domains of flooding and urban heat stress in Western Europe. Also, an elaboration is given of how governmental actors could relate to each role. This analysis provides input for hypotheses on ways forward in engaging residents in climate change adaptation action in urban areas as well as ideas for a research agenda.

The outline of this paper is as follows. Section 2 embeds the study in broader scholarly discussions on the roles of residents in environmental governance in general and climate change adaptation in particular. In other bodies of literature, they are also often referred to as citizens (Barr et al. 2011, O'Brien 2009), consumers (Barr et al. 2011, Van Vliet and Stein 2004), citizen-consumers (Spaargaren and Oosterveer 2010), stakeholders (Reed 2008), participants (Newig and Fritsch 2009)

but also in terms that presuppose a very passive role for the individual such as end-users (Hegger 2007), and even “nodes or connections” (Van Vliet and Stein 2004). The section also sets out the framework used for structuring the literature. The subsequent sections elaborate residents’ roles, clustered according to roles related to residents’ capacities of citizens falling under the jurisdiction of various levels of government (section 3); consumers on the market (section 4) and members of civil society (section 5). Section 6 concludes this paper and provides a research agenda.

2. Researching residents’ roles in the governance of climate change adaptation: conceptualisation and methods

Governments at various levels appear to be primary actors in adaptation planning and taking adaptation measures. At national level, in various countries, national adaptation strategies have been produced (Biesbroek et al. 2010). Also at the national level, rules of the game for market parties are determined, including the conditions under which private parties can offer adaptation goods (e.g. presence/absence of subsidies, tax reductions etc.). Local governments (e.g. municipalities), however, make concrete local policies or take specific actions in several adaptation domains, including flooding and urban heat stress, sometimes as part of a broader vision on the future development of an urban area (Mees et al. 2013, Den Exter et al. 2014, Johnsson and Lundgren 2014). It is to some extent logical that primacy for taking adaptation measures lies with these governmental actors, at least in those cases in which the creation of public goods is at stake (e.g. increasing the amount of green areas in the city to counteract the urban heat island effect). In many cases, however, governmental actors are not allowed to or capable of taking certain measures, for instance, if these measures can only be taken by property owners (Mees et al. 2012). The realisation of green roofs for storm water retention on private properties is a case in point (Mees et al. 2013). Also, in many cases in which governments could take measures, private provision or public-private partnerships may be more cost effective, lowering the threshold for actually taking measures (Mees et al. 2012; Tompkins and Eakin 2011). Climate change adaptation can therefore be thought to require a range of governance arrangements, including centralised governance, decentralised governance, public-private governance, interactive governance and self-governance (Driessen et al. 2012). It will depend on contextual factors what kind of arrangement is appropriate in which circumstance (ibid). Besides the role of governmental actors, also the roles of residents and the rationalities underlying these roles will be different in each mode of governance.

In this paper, residents are portrayed as participants in social practices, resonating with the work of scholars employing a sociological perspective (Giddens 1984, Spaargaren and Oosterveer 2010). We argue that institutional actors cannot take adaptation action entirely “behind the back of citizens”. But neither is the other extreme position valid, in which the presence or absence of societal dynamics could be attributed solely or predominantly to the actions of residents (Shove 2010, Elliott 2013), a position which is implicitly present in scholarly disciplines such as behavioural economics, psychology, and market research (Elliott 2013: 297). Our approach, instead, presupposes that institutional actors may both enable or stimulate, but also constrain or discourage residents in taking adaptation measures.

To acquire an overview of the potential roles of residents in climate change adaptation, literature from the fields of environmental governance, climate change adaptation and sustainable consumption was analysed. Based on the literature review, eleven residents’ roles and their underlying rationalities were identified. With residents’ roles we mean brief indications of the type of actions and attitudes that are presupposed or expected of residents in a particular social position. These were identified by, first, distinguishing between three ideal-typical forms of commitment of residents (Glasbergen 2002, Spaargaren and Oosterveer 2010), being that of citizens relating to governments including the state (Held 1995) as consumers relating to market parties in several different ways (Micheletti 2003) and as members of civil society. This distinction is relevant, because

in each form of commitment, the relations governmental actors have, directly or indirectly, with residents can be expected to vary (Spaargaren and Oosterveer 2010). As a second step, a further clustering of the literature was made by categorising it according to the extent to which residents are seen as recipients of policies/actions or as the initiator thereof (Tompkins and Eakin 2011).

