



# Coastal Communities 2150

shaping our future by the coast

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Engaging Coastal Communities in Climate  
Mitigation and Adaptation Measures – basis  
for the application of psychological principles

## Phase 2 Report

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# 1. Executive summary

Impending climate change threatens the status quo of many coastal communities. Successful mitigation of this threat may only be achieved through actively engaging communities with the challenge ahead, and the acknowledgement that outsider assistance cannot be relied upon.

The controversy and uncertainty surrounding climate change impedes community action through demoralisation, antagonism and de-motivation. The scale of the challenge, non-specific risks, aversion to change and incomplete knowledge of both individuals and communities present barriers to effective community action. This document outlines some effective means of engagement based on the psychology of barriers to and drivers of community engagement and how these may be implemented in best practice.

For effective engagement on the issue of climate change, community groups require a stable framework that provides scope to develop and sustain active, locally led participation. It is important to recognise heterogeneity in communities and to consider each on a case-by-case basis.

Psychological research highlights justice and equality as priorities within community groups. It is paramount that there is no perception of vested interest or minority outsiders enforcing an agenda on community led action, and that all decisions and activities are transparent. Evidence dictates that using established community meeting points, such as town halls, helps to quickly convey a sense of ownership and spirit, thereby encouraging action. In order to maximise participation it is important to broadcast the perception that engaging is the action of a 'good citizen' therefore conforms to the social norm.

Uncertainty and change typify the threat from climate change. By evaluating and overcoming these barriers public agencies are better positioned to encourage community resilience. Uncertainty may be expressed by responsibility, perception (the extent and nature of expected change), society (how others may respond), environment (effectiveness of one's contribution), and behaviour (uncertainty as to the best course of action).

Uncertainty in community engagement can be overcome by:

- Provision of authoritative yet accessible (visual) science.
- Outlining specific, local examples of impact to provide context and assign responsibility.
- Highlighting specific opportunities and benefits to the community (if any).



- Distinguishing between the size and the likelihood of expected events.
- If possible, quantifying uncertainty both numerically and verbally.
- Publically acknowledging any uncertainties and attributing a cause.

The threat of perceived change can be overcome by;

- Communicating the evidence and inevitability of change in a local context and therefore acting to demonstrate a proven ability of communities to adapt.
- Communicating the 'challenge' and not the 'threat' of climate change to highlight a solvable problem rather than impending ruin.
- Encouraging adaptation rather than mitigation approaches to minimise perception of change in relation to the status quo.

Advocating such action should promote greater acceptance of uncertainty and redundancy within the natural and built environment while encouraging opportunities for self-organisation, nurturing diversity and improved community resilience through adaptation and, to a lesser extent, mitigation.



## 2. Introduction

Coastal communities face enormous challenges in coming generations. Climate change is predicted to cause changes to their physical geography, habitats, and economies (Fletcher & Potts, 2008). Dealing successfully with these challenges depends, to a large degree, on the communities themselves. External organisations, from the private or public sector, cannot be expected to possess the expertise or resources to solve these problems without the active participation of communities.

Coastal Communities 2150 is premised on the idea that public sector partners can help the communities to help themselves, through processes of *community engagement*. Through mutual exchanges of information, communities and external agencies develop an enduring relationship that facilitates communities' efforts to solve problems and take opportunities. This also entails the creation of enduring relationships within the communities, involving dialogue between community members and the assignment of responsibilities.

Just as coastal communities face a raft of challenges associated with climate change, so many challenges confront agencies wishing to engage those communities. Several psychological barriers can make it difficult to engage individuals with climate change and its specific local consequences. These include difficulties in visualising or being exercised about distant futures, and the desire to defend one's self-image, sense of control, and other valued psychological resources from the threat that engaging with climate change is perceived to pose. Further, adverse group dynamics also act as barriers to engage communities as collectives.

In the Phase 1 report of this project (Sutton, Douglas, & Murphy, 2011), we reviewed these psychological barriers. We also identified some general principles for overcoming these barriers with the aim of providing partners with a resource to develop their practice. We have since attended the partner workshop held in Worthing in December 2012 and have familiarised ourselves with what partners are doing. We are thus in a position to take a psychological perspective on specific techniques of engagement. We have also received feedback from partners and some suggestions of psychological issues to discuss from the lead partner of the Coastal Communities 2150 project.

Informed by this new information and feedback, this report is more general in scope than the Phase 1 report. Thus, it broadens the focus from psychological barriers to engagement, to a more general review of psychological factors that are relevant to partners' practice. We discuss the psychology of uncertainty and change, two salient issues highlighted by the lead partner in response to the Phase 1 report. We



also discuss not only psychological barriers to engagement but the *psychological drivers* of engagement. These are factors that impel groups and individuals towards engagement. We think it is useful for partners to be aware of psychological factors that work to their advantage, as well as to their disadvantage. In a similar vein, we discuss how to help communities form their own vision, and to identify the opportunities as well as the risks that are presented by climate change.

As well as being more general in scope than the Phase 1 report, the present report is more specific. We distinguish between two key behavioural aspects of engagement: adaptation and mitigation. We discuss the advantages and disadvantages of promoting each of these responses to climate change in the context of Coastal Communities 2150. As part of this discussion, we consider which of the psychological drivers and barriers apply particularly to mitigation or adaptation. Further, we comment specifically on existing and possible practices of Coastal Communities 2150 from a psychological perspective. Thus, this report moves closer to the aim of working out how psychological theories and findings can be used by partners to inform their work.

The report is structured as follows. In Section 3, we discuss the general psychological issues that surround engagement with climate change. These include the psychology of change and uncertainty. In Section 4, we discuss some psychological drivers of engagement. In Section 5, we continue this discussion by examining how to build long term visions of their futures, in which they identify opportunities as well as risks. Throughout the document, we refer to examples of psychological principles from the Coastal Communities 2150 project areas, and we highlight instances of good practice and major recommendations for practice.



