6.

Reframing adaptation to climate change in Portugal: the case of ClimAdaPT.Local

João Mourato
Luísa Schmidt
João Ferrão
Alexandra Bussler

INTRODUCTION

CRITICAL JUNCTURE

As the 21st century settles in, an array of tightly intertwined migratory, social, economic, financial, political, and ecological unrest has brought to the fore the restrictive adaptability of contemporary political arenas, institutions, development models, and policy instruments, inviting us to interpret and to address the causes underlying these upheavals (Ferrão 2016; Kolb 2010; Castles 2004; Smith and Wiest 2012) and attempt to mitigate their negative impacts (Akyüz 2014). Beyond that looms an unpredictable regime of climate change that may permanently undermine the Planet's habitability (O'Brien 2014).

We appear to have reached what is today conceptually identified as the *Anthropocene* (Crutzen 2002; Barry and Maslin 2016; Steffen et al. 2011), interpreted as Earth's newest epoch in which humankind has turned into a collective geochemical force profoundly altering the planet's natural cycles (Biermann et al. 2015). Rickards (2015) and Ferrão (2017) argue that the Anthropocene provides an opportunity, however, not only to produce new thinking, but also to bring about new actions in the field of sustainability. In line with the latter, a rising call for structural change that catalyzes societal transformations toward sustainability has appeared concurrently with – or seemingly as a result of – the predominant neo-liberal capitalist, productivity- and growth-led hegemonic worldview (McMichael 2010). Among the reasons underlying this call are that continued and distributed economic growth can no longer be taken for granted (Krugman 2014), that growth endangers socio-ecological sustainability, and that there exists increasing awareness and wariness of its limits (Rydin 2013; Eastin et al. 2011). Alarmingly, the mainstream understanding of sustainability underpinning contemporary development politics and policies is still to openly embrace and exploit the discussion and experimentation of non-growth-dependent development solutions (Bina 2013; Martinez Alier 2009).

Alongside global reactions to the aforementioned crises, such as the Paris Climate Change Conference (COP21) or the 2030 Sustainable Development Agenda with its 17 Sustainable Development Goals (SDGs) (UNESCAP 2015), in Portugal a pioneering climate change[1] adaptation action-research project

1 Hereinafter, Climate Change will be referred to with the acronym "CC".

was launched: ClimAdaPT.Local[2] (2015-2017). This was a jointly funded research project, EEA Grants and Portuguese Government (*Fundo Português do Carbono*), aimed at enabling and providing Portuguese municipalities with climate change adaptation strategies at the local level. Its approach, scale, and nature, as explored here, characterizes ClimAdaPT.Local as a groundbreaking initiative within the Portuguese CC adaptation research and policy landscape. ICS ULisboa was a member of the research consortium that planned and carried out ClimAdaPT.Local.

In light of the wide recognition that CC is already happening and threatens the habitability of the planet (Thomas et al. 2004; Cahill et al. 2012), ClimAdaPT.Local addressed head on the key intertwined dimensions of the current debate about how to address this pressing issue: fostering and embedding sustainable development, engaging and learning in adaptation and mitigation to CC, and raising the performance of on-the-ground adaptation research and practice.

SCOPE AND OBJECTIVES

This chapter examines the conceptualization of adaptation to CC research and practices found in the literature, and from a social sciences perspective, revisits the imprint of ClimAdaPT.Local, emphasizing its conceptual and transformational strengths and shortcomings. It is structured in three sections.

Section 1 engages an analysis of the concept of *adaptation*, followed by a deeper look into adaptation research and practice. Our analysis builds on the fact that there is no homogenous adaptation research tradition (Wise et al. 2014; Pelling 2011). Therefore, we review current adaptation research lines seeking to reveal their respective emphases and limitations. From a first-order perspective, adaptation tends to be perceived as the management of coping with CC impacts through solutions to minimize them. This chapter adds to the literature by illustrating how adaptation research could play a much larger role in advancing the sustainable development/sustainability agenda (O'Brien 2012; Pelling 2011; Irwin 2010).

Section 2 introduces ClimAdaPT.Local and frames it against the backdrop of contemporary adaptation research and practices, illustrating the ethos underpinning the project's research focus and methodological approach. In addition, this section revisits ClimAdaPT.Local to assess its potential for

2 The project can be visited on the following webpage: http://climadapt-local.pt/en/.

transformative adaptation, the extent to which it was met, and how it can be taken further.

Section 3 concludes that the outreach of ClimAdaPT.Local is not limited to the completion of the research project, since a number of communicative platforms and decision-maker/community-engagement instruments have subsequently been put into place, and several related initiatives are beginning.

THE EVOLVING FRAMING OF ADAPTATION TO CLIMATE CHANGE

THE FRAGMENTED LANDSCAPE OF ADAPTATION RESEARCH

In the last decade, adaptation to CC has gained increasing political and policy importance. In fact, "priorities have moved from estimating impacts and vulnerabilities in order to make the case for mitigation, to adaptation planning and action in a world that is looking less and less likely to stay within 2° C of global warming" (Wise et al. 2014, 326). It is thus no wonder that over the last two decades adaptation research has surfaced and boomed (O'Brien 2012), and eventually has led to the appearance of first adaptation practices. However, there are growing calls (Bassett and Fogelman 2013; O'Brien et al. 2015; Bennett et al. 2015) for adaptation research to: (i) encourage a broader analysis of how underlying structural factors (i. e. societal or political systems and practices) directly or indirectly cause CC; and (ii) critically examine the current development paradigm and the moral and ethical aspects of the kind of *sustainability* it promotes. In sum, present-day research on adaptation does not reveal a homogenous pattern. Its variation depends largely on the specific object of analysis, adaptation context, and especially the different scientific epistemological approaches applied by climate social scientists.

Wise et al. (2014) provide us with a brief but concise review of adaptation research that outlines its conceptual evolution. Two main lines of adaptation research seem to be followed. One explores a more instrumental approach aiming at vulnerability and impact diagnoses, as well as the corresponding intervention toolkits. The other examines a more socio-political approach focusing on the governance and politics of adaptation.

Researchers from the first group mainly concentrate on quantifying climate change (Hansen et al. 2006) and examine the biophysical, social, and economic consequences of climate hazards (Stern 2006; Tol 2010). Others engage in the development and implementation of methods and tools to

assess the vulnerability of communities and ecosystems to CC (Turner et al. 2003; Eakin and Luers 2006; Adger et al. 2007; Füssel 2007). From a more general stance, Fankhauser et al. (1999) and Hallegatte (2009) work on the provision of universal principles and broad strategies of adaptation. Adding to this, scholars like Burch (2010) inquire into the identification of both opportunities and barriers to adaptation.

