How can local authorities stimulate & support behavioural change in response to climate change?

A report for Hampshire County Council
undertaken as part of the ESPACE project
September 2004 – May 2005

Contents: Volume 1

Executive summary

This is a report on how a local or regional authority such as Hampshire County Council (HCC), or another member of the European Spatial Planning for Adaptation to Climate Events consortium (ESPACE), can best use its resources to maximise its influence on the behaviour of stakeholders in response to climate change. It addresses a very important and extremely challenging question that is becoming ever more central in discussions on how to respond to climate change.

The research project that it summarises was carried out between September 2004 and May 2005 by Alexander, Ballard and Associates, with stakeholder research, including with ESPACE partners, being carried out by Rosslyn Research Ltd.

The contract was managed on behalf of ESPACE by HCC. While the research covers a broader range of climate change issues than adaptation alone, covering the mitigation agenda as well,[1] it was intended to be helpful both to HCC and to ESPACE partners as follows: *process research* and *generic recommendations* should be relevant to ESPACE, but *specific research* and *action recommendations* should be relevant to HCC. The structure of the report is briefly described below, but first we summarise its ten key messages.

Ten key messages

A very coherent set of findings has emerged from our research. This is not only based on academic research but is also strongly supported by the stories told us by practitioners and by our own practical experience of working with people's response to climate change and related issues. We have identified the following ten key messages that we believe can help public policymakers and others with responsibility for developing societies that are sustainable in their use of carbon.

1) Both mitigation and adaptation involve behaviour change

Adaptation is clearly needed: planning and projects need to take account of significant climate impacts which are no longer avoidable. Adaptation cannot avert the consequences of an out of control climate, however, and so it is also necessary to pursue mitigation policies.

That mitigation involves behaviour change is reasonably clear: climate change is the result of many small decisions taken by ordinary people at work or in their private lives. But adaptation to impacts – inherently uncertain as some of these may be – also involves change, whether by expert engineers and officials, by professional and industry practitioner groups, or by the general public. However, there seem to be barriers:

- Work carried out on large construction projects shows that experts working on them seem often to be barely better informed on the need for adaptation measures than the general public, and their clients are usually at least as poorly informed.
- We found that although some adaptation measures such as water storage are being undertaken at the farm level, the need for wider adaptation strategies is barely recognised.

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[1] 'Adaptation', the main focus of the ESPACE project, covers steps taken to prepare for a climate that is certain to change (because climate impacts lag emissions). 'Mitigation' covers steps to reduce human impacts on the climate so as to keep disturbance to a range within which adaptation is possible.

- Work carried out for ESPACE on behalf of West Sussex County Council[2] shows clearly that ignorance of the likely impact of flooding is significantly greater among the very householders who are most likely to be subject to it.

Neither type of change is adequate at present: society is insufficiently adapted to likely impacts, and mitigation measures are not enough to limit future climate changes. Some of the key blockages to change apply to both adaptation and mitigation agendas and we suggest that progress on one enables progress on the other as well. Indeed the two carry so many features in common that they form in practice a single agenda, with each aspect being an opening to and an opportunity to engage with, the other.

2) There are significant contextual blocks to change

What stops change from happening? It has been shown conclusively that awareness raising is not enough to promote change and that there are other barriers to overcome. Many of these are *contextual* barriers. That is to say, they normally fall outside the immediate scope of work to promote change.

Based on research, we propose a simple structure for analysing barriers to change. These barriers may apply either at the *personal* level or at the *collective* level and they may consist either of *subjective* issues (for instance, limiting assumptions or group norms) or *objective* factors (for instance the constraints of a role or of technologies).

1. Individual subjective factors (Limiting personal values, worldview, assumptions, etc)	2. Individual objective factors (Limitations of one's role, skills, knowledge, relationship set, etc)
3. Collective subjective factors (Group cultures, shared norms, etc)	4. Collective objective factors (Political, economic, social, technological, legal, environmental)

Barriers to change (after Ken Wilber)

One or another of these barriers can come into play at any time, and they are often interlinked. For instance, work on a technical adaptation response (quadrant 4) may run into organisational power dynamics (also quadrant 4) which may result from a shared mindset about how decisions should be taken (quadrant 3). One's personal skills and role (quadrant 2) may make it difficult to address this mindset, as may personal assumptions (quadrant 1) such as '*climate change is such a huge issue that there is nothing that a person like me can do about it*' (this has been shown to be a particularly strong assumption among many people). Change efforts will continually come up against 'hard' and 'soft' constraints at different levels in this way; either can cripple efforts for change.