## 3. Engagement with climate change: general psychological issues

In the Phase 1 report, we focused squarely on the psychological threat of climate change *per se*, and the sometimes unhelpful psychological processes that it elicits. In this section, we unpack that threat by considering what about climate change is particularly threatening. One feature of climate change, about which much has been written, is *uncertainty*. As we shall see, all manner of uncertainties surround climate change in the scientific community, in the study and formulation of policy, and in the public imagination. We discuss these uncertainties, and research that suggests how people are likely to respond to them. For the most part, these responses to uncertainty are not helpful to engagement. Unfortunately, existing practices of climate change communication, for example by the Intergovernmental Panel on Climate Change (IPCC), may inadvertently cause the public audience to overestimate uncertainty (Budescu et al., 2009). We thus briefly review research on how uncertainty is best communicated.

We also discuss psychological responses to *change*, an important aspect of climate change. In fact, the prospect of climate change arouses the prospect of several changes. As well as purely climatic changes to temperature and precipitation, topographic changes to sea level, coast lines, and river courses follow from climate change. Changes in habitat, agriculture and horticulture are also likely to occur. Finally, the need for adaptation and mitigation measures also suggests that changes in lifestyle, technology, and economic activity are likely to follow. Communities' responses to the prospect of such changes, and the responsibility they take for managing change, is clearly a key component of community engagement. Thus, we review some of the key findings in how people react to, enact, and manage change.

### 3.1. *Uncertainty*

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According to a strictly statistical definition, uncertainty is simply a type of not knowing - a state in which we cannot be sure which of a range of possible facts or solutions is correct. This state of not knowing is not enough, however, to experience the psychological state of uncertainty. We are uncertain when we do not know something *that is relevant to our goals* (Hirsch et al., 2012; McGregor et al., 2010). For example, you may not know the precise population of Luxembourg, but you would not normally describe yourself as uncertain about this until, for some reason, you felt you needed to know. So, if someone suddenly asks you to tell them the population of Luxembourg, the goal of giving a reasonable answer transforms your



state of simply not knowing to one of uncertainty. This psychological state of uncertainty is sometimes described as *personal uncertainty* (van den Bos, 2009) or *anxious uncertainty* (McGregor et al., 2010). People try to manage anxiety levels, which may cause them to be paralyzed and very vigilant for new information that will help them resolve uncertainty. However the desire to manage anxiety can also encourage people to go into denial or to avoid thinking about problems (Hirsch et al., 2012). It is easy to see, therefore, why the uncertainties surrounding climate change largely present a barrier to engagement.

For partners wanting the psychology of uncertainty to inform their practice, it is useful to think about some of the main sources and types of uncertainty regarding climate change. These are reviewed in the following pages.

### *3.1.1. Uncertainty about the existence, extent, and cause of climate change*

As we saw in the Phase 1 report, although there is a high degree of consensus in the scientific community that the world's climate is warming because of human activity, there is considerably less consensus and more uncertainty in the media and public opinion. This is a type of *perceptual uncertainty* - not knowing important facts about the world. When it is goal-relevant, as can be expected among coastal communities who are considering how climate change may affect them, then it is likely to lead to behavioural inhibition and avoidance, as well as constructive behaviours. Alongside the neuropsychological evidence that uncertainty activates parts of the brain responsible for the inhibition of behaviour (Hirsch et al., in press), there is a relevant line of evidence from social psychology. Researchers have shown that people are less likely to act on their beliefs when they feel their beliefs are uncertain. On the upside, uncertainty about what is causing events - so called *causal uncertainty* - can trigger the search for accurate, authoritative information (Weary & Edwards, 1994). This form of uncertainty management may be helpful to processes of engagement, so long as accurate information is made available.



### **Recommendation for practice: Provide links to science**

We recommend that partners provide communities with links to authoritative, but accessible scientific information about climate change.

This information should be presented in accordance with the principles of uncertainty communication outlined below. There should be little or no need for significant expense, as there are a range of public sources of credible, effectively communicated climate science available. A common set of information (barring language barriers) could be made available to all communities. This is not necessarily a priority in communities where there is little evidence that people fail to understand the scientific issues. However, either a lack of understanding, or vociferous denial, of climate science is being encountered by several partners.

### **Example of practice: Communicating uncertainty in visualisations**

Visualisations are presently being used by several communities. This is a psychologically strong tactic to avert tendency to be vague and disengaged about distant futures. However, communication of uncertainty is an issue (cf. Budescu et al., 2009).

Critical audiences may wonder what the uncertainty associated with these visualisations is, and (at worst) whether they constitute scaremongering. Thus, if budgets permit, consider visualising the probability range. For example, present the scenario in the middle of forecast ranges, and also present the best and worst cases (say, the level at which sea level rise is estimated to exceed with 95% probability, and to fall short of at the same probability). The recommendation here is therefore to consider communicating uncertainty in much the same way in pictures as is done with words (see the highlighted recommendation: “evidence based communication” below for more detail).

### *3.1.2. Uncertainty about responsibility for climate change, mitigation, and adaptation*

Another form of perceptual uncertainty is very relevant to engagement with climate change. The problem of global climate change can be seen as a *social dilemma*, in which the interests of individuals are pitted against the interests of human society as a whole (Dawes, 1980; van Vugt, 2009). In particular, it is generally in a person’s interests to make use of cheap sources of energy, to use convenient and expedient forms of transport and heating that entail a large carbon footprint. (However, there is evidence that economic savings and health benefits follow for individuals who make lifestyle switches such as walking and cycling more often - see Roberts & Edwards, 2010; Swinburn et al., 2011). The world’s atmosphere is a public or common resource that is being exploited selfishly by individuals, companies, and countries, at the expense of humanity as a whole. If people were to exploit this resource more responsibly, then the sum total of society would benefit. This global dilemma is



echoed in myriad local dilemmas: each individual may benefit by letting others make the necessary sacrifices for mitigation and adaptation, but overall, communities suffer.