As table 1 below shows, this clustering leads to a first categorisation of roles. Some cells in the table contain multiple roles, indicating that in these cases a more detailed specification of roles was necessary. Role 2-5 differ in terms of the types of citizenship vis-a-vis government. Role 6 and 7 differ in the underlying motivation for residents to consume. Role 10 and 11 differ in the extent to which organisations exist virtually or physically. These specifications of roles will be further explained in the subsequent sections.

Table 1: categorization of residents' roles in climate change adaptation

Residents as citizens vis-à-vis governments	
Residents take adaptation action	1. Resident with duties and responsibilities
National/local governments take adaptation action	2. Resident looking at the government for solutions 3. Resident as protester/hindrance power 4. Resident as participant in local participatory governance processes 5. Resident as voter
Residents as consumers vis-à-vis market parties	
Residents take adaptation action	6. Resident as homo economicus 7. Resident as lifestyle pursuing consumer
Market parties take adaptation action	8. Resident as political consumer
Residents as members of civil society	
Residents take adaptation action	9. Resident as member of communities
Civil society organisations take adaptation action	10. Resident as member of formal organisations 11. Resident as member of virtual communities

3. Resident as citizen vis-à-vis governments

In this paper, the notion of a resident as citizen vis-à-vis governments is confined to the political science notion of an individual relating in one way or the other to governmental actors (Spaargaren and Oosterveer 2010). As indicated in the previous section, we have distinguished one role in which primacy for taking actions lies with residents (1. Resident with obligations and responsibilities) and four roles in which national or local governments are the primary actors to take actions (2. Problem owner; 3. Protester/hindrance power; 4. Participant in local participatory governance processes; 5. Voter).

3.1 Resident with duties and responsibilities

A first perspective to look at residents is to see them as persons with obligations and responsibilities towards governments and fellow citizens. Whereas residents often have positive or negative expectations regarding their governments, these governments in turn increasingly try to make them co-responsible for adapting to climate change (add references). The dominant rationale for doing so seems to be a substantive one: appeals to residents are made in cases in which governments cannot act or residents are expected to be better capable of acting efficiently. An example that can be found in several European countries is that of governments asking residents living in unembanked areas to take additional property level measures to deal with flood risks (e.g. Flutschutzgemeinschaften in Hafencity Hamburg (Mees et al. 2014). In the case of the Dutch city of Dordrecht, positive experiences have been reported with engaging residents of unembanked areas in Flood Risk

Management. They have a high degree of flood consciousness and in times of high water they devote proactive and coordinated efforts to protection against the water (Hegger et al submitted). A less successful effort to make residents take additional responsibilities is the effort of the Dutch Ministry of the interior to appeal to citizens to make them aware that they should be prepared in case of an emergency (<http://www.nederlandveilig.nl/noodsituaties/>). Amongst other things, through a governmental campaign they have been requested to have a so-called “emergency package” in their home, including such items as a radio, a first aid kit, bottled water, candles, matches, a whistle, an isolating towel etc. However, the penetration of these emergency packages in Dutch households is still low (ref).

As these examples show, if residents take on board specific responsibilities, this can in principle lead to better preparation for the consequences of climate change at the societal level and to residents that do not rely too heavily on governmental actors for this. However, it will not always be easy to make residents take on board these responsibilities. An important condition for involving residents in this way is that they are either obliged to take responsibilities (as in the case of the Flutschutzgemeinschaften) or that they are persuaded to do so. One can logically assume that the latter will only succeed in cases in which residents have sufficient degree of risk awareness and see a concrete action perspective for themselves.

3.2 Resident looking at the government for solutions

Residents, often rightfully, have expectations regarding the governments under which jurisdiction they fall. They expect protection against (environmental) risks and (access to) information about risks (Spaargaren and Oosterveer 2010). In many cases, citizens have legal entitlements. For instance, the EU Floods Directive (2007/60/EC) refers to citizens’ right to know the flood risk in their area, both in terms of flood probabilities and in terms of the potential consequences of floods.