3) Awareness-raising needs to happen alongside 3 other factors

Despite awareness of climate change related issues being vitally important, it has been conclusively shown to be a very poor way of intervening to stimulate change unless other agendas are addressed in parallel. We see can distinguish four such agendas as follows:

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[2] By our partners, Rosslyn Research Ltd.

a) **'Awareness'** of the issues. Awareness of climate change at a very basic level is exceptionally high (in the UK at least). However awareness of its urgency and scale is much lower – around 15% or so of the population. Awareness of its systemic structure – delays in the climate system and in the human response, points for intervention, etc, is very low. Awareness needs to progress to these higher levels if change efforts are to be effective.

b) **'Agency'.** A key barrier to awareness is that people believe that climate change is so huge an issue that there is nothing meaningful that they can do about it (quadrant 1 above) and that it is best not to think about it. Unless this can be addressed, more information makes things worse. Change therefore depends on developing a sense that there are meaningful responses that one can make to an issue of this magnitude. Our separate research for HCC on climate change champions showed that a distinguishing feature was their thirst to develop agency.

c) **'Association'** with other people in groups to work on these issues. The evidence is very strong that change efforts are more effective, and last longer, if people work together. This not only potentially develops 'agency' but also provides a 'weight watchers' effect to reinforce wavering motivation.

d) **'Action and reflection'**. Action is needed, but it is important also to reflect on outcomes so that efforts can be refocused. Even at the most basic level, change involves 'unlearning' habits and research shows that reflection is key to doing this successfully. As change deepens, reflection helps us to identify where a difference can make a difference, and so helps us to develop agency.

These four factors are consistent with the other enablers that we identified from our research. Crucially, people are much more likely to move from action to awareness than vice versa. 'Agency' is central to the above: if it can be developed, awareness can be raised. This suggests that it does not greatly matter where action starts, provided that a sense of agency, and hence deeper awareness, can be developed.

4) A key enabler: change must start with action where people are

It is clear from the research that it is very difficult to get people to become involved unless they act on something that they care about. What we might think they *ought* to care about is irrelevant: we must begin from what they *do* care about.

Projects should make sense both in terms of climate
change and of participants' felt concerns

There is considerable evidence that it is often possible to make a bridge from people's own concerns to the climate agenda. However, we do not recommend that local authorities hide their interest in climate change (we think that this risks seeming manipulative and so losing trust) but rather that they present projects as addressing <u>both</u> the climate change agenda <u>and</u> people's own felt concerns, aiming to build win: win outcomes. This provides association in groups within which people can (a) build awareness by discovering how climate change will affect what they regard as important and (b) develop agency by allowing them to investigate responses that they consider meaningful.

This also means that outcomes should be evaluated, and should continue to be evaluated, fully respecting both agendas and that a criterion of success should be that both parties agree that both agendas have been respected.

5) Changing context is the route to agency

Since change is restricted by the contextual barriers summarised above, engaging with and transforming these is key to developing agency and so to human change in response to climate change.

To give an example, if change is restricted by a law which has perverse consequences, agency comes from engaging with that law and trying to change or reinterpret it. If the culture of partner organisations is a limiting factor, and there is no way of working around it, then agency comes from engaging with that culture. By doing so, not only is one's own response enabled, but so is that of other people: there is agency.

We suggest that the need to address such contextual barriers makes much work on climate change responses very strategic, in so far as strategy involves working outside existing operational structures to bring into play issues that are outside the remit of day-to-day operational responsibilities.

Using a relatively mechanistic approach to change (regulation, fiscal measures) will of course be a part of the process of change, particularly as people engage with context, but will never be robust unless account is also taken of other contextual constraints.