Research suggests that people are better at exploiting resources in a selfless, pro-social way when they understand how large the resource is and how it is being exploited (de Kwaadsteniet et al., 2008). *Environmental uncertainty* is the state of not knowing how much one is personally exploiting a resource, what one's appropriate share of the resource is, how many other people are exploiting the resource, or how large the resource is (Blackmore, 2007; van Dijk et al., 1999). A further type of uncertainty is *social uncertainty*, which concerns ignorance about the decisions that other people make. When people do not know how others are behaving, or how they will behave, they are more likely to act selfishly rather than in the interests of the group (e.g., Kortenkamp & Moore, 2006).

This kind of "social dilemma" can operate not only within communities but between communities and external partners. It is normally in communities' economic interest to have someone else pay for their adaptation measures. Communities may sometimes be unaware of what external partners have been doing and the contribution it has made to solving their problems, giving rise to a particular kind of social uncertainty. It is noted that the risk of flooding may be concealed by the effectiveness of the defences that have already been installed. In situations like this, communities may not be aware of how external agencies have already acted to protect them. This may undermine their willingness to engage and make their own sacrifices in the sake of adaptation.



### **Recommendation for practice: Highlight historical help given to communities**

Many communities may lack an understanding of the efforts that have been made, by themselves and external agencies, to protect them from the coast. The present “status quo” may strike them as the natural order of things. That is, community members may perceive that their present coastline, economy and ecology as the default condition of their area in the absence of coastal defenses. When it is clear that there is this type of social uncertainty in a community, it could be useful to educate communities about the efforts that they and others have historically made. Just as several partners are using visualisations to identify past scenarios; it may be very useful to provide communities with counterfactual scenarios, and even counterfactual visualisations. For example, “this is what the coastline would look like in the absence of defense X”, or “this is what the flood of 1996 would have looked like without the defense”.

As well as reducing social uncertainty, historical contextualisation may have several other benefits. It may erode resistance to change by teaching communities that change is natural and inevitable. It may improve trust of outsiders and external agencies where this is a problem. It may reduce a sense of entitlement to external resources. As community members learn what each other and external agencies have been doing, they may see the justice and fairness of making contributions themselves.

It is also recommended that when engaging communities in mitigation, individuals are given access to resources by which they can calculate their own carbon footprint and estimates of the carbon footprint of their community as a whole. This will reduce environmental uncertainty and help motivate individuals to take their own action.

A related issue is that communities may believe that it is the responsibility of the public sector, and not themselves, to protect the community from sea level rises and the other consequences of climate change. There is a danger of “moral hazard” in which communities do not take their own adaptation measures, and when crises arise partly as a result of this failure, they expect to be assisted by external agencies. This difficulty in understanding the role of the public sector and the limits of its resources is quite understandable. Protection from the elements and the preservation of one’s home are likely to feel like basic features of contemporary civilisations. This difficulty in accepting responsibility for one’s own plight may manifest itself to varying degrees in many coastal communities.

### **3.1.3. Behavioral uncertainty**

Thus far, we have encountered varieties of perceptual uncertainty - not knowing the extent and cause of problems, and how others are responding, for example. Another key type of uncertainty is *behavioural uncertainty*. This refers to uncertainty about what to do. When people are aware of several possible responses but do not know what the best one is, then they are in a state of behavioural uncertainty (Carver &



Scheier, 1998; Peterson & Flanders, 2002). This state has negative psychological outcomes. Research shows, for example, that consumers are more anxious and less satisfied as the number of products to choose from increases (Iyengar & Lepper, 2000).

Generally, the topic of climate change elicits a great deal of behavioural uncertainty. A range of behaviours are available to people, as individuals and collectives. For example, people may reduce their carbon footprint by a large number of means including offsetting, reduction of travel, retrofitting, microgeneration, choosing more energy efficient transport and domestic heating and appliances. Given that people have limited time, money, and self-regulatory resources, they generally feel unable to engage in all of these steps, many of which are surrounded by uncertainty and controversy (Hulme, 2009). Collectively, communities and nations are presented with a range of political, technological, legal and cultural responses to climate change, which are sometimes mutually incompatible. At a national level, the choice between nuclear, renewables, and carbon capture as the predominant means of energy generation is a case in point. So is the choice between carbon taxes and cap-and-trade mechanisms.

In the beginning of processes of community engagement, there is likely to be a high degree of both environmental and behavioural uncertainty. Thus, communities are likely to be confronting uncertain estimates of multiple scenarios, and with multiple choices about what to do. The behavioural aspect of uncertainty is of crucial psychological importance. When people have a clear understanding of an appropriate and desirable course of action, even perceptual uncertainty elicits much less anxiety and paralysis. In fact, when people know how to respond in an uncertain situation, uncertainty can motivate behaviour, as engaging in action becomes a way of avoiding feelings of uncertainty (e.g., McGregor et al., 2010).

#### **Recommendation for practice: Funnel planning**

Where uncertainty about adaptation seems to be particularly profound in a community, we recommend an approach that seeks to progressively reduce uncertainty. Initial agreement focuses on little more than whether to engage. Later, successively more detailed decisions are made. For example, initially the community agrees that engagement is the best response - working together to do something about climate change, alongside the Coastal Communities 2150 project partners.

As time goes on, increasingly more specific behaviours are agreed upon. For example, communities may agree on whether to attempt or abandon coastal defense, and then work out the best method of coastal defense. This kind of increasingly specific planning comes naturally to human beings who, as we saw in the Phase 1 report, tend to construe the future in rather abstract terms initially and become increasingly specific as events of interest near.