Hence, the rationale behind the role of resident as someone with expectations of governmental actors is primarily a substantive one. The government is expected to carry out certain tasks, for instance because of their public character (dikes, hazard maps) and, related to this, the large amount or resources necessary to carry out the tasks. Besides that, there may also be a normative rationale: in each society, certain expectations regarding protection of residents against risks have been institutionalised.

In a Swedish study, in the domain of climate change adaptation, both positive and negative experiences regarding the relationship between the residents who are confronted with the consequences of climate change and governments have been documented (Wamsler and Brink, forthcoming). On the one hand, local governments have been shown to fulfil people’s legal responsibilities for adaptation, provide information or incentives and engage in a dialogue, information exchange and complementary action taking. But on the other hand, also examples have been documented of residents taking autonomous, sometimes illegal adaptive actions that may be effective from the individual’s perspective, but not from a collective perspective (including an example of connecting roof runoff water to the municipal storm-water system via illegal downpipes) (ibid: 13). Residents may also be discouraged because of a lack of or inadequate institutional assistance. A final, dangerous, possibility is that residents rely fully, but wrongly, on institutional assistance (ibid). An example is that about 40,000 inhabitants of the Dutch city of Rotterdam live in unembanked areas with a relatively high probability of flooding. It has been shown (ref) that a large part of them are aware neither of this high probability nor of the fact that they formally live in these unembanked areas at their own risk.

3.3 Resident as protester/hindrance power

Residents may also try to hinder or protest against actions taken by governmental actors (NIMBY). For instance, in Rotterdam, residents protested against the establishment of water plazas meant for water retention in the city, out of fear that children might risk drowning.

Such protests or efforts to hinder decision making procedures can take place for several reasons. For one, they can take place out of a substantive rationale: residents have genuine and maybe rightful concerns regarding the consequences of certain measures. Two, it is possible that residents found that a certain decision was made in an illegitimate way and therefore they protest against it (normative rationale). Three, residents can protest out of an instrumental rationale. For instance, they may want to try to be better off by claiming financial compensation. Hence, the fact that residents try to obstruct certain measures can be evaluated both positively and negatively. On the positive side, the possibility – within the law – to obstruct certain measures can be seen as a democratic right that may potentially improve decision making processes as it ensures that certain interests that would otherwise be underexposed receive proper attention. On the negative side, this democratic right is generally not claimed by the most marginalized or least articulate groups in society (Glucker et al. 2013) implying the risk that certain groups in society are privileged above others.

3.4 Resident as participant in local participatory governance processes

A fourth perspective to look at the residents is to see them as participants in politics/governance processes. Residents can be directly included in participatory processes of governments as stakeholders. Depending on the degree of power governments are willing to share with them, residents can be consulted about governmental policies, but they can also be co-deciders. Hence, if residents participate, directly or indirectly, in governance processes, primacy for developing policies and taking measures lies with governmental actors. However, governments may choose to open up the policy process to residents, in one way or the other.

The reason for doing so may be twofold. On the one hand, policy content may be improved if governments make use of the knowledge and ideas from residents (substantive rationale). On the other hand, by involving residents in the process, legitimacy of policies may be enhanced (instrumental rationale). We know from stakeholder literature (Glucker et al. 2013), however, that a participatory process requires governments to be open to residents regarding the scope of their influence, and not to raise too high expectations in this respect. Otherwise, negative consequences can be expected, including a decline of trust of residents in governmental actors and frustration.

3.5 Resident as voter

Residents can also take on board the role of a voter. Through their voting behavior at national, regional or local level, they can legitimize certain politicians with certain ideas about how to deal with the consequences of climate change in the urban environment. Because of this, those who want to be elected need to sell their ideas. Politicians who want to boost climate change adaptation need to make strategic context-specific choices. For instance, they may choose not to make climate change adaptation a political issue, they may try to get it high on the political agenda or they may try to integrate this issue in other political debates (e.g. debates on urban renewal).

3.6 Conclusion

The previous sub-sections have shown five ways in which governmental actors can address residents in their capacity of citizens. In the first role (resident with duties and responsibilities) it is the resident who takes adaptation action. In the other roles, primacy lies with governmental actors, but residents are involved in several different ways.