6 Change often involves difficult emotions

The foregoing suggests that responses to climate change require intellectual skills. But adequate engagement with this issue also has a strong emotional dimension:

- It is well known that major change typically has an emotional dimension; human change for climate change is among the biggest of such changes.
- Shifting awareness to acknowledge the urgency and scale of the climate change challenge has an obvious human dimension: much of what human beings love is threatened by it. Research shows that people back off the agenda because they do not think that they can do anything about the concerns, as if the Earth was about to be struck by an asteroid, and so they suppress awareness. Engaging with the issue makes this strategy untenable and many people feel quite shaken by the process.
- Perhaps because of this, our own research for HCC on climate change champions, supported by the wider literature, shows that they usually have a very strong felt connection with the issues, and that they are extremely passionate about them.

This does not mean that it is appropriate to try to engineer an emotional experience for people. While such experiences are quite common when people take on board the issues, and seem very helpful in stimulating and sustaining action, not everybody has them. While – in our experience – there is often a deepening of awareness after about six months of a project, people differ in this and they should – we think – be put under no pressure to feel anything.

On the other hand, people running projects should be prepared for participants to experience some difficult emotions, and should recognise that this is probably a helpful process that should be supported sympathetically and certainly not avoided.

7 Change is inevitably a learning process which takes time and requires both management and leadership

Change projects in this area imply continual learning, in so far as it is crucial to recognise barriers as they occur and to find ways of engaging with them. This means that good climate change responses will only rarely proceed exactly as planned but will continually need to be modified in order better to meet their underlying purposes.

Indeed projects should usually partly be designed as developmental activities in their own right. We suggest that one of their planned outcomes should be to provide a cohort of people who are better equipped to engage creatively with this agenda in the future, both in the project team and among stakeholders as well. Few people have a developed sense of agency, and awareness is generally at a low level, but projects provide a context within which these can be developed.

This is another reason why projects are likely to need to change focus over time: the awareness starting point for the vast majority of people starts at far too low a level for a project to be adequately defined. Developing one's thinking on vital issues as one acts (while holding this in creative tension with the need for outputs) is widely recognised among strategists not as a problem but as a sign that mature strategic change is happening.

Even where a project is heavily engineering and design-led, as for instance with major sea defence projects, we believe that there will be at least some areas which need such an approach.

The learning agenda takes considerable time. In our experience it is rare for people fully to 'get' the scale of the issue until they have been working on it for six months, and it normally takes two years or more before people find appropriate ways of responding.[3]

Projects need to be managed so as to facilitate such learning and change. We have proposed a model for change projects which draws on quality management thinking, with action phases interspersed with periods for reflection and refocusing.

We also identified that climate champions had played a crucial role in all the projects that we had investigated in case studies. This may be because they have developed their own awareness, and their thirst for agency, to such a level as to be able to help others develop.

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[3] This clearly means that the results of public surveys, 'citizens' juries', etc., should be treated with caution.

8 Local authorities have a key role to play

It should be clear that local and regional authorities and similar bodies have a key role to play in stimulating change on these issues. More than national government, they have the local contacts to engage with local residents in areas that people care about – schools, leisure facilities, local industry, and other key areas of people's lives.

Such organisations typically have the resources and processes to structure and support learning-oriented change processes and – if they do not – almost certainly have the capacity to develop them. They have the capacity to manage learning flows from projects, protecting them from interference in the early stages and helping dissemination when it is timely to do so. They can also create communities of support for climate change 'champions'. They can either do this directly or (depending on their own capacity relative to other local agencies) by resourcing and otherwise supporting others to do this.

This role has been well described in the wider literature[4] as that of a 'linking pin' organisation. It offers people who work for local authorities significant 'agency'.

9) Choose areas for action taking account of key local issues

In their work on behaviour and climate change, local and regional authorities will clearly need to take due account of locally relevant issues. For Hampshire, we assessed this through desk research and through stakeholder discussions. We recommend that other local authorities follow a similar approach.