The second group of adaptation researchers show a growing interest in the topics of governance, decision-making, stakeholder-networks, and the politics of CC adaptation. This might be triggered by a "growing intensity of calls for more decision-oriented research […]", as Wise et al. (2014, 326) put it. More precisely, researchers belonging to this group increasingly focus on how to efficiently enable decision makers to engage in the "difficult and urgent choices between a range of *alternative policy and management options* in interconnected social and natural systems (Sarewitz et al. 2003; Pielke 2007; Eakin and Patt 2011)" (Wise et al. 2014, 326; italics added). The nature of these *alternative policy and management options* has been only marginally debated to date.

Why this increasing emphasis on decision-making processes? On the one hand, Hinkel (2011) and Downing (2012) highlight the risk of decision-makers' *paralysis by analysis* due to the overload of information resulting from assessments of impact, vulnerability, and adaptive capacity. The challenge is how to better manage information by taking in viewpoints from various related and affected sources, and organize evidence to inform policy-making. On the other hand, adaptation strategies seem to translate into little implementation, largely due to the contingency of human behaviour and ill-fitting governance solutions, especially if they involve the recognition of value changes (O'Brien and Wolf 2010). Participation and democratic deficits are also pressing issues (Bennett et al. 2015). The challenge here is to examine the ethos currently underpinning adaptation decision-making.

Debating the politics of adaptation is of paramount importance in order to handle the following complex issues: (i) the uncertain future consequences of changing and unpredictable values; (ii) the management of preferences and vulnerabilities of at-risk populations (Fazey et al. 2010; O'Brien and Wolf 2010, in Wise et al. 2014); and (iii) the challenge of accommodating many confounding issues, such as cross-scale effects over space and time and multiple forms of uncertainty (Stafford Smith et al. 2011, in Wise et al. 2014). Hence, analysing the political dimension of adaptation to CC is crucial to fully

understand the spatial and environmental justice implications of predominant adaptation actions. Even so, we witness a predominant behaviour of crystallizing incremental adaptation practices focused on similar causes. These include such things as the transformation of production systems or infrastructure planning in light of changing external environmental factors, with limited debate on alternative options or transitional/transformational changes (Park et al. 2012). In other words, a significant amount of CC adaptation research and action have been rather technical, non-political, and essentially response-driven (Pelling 2011).

Regardless of these limitations, there is a consensus about the impact – albeit modest – that adaptation research has had in influencing decision-makers into putting adaptation solutions into practice, and including them into planning or policy (Tompkins et al. 2010; Ford et al. 2011).

REFRAMING ADAPTATION RESEARCH

In light of the sustainable development and sustainability debate, these multiple shortcomings and obstacles hinder the potential that adaptation, and the framing of adaptation, could promote transformative, paradigm shifting policy practices. Hints about this potential can be found scattered in the literature, but two authors have brought this issue to the centre stage of their research. Mark Pelling (2011; Pelling et al. 2014) and Karen O'Brien (O'Brien and Wolf 2010; O'Brien and Leichenko 2003; O'Brien 2012) provide an in-depth critique of the underlying predominant ethos of adaptation embodied by adaptation research and practice, revealing how its potential could be tapped.

Both authors offer a similar approach to the potential for adaptation. Yet their interpretations seem to vary slightly from a more all-encompassing framing (Pelling 2011), in which transformative adaptation is seen as one of many dimensions of adaptation, to a more explicit emphasis on the need for a paradigm shift toward deliberative transformation (O'Brien 2012).

Nevertheless, one must first clarify the concept of *change* itself to be able to analyse what change adaptation could be promoting. Directly under the spotlight stands the coexistence of diverse discourses that embody the projection of different *desirable futures* (Bina 2013; Sneddon et al. 2006) closely intertwined with different conceptualizations of sustainability. The fundamental choice concerning the future is: what do we, as a society, want

to *change* into (i.e. ends)? And, subsequently, what do we, as a society, need in order to secure such *change* (i. e. means)? These questions refer to a *forward-looking* concept of adaptation, which is able to intervene in the course of policies and practices in favour of sustainability (Pelling 2011, 6-7).

Pelling (2011) highlights how the latter fails to address the meaning of *change* in a comprehensive manner, as well as to propose a framework that encompasses core questions of how *change* can be promoted and implemented in practice. In other words, the fundamental discussion about the values that underpin the change we, as a society, wish to promote are absent from most of the contemporary adaptation debate, at the technical but also the political level.

SYSTEMATIZING THE CRITIQUE OF THE CURRENT FRAMING OF ADAPTATION

Contemporary mainstream and alternative sustainable development and sustainability discourses fall into three main categories: business as usual, reformist, and paradigm shift (Dryzek 2009). These are mirrored in Mark Pelling's triple tier classification of adaptation as *resilience*, *transition*, or *transformation* (Pelling 2011):

- ***Resilience*** – This is the most common approach of adaptation so far. It seeks to secure the survival and functioning of existing systems[3] and practices (similar to the business as usual discourse) into the future in the face of changing external parameters, such as intensifying climate hazards due to CC. However, by focusing solely on solutions (tools) instead of causes, *resilience* fails to scrutinize the behaviours, economics, and politics that justify the need for adaptation in the first place. In other words, it seeks *functional integrity*, in which parameters *in* the system are incrementally altered so that the integrity *of* the system remains unchanged, aiming for greater efficiency without asking if what is being done is actually worth doing (Orr 2009, 15). As the system's ethos is not subjected to examination, the survival of unsustainable or unjust systems may prevail (Jerneck and Olsson 2008).

3 By systems we refer to "a set of things – people, cells, molecules, or whatever – interconnected in such a way that they produce their own pattern of behaviour over time" (Meadows 2008).

• ***Transition*** – *Transitional adaptation* promotes innovations to social, economic, political, or cultural relations in a system but does not *a priori* intend to lead to regime change (Pelling 2011). In other words, this does not mean that regime changes will not happen – only that these are not normative from the outset, but can result from governance dynamics triggered by research projects or policy process. By regime changes Pelling refers to an irreversible disruption of existing systems, paradigms, and structural constraints. Transitional adaptation could potentially lead to regime change as a result of the governance and learning dynamics during the process. "Transition implies a reflection on development goals and how problems are framed (priorities, include new aspects, change boundaries of system analysis) and assumptions of how goals can be achieved", as Pelling argues (2012, 53).