There is, of course, no way of removing this uncertainty, which is intrinsic to the situation confronting coastal communities. Some communities may face deeper or more complex behavioural uncertainty than others. For example, some communities are assured of being granted physical protection by coastal defenses. In other communities, there is uncertainty about whether coastal defenses will eventually be provided by the government. When there is uncertainty about the future provision of coastal defense, there is likely to be a good deal of uncertainty about which of many possible actions to take. These decisions have very high stakes, involving investment of large sums of money and potentially the existence of the community in the future. It may be in these crucially important conditions that uncertainty is most paralyzing.

An advantage of this type of “funnel” planning is that it promises increasing certainty through the planning process. Thus far, we’ve considered the problems posed by the experience of uncertainty in the here and now. But *anticipated uncertainty* - the perception that one will experience uncertainty in the future - may be an equally important deterrent to engagement.

Sutton et al. (2012) found that people who were intolerant of ambiguity and who desired a subjective feeling of certainty (known as “cognitive closure”) reported lower willingness to reduce their carbon footprint. To clarify what specifically was deterring these “closed-minded” people from making lifestyle changes, Sutton et al. (2012) presented a new group of participants with fictional people who either did not plan to reduce their carbon footprint, who were planning to do so, or who had already done so. Participants were asked to indicate how much uncertainty each of these people experienced. Easily the most uncertainty was attributed to people who were planning to reduce their carbon footprint. People attributed lower levels of uncertainty to people who did not have any plans to reduce their carbon footprint, and to people who had already done so.

People seem to expect that the process of engaging with climate change will cause significant levels of uncertainty through the transition from current lifestyles to a more sustainable destination. In other words, it’s not that people perceive that “being green” is accompanied by uncertainty. Rather, they are deterred by the belief that the process of “going green” causes uncertainty.

A final point worth making about uncertainty is that while it is generally going to work against community engagement, it is not always a deterrent to action. As we have noted, when people have a clear plan of action, they find uncertainty much less aversive and paralyzing. Even brain activation responses are less adverse in the presence of a plan of action. Further, although uncertainty is generally an unpleasant state, people are not always highly intolerant of it. Some people are



more tolerant of uncertainty than others, and may actually seek out situations that are uncertain. Some situational factors make people more tolerant of uncertainty. If they feel like a secure and valued member of a group working towards a common goal, people are much more likely to be able to tolerate uncertainty (Hogg, 2009). Further, uncertainty can be a positively pleasant experience for people who are focused on a positive outcome. Lee and Qiu (2009) found that people who were expecting a pleasant surprise - a lottery win, the amount being unknown - engaged in constant thoughts about what awaited them and reported more positive emotions than people who knew how much they had won. This suggests that the more community engagement is genuinely engaging, causing community members to work together as a group, and the more it focuses on positive as well as negative uncertainties, the less of an obstacle uncertainty will be.

### **Recommendation for practice: Evidence-based communication techniques**

Uncertainty can also be managed by means of effective communication techniques. We recommend to all partners that they read the excellent guide to the communication of climate change by Shome and Marx (2009), which is freely available on the internet. Devoting too much space to this topic here would detract from the coverage we can give to other issues. However, in summary, they report that climate change is all-too-often communicated in ways that create an exaggerated impression of uncertainty in the mind of the audience. Budescu et al. (2009) show that people who read IPCC statements about climate change interpreted statements of uncertainty such as “likely” very differently, and generally in ways that exaggerated the imprecision of scientific estimates. They make three very useful recommendations:

1. Distinguish between the size of an event and its likelihood. For example, in relation to sea level rise, it is better to say “it is unlikely that there will be a rise of greater than 1m this century” than “it is unlikely there will be a large rise in sea level this century”.
2. Describe why estimates are uncertain. Sometimes estimates are uncertain because there has been insufficient research, sometimes because the research data are not of high quality, and sometimes because there are variables that may affect an event to an unknown degree. People are better at understanding and accepting uncertainty if they know where it comes from.
3. Use both numbers and words to describe uncertainty. To say “it is unlikely (8-21%) that there will be a sea level rise of greater than 1m this century” gives people a much more accurate grasp of uncertainty than to rely on the numbers or words alone.



### **Example of practice: Communicating uncertainty**

Hampshire County Council have produced a brochure about changes in the local coastal environment. The brochure states:

“If sea levels rise or storms increase the sea defences will be less effective. At Lepe Country Park the impact of rising sea levels and increased storminess are likely to result in the lower beach area and car park becoming increasingly unusable for periods of each year”

This communication of uncertainty has several strengths, for example in highlighting a specific outcome. In light of the research findings we have reviewed here, it could be enhanced further by providing numerical estimates of uncertainty (if these are available), and being clear that sea level rise and increased storminess are likely, not hypothetical, changes. Uncertainty about the local effects of these processes stems from uncertainty about the magnitude and the intensity of the change, not so much from uncertainty about whether they will happen.

#### *3.1.4. Uncertainty in summary*

In summary, uncertainty is generally, but not always, unhelpful to community engagement. Several types of uncertainty are aroused by climate change and by the prospect of community engagement. These include **perceptual uncertainty** (doubts about the extent and nature of changes brought about by climate change), **social uncertainty** (doubts about how other people will respond to those changes), **environmental uncertainty** (doubts about how much one is contributing to the problem of climate change, and to collective solutions), and **behavioural uncertainty** (doubts about the best course of action) Even **anticipated uncertainty** may be enough to deter people from taking action, because people are generally intolerant of uncertainty and attempt to “manage” or minimise its role in their lives. However, some conditions make uncertainty less of a problem. Uncertainty may help to motivate action when there is a **clear plan**, when there is a **strong sense of group identity** and **common purpose**, and when **positive outcomes are anticipated**. This suggests that it will be productive to encourage communities to have clear plans, a strong identity, and to make plans that include the possibility of positive as well as negative outcomes positive.