On the adaptation side, HCC, in common with the rest of the South East Region, has benefited from its early involvement in the UK Climate Impacts Programme, which clarified the particular impacts that are most likely to affect the county. These were examined through the 'Rising to the Challenge' and 'SECTORS' reports, the latter a 2004 update to the former. Key impacts were identified as follows:

- Agriculture, which will suffer from flooding and (particularly) drought and where farmers will need to adapt crop choice;
- Emergency planning, for river and coastal flooding in particular;
- Biodiversity impacts, with some species being negatively affected, and some positively, but with the overall effect on ecosystems being negative;
- Infrastructure, especially water availability and the suitability of public and other buildings to withstand climate impacts;
- Public health – heatstroke and air quality;
- Tourism and leisure, which could increase but which will require infrastructure;
- Business and industry, where stakeholders are largely unaware of impacts but where the 1.5m working in the region will be affected *'as patterns of transport, health and the nature of the working environment shift'*.

On the mitigation side, we used Government and Regional statistics to get an overview of the pattern of energy use in the Region and, where possible, in the county, using national statistics to set a context where appropriate. We found very low levels of heavy industry in the county, which is much more service-oriented with a high proportion of start-ups: energy is unlikely to be a strategic cost for such companies. The population

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[4] By Ian Christy, who works in a climate change role for Surrey County Council, an ESPACE partner, in a book published with Professor Michael Carley.

is also relatively wealthy – *'money rich, time poor'*, as one of our contacts put it. There is also a much lower level of fuel poverty than, for instance, in the North of the UK. This means that energy costs, per se, are not likely to be a major driver in change programmes for most energy users in the county. Non-industrial space and water heating, and transport, emerged as the priority mitigation issues.

With these conclusions in mind, and taking account of our discussions with stakeholders, we identified a number of areas for further detailed research.

10 Schools are very suitable hubs for behaviour change projects

Our conclusion from this research (which is summarised in the report) is that schools have great potential to be significant hubs for behaviour change initiatives:

- They are a focus of much fund-raising and other activity by parents;
- Schools can often save much money from energy saving measures;
- With changes to the management of schools, there is the potential for HCC to develop a new and constructive relationship as supportive landlords;
- There is every possibility for schools to act as distributors of energy saving measures into the community, taking a financial margin and encouraging and supporting parents in taking pro-environmental actions;
- The UK Government's Building Schools for the Future programme gives scope for expansion into the construction sector;
- There are other areas of overlap between schools' agendas and climate change, specifically transport (children's health and road safety), climate impacts (resilience of buildings in high winds and rain) and healthy eating (links to local food distribution and avoidance of 'food miles');
- There is the possibility of links to the national curriculum;
- Schools are deeply embedded in the community, and are of about the right scale to capitalise on network effects, offering the enticing prospect that pro-environmental behaviour could become 'normalised'.

For these reasons, school communities – particularly primary schools – are extremely suitable places for HCC-led behavioural change projects that could reach a wide proportion of people in the county. Although outside our scope, we suspect that the same would be true for other partners within the ESPACE project.

We developed a proposal and tested it with stakeholders from the sector. It researched extremely well and, we think, offers a creative possibility for behaviour change activities by HCC. Other initiatives will certainly also be possible, but we recommend this as a good place to begin.

There are precedents for change of this magnitude

Whether significant behavioural changes by a proportion of participants in projects of this type will be enough for an effective social response to the pressing dangers of climate change will never be certain. Modern complexity science perspectives suggest that it is not possible to know for sure. If such a response is eventually forthcoming, as with the long-desired end of the UK slave trade in 1806, historians may long debate what caused it. We think that that our research offers reassurance, however, that there are grounds for hope that efforts to promote behavioural change need not be in vain.