Addressing residents in the role of a “traditional” citizen seems to be the default position of many governmental actors at different levels across Europe. This is understandable because this perspective on residents fits well with an entrenched perspective on governance in which governments steer societal processes in a direct way (government instead of governance). At this point, two problems with such a perspective can be observed. First, it is safe to say that the experiences of governments with directly “steering” residents in the domain of climate change adaptation are at best mixed. In some cases, the relationship between governments and residents is more synergistic than in others and the degree of mutual trust seems to vary. Hence, many lessons are still to be learned by governments, residents as well as scientific researchers analyzing the relationship between governments and residents, specifically in the domain of climate change adaptation (see also Bickerstaff et al. forthcoming). As we will see in the upcoming sections, other perspectives on the resident, complementary to that of the traditional citizen, might offer new possibilities for realising adaptation measures.

4. Resident as consumer vis-à-vis market parties

This section discusses three ways in which individuals can be viewed as consumers vis-à-vis market parties: the homo economicus (4.1), the lifestyle-pursuing consumer (4.2) and the political consumer (4.3). As we explain below, the first two roles assume that residents take adaptation actions, the last one assumes that market parties take adaptation actions, but triggered by residents. In 4.4. we conclude this section.

4.1 Resident as homo economicus

The stereotypical notion of the homo economicus refers to the idea that individuals make rational choices that serve their self-interest. Seen from this perspective, it is logical to use economic incentives to try to stimulate individuals to take adaptation measures. Examples of such incentives can be found in various countries where flood insurance is available (e.g. France, Germany) or even mandatory (England) (Kleindorfer and Kunreuther 1999). Although the focus here is on market parties that offer products to residents, governments have an important role by determining the rules of the game. For example, they can make rules regarding the scope of insurance systems, including rules on who can participate and who should participate, and rules on who is the risk taker of last resort (e.g. re-insurance companies in the UK, the government itself in France).

There appear to be two dominant rationales for approaching residents as homo economicus. First, from an instrumental point of view it is logical to tempt residents to take actions themselves through an incentive system that ensures that taking action is in these residents’ own interest. For instance, if flood insurance premiums are risk-based, that is, they vary according to the actual flood risk to which a property is exposed; they form at least a source of information to residents and a way to increase their flood consciousness. They may also provide an incentive not to live in high-risk areas or to move away from them. Another possibility is to offer premium reductions to residents who take adaptive measures themselves. A second rationale for approaching residents as homo economicus is a normative one. Again the risk-based insurance premiums are a case in point. The implicit normative principle underlying risk-based premiums is the idea that the consequences of risk taking should be carried by those who willingly and knowingly take the risk as opposed to the solidarity principle postulating that society as a whole should carry these risks.

As illustrated above, approaching residents as homo economici does have potential advantages. It is indeed a possible route to try to engage residents in climate action. But there are also potential downsides. For instance, in the case of insurance schemes, the question arises who is included and

who is excluded? And how fair are the schemes? If a society attached much importance to the solidarity principle, the question arises to what extent risk-based insurance schemes (with higher premiums or even non-insurability in high risk areas) are legitimate.

A more fundamental downside of approaching individuals as *homo economicus* has to do with the assumptions behind the notion of *homo economicus* itself. Implicit in this notion is that individuals process information in a rational way. This notion has been fundamentally criticised in literature (Gigerenzer and Selten 2002). The notion of bounded rationality has been coined to refer to the idea that rationality of individuals is inherently limited because individuals have a finite amount of time and information at their disposal, and the abilities of their minds are also limited. The notion of bounded rationality suggests that, at least, the circumstances in which a rational model of the individual is valid, is limited (*ibid*).