### **Recommendation for practice: Multifinality**

Multifinality is the achievement of multiple desired outcomes through a small set of actions. It is captured by the English proverb, “to kill two birds with one stone.” Embracing multifinality may be an effective way of identifying opportunities. Decision-making processes should articulate the opportunities and goods that may follow from a particular mitigation (or adaptation) measure. For example, do coastal defenses open up attractive promenade walks? Do plantings bring in wildlife? Communities should be encouraged to think of economic and environmental opportunities that each of a range of actions could open up.

### **Example of practice: Highlighting opportunities**

A good example of stressing the positive opportunities afforded by environmental change is highlighted by Alterra in Zeeland, NL. There, the potential for saline agriculture is being highlighted, including emerging opportunities to grow saline groups and farm saline animals such as sole and oysters. Research suggests that although uncertainty is highly aversive for people who are considering the possibility of undesirable outcomes, the prospect of desirable outcomes makes people more willing to embrace uncertainty. See <http://www.zeeuwsetong.nl/> for more information.

## **3.2. Change**

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The term “climate change” is an umbrella term for a wide range of climatic transformations that accompany the warming of the planet. Geographical, ecological, economic and social changes loom, many of which impose the need for communities to change the way they live and do business. Thus, it is important to consider how individuals and communities understand those changes, how they will adapt to changes that are imposed on them, and negotiate, implement and manage changes themselves.

In this regard, the first and perhaps most important point to make is that change and uncertainty are intimately connected psychologically. People who live in well-structured, relatively unchanging environments confront a lot less uncertainty in their lives. Indeed the desire to limit uncertainty may be one of the main reasons that people frequently oppose and resist change (Fromm, 1969; Jost et al., 2003; Nash et al., 2011). Intolerance of uncertainty may cause people to be dogmatic, fixed, and unbending in the face of inevitable change, and thus fail to adapt (e.g., Pennebaker, 1989). Thus, all of the points we made under the previous heading are relevant to the psychology of change.



Another important point to make is that climate change is just one source of change, even for coastal communities who in many respects are at the forefront of its consequences. To illustrate this point, if we were to travel back 140 years we would find ourselves in a world without motor vehicles, antibiotics, telephone, radio, television or computers, the welfare state, trade agreements or international institutions like the United Nations, the EU, or the IMF. Life was very different, and in that time communities have coped with traumatic upheavals associated with war and depression. Many of the changes experienced over this time were essentially unpredictable from the outset. Over the next 140 years, to the end of the time frame of the Coastal Communities 2150 project, we can be certain that communities will experience dramatic changes. We can also be certain that our best attempts to predict those changes now will be wholly or partly wrong, and that by and large, communities will adapt to them.

Climate change presents a likely prospect of a physical change to some communities that have not been experienced in recent history: inundation of significant areas of coast by the encroaching sea. Some of these coastal communities already have experience in coastal defense and other adaptations. Other coastal communities around the world have had experience in having to engage in major adaptation, and even relocation, as a result of coastal erosion. There is not any psychological literature devoted to the experiences of these communities. Indeed, it is likely that greater wisdom about this experience is to be drawn from disciplines such as human geography, anthropology, sociology and economics.

However, where psychology *is* of particular use is in its ability to reveal how people think about change, and its effects on mood, motivation, and action. There are some key lessons of importance from the social psychological study of change. One is that people may overestimate the permanence of the status quo. Groups, institutions, and social conventions that have been in place for only a few generations may seem to have been in place more or less permanently (e.g., Minnegal et al., 2003). In part this is because the status quo is seen to represent more than just a current state of affairs but the natural order of things. For example, gender roles and the relative status of ethnic groups are attributed not to changeable social factors but to eternal biological differences. Going further, the status quo is often seen as not only *what is* but *what ought to be* (Kay et al., 2009). Thus, prospective changes may seem more radical and profound than they really are. Whereas people more or less understand how to live with their current social system, they may fear being unable to survive, build relationships, and understand their place in the world under a new social system.



For these reasons, as we suggested in Phase 1 report, it is important that adaptation and mitigation measures are not presented as radical changes, but rather, principally, as ways of conserving and optimising aspects of the status quo. We also recommend that publicity and communication regarding climate change places it in a context of constant change, emphasising the resilience that coastal communities have shown in the face of previous changes. Indeed, raising communities' consciousness of their resilience, and alerting them to ways in which they can foster resilience in the face of environmental change, is crucial. We shall return to this in Section 4.

### **Recommendation for practice: Capturing and celebrating histories of change and resilience**

This practice can be replicated elsewhere. It need not take the form of a brochure. In community meetings, or in school projects, local community members might be asked to recount changes in the local environment. This may be a helpful method of building community identity and social capital in less cohesive or settled communities. It provides a local context in which to communicate visualisations and verbal descriptions of past and future changes. In whatever medium the storytelling is originally done, creating some kind of permanent, publicly accessible digital record of these stories will reinforce its benefits.

### **Example of practice: Normalising change**

An excellent example comes from Hampshire County Council's C-CATCH programme. They have produced a glossy brochure (Calshot to the Beaulieu River: A Story of Change), which provides an illustrated explanation of the extent and causes of change in the area to the public. The history goes back as far as 65 million years, and the brochure highlights changes in physical and human geography at increasingly close intervals as it progresses through time. It stresses that sea levels are impermanent, explaining that sea levels have risen by 2.5m in the last 5,000 years. The brochure goes on to point out the likely implications of further sea level rise.

This expert information is complemented by narratives of the changes that community members have experienced in their lifetime, as a result of processes such as coastal erosion. This kind of approach encourages communities to appreciate that the present coastal environment, however familiar to them, is less permanent than it appears. It is likely to puncture the illusion of permanence and make people more receptive to adaptation. An additional benefit of quoting local people in the brochure is that gives them a voice, makes that voice visible, and so demonstrates that in the local community it is normal to be engaged and to acknowledge change.