In a nutshell, *transitional adaptation* differs from *resilient adaptation* in its *leitmotif*. When transitional adaptation strategies incrementally seek to include social justice dimensions and intervene in the course of development, this can lead to *progressive transition* within existing governance systems (Pelling 2011). Even if it aims beyond *functional integrity* (e.g. greater focus on governance solutions), it falls short of any transformative mindset, since it lacks the capability to envisage the underlying value changes and outcomes of structural system changes. *Transitional adaptation* has mainly honed in on the pathways from one socio-technical regime to another, focusing on how these shifts occur and how new regimes can be set in place (Geels and Schot 2007; Wise et al. 2014; Burch et al. 2014; Moore et al. 2014).

Current socio-political regimes represent a persistent and complex limitation to the literature on transitions to more sustainable futures (Campos 2016, 14). In our opinion, transition research has focused over-proportionally on technical and abstract conceptualizations of transition pathways, failing to bring the actual outcomes after transition, problems arising along the way, and possible negative spin-offs including the uncertainty of change. To this effect, it has been articulated that its core weaknesses seem to lie in the lack of: (i) planning for the structural changes needed in order to reorder existing regimes, (ii) examining how these regime changes can be achieved in practice, and (iii) exploring the implications of such changes for existing power relations and the affected humans in general (Shove and Walker 2007; Pelling 2011; O'Brien 2012; 2015).

• ***Transformation*** prescribes the most complete level of adaptation to CC, according to Pelling (2011). It aims to bridge the existing deficit of adaptation

research by touching upon inequalities in the suffering from causation of CC impacts, and by challenging the *status quo* of systems and paradigms (Biermann et al. 2015). Nelson et al. (2007, 397) define *transformation* as: "a fundamental alteration of the nature of a system[4] once the current ecological, social or economic conditions become untenable or are undesirable", that is, when a certain *tipping point* is reached.

Transformation embodies the paradigm shift (Dryzek 2009; Bina 2013; Pelling et al. 2014) identified earlier in this section, as it implies an in-depth examination and consequent shift of wider, less easily visible current unsustainable system structures, which brought about vulnerabilities in the first place. Pelling (2011, 8) calls transformation "[…] an extreme case where profound change alters the distribution of rights and responsibilities and visions of development across society". It has already found its way into international scale debates and forums, as Pelling, O'Brien, and Matyas (2014, 4) highlight:

> Within the academic community transformative adaptation has gained visibility through the Intergovernmental Panel on Climate Change (IPCC) which first discussed transformation in its Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) (IPCC-2012). […] In this context, transformation was presented as one of six interacting elements that make up the solution space for managing risks and adapting to climate extremes.

Yet adaptation efforts may not be sufficient to defy environmental change (O'Brien 2012). Some changes will simply be too drastic for adaptation to encompass[5] (Kates et al. 2012), while an uncomfortable question always seems to be left aside: Do we actually have the possibility for *inducing change* instead of only *adapting*?

To summarize, r*esilience* and *transition* are understood as incomplete strategies of adaptation to CC, since their respective framings imply that the core underlying structures driving CC and vulnerabilities in the first place are not addressed (Pelling 2011; O'Brien 2012). Still, *transition* can set in place pathways for transformational change. On the contrary, *transformation* as an

4 At this stage, an important clarification is in order: systems and regimes, as concepts, are often used interchangeably in the literature.

5 Such as ocean acidification, extreme aridification, ground and surface water disappearance. Some islands have already disappeared under the rising sea-levels and more will.

alternative adaptation approach is said to have the power to substantially shift current unsustainable systems toward new desirable states in which the values and morality underlying development are brought back into the centre stage of discussion (Pelling et al. 2014).

WHAT IS TRANSFORMATIVE ADAPTATION?

From a philosophical standpoint, any debate on transformation begs at least three questions: *why* do we, as a society, need to transform? *What* do we need to transform? And *how* can we transform it? In light of the wider CC context, the *why* is clear. It is now necessary to shift our attention to the *what*.

In light of the socio-spatial justice issues associated with vulnerabilities to CC, Pelling (2011) highlights the need to revisit Rousseau's social contract, as the values of human rights and equality must be included in a redefinition of our moral frameworks. The underlying claim is that humanity and ecosystems have to be viewed anew as a connected system in which each element is co-evolving. Indeed, our transformative adaptation capacity (O'Brien et al. 2009) will be determined by our ability to inscribe in this *new social contract* the recognition of societal divisions (i. e. geographical, gender, class, developed versus developing world, etc.) and the needs of future generations and non-human entities.

To explore transformative capacity-building processes and solutions, the value-systems underlying current patterns of social organization must be questioned, aiming at debating *how* these could be transformed. One should look beyond more visible exposures to CC by examining its more invisible vulnerabilities and their underlying causes (Heald 2017). Indeed there already exist historical empirical examples of observed transformative adaptation[6] and political regime shifts. A common feature among them is that *change* itself was not intended, but rather emerged out of the contextual circumstances and often following severe natural disasters or crises (Pelling 2011).

Transformation has been defined in many different ways, including physical or qualitative changes to existing forms, structures or predominant belief systems, as well as targeting psycho-social patterns in order for actual transformation to take place (Folke et al. 2010; Nelson et al. 2007; Pelling 2011; Sharma 2007;

6 See for empirical examples the conclusion of Section II, chapter 5 of Pelling (2011).

in O'Brien 2012). It can take place in many spheres, such as politics, gender relations, production and consumption patterns, worldviews, values, or personal lifestyles (O'Brien 2012). This being said, the uncertainty about possible costs of change seems to still be so frightening that both poor and powerful apparently prefer the known to the unknown, even if the former triggers vulnerabilities and risk (Pelling 2011). It therefore comes as no surprise that transformation is conceptually "vague or ambiguous and [that] there is a need for a more rigorous approach to its application" (Feola 2015, in Fazey et al. 2018).

PRECONDITIONS FOR TRANSFORMATION

Transformation being until now a notion that means "different things to different people or groups" (O'Brien 2012, 670), it is necessary that transformation research raises a number of substantial questions if it is to become a scientific alternative of adaptation research, concretely relating to the foregoing issue of the *how*: What are the driving forces behind intended change, and how does the change become mainstreamed? How does the process of establishing transformation goals work? Is it democratic, inclusive, participatory, and deliberative? Who is involved in the debate, and to what extent and in which way(s) can the participants actively influence the direction and scope of the discussion and the decision-making processes? These are a few of the fundamental aspects that will determine the ethicality and social sustainability of transformation itself.