4.2 Resident as lifestyle pursuing consumer

The notion of the lifestyle pursuing consumer forms a more sociological way to look at consumers and consumption. Giddens (1991:81) has defined a lifestyle as “an integrated set of practices which an individual embraces, not only because these practices fulfil utilitarian needs, but also because they give material form to a particular narrative of self-identity”. Some consumption choices will provide for a better fit with the individual’s narrative of the self than others and these choices also confirm how the individual differs from others. According to Giddens, for individuals “the self” is a reflexive project. According to Bourdieu (1984), individuals have a certain amount and type of economic, cultural and social capital at their disposal and these three capitals constitute a playground of consumption ‘choices’ that the individual sees as ‘normal’ or ‘good’ (Elliot 2013). As Elliott (2013:300) puts it: “for Bourdieu, the consumer is indeed expressive, but often unconsciously so; she ‘chooses’ the goods that correspond to her economic and social position, but this ‘choice’ is felt as natural for her. It is her taste. For economists, tastes are idiosyncratic; they are exogenous to market transactions and socially neutral”. From a more sociological perspective, tastes are not socially neutral, but on the other hand medium and outcome of processes of social stratification.

For residents acting as lifestyle pursuing consumers, the dominant rationale is a substantive one. They want to reach goals that they see as good, normal or worthy to strive for. The fact that they are financially stimulated to take certain actions is not the *primary* motivation to act, as in the case of the *homo economicus*. Residents may take certain actions like installing a green roof, or installing rainwater harvesting systems in their garden but not primarily out of the wish to realise adaptation measures. Instead, taking these measures may, from the consumer’s perspective, be *a co-benefit of something else*. The adaptation good may be purchased for its aesthetic value, or even because it is seen as a status symbol (see also: Van Vliet and Stein 2004). Some individuals may see green roofs as a status symbol, others may not. One individual will see ‘adaptive building’ as an opportunity to confirm his self-image as a good “do it yourself” man, another not.

An example is that of floating urbanisation. In the Netherlands, several examples are available of cases in which floating urbanisation is seen as an economic opportunity. E.g. the municipality of Rotterdam has explicitly denominated floating urbanisation as such an opportunity. In the Harnaspolder in Delft, consumers can buy water plots, several of which have been sold, where floating houses are being realised (<http://www.architectuurcatalogus.nl/locatie/delft-waterkavels/>) and there are companies specialised in such floating urbanisation (<http://www.deltasync.nl/deltasync/index.php?id=homepage&L=1>). One can logically expect that residents will not primarily buy floating houses out of the wish to reduce risks, but instead because they want to live on or close to water, or because of the houses’ aesthetic value, or as ways to confirm to themselves and others what kind of person they are.

On the other hand, individuals may engage in consumption practices because they are seen as normal, as “the right thing to do”, or to put it differently, as “the kind of things people like me do”. Complementary to recent pleas in environmental governance literature for mainstreaming of climate adaptation into “normal” policy practices (Mees and Driessen 2011, Runhaar et al. 2012, Uittenbroek et al. 2013), one could symmetrically consider the possibility to mainstream climate change adaptation into “normal” consumption practices. This would mean that individuals routinely include the consequences of climate change as one of the many considerations that they take into account when they are to judge if they find a certain consumption option ‘right’ or ‘normal’. An example would be that an individual considers it ‘within the range of normal considerations’ to install a rainwater collection system when a new garden is constructed. Note that this motivation to take adaptation measures is different from the kinds of motivations of the homo economicus, who is primarily motivated by a more narrowly defined form of self-interest.

The potential advantages of addressing residents as lifestyle pursuing consumers are clearly visible. Residents take actions without the need for governments to organize these in great detail. In some cases, the market may contribute to the identification of win-win situations between adaptation goals and other goals of residents. But there are also potential downsides to this role. Governmental actors, by definition, can only regulate a market for consumer products, but they cannot directly determine the outcomes on the market. Hence, the possibilities to control what happens are less directly in nature and governments have no other options than to adapt the rules of the game after observing that market failures have occurred. Another downside is that governments can also use the possibility “to arrange climate adaptation via the market” instrumentally, as an excuse not to engage in adaptation action itself.

4.3 Resident as political consumer

A third way to look at residents as consumers is the perspective of the political consumer. This notion was originally coined by Micheletti (2003) to refer to the activist role that consumers can play on the market. They can include all kinds of moral and political considerations in their consumption behaviour and hence steer societal developments into directions desired by them. Prominent examples of political consumerism are the choice of consumers to buy eco-labelled products in the supermarket or on the other hand to boycott certain providers (e.g. boycott of Shell after its announcement to sink the Brent Spar oil platform).