## 4. Psychological drivers of engagement

Our writing thus far has been focused on psychological barriers to engagement. However it is useful to put these barriers in the context of factors that encourage, as well as deter, engagement. These psychological drivers of engagement, like psychological barriers, can operate at the individual and the collective level. In other words, some psychological factors impel individuals to engage with climate change. Some psychological factors operate at the collective level to facilitate collective engagement. We consider both of these types of psychological drivers together here. We do this since psychological drivers are not the primary focus of this report, and since the relationship between individual and collective processes is intimate and mutually dependent.

### 4.1. Commitment to the environment.

People have overwhelmingly positive reactions to the natural environment. This love of nature has been termed “biophilia” by Wilson (1984) who suggested that it is an inherent, hard-wired feature of human nature. Subsequent work by social scientists shows to a greater or lesser extent, people think of themselves as part of nature and define themselves in terms of the environment. This sense of identification with nature is said to be built up from childhood experiences of relating to natural places. This is known as “ecological identity” (Thomashow, 1995), and it along with related concepts has been widely studied (e.g., Clayton & Opatow, 2003; Stets & Biga, 2003; Whitmarsh & O’Neill, 2010). Deeply felt values such as love of the environment can motivate people to volunteer time and energy, and to make sacrifices if required (e.g., Penner & Finkelstein, 1998). In so doing, people reap psychological and health benefits (Omoto & Snyder, 2005). Because this particular value is widely shared, it provides an excellent foundation on which a community can self-organize and build norms of action.

The role of environmental values in engagement is likely to vary widely from community to community. Some communities face a clear suite of economic risks that are likely to affect much of the community. They probably do not require a love of the environment to motivate them to engage. But environmental values may nonetheless inform the direction that their engagement takes - for example, in decisions about whether to protect habitats and ecology. There is little common economic interest or threat. But environmental degradation is a common theme that



unites the diverse risks at play. It may be useful in these communities to present the various risks as heads of the same Hydra.

## ***4.2. Commitment to the community.***

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Although global environmental change is the primary driver of changes to the local environment, the latter are focal in the Coastal Communities 2150 project. Although doubts about global environmental change may pose a barrier to engagement, this focus on local issues may help to skirt some of the cultural controversies surrounding climate change. Most important, the local focus means that other forms of self-identification come into play. The first is *identity of place* - the feeling of a close personal relationship with a locale, and seeing oneself as having been shaped and defined by living there. Second is *social identity* - feeling part of, close to, and defined by one's membership of the local community. The strong sense of identification with place is likely to be especially strong in coastal communities that tend to be spatially isolated and defined by a maritime tradition (Minnegal et al., 2003). Identification with place and community motivates people to make personal sacrifices, if need be, to defend them from incursion from external threats, to adhere to local norms, and to foster a positive, distinctive image of their locality in their own eyes and in the eyes of others. Thus, these local identifications will drive engagement, where it is normative, where it is seen as a means to preserve valued and distinctive features of the locality, and where it is seen to lead to material and reputational gains for the community. Initially, when local norms regarding engagement may not be formed, it is advisable for partners to frame community engagement in terms that are compatible with good citizenship of these communities. It makes sense, for example, to participate in the early processes of engagement to learn what protections and benefits it may bring to the community. It is also advisable to stress the role of autonomy and self-organization, and the central role of the community's existing ambitions, early on. This way, community engagement is also more likely to be seen as the kind of thing that a good citizen would participate in. From these initial steps both the community's planning and the input from partners may become increasingly specific, in keeping with the "funnel" model of planning that we advocated in Section 2.



### **Recommendation for practice: Building community vs. building on community**

Like commitment to the environment, the role of community commitment will vary between communities. However, unlike environmental commitment, some kind of community commitment is likely to be a fundamental requirement of engagement. In some cases, communities are already cohesive and acting as a community. In others, calling the target groups “communities” may be a misnomer, given the diversity, geographical spread, transience or different interests of population groups.

If this is the cases, partners should be sensitive, to the sectoral interests and identities in their community. Partners could consider encouraging multiple engagement groups to be formed in such communities, so that different interests have their own voice. These need not necessarily be formed along geographical lines - it might be that groups of fishers, farmers, coastal residents or tourist operators are formed, for example. These specific groups are more likely to experience the esprit d’corps required for engagement.

Meetings or communications between partners and each of these smaller groups should be conducted openly and some common forums opened, to allow these groups to identify areas of common interest. Attempts to impose a “common identity” on these community sectors may backfire. That said, where commonalities and good will between community groups is evident, and there is a desire to build community, the early stages of community engagement should focus on developing the sense of community. Community meetings, projects, work through schools, the capturing of community history and narratives are key ingredients that are being employed already by some partners.

## ***4.3. Perceived and actual benefits of collective effort.***

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A growing body of research shows that people’s psychological and physical health is enhanced by a strong participation and identification with community life. People express a strong desire for more community life. Community engagement projects provide an excellent opportunity for communities to galvanize and for strong social relationships to develop. Collective efforts are inspired partly by local identity, but also enhance that identity. There may be no need for partners to explicitly appeal to the importance of community spirit (and indeed, this may backfire if it is seen as an attempt by outsiders to impose norms onto the community, as we saw in the Phase 1 report; see also Sutton, Elder & Douglas, 2006). However, community engagement should be framed as a means to enable communities to define and work together to achieve their aspirations and solve their problems. It would be useful to highlight



cases of local initiative as an example of what can be done for the benefit of the whole community.