The ultimate goal is the mapping of the politics of transformation into a comprehensive framework. We need to identify the parameters and the scale of change necessary to actually make a difference, which also will enable analyses of the progress of change (Bennett et al. 2015). This is followed by the need to define the aims of transformation itself. If, as it has emerged in the common understanding about CC responses, "sustainable development" is the ultimate goal toward which our actions are directed, then the very same term must again be filled with sense (i. e. Mourato et al. *forthcoming*). Like Pelling (2011), O'Brien urges for an inclusion of ethical aspects such as solidarity and equality into the redefinition of *sustainable*. In this connection, both potentials and dangers of transformation need to be given more attention, including a broader discussion about the ultimate meaning of progress, development and wellbeing (Jackson 2009).

Regardless of its conceptualization, we still need to analyse how transformation can actually be reached. In its way *invisible* barriers often stand, such as cultural, institutional, or cognitive ones, which in turn are expressed through policies or social practices (Kegan and Lahey 2009; Moser and Ekstrom 2010; Pelling 2011; Shove et al. 1998). All of these must be unified and fitted into the big picture. However, as Moser and Ekstrom (2010, 22027) claim, these barriers can be overcome "with concerted effort, creative management, change of thinking, prioritization, and related shifts in resources, land uses, institutions, etc.", thus emphasizing the usefulness of developing a systematic diagnostic framework. Such a framework is largely enabled via processes of transformational learning (Tschakert and Dietrich 2010) and leadership (Heifetz et al. 2009). However, we still have to address how transformation actually occurs, that is, how to move forward from purely abstract and theoretical constructs of change, often found in pathways literature (Wise et al. 2014; Moore et al. 2014), toward more practical and empirical work on deliberate transformation (see for instance Burch et al. 2014; Fazey et al. 2016).

TRANSFORMATIVE STAKEHOLDERS

A fundamental precondition for transformation is the value-change within the network of stakeholders that will promote it. To begin with, we must focus on the knowledge production underpinning the transformation debate. Transformation may occur at many different scales and across different settings and contexts. Research informing it should hail from a variety of scientific fields, such as psychology, sociology, cultural studies, geography, history, geology, economics, and philosophy, etc. However, so far we face numerous partial theories, frameworks, or approaches to transformative adaptation (O'Brien 2012), but a consolidated holistic and interdisciplinary theoretical transformation framework is still missing.

Although views on the desired outcome of transformation might not be shared by all scholars of these fields, they do have in common viewing transformation as a deliberate or intended process in which ethics and sustainability are major priorities (Irwin 2010). This means that among them exists *a priori* an intention of thinking about how to bring about a profound alteration to current practices and systems when engaging in the elaboration of these theories.

Yet, O'Brien (2012, 672) challenges whether this is "sufficient to inform strategies and actions for deliberate, ethical and sustainable transformation", insinuating that we might need to engage in innovative transdisciplinary approaches. Concurrently, some (i.e. Wickson et al. 2006) call for a transformation of scientific ontology and strategies of conducting and communicating science, taking in multiple viewpoints (Mezirow 2000), as well as recognizing objective and subjective realities and including different knowledge types into analyses (O'Brien 2012), for example knowledge from local professionals (e.g. forest or coastal agents). Furthermore, local community actors can inform about their "experience [in facing] a broad array of multi-scalar and multi-temporal, social, political, economic and environmental changes" (Bennett et al. 2015, 907), which is valuable for pre-transformation analysis.

In practice, *deliberate transformative action* often takes place in so-called niches (sometimes shadow networks) (Geels and Schot 2007; Burch et al. 2014) and is promoted by small committed groups with worldviews built on challenges to the rooted systems (Pelling et al. 2008). Therefore, not only should civil society actors' viewpoints be considered, but those actors themselves should be actively included in the deliberative transformation process, since they are connected to grass-roots movements and provide access to valuable networks and spheres of influence hard to reach for actors on higher levels. This becomes especially important in the context of social learning and social organization. The challenge is therefore to analyse how niche transformation can become mainstreamed in political and practical terms, complementary to numerous theoretical approaches to this issue (Burch et al. 2014; Geels and Schot 2007; Park et al. 2012; Moore et al. 2014).

In the first part of this chapter we have extensively reviewed, from a comparative stance, the features of different types of adaptation conceptualization and practices. We now examine a specific CC adaptation action-research project, ClimAdaPT.Local, in the context of our review.

CLIMADAPT.LOCAL: SCALING-UP ADAPTATION IN PORTUGAL

PORTUGAL'S CC CONTEXT

Portugal is one of the European countries most vulnerable to the impacts of CC (Carvalho et al. 2014). Widespread throughout the country, CC's adverse impacts include: sea level rise (coastal areas); desertification and drought

(southern areas and hinterland); temperature increase, heat and cold waves, frequent and intense extreme weather events, and fires. Coupled with this, as the European Spatial Planning Observatory Network (ESPON) research revealed, Portugal's adaptation capacity is regarded as inadequate (Greiving et al. 2013). The urgency to swiftly engage in a nation-wide capacity-building process prompted the development of multiple adaptation action-research proposals.

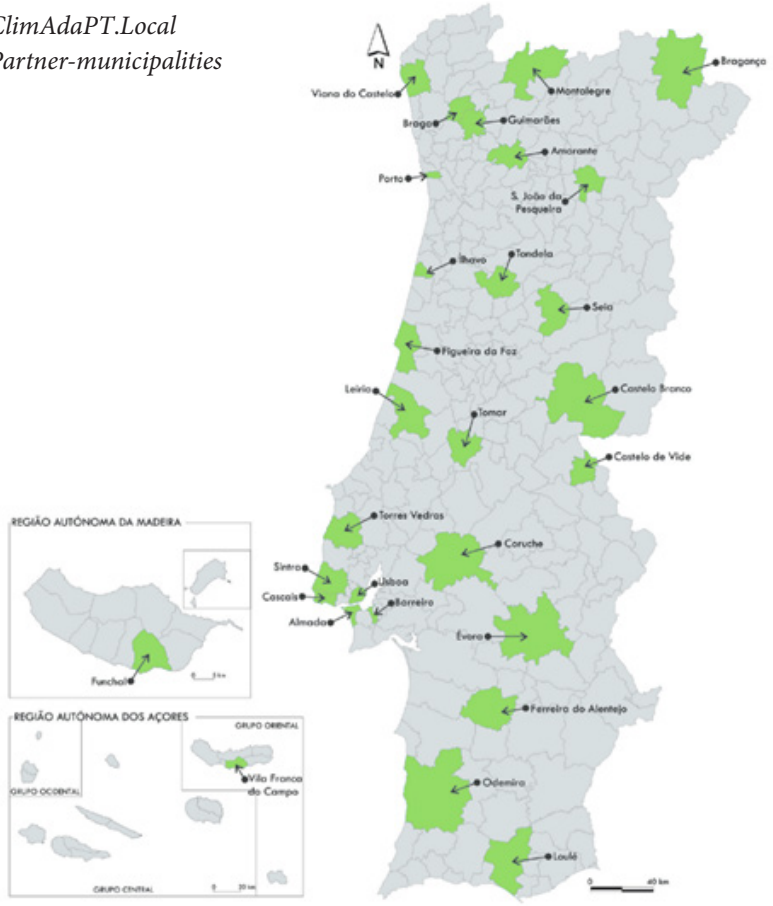
ClimAdaPT.Local resulted from a successful bid for European Economic Area Grants (EEA) and Portuguese Government funding (*Fundo Português do Carbono*) to develop 26 Municipal CC Adaptation strategies in Portugal and incorporate adaptation measures and guidelines in local planning instruments. In other words, the pre-defined objective was to promote resilience through policy innovation, enhancing the reach and impact of existing policy instruments (i.e. planning) in promoting adaptation to CC. These objectives were clearly stated in the funding bid. It was at the methodological level, namely in *how* to achieve the objectives, that room for innovation truly resided.