The structure of this report

These points are also summarised in §13, which is cross-referenced to sections of the main report. The report is presented in two volumes. Volume 1, which covers the main report, is organised as follows:

- Part One introduces general aspects of the challenge of human change in response to climate change. It begins with an introduction to the project and goes on to scope the overall challenge. It then summarises key contextual barriers to change before going on to examine the key enablers of behaviour change, to summarise the key role that local government can play and to describe a generic process for managing behaviour change projects. We have written this part of the report to be relevant to all ESPACE partners.
- Part Two covers specific issues that relate to spatial planning and behavioural change. It moves from a generic overview of the situation in ESPACE to look in more detail at the particular issues that apply in Hampshire, going on to identify some options for responding.
- Part Three summarises the research on these response options in Hampshire and ends with conclusions that are primarily aimed at HCC

Volume 2 includes the appendices which report on specific areas of our work. We wish in particular to draw readers' attention to Appendix D, which summarises much of the key research literature on behaviour change, and to Appendix E, which summarises case studies. We offer these in the hope that both will be of continuing value to HCC and ESPACE partners in years to come.

Finally, we wish to express our thanks to the officers of HCC, on behalf of the ESPACE Partnership, for having had the opportunity to participate in this fascinating project. We have come to hold a high regard for HCC's longstanding work in this field and for its various 'climate change champions'. We also wish to express our thanks to our colleagues at Rosslyn Research Ltd for the contribution that they made to this report.

David & Susan Ballard
Alexander, Ballard & Associates, July 2005

Part 1: Human change in response to climate change

1. Introductory

1.1 The purpose of the project

Project purpose as defined in the brief

The overall purpose of this project was identified as being "to develop recommendations as to how Hampshire County Council (HCC) can best use its resources to maximise its influence on the organisational, private and political behaviour of stakeholders in response to climate change, carrying out appropriate research into how this can be undertaken."

The meaning of 'influence' can be understood in relation to the overall goal of HCC's Climate Change Strategy (CCS), which is to identify effectively targeted "action" so that HCC can address its mitigation and adaptation responsibilities successfully while also fulfilling its wider public service responsibilities to the community.

Doing this gives HCC an opportunity to contribute as a partner in the European ESPACE Project (www.espace-project.org), which is primarily concerned with adaptation issues. While the research covers both mitigation and adaptation issues, it was intended to be helpful both to HCC and to ESPACE partners and the wider ESPACE process as follows: *process research* and *generic recommendations* should be relevant to ESPACE, but *specific research* and *action recommendations* should be relevant to HCC.

The terms of reference for this project are at Appendix K in Volume 2.

Further clarification of project purpose from introductory interviews

As part of our initial research we spoke to a number of internal managers ('officers') and county councillors ('members') within HCC and the South East of England Regional Assembly ('SEERA'), almost all of whom were working on climate change issues in at least part of their role These interviews are summarised at Appendix A in Volume 2. Some of our interviewees were very senior, all were generous with their time and had extremely valuable perspectives on the project. During these interviews, we took the opportunity to identify how this research could be of greatest assistance to these people in their work with behaviour change in response to climate change (§4.3 of that Appendix).

This process showed that the objectives of the project were widely shared by the people to whom we spoke. For instance:

- *I am very interested in this project. This is a classic issue which no party or person can solve in isolation. We have very good experts but we are less good at turning that into action. We are not far enough on yet and this project can help.*
- *I do not know how to convert the information that exists into action by individuals, whether adaptation or mitigation. I do not know how to measure behavioural change or attitudinal change and their impact, etc. I do not know how to create a relationship between input and output. If I spent £1m on advertising I would know what to measure. I need to understand what changes in behaviour we should observe and measure.*

- *We have to present Climate Change anew. We should really influence the way that development happens. We need to call the Environment Department to its role. We need to involve the community very practically in a way that offers added value.*
- *Changing behaviour, attitudes and values in the community is hard. We have to resolve this issue. We need to know how to do this.*
- *We're very interested in knowing the outcome of this research on behaviour change. We want to get people engaged in understanding policy and its implementation*

Some of the interviewees had particular interests:

- *We can help clarify the role of training... We can also clarify the communication role and the information people need. Can we articulate the sector agendas and articulate their interests? I am particularly interested in the agricultural sector, in understanding what presses their buttons.*
- *A programme to work with the farming community is key.*
- *The project can help with Education, where I see a big potential for building on HCC's extensive community base. Schools have dedicated funding: they hold purse strings. It important to influence them – Head Teachers & Governors. Can we get into curriculum and influence parents and children themselves?*

And one person had very specific hopes for what we might produce as an output:

- *We want something very practical and applied. We need to be able to communicate it to several hundred senior managers. We need to be able to apply it to our services. We need to be able to measure it, to show that there is value for money. We need a clear strategy on climate change, a clear plan that allows us to do as much as we can – over a 4 year period. We need something quite hard-edged, for the next iteration of the corporate strategy.*

We were pleased that the need expressed in the project's terms of reference was widely, and non-defensively, expressed: one of the most potent barriers to change is when people do not recognise that there is indeed a question worth exploring but rather think that business as usual will be enough. Here, as in other respects, we began to form a high opinion of the quality of the HCC people who are working on this issue. We have done our best to respect these and other wishes, given that they are not at all inconsistent with the primary purpose of our work.

1.2 Research approach

A critique of Defra and other policy abstraction approaches

The issue of behavioural change has recently been becoming increasingly live in policy, academic and practitioner circles. For instance, Professor Tim Jackson of the Sustainable Development Commission has been chairing a 'Sustainable Consumption' process and has published for the Sustainable Development Research Network on that subject.

Defra's recent strategy has come up with an approach to behavioural change.[5] This was based upon desk research by Andrew Darnton, which summarised over 80 research papers and on a variety of consultative processes among various experts, in one of which we participated along with HCC's Doogie Black.

Andrew Darnton's work in particular has been extremely helpful, and we made extensive use of it in identifying articles, though we also made use of our own wide knowledge of this field both as practitioners and as researchers (see Appendix M for a summary of our experience).

Nonetheless, while the Defra process is undoubtedly helpful in articulating some of the issues that need to be considered by Government at all levels, the central question – how does one actually catalyse behaviour change? – is more or less unaddressed in the report. We think that the research methodology makes this understandable.

Darnton's work, helpful as it is, itself summarises reports written by other researchers, themselves sometimes but by no means always practitioners in the field of climate change behavioural responses. These summaries were then abstracted into two further reports, which were then further summarised in the final strategy. In other words, the policy output has become very far removed from the on-the-ground experience and craft of working with people on this huge agenda. In the process, we suggest, the craft expertise, the lived stories of change, have been submerged. To all intents and purposes, the output is of limited relevance to people who actually work in the field, among whom HCC itself is at the forefront.

How the research approach of this project differs

We do not know the extent of Andrew Darnton's personal experience with climate change, but we notice that his summaries of major research contributions (such as that of the Lancashire Research of 1995) tend to understate the importance of some of the central conclusions (in that case, the importance of emotional blockages to change). Those key aspects have in due course failed adequately to appear in the Defra strategy. We believe that what was missed in that research was the direct voice of experience. We think that this is a crucial gap.

As mentioned, we have used that research ourselves, and have found it a helpful resource. So how does our research approach differ? In a number of respects:

- First, we took Andrew Darnton's and other summaries as an invitation to go back to the primary sources – in other words to get closer to the specific experiences. We made almost no use of the Darnton summaries, as we felt that these would distance us from direct experience.
- We carried out a series of case study discussions with practitioners in Hampshire ('the county') and more widely.
- We have considerable experience in working with these issues (for instance human change, strategic change, organisational change, climate change and the wider sustainable development field, the various intersections between these areas) over many years in different contexts (as campaigners, managers, consultants, researchers, academics, teachers, etc). We continually related research summaries both to our own

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[5] Reference 2005 Strategy p. 35?

experience and to the stories told us by others. When there was a match between these perspectives, we felt confident in our conclusions; when not, we tended to distrust what we were discovering.

- In reaching conclusions, we began from the research evidence on occasions, and from the stories of practitioners at others, always (and inevitably) mediated through our direct experience.

This is a research approach based on what is known as a 'four-fold epistemology'[6]. It allows us to distinguish between:

- 'Practical knowing': how actually to do something, represented in this project by the recommendations in this report and by others' experience of successful working on this issue;
- 'Experiential knowing': what it is like when we do it, represented in this project by the well of lived experience that we carry ourselves and that the readers of this report, and our various interviewees, also carry to a greater or lesser extent, but which we can never adequately communicate;[7]
- 'Presentational knowing': how we tell each other what it is like when we do something, given that we can never adequately communicate it, represented in this project by the stories that we have chosen to summarise and that we were told by the people with whom we interacted;
- 'Propositional knowing': relative statements about the way the world is, represented in this project by the summaries of research and the theories we introduce (including this one).