The rationale behind adaptation-related political consumerism is on the one hand a substantive one. Residents acknowledge that market parties can take measures. On the other hand, the rationale is also normative. Residents think that they have to play a role in influencing market processes in a political way.

Currently, the notion of the political consumer still seems to be less logical for the domain of climate change adaptation. In practice, individuals seem to have a tendency to try to address governments, not market parties, when they want to take actions to deal with climate change. As opposed to that, in the domain of climate change mitigation the tendency of consumers to want to address market parties seems to be larger. It can logically be expected, though, that the role of the political consumer will become more relevant for adaptation in the future. A driver for this may be the ongoing societal debate about the need for more private involvement in climate change adaptation.

Potential advantages and disadvantages of the role of the political consumer are comparable to that of the lifestyle pursuing consumer.

4.4 Conclusion

The previous sub-sections have shown three roles of residents in realising adaptation measures, which they primarily pursue as consumers on the market, as homo economicus, as lifestyle pursuing consumer and as political consumer. The complementary role of governments is generally not that they provide market goods themselves. However, governments can influence in various ways how markets function. Regarding the private provisioning of adaptation goods, at least the following roles of governments can be identified:

- (i) Governments may create or destroy markets. For instance, they may stimulate market parties to offer certain adaptation goods, or even make it obligatory to purchase them (e.g. in the case of insurance schemes);
- (ii) Governments may influence the playing field on existing markets. For instance, fiscal benefits or subsidies may be used as incentives to make certain privately provided adaptation goods (rain water harvesting systems, green roofs) more attractive;
- (iii) Governments may indirectly create market supply of adaptation goods, for instance by stimulating entrepreneurship in developing or retailing such goods. This can be done through education or the offering of credit;
- (iv) Governments may indirectly create market demand for adaptation goods, for instance through schooling and communication campaigns aimed at youth, residents or others.

5 Resident as member of civil society

When we write about residents as civil society members, the focus is on groups of residents that are organised or connected in one way or the other. The defining feature of what we call civil society initiatives is that they have been initiated outside the domains of the state and the market. This section distinguishes these initiatives from one another by looking at the degree and way in which these initiatives have been organised: through physical communities (5.1), formal organisations (5.2) and online/virtual communities (5.3).

5.1 Resident as members of physical communities

With physical communities we refer to societal groups that can be characterized, amongst other things, by their physical proximity and their engagement in concrete adaptation actions. Hegger (2007), who performed policy analyses and research into residents' perspectives in various Dutch, German and Swedish eco villages, found that a substantial part of these initiatives are to be seen as bottom-up initiatives in which residents' groups and NGOs were the initiators. Several of these initiatives included measures that would nowadays be labelled as climate change adaptation measures, including such measures as green roofs and rainwater retention. Another example of such bottom-up initiatives would be residents who voluntarily engage in communities that help each other out in cases of emergency, e.g. during heat waves.

Rationales for engaging in such physical communities are both substantive (an "inner directed" wish of residents to live what they perceive to be the good life) and normative (a more "outer directed") viewpoint that they can and should contribute to societal transformations (Hegger 2007). With regard to the former, the notions of lifestyle and identity, introduced in the previous section, are also relevant. It has been shown that bottom-up initiatives are often pursued as part of overarching "green" lifestyles (ibid).

An obvious advantage of actions taken by residents as members of physical communities is that a third resource in society (besides the state and the market) is mobilised for taking adaptation option. A second advantage is that, like in the case of the lifestyle pursuing consumer, multiple goods can be created, not only adaptation goods. Arguments can be made that such bottom-up initiatives may turn out to be social experiments providing a stepping stone towards wider societal transformations

(Verheul and Vergragt 1995). But on the other hand, there is the risk of creating what some have called “eco-gated communities” that are seen by others as “not for our kind of people” (Hegger 2007). Said differently, actions of residents may reduce the chance of further institutionalisation of certain adaptation measures.

5.2 Resident as member of formally organized communities (e.g. NGOs)

Individuals can be members of formally organised communities, e.g. NGOs.

5.3 Resident as member of virtual/online communities

Thirdly, individuals can be members of online fora and discussion platforms and in this capacity exchange information, reinforce each other and thus helping each other out.