In this sense, a few key decisions proved instrumental in securing ClimAdaPT.Local's innovative nature. To begin with, the project's implementation design sought to ensure the political and institutional commitment of local decision makers, as well as to raise awareness and engage a wide and diverse group of local stakeholders in view of the elaboration and future implementation of each EMAAC (*Estratégia Municipal de Adaptação às Alterações Climáticas* – Municipal CC Adaptation Strategy).

Partner-municipalities were chosen strategically (Figure 6.1), one per intermunicipal community – Portugal's subregional territorial units according to the NUTS III classification. ClimAdaPT.Local's underlying ambition was to develop and promote a holistic strategy for CC adaptation in one municipality of each of these territorial units, in the hope that neighbouring municipalities would engage a copycat process. Furthermore, the heterogeneity of the 26 municipalities selected allowed for a wide geographic, socioeconomic, and cultural diversity, enabling the project's results to be regarded as representative.

ClimAdaPT.Local's research approach was both holistic and interdisciplinary. The project's consortium was composed of a team of academics of different universities, encompassing climatologists, biologists, engineers, planners, and a wide array of social scientists, as well as environmental NGOs and private sector partners. In addition, the only three local authorities that already had CC adaptation strategies in place in Portugal (i.e. Almada, Cascais, and

Figure 6.1 *ClimAdaPT.Local Partner-municipalities*



Sintra), were made project partners. The underlying goal was to bank on these municipalities' knowledge and experience to further inform the design of the CC Adaptation strategies to be implemented in all other partner-municipalities. In this sense, the project sought to maximize the input of the institutional learning processes that had brought forward CC Adaptation in Portugal up to that date.

In its work plan, the project took stock of a thoroughly tested solution (UKCIP 2009): (i) to begin by developing a present and future vulnerabilities scenario, specific for each municipality; (ii) to perform a risk and priority assessment concerning climate change scenarios for each municipality and their impacts; and (iii) to develop a set of adaptation options. These three steps were carried out in close consultation with local decision-makers, local technical municipal officials, and, to some extent, the local communities.

GOVERNANCE INNOVATION THROUGH RESEARCH DESIGN?

There are many ways to analyse and interpret ClimAdaPT.Local's innovation potential and achievements. We will focus on the impact ClimAdaPT.Local has had on stakeholders (i.e. decision-makers, municipal officials, and civil society), their interactions, and networking dynamics. We explore ClimAdaPT.Local's potential impact by examining the nature of the governance solutions used during its completion and those left in place for its post-project implementation.

Good governance principles were instrumental in the development of ClimAdaPT.Local's methodological framework. In a nutshell, the idea of good governance is that effective participation of all stakeholders in a policy design process, especially at local levels of government, is a fundamental feature, in order to promote both equity and efficiency in public action. Participation holds both an intrinsic and instrumental value. For instance, policy-makers often do not have access to the details of local-level information, preferences, and perceptions that may be necessary for the proper design and implementation of projects and public responses. Furthermore, participation plays an often-neglected role that protects against moral hazards, through the development of a sense of ownership and peer monitoring of public action by local communities. This promotes greater accountability in public action and the likelihood of more equitable policy impacts, allowing community stakeholders who are usually silent to be heard (Osmani 2008).

ENGAGING COMMUNITIES IN CC ADAPTATION

ClimAdaPT.Local's workshop-based participatory framework engaged over 1400 stakeholders nationwide. These were a highly diversified group hailing from different activity sectors (economy, agriculture, tourism, energy, forests), to public administration (central, regional, and local), local technical officers, NGOs, and church and charity members, always in accordance with the issues worked upon in each municipality.

The workshop-framework aimed at: (i) increasing local adaptation knowledge levels; (ii) helping to identify adaptation priorities; (iii) promoting transparency in the decision-making processes; (iv) promoting the basis

of common understanding and encouraging the sharing of adaptation responsibilities; and (v) creating synergies and ensuring a good coordination of answers and resources - in other words, adaptation efficiency.

Lasting from six to seven hours, the workshops were structured into two separate parts. The first and more descriptive part included a general scientific presentation on the impact of CC at a global and national level, focusing on the region of each specific workshop. This was followed by municipal technicians of each municipality exposing local vulnerabilities, both present and future (projected), and identifying a set of strategic measures of adaptation. During the second part of the workshop the stakeholders were encouraged to debate, even if to a limited extent. The process was organized across different thematic tables in which a moderator steered the discussion with a focus-group style script, and a recording secretary organized and wrote down the key debate facts.

The script was based on three fundamental levels (Schmidt et al., 2018): (i) perceptions of the CC impacts already felt, or not, in the municipality; (ii) assessment of the viability of the proposals included in the strategy designed by municipal officials, as well as obstacles, responsibilities, suggestions, and recommendations for the strategy; (iii) visions of the future: how CC and local identity will be articulated in the near future. The information gathered in the workshops also allowed obtaining an overall reference framework on the sensitivity and the perceptions of CC at a local level, according to the geographic, professional, and social diversity of the stakeholders engaged in this process.