'Validity' of findings comes from their working within all four of these frameworks: a discrepancy between any of them provides a stimulus to further understanding. In this respect, and particularly by our emphasis on using reflection on experience as a vital element in research validity, and in using this to address a practical question such as the one at the head of this page, our research falls within the broad framework of 'action research'. This has been recommended by a wide range of authors as particularly suitable for work on sustainable development issues.

Action research emphasises 'the primacy of the practical' – i.e. that knowledge is of no use unless it can be applied. We are strongly committed to work on environmental sustainability and hope that our work in this project, itself giving voice to others, may be of assistance in making practical steps in response to climate change more possible.

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[6] 'Epistemology' is the philosophical term for 'process of knowing'. There is not an easy synonym. The 'four-fold epistemology' is a phrase developed by John Heron and Peter Reason. The latter is a colleague of and doctoral supervisor for David Ballard and is a world-renowned figure in 'action research' approaches.
[7] The difficulty of representing experience can be experienced by considering hitting a tennis ball in the sweet spot of a racquet, or missing it. The experience is widely shared, but how can it be described in words? This difficulty is well known to mystics: *'The Tao that can be expressed is not the Eternal Tao'*.

1.3 Summary of work undertaken and links to detailed Appendices

Report structure

Rather than catalogue all the stages of our work, we have chosen to write this report as a direct response to the focal question, *How can Hampshire County Council stimulate & support behavioural change in response to climate change?* This obviously runs the risk that the process of our research will be underplayed and that potentially rich learning that relates relatively little to this question will be missed.

To get around this problem, this section chronologically describes the work that we did and provides a link to the various Appendices in which the outputs can be found. These are quite substantial and it was our wish in writing them (particularly Appendix D, where literature is summarised, and E, which summarises case examples) to provide a resource that can be used and developed further by HCC and other ESPACE partners in their work in this area in the future.

Summary of approach

In addressing the project, we first looked broadly at the county and at the issues involved in behavioural change for climate change and related issues. We then chose a number of specific sectors for focused research where action might be targeted within the county. In selecting these, we built a) on interviews with representatives of HCC, b) on a desk review of the issues that are particularly relevant to the county and c) on the outcome of the initial stakeholder review. We then went on to test our emerging conclusions and to identify specific approaches that might be expected to help stimulate appropriate action at the end of the project and so test the validity of initial conclusions.

Espace project interface

This project being funded by the ESPACE project, HCC wished that all reasonable opportunities should be taken to draw on other ESPACE partners' experience, expertise and contacts and to contribute insights of wider value.

As stated above, we aimed that the final report should define a *process* that will be of value to these partners (and so to the wider community engaging with the challenge of climate change) as well as having *content* relevant to HCC.

We involved ESPACE partners a) by asking for introductions to local case studies and other relevant contacts (including within their own organisations), b) by seeking their expertise on and understanding of this issue, and c) by giving them an opportunity to comment on our conclusions by commenting on this draft report.

Link between work undertaken and detailed outputs

Here is a brief table summarising work undertaken and giving links to where outputs can be found in this report ('RR' means work carried out by Rosslyn Research Ltd.):