5.3 Conclusion

The resident as a member of civil society is a third capacity in which the realisation of adaptation measures can be positively or negatively influenced. This form of commitment may take shape entirely “behind the back” of governments, through forms of self-governance, e.g. in the case of virtual communities. But as we have shown, individuals and residents’ groups sometimes engage in forms of interactive governance, in which they take initiatives, but subsequently need the commitment of governments and private actors to realise these initiatives (e.g. in the case of realising eco-villages).

The corresponding role of governments who want to promote the activities of residents in their capacity of civil society members will often be a facilitating one. Such a facilitating role is not trivial though. Initiatives from civil society will often be innovative, different from the mainstream and hence offer the potential for unexpected solutions. But on the other hand, such initiatives, e.g. initiatives for eco villages, may fit uneasily with mainstream spatial planning processes (Hegger 2007). To enable them, actors, including those at local governments, may need to step out of their comfort zones (Tennekes et al. 2013).

6. Conclusion and discussion

We started this paper with the observation that in the governance of climate change adaptation, systematic attention to all potential roles of residents in their capacities as citizens, consumers or civil society members has hitherto been relatively limited. For that reason, an overview of potential roles of residents in climate change adaptation in urban areas has been developed, including an exploration of the rationales underlying these roles, potential advantages and disadvantages of the roles as well as the ways in which governmental actors at different levels could anticipate, address and make use of these roles. Table 2 below summarises the results of this analysis.

At least two lessons can be derived from the discussion hitherto. First, the discussed examples of governments engaging with residents have shown that governments have mixed experiences in addressing residents (Wamsler and Brink, forthcoming). These have, for instance, been shown to employ behaviour that is not expected or seen as undesirable or even illegal by governments (the illegal water connections). This notwithstanding, we could also document apparently synergistic relationships between citizens and governments, or between citizens groups, private actors and governments (engaging of residents living in unembanked areas in Dordrecht; the realisation of eco-villages). But there still lies a challenge ahead to learn more about the ways in which and the conditions under which such synergistic relationships can come into being and can be maintained. Second, we have indications that there is some unexploited potential in terms of the possible ways in which residents can be addressed in the climate adaptation domain, especially when it comes to the more market- and civil-society oriented roles; there seem to be possibilities for co-benefits and

unexpected solutions. The offering of adaptation options such as green roofs or rainwater harvesting systems for reasons other than pure functionality (e.g. their symbolic/aesthetic value) is a case in point.

Therefore, the dominant message to be derived from this paper would be that the chance of adaptation measures being realized can often be increased if governmental actors address or at least expect more different roles of residents. The eleven roles and underlying rationalities identified in this paper provide a first sketch of the playground governmental actors have. Of course, in practice the boundary between various roles may blur. For instance, various motivations and rationalities may drive residents' actions in combination. These motivations and rationalities may include: being obliged to or necessitated to take actions (citizen, member of civil society), acting out of economic self-interest (homo economicus), giving form to one's self-identity (lifestyle pursuing consumer, member of civil society) and acting out of ethical or moral considerations (political consumer, member of civil society). Whereas these rationalities may be closely intertwined for individuals, for governments it can make a tremendous difference to choose for one or the other rationality as the primary way to address residents.

This conclusion points to an emerging research agenda related to the analysis, explanation and evaluation of roles of residents in the governance of climate change adaptation:

- **Analysis of the roles.** Practical experiences with the various roles need to be further explored through comparative empirical analyses. These analyses should address the question which roles are encountered in practice and where (e.g. in certain administrative contexts, in certain types of society, related to certain adaptation themes etc.);
- **Explanations on the occurrence of the roles.** The above-mentioned experiences need to be explained. Why have arrangements been made in a certain way? Coupled to this, a counterfactual analysis can be undertaken. Researchers can reflect, together with actors from practice, on the possibilities and impossibilities of arranging adaptation through other residents' roles. How feasible and desirable is this perceived to be? Which roles and responsibilities do governmental actors, private parties and residents see for themselves in different contexts and why?
- **Evaluation of the experiences with the roles.** Experiences with the roles need to be evaluated. To what extent is a certain role for residents in a certain context effective, efficient or legitimate? Is one role inherently "better" than others in a certain situation? Or would an orientation on several different roles simultaneously be preferable (analogous to the notion that combining policy instruments ensures that the weaknesses of one instrument can be compensated by another instrument)?
- **Identification of good practices.** Finally, good practices for engaging residents in climate change adaptation can be identified.