UNPACKING THE INNOVATIVE POTENTIAL OF CLIMADAPT.LOCAL

ClimAdaPT.Local stands as a groundbreaking adaptation action-research project in Portugal. The sheer geographic scope and range of engaged decision-makers, local municipal technical staff, central and regional public administrative staff, private and third sector representatives, and civil society in general, went largely beyond anything previously attempted. Notwithstanding the scale of this endeavour and the added value it created, a critical self-assessment is of paramount importance if we are to fully understand the impact that projects like this can have and what exactly we are trying to achieve by pursuing them.

In retrospect, ClimAdaPT.Local:

- introduced and reinforced a local participatory culture and enhanced the communication capacity amongst different audiences. In detail, the stakeholder involvement strategy was instrumental in promoting the participation of a wide range of local community representatives, avoiding the perpetuation of top-down public interventions and their fundamental democratic deficit. This participatory dimension moved ClimAdaPT.Local beyond a mere exercise in "functional integrity" toward governance dynamics and politicization of adaptation to CC at the local level.
- helped to decode the complexities of CC knowledge language and themes and strengthened local administrative and institutional confidence. In detail, the project promoted a tool-kit to better manage complex and confounding issues building on the input of the local communities' risk and vulnerability perceptions.
- fostered the advance in the co-production of knowledge in a more consistent way. ClimAdaPT.Local set out to be a holistic interdisciplinary exercise in which both objective and subjective dimensions of knowledge were taken into account. This was fuelled by the strategy laid out to identify and incorporate local knowledge in terms of climate change detection and adaptation solutions into the projects' final adaptation measures and recommendations. In this sense, ClimAdaPT.Local did work as an institutional and social-learning platform.

Despite these positive achievements, the information-exchange dynamic established amongst policy makers, academics, and local communities does not necessarily guarantee long-term community support. Stakeholders need not only to understand, debate, and contribute to the development of specific CC adaptation options, they also require a greater sense of ownership of the adaptation process itself.

This outcome may be enhanced by the political and institutional commitment of local decision makers to create a local adaptation strategy monitoring committee in each of the 26 locations. Such bodies would monitor the emerging and future local adaptation efforts in each community. They might also provide a platform for continuous adaptation knowledge exchange and communication. Led by the local mayor, these organizations

would embrace a suitable sample of the stakeholders who previously had participated in the project workshops. This governance innovation was engendered by an unplanned project outcome: the creation of a nation-wide local adaptation network, partnering ClimAdaPT.Local's local authorities with other municipalities, the private sector, NGOs, and academic stakeholders. It is heartening to record the innovative and transformative potential that such well-designed adaptation projects can unleash.

CONCLUSIONS

We set out to place a specific project, ClimAdaPT.Local, within the wider CC adaptation research framework at the municipal governance level. In retrospect, it is not easy normatively to fit this project into a single box, or into the very limited time scale at our disposal. In our view, the research team's interpretation of the original bid and its subsequent implementation of methodological choices altered, to some degree, ClimAdaPT.Local's ultimate scope. While remaining true to its policy innovation goal seeking to enhance local resilience to CC, the project – as a process – proved to be a gateway for broader change.

The evolutionary framing tested the efficacy of the research programme. Tackling 26 municipalities with very different CC threats and experiences, with differing political party configurations in the governing coalitions, and with a very nascent stakeholder commitment to transformative change, was asking a lot of any research programme. There is always the feature of any research, even one as well designed and as politically well-connected as this, that it is seen as essentially peripheral to day-to-day governing and politicking. Furthermore, the structures of resources, budgets, institutional arrangements, and cultural histories of each of these municipalities to climate change, which is still being conceptualized, all make a short, if forensic research process highly vulnerable to other agendas. Given all of this, the outcomes were actually very exciting and encouraging.

Policy change aside, ClimAdaPT.Local's participatory dimension allowed for what Pelling (2011) would call a spark of transitional change. It is true that at its root (i. e. ClimAdaPT.Local's call), this was not set out as a priority; yet, the chosen project implementation design and process brought its governance innovation, participation, and knowledge co-production dimensions to the

centre stage. In this sense, the project arguably raised a previously unseen level of local awareness of current socio-ecological challenges, and brought a much more in-depth debate about sustainable development to local policy agendas through the mobilization of a large array of stakeholders toward CC adaptation. It did so on the shoulders of a process of self-reinforcing social learning, knowledge co-production, and self-organization.

It is hard to say how the different impact dimensions of ClimAdaPT. Local will evolve in the future. Its undisputed achievement of policy reform and awareness-raising is potentially just the tip of the iceberg. The project's domino effect on neighbouring municipalities is slowly gaining traction although it remains to be confirmed whether the same governance innovations are going to be set in place. One spin-off effect, however, must be highlighted. The now flourishing national network of municipalities for local adaptation to CC is incrementally taking on the role of nation-wide platform for knowledge dissemination, political mobilization, funding solutions, and overall awareness-raising for CC adaptation action. Whether it can work as the facilitator for broader movements of transition or transformation is yet to be determined, but as of now, the message and ethos of ClimAdaPT.Local have found a champion.

» ACKNOWLEDGEMENTS

We would like to express our gratitude to Tim O'Riordan (University of East Anglia) and Roberto Falanga (University of Lisbon) for their insightful comments and suggestions to earlier versions of this chapter.

JOÃO MOURATO
Instituto de Ciências Sociais, Universidade de Lisboa
Av. Prof. Aníbal Bettencourt 9 — 1600-036 Lisboa, Portugal
joao.mourato@ics.ulisboa.pt
orcid.org/0000-0003-0891-4897

LUÍSA SCHMIDT
Instituto de Ciências Sociais, Universidade de Lisboa
mlschmidt@ics.ulisboa.pt
orcid.org/0000-0002-7449-8636

JOÃO FERRÃO
Instituto de Ciências Sociais, Universidade de Lisboa
joao.ferrao@ics.ulisboa.pt
orcid.org/0000-0001-7729-1908

ALEXANDRA BUSSLER
Instituto de Ciências Sociais, Universidade de Lisboa
alexandra.bussler@ics.ulisboa.pt
orcid.org/0000-0003-0912-7502

§ REFERENCES

ADGER, W., et al. 2007. "Assessment of adaptation practices, options, constraints and capacity". *Climate Change 2007*, 717-743.

AKYÜZ, Y. 2014. "Crisis mismanagement in the United States and Europe: Impact on developing countries and longer-term consequences". Discussion Paper, Turkish Economic Association, No. 2014/3.

BARRY, A., M. Maslin. 2016. "The politics of the anthropocene: a dialogue". *Geo: Geography and Environment*, 3 (2): 1-12.