#### **4.4. Perceived economic and local benefits**

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Of course, people and communities respond to economic incentives. Thus, the actual or perceived presence of economic benefits will encourage engagement with adaptation and mitigation. Crucially, among individuals and communities who may be reluctant to embrace the climate change hypothesis or purely environmental reasons to adapt or mitigate, economic benefits provide an alternative ideological justification. Perceived economic benefits are more likely to engage communities when they are expected to be widely shared among the community. Adaptation and mitigation strategies that present multiple benefits are more likely to be embraced, perhaps because multiple benefits are more likely to benefit a wider range of people in the community. For example, Walton et al. (2006) found that replanting degraded mangrove forests in an impoverished area of the Philippines was strongly supported by the local population. So much so, that fishers with an annual income of little more than US\$1,000 offered to donate some \$8.00 to fund the replanting. In this case, the mangrove replanting was supported because it was perceived to bring multiple benefits to the community. These included defending the coastline by buffering it from storms and capturing sediment, by acting as a nursery for crustaceans which would later provide food, and by attracting greater numbers of fish.

As we have noted above, many communities in the Coastal Communities 2150 project areas have clear and pressing economic reasons for engagement. The economic benefits and opportunities may be an especially powerful reason to engage, and may have a disproportionate effect on large, commercial players. Insofar as this is likely to lead to resourcing and action, it is to be encouraged. However, there is a danger that in some communities, the engagement agenda could be captured by large economic interests. Another challenge is that although the members of a community live in the same place and may share many of the same identities and environmental values, their economic interests may diverge sharply. The economic interests of property owners near eroding cliffs may require coastal defenses that directly clash with the economic or other interests of other community members. Given that common economic interests are likely to be motivating and contribute to a shared sense of identity, the formation of factional engagement groups (recommended above) along economic lines may be particularly useful.

A final note on economic and local benefits is that in reviewing the posters and related materials, we noticed a distinct skew toward prevention and conservation,



rather than toward opportunities. Although there are several examples of good practice in which positive opportunities are identified, there are many cases where no positive opportunities are presented. By positive opportunities, we mean potential benefits to a community arising from climate change processes themselves, or from adaptation and mitigation measures (aside from conservation).



## 5. Assisting communities to build long-term visions

Thus far in the Phase 1 and Phase 2 reports, we have reviewed psychological processes that help and hinder engagement, and have drawn out some general recommendations for partners' practice. In this final section of the Phase 2 report, we step back from the psychological literature and its general implications, and focus on specific challenges and opportunities facing Coastal Communities 2150. In this section we focus on the global task: how to encourage communities to self-organise, to build resilience in the face of environmental change. This section builds on the psychological literature that we have reviewed. Taken together, this literature is highly consistent with contemporary theorising about community building in environmental sociology. One such analysis, by Folke (2003), seems particularly pertinent and this section owes much to it.

Folke (2003) considers how individuals and communities can change their behaviour in order to become resilient to environmental change. He makes several similar points to those made throughout the Phase 1 and 2 reports. First, processes of change are impeded by inertia (Biel, 2003). Where we have focused on psychological causes of inertia (e.g., preference for the status quo), Folke (2003) primarily considers physical and social factors. These include vested economic interests in the status quo, rigid institutional and bureaucratic processes, and limitations of local infrastructure. Second, he notes that social and environmental change is a constant in human history. Folke (2003) notes that, in addition to naturally occurring changes, humans have transformed the environment such that there is no such thing as a pristine natural environment. Historically, economies, societies and cultures have adapted to changes that previous human activity has brought about; meaning that for millennia there has been a dynamic interplay between human activity and the environment. The intuitive conception that we live in, but somehow causally apart from, a natural environment is deeply misleading and obscures the fact of constant change. Although human beings are continually adapting to environmental change, some of their adaptations have been much more successful than others (Bodin & Crona, 2009; Holling, 1986). Some responses make communities resilient to further changes, and some make them more vulnerable to change.

This concept of resilience, and in particular ecological resilience, is crucial. Ecological resilience is defined as the capacity to buffer or absorb disturbances (Holling, 1986). For Folke (2003) and other analysts (Crona & Hubacek, 2010; Holling & Meffe, 1996; Folke et al., 2005), the traditional "command and control"



method of natural resources, in which management is taken over by centralised authority, is systematically prone to predictable errors which in the long run erode resilience. Together, the ultimately unhealthy, conventional pattern of resource management follows this path:

1. Interventions conducted as a reaction to some environmental change are initially successful.
2. The agencies created to deal with an environmental change are initially responsive to ecological, economic and social change, but over time become narrow, rigid, short-sighted, and ultimately captured by the need to protect their own interests and those of economic dependents.
3. Economic interests affected by the resources grow, and become increasingly dependent on subsidies.
4. Local ecosystems become less varied and more dependent on the interventions that were initially successful.
5. Crises and vulnerabilities emerge and bring about environmental failure, or the apparent threat of looming failure.
6. As a result, public trust in resource management regimes is eroded.

Scholars have related this to the collapse of many ecosystems bringing about social and economic disaster throughout human history (van der Leeuw, 2000).

A way out of this pathology is suggested by Folke (2003) and other scholars (e.g., Berke et al., 2003; Gunderson & Holling, 2002). This dovetails with the psychological principles that we have reviewed throughout these reports. The essence of their recommendations is that communities organise themselves rather than being subjected to top-down management from external agencies. This self-organisation should be oriented towards learning to live with change and uncertainty, nurturing diversity and redundancy both in the local environment and in their community, in learning from different types of knowledge, and in creating opportunities for self-organisation. Little in the way of concrete examples or practices are mentioned by Folke (2003), but these are useful principles that provide a framework for practice.