We invite other scholars to join us in the inspiring endeavour of pursuing this research agenda.

Table 2: Overview of the eleven residents' roles, underlying rationales, potential advantages and disadvantages and corresponding roles for governmental actors

Role	Rationale	Advantages (+)and disadvantages (-)	Corresponding roles for governmental actors
Residents as citizens vis-à-vis governments			
1. Resident with duties and responsibilities	Mainly substantive: governments cannot act or residents are expected to be better capable of acting efficiently.	+ better preparation to consequences of climate change at societal level – sometimes difficult to get residents involved, especially in cases of low risk awareness and unclear action perspectives	Decentralised governance (responsibilities delegated to the lowest possible level, that of the citizen)
2. Resident looking at the government for solutions	Substantive: the government is expected to carry out tasks because of their public character and the large amount or resources necessary to carry them out. Normative: certain expectations regarding what governments should do for residents have been institutionalised.	+ governments may indeed be the most well-placed actor to take a measure + in principle complementary action taking (both residents and governments act) is possible – residents may be discouraged because of a lack of institutional assistance – residents may rely wrongly on institutional assistance	Centralised/decentralised governance
3. Resident as protester/hindrance power	Substantive: residents have concerns regarding the consequences of certain measures Normative: process was deemed illegitimate by residents Instrumental: residents may want to be better off	+ Articulate residents may enhance participatory democracy, ensuring a more balanced weighing of all interests in society – the opposite is also possible: the most articulate residents are often not the ones representing the interests of the most marginalized groups	public-private governance
4. Resident as participant in local participatory governance processes	Substantive: improved policy content by making use of the knowledge and ideas of residents Instrumental: governmental actions are legitimized by involving residents in the policy process	+ policy content may indeed be improved through participation of residents + governmental actions may indeed be legitimized by involving residents in the policy process – residents may be disappointed about the process or outcome of the participatory process, leading to decline of trust	public-private governance

5. Resident as voter	Normative: decisions on how to adapt to climate change are legitimized through representative democracy Substantive: politicians have an incentive to come up with good ideas	+ legitimization of actions through representative democracy – control of residents on adaptation action is very indirect	Centralised/decentralised governance
Residents as consumers vis-à-vis market parties			
6. Resident as homo economicus	Instrumental: incentive systems tempting residents to take measures that are in their own interest have more chance to succeed Normative: the costs stemming from risk taking should be paid by those who take the risk, not by society as a whole	+ This role may indeed help to engage residents in climate action – Undesired distributive effects may occur – Potential misfit with societies that adhere to the solidarity principle – Effectiveness is lower in cases in which residents do not base decisions in a rational way	Governments play an important role in determining the playground for market parties (which markets are there?), determining the rules of the games on the market to some extent (e.g. subsidies, tax reductions), and educating responsible consumers.
7. Resident as lifestyle pursuing consumer	Substantive: residents want to achieve goals that they see as good, normal, worthy to strive for – realizing adaptation measures may be a co-benefit of this	+ residents may take actions without governments coordinating these in great detail + Win-win situations between realizing adaptation measures and other goals may be found – Governmental actors cannot directly control the outcomes of the market – Governments can use this role instrumentally, as an excuse not to take action itself	
8. Resident as political consumer	Substantive: residents acknowledge that market parties can take measures Normative: residents see it as their role to influence market processes	+ Market parties are tempted to offer products that may stimulate adaptation action – It is not yet very likely that residents will actively pursue this role	
Residents as members of civil society			
9. Resident as member of physical communities	Substantive: wish of residents to live a good life; but also the conviction that they can contribute to realizing societal transformations Normative: residents believe that it is their role to contribute to what they see	+ A third resources besides the government and the market is mobilized: civil society + Co benefits between adaptation action and other actions may arise –d Eco villages may be seen as “eco-gated” communities, reducing the chance for	Governments may facilitate initiatives (interactive governance)

	as beneficial societal transformations	institutionalization of adaptation measures	
10. Resident as member of formal organisations			Self-governance
11. Resident as member of virtual communities			Self-governance

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