BASSETT, T., C. Fogelman. 2013. "Déjà vu or something new? The adaptation concept in the climate change literature". *Geoforum*, 48: 42-53.

BENNETT, N., et al. 2015. "Communities and change in the anthropocene: understanding social-ecological vulnerability and planning adaptations to multiple interacting exposures". *Regional Environmental Change*, 16 (4): 907-926.

BIERMANN, F., et al. 2015. "Down to Earth: Contextualizing the Anthropocene". *Global Environmental Change*, 39: 341-350.

BINA, O. 2013. "The green economy and sustainable development: an uneasy balance?". *Environment and Planning C-Government and Policy*, 31 (6): 1023-1047.

BURCH, S. 2010. "Transforming barriers into enablers of action on climate change: insights from three municipal case studies in British Columbia, Canada". *Global Environmental Change*, 20 (2): 287-297.

BURCH, S., et al. 2014. "Triggering transformative change: a development path approach to climate change response in communities". *Climate Policy*, 14 (4): 467-487.

CAHILL, A., et al. 2012. "How does climate change cause extinction?". Proc. R. Soc. B. The Royal Society.

CAMPOS, I. D. S. 2016. *Societal Transformation and Climate Change Adaptation: PAR Experiences in Portugal*. Doctoral dissertation. Lisbon: Instituto de Ciências Sociais, Universidade de Lisboa.

CARVALHO, A., et al. 2014. "Climate change research and policy in Portugal". *Wiley Interdisciplinary Reviews: Climate Change*, 5 (2): 199-217.

CASTLES, S. 2004. "Why migration policies fail". *Ethnic and Racial Studies*, 27 (2): 205-227.

CRUTZEN, P. 2002. "Geology of mankind". *Nature*, 415, 23.

DOWNING, T. 2012. "Views of the frontiers in climate change adaptation economics". *WIREs Climate Change*, 3: 161-170.

DRYZEK, J. 2009. "Democratization as deliberative capacity building". *Comparative Political Studies*, 42 (11): 1379-1402.

EAKIN, H., A. Luers. 2006. "Assessing the vulnerability of social–environmental systems". *Annual Review of Environment and Resources*, 31 (1): 365-394.

EASTIN, J., R. Grundmann, and A. Prakash. 2011. "The two limits debates: limits to growth' and climate change". *Futures*, 43 (1): 16-26.

FANKHAUSER, S., J. Smith, and R. Tol. 1999. "Weathering climate change: some simple rules to guide adaptation decisions". *Ecological Economics*, 30: 67-78.

FAZEY, I., et al. 2010. "A three-tiered approach to participatory vulnerability assessment in the Solomon Islands". *Global Environmental Change*, 20 (4): 713-728.

FAZEY, I., et al. 2016. "Past and future adaptation pathways". *Climate and Development,* 8 (1): 26-44.

FAZEY, I., et al. 2018. "Transformation in a changing climate: a research agenda". *Climate and Development*, 10 (3): 197-217.

FERRÃO, J. 2016. "As geografias rurais do Antropoceno: ainda uma terra incognita?". In *Agricultura, Florestas e Desenvolvimento Rural*, org. A. O. das Neves. Lisbon: IESE – Instituto de Estudos Sociais e Económicos, 249-257.

FERRÃO, J. 2017. "O antropoceno como narrativa: uma lente útil para entender o presente e imaginar o Futuro?". *Biblos*, 3 (3): 205-221.

FOLKE, C., et al. 2010. "Resilience thinking: Integrating resilience, adaptability and transformability." *Ecology and Society*, 15 (4): Article 20.

FORD, J., L. Berrang-Ford, and J. Paterson. 2011. "A systematic review of observed climate change adaptation in developed nations". *Climate Change*, 106: 327-336.

FÜSSEL, H. 2007. "Vulnerability: a generally applicable conceptual framework for climate change research". *Global Environmental Change*, 17 (2): 155-167.

GEELS, F., J. Schot. 2007. "Typology of sociotechnical transition pathways". *Research Policy*, 36: 399-417.

GREIVING, S., et al. 2013. *ESPON CLIMATE – Climate Change and Territorial Effects on Regions and Local Economies*. The ESPON, Harvard.

HALLEGATTE, S. 2009. "Strategies to adapt to an uncertain climate change". *Global Environmental Change*, 19: 240-247.

HANSEN, J., et al. 2006. "Global temperature change". *Proceedings of the National Academy of Sciences* 103, 29.

HEALD, S. 2017. "Climate silence, moral disengagement, and self-efficacy: how Albert Bandura's theories inform our climate-change predicament". *Environment: Science and Policy for Sustainable Development*, 59 (6): 4-15.

HEIFETZ, R., A. Grashow, and M. Linsky. 2009. *The Practice of Adaptive Leadership: Tools and Tactics for Changing Your Organization and the World*. Boston, MA: Harvard Business Press.

HINKEL, J. 2011. "Indicators of vulnerability and adaptive capacity: towards a clarification of the science-policy interface". *Global Environmental Change*, 21: 198-208.

IRWIN, R. (ed). 2010. *Climate Change and Philosophy: Transformational Possibilities*. London: Continuum Studies in Philosophy.

JACKSON, T. 2009. *Prosperity Without Growth: Economics for a Finite Planet*. London: Earthscan.

JERNECK, A., L. Olsson. 2008. "Adaptation and the poor: development, resilience and transition". *Climate Policy*, 8 (2): 170-182.

KATES, R., W. Travis, and T. Wilbanks. 2012. "Transformational adaptation when incremental adaptations to climate change are insufficient". *Proceedings of the National Academy of Sciences*, 109 (19): 7156-7161.

KEGAN, R., L. L.-Lahey. 2009. *Immunity to Change: How to Overcome It and Unlock Potential in Yourself and Your Organization*. Harvard: Harvard Business Press.

KOLB, R. (Ed). 2010. *Lessons from the Financial Crisis: Causes, Consequences, and Our Economic Future*. John Wiley & Sons, Hoboken, New Jersey.

KRUGMAN, P. 2014. "Four observations on secular stagnation". *Secular Stagnation: Facts, Causes and Cures*, CEPR Press: 61-68.

MARTINEZ ALIER, J. 2009. "Socially sustainable economic de-growth". *Development and Change*, 40 (6): 1099-1119.

MCMICHAEL, P., ed. 2010. *Contesting Development: Critical Struggles for Social Change*. London: Routledge.

MEADOWS, D. 2008. *Thinking in Systems: a Primer*. A White River Junction: Chelsea Green Publishing Company.