## ***5.1. Learning to live with change and uncertainty***

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As we have seen, change and uncertainty are instinctively threatening and are met with resistance and inertia. Folkes (2003) argues for highly responsive management structures. Institutions should emerge in response to crises and be prepared to adapt to crises. The Coastal Communities 2150 project embodies this notion, because it will result in the formation of local engagement groups who are



assembled precisely because of looming environmental crises. Folkes (2003; Costanza et al., 2001) recommends that institutions and bodies be allowed to have overlapping areas of purview and responsibility. This redundancy increases the likelihood that a decision making body will take responsibility for a problem, and that a responsible body will survive long enough to implement a solution. Their model of decision making is essentially modelled on ecology. Diversity within a society, as within an ecosystem, is seen as important to its long term success, because the system does not depend too much on one of its components.

This argument supports some of the points that we made in the Phase 1 report. We suggested that the tendency of human groups to break up and cease functioning should not be overlooked.

### **Recommendation for practice: Community building**

Identify established decision making institutions and practices. Enmesh engagement within them. Allow multiple engagement groups and interests to operate within a community, where applicable.

## ***5 2. Nurturing environmental and social diversity***

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A key point made by Folke (2003) is that no single solution, or way of finding solutions, is going to give communities a good enough chance of successfully navigating change. Solutions to crises should be multifaceted. For example, a sea wall will solve some problems but create others, and leave still other problems (e.g., flooding from rivers) unsolved. A multifaceted approach of plantings, landscaping, watercourse management and town planning will mean that if any one measure is defeated, others will take its place. This approach is analogous to spreading risk in insurance or financial investments (Costanza et al., 2001). Similarly, diversity of perspective and expertise is very important. External consultants, fishers, recreational beach users, and local businesses will have non-overlapping areas of expertise on the impact of current and future changes.

Again, our observation is that these practices of diversity are already embedded as best practice within Coastal Communities 2150, for example in its systematic approach to stakeholder analysis and consultation. It is also consistent with the psychological aspects of voice and participation that we reviewed in the Phase 1 report: that is, every member of the community should be encouraged to give voice to their perspective. Probably the most important implication of Folke's (2003) analysis is that the process of community engagement should not be seen as one in



which an initial period of wide and diverse consultation, decision making and action is followed by increasing focus on a smaller, leaner set of decision making bodies. Diversity and plurality is important throughout the process to allow communities to be resilient and come up with many possible responses to the changes that they will continue to face. This is particularly important because history shows that environmental and climatic changes are hard to predict. This underscores the importance of our recommendation that multiple groups and routes of engagement should be considered across communities to build resilience.

### ***5.3 Creating opportunities for self-organisation***

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Folke (2003) stresses the crucial role of self-organisation in building community resilience. This may require that as much as possible, local and national governments devolve responsibility to local communities. In their case study of a fishing community, Olsson and Folke (2001) found that this devolution enabled a fishing association to convene to develop and implement rules for ecosystem management. Encouraging and supporting self-organisation through action groups and specific working parties which document and broadcast their activities, as we suggested in the Phase 1 report and above, is a crucial step in this process. Some Coastal Communities 2150 communities are already self-organising and engaging to a large extent. In other communities, there may simply be insufficient social capital for engagement to take place. Community building should be an explicit aim of engagement in these communities. Barriers to the formation of communities (e.g., demographic differences, transience, and geographical spread) and ways to overcome them should be identified (see recommendation for practice: community building, above).

### ***5.4. Focusing on adaptation or mitigation***

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Coastal communities are primarily *patients*, rather than *agents*, of climate change. The *raison d'être* of the Coastal Communities 2150 project is primarily to empower communities to adapt to the risks and opportunities that climate change will bring them. Adaptation, rather than mitigation, is clearly the most pressing priority for the communities and therefore for partners.

What role should mitigation play in engagement? This is likely to depend heavily on each community's characteristics. Different types of mitigation are available and affordable to different communities. Some communities may be more receptive to the idea of mitigation than others. Rather than devise a one-size-fits-all set of recommendations, we just want to set out a few of the advantages and



disadvantages of including mitigation as part of the engagement strategy in different communities. These all map on to the psychological principles discussed here and in the Phase 1 report. Although we list more advantages than disadvantages, we feel that for many communities the disadvantages may loom larger than the advantages.

### **Advantages:**

- Mitigation may strengthen **commitment to the environment**, pro-environmental norms and identities in the community. Where the unifying case for adaptation is environmental and where the economic or social case for adaptation is more diffuse, this may be a particularly useful strategy.
- Mitigation may be a useful way of engaging residents in some communities who may be more receptive to mitigation than adaptation.
- Mitigation may strengthen **commitment to the community** by enhancing communities' sense that they are the "good guys": the blameless recipients of climate change. Climate change becomes a resource for the community's collective self-esteem, rather than a threat.
- Mitigation may enhance communities' legitimacy in the eyes of others. It may galvanise community cohesion and external sympathy. A case in point is the low lying island nations who act as a bloc on the world stage.

### **Disadvantages:**

- Attempts to engage communities in mitigation may signal that Coastal Communities 2150 partners are informed by an environmentalist agenda, rather than the desire to empower communities to look after their interests (of course, the two are not incompatible, but may seem so). Thus, it risks undermining **trust** and **partnership**.
- Concerted efforts to mitigate could divert communities' (and partners') attention, energy and even some resources away from adaptation. This is a risk especially when adaptation is fraught with controversy, difficulty, or uncertainty. In this case mitigation actions may be a kind of escapist route to deal with psychological threat. However, this could be useful as a temporary step when community building and normative engagement is required.



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**Why 2150? Why communities?** By working to a long-term time frame, we aim to see the wider implications of coastal change, rather than seeing only the immediate concerns. Effects of climate and coastal change are already being felt by residents around our coastlines and this project aims to help communities maximise the opportunities and minimise any risks associated with these impacts. We know that the social, economical and environmental costs of acting now to address change are far less than if we take a purely reactive position.



With Thanks to our Partners:



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