MEZIROW, J. 2000. *Learning as Transformation: Critical Perspectives on a Theory in Progress*. New York: Jossey-Bass.

MOORE, M., et al. 2014. "Studying the complexity of change: toward an analytical framework for understanding deliberate social-ecological transformations". *Ecology and Society*, 19 (4): 54.

MOSER, S., J. Ekstrom. 2010."A framework to diagnose barriers to climate change adaptation". *PNAS*, 107: 22026-22031.

MOURATO, J.. et al. Forthcoming. "Framing the alternative: sociopolitical dynamics towards sustainability". *Changing Societies: legacies and Challenges*. vol. III: The Diverse Worlds of Sustainability. Lisbon: Imprensa de Ciências Sociais, 87-110.

NELSON, D., W. Adger, and K. Brown. 2007. "Adaptation to environmental change: contributions of a resilience framework". *Annual Review of Environment and Resources*, 32: 395–419.

O'BRIEN, K., R. Leichenko. 2003. "Winners and losers in the context of global change". *Annals of the Association of American Geographers*, 93 (1): 89-103.

O'BRIEN, K., B. Hayward, and F. Berkes. 2009. "Rethinking social contracts: building resilience in a changing climate". *Ecology and Society*, 14 (2): 12.

O'BRIEN, K., J. Wolf. 2010. "A values-based approach to vulnerability and adaptation to climate change". *WIREs Climate Change*, 1 (2): 232-242.

O'BRIEN, K. 2012. "Global environmental change II: from adaptation to deliberate transformation". *Progress in Human Geography*, 36 (5): 667–676.

O'BRIEN, K. 2014. "Global citizens of the world unite!". In *Global citizen – Challenges and Responsibility in an Interconnected World*. Oslo: Sense Publishers, 27-36.

O'BRIEN, K., et al. 2015. *Climate Change and Development: Adaptation through Transformation. Climate Change Adaptation and Development – Transforming Paradigms and Practices*. London: Routledge.

ORR, D. 2009. *Down to the Wire: Confronting Climate Collapse*. Oxford: Oxford University Press.

OSMANI, S. 2008. "Participatory governance: An overview of issues and evidence". *Report on 'Participatory Governance and the Millennium Development Goals (MDGs)'*. United Nations

DESA: 1-45.

PARK, S., et al. 2012. "Informing adaptation responses to climate change through theories of transformation". *Global Environmental Change*, 22 (1): 115-126.

PELLING, M., et al. 2008. "Shadow spaces for social learning: a relational understanding of adaptive capacity to climate change with organisations". *Environment and Planning A*, 40 (4): 867-884.

PELLING, M. 2011. *Adaptation to Climate Change: From Resilience to Transformation*. London: Routledge.

PELLING, M. 2012. "*Resilience and transformation*". *Climate Change and the Crisis of Capitalism. A Chance to Reclaim Self, Society and Nature*. Oxford: Routledge, 51-65.

PELLING, M., K. O'Brien, and D. Matyas. 2014. "Adaptation and transformation". Special Issue on 'Advancing Climate Change Adaptation and Risk Management'. *Climatic Change*, 128 (1-2), Springer Verlag.

RICKARDS, L. 2015. "Critiquing, mining and engaging Anthropocene science". *Dialogues in Human Geography*, 5 (3): 337-342.

RYDIN, Y. 2013. *The Future of Planning*. Bristol: Policy Press.

SCHMIDT L., et al. (2018) "Outlining community perceptions of climate change in local adaptation strategies development: the case of ClimAdaPT.Local". In *Theory and Practice of Climate Adaptation. Climate Change Management*, eds. F. Alves, W. Leal Filho, and U. Azeiteiro. Cham, Szwitzerland: Springer, 219-233.

SHARMA, M. 2007. "Personal to planetary transformation". *Kosmos Journal*. Available at: http://www.kosmosjournal.org/_webapp_3847072/Personal_to_Planetary_Transformation.

SHOVE, E., et al. 1998. "Energy and social systems". *Human Choice and Climate Change*, 2: 291-325.

SHOVE, E., G. Walker. 2007. "Caution! transitions ahead: politics, practice, and sustainable transition management". *Environment and Planning*, 39 (4): 763-770.

SMITH, J., W. Dawn. 2012. *Social Movements in the World-system: The Politics of Crisis and Transformation*. Harvard, Russell: Sage Foundation.

SNEDDON, C., R. Howarth, and R. Norgaard. 2006. "Sustainable development in a post-Brundtland world". *Ecological Economics*, 57 (2): 253-268.

STEFFEN, W., et al. 2011. "The Anthropocene: from global change to planetary stewardship". *Ambio*, 40 (7): 739-761.

STERN, N. 2006. "Stern review on the economics of climate change". HM Treasury, http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm (Accessed on November 10th 2017).

THOMAS, C., et al. 2004. "Extinction risk from climate change". *Nature*, 427 (6970): 145--148.

TOL, R. 2010. "The economic impact of climate change". *Perspektiven der Wirtschaftspolitik*, 11: 13-37.

TOMPKINS, E., et al. 2010. "Observed adaptation to climate change: UK evidence of transition to a well-adapting society". *Global Environmental Change*, 20 (4): 627-635.

TSCHAKERT, P., K. Dietrich. 2010. "Anticipatory learning for climate change adaptation and resilience. *Ecology and Society*, 15 (2): Article 11.

TURNER, B., et al. 2003. "A framework for vulnerability analysis in sustainability science". *Proceedings of the National Academy of Sciences*, 100 (14): 8074-8079.

UKCIP. 2009. "A local climate impacts profile: how to do an LCLIP". Oxford: UKCIP.
UNESCAP. 2015. "Integrating the three dimensions of sustainable development: A framework and tools". http://sustdev.unescap.org/Files/Integrating the three dimensions of sustainable development A framework.pdf (Accessed on November 10th 2017).
WCED, UNCED. 1987. "Our common future". World Commission on Environment and Development, Oxford: Oxford University Press.
WISE, R., et al. 2014. "Reconceptualising adaptation to climate change as part of pathways of change and response". *Global Environmental Change*, 28: 325-336.

CITE THIS CHAPTER AS:
MOURATO, J. et al. 2018. "Reframing adaptation to climate change in Portugal: the case of ClimAdaPT. Local". In *Changing Societies: Legacies and Challenges*. Vol. III. *The Diverse Worlds of Sustainability*, eds. A. Delicado, N. Domingos and L. de Sousa. Lisbon: Imprensa de Ciências Sociais, 153-177.
https://doi.org/10.31447/ics9789726715054.06