Activity	Purpose	Outputs
Phase 1: mobilising Briefing meetings on context of project with representatives of HCC client system – e.g. Chief Officers, members, etc.	Gain greater understanding of client system needs and perceived constraints – e.g. on action that can be taken by HCC	Appendix A
Desk research and consultation to 'profile' the county.	To help prioritise later work and to inform us on issues.	§9.1
Phase 2: broad research Undertake literature review of research into the process of moving from 'unawareness and inaction' to 'awareness and meaningful action'	To place this work in the context of wider research on behavioural change; to provide a resource for those working on this area.	Appendix D
Identify and research case studies of behavioural change – primarily outside the county	To identify what actually works 'on the ground' and so provide experience against which to test theoretical research.	Appendix E
Carry out stakeholder discussions with agreed stakeholders in and around the county (RR)	To identify priorities, actions in hand, contacts, expectations of project, level of awareness, etc.	Appendix B
Carry out stakeholder discussions with ESPACE partners (RR)	To bring the ESPACE perspective into the project.	Appendix C
Phase 3: focusing Summarise and integrate findings, particularly 'enablers' and 'pathways' in move from unawareness/inaction to awareness/action (including network aspects). Select 8 areas for detailed research in Phase 4.	Use to focus and prioritise later work so as to clarify potential actions.	Interim report issued Nov. 2004
Phase 4: focused research Investigate parallel focused case studies in areas identified in Phase 3 to identify where there might be possibilities for action. Review expert opinion on issues arising and on good practice in these areas.	Identify potential specific options that might stimulate behavioural change. Generally test conclusions from Phase 3.	Appendix F
Carry out further stakeholder research in 4 of the 8 areas selected in Phase 3. (RR).	Further research to identify potential actions for behavioural change.	Appendices G, H, I, J
Phase 5: concluding & reporting Produce draft and then final report,	Communication of what has	This report

following feedback from interested parties as organised by HCC	been learned so as to help HCC make full use of project.

In the next sections, we move on to identify some of the main lessons arising from this research process.

2. Scoping the challenge of behavioural change

2.1 Extent of the problem

Behavioural change on climate change is not happening at anything like the required rate. Despite increasing media attention and international treaties, and an overwhelming scientific consensus,[8] trends remain negative. For instance:

- Atmospheric CO2 has risen from 316 ppmv[9] in 1959 to 376 ppmv in 2003 and the rate of increase is itself increasing, currently averaging around 2.0 ppmv/year;
- Global carbon emissions were higher in 2002 than at the time of the negotiation of the draft Kyoto treaty in 1997;
- UK carbon emissions rose by around 3% in 2003 despite the UK Government's commitment to reductions of 60% by 2050 and of 20% by 2010;
- UK household energy consumption has risen by 30% between 1970 and 2003, with both numbers of households and consumption per household increasing;
- Although UK industrial energy efficiency has improved significantly over the same period, research shows that companies continue to pay little attention to energy costs and that they 'leave money on the table';
- Research published in 2003 showed that while there was some awareness (if little action) among clients and contractors in the building sector about the need for mitigation measures, the adaptation agenda was more or less completely unaddressed.

2.2 Blocks to change

What are some of the key factors that block change? These are explored in Appendix D, with some of the main ones being as follows:

Widespread but very low level awareness

Awareness of the term 'climate change' and of the basic mechanisms (e.g. use of energy, driving cars, etc) is very high indeed, with 85% thinking that it is happening. However awareness of the seriousness and urgency of the situation is correspondingly low, with only 15% recognising it. Awareness of the systemic structure of the problem (for instance, why it is that reducing emissions significantly still results in increasing CO2 levels and continued warming, or of the many delays in the system) is extremely low. (For further information on this, see Appendix D, §1.)

This shows that basic awareness is not the problem, but that there s clearly an issue with people understanding the implications and the deep structure of the issue.

Perceived lack of 'agency'

Research suggests strongly that many people <u>are</u> subconsciously aware of the seriousness of climate change, but that they suppress this awareness. This is because they see the situation as being so huge and complex that they have no 'agency', i.e. that there is

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[8] Naomi Oreskes, The Scientific Consensus on Climate Change, Science, 3rd December, 2004.
[9] Parts per million by volume. CO2 levels from the Mauna Loa record. Other data from 'Vital Trends', Friends of the Earth UK, DTI, SPRU (University of Sussex), Building Research Establishment.

nothing meaningful that they can do by way of response. Lacking agency, the problem becomes rather similar to what would happen were we to know that an asteroid were to hit the Earth on a defined date: there is no point to awareness or action (Appendix D, §s 2 and 10).

'Lock-in' of socio-technical systems

One of the main reasons why agency is so hard is because the pattern of carbon emissions is locked-into place by interactions between technical and social systems. New buildings can in principle be extremely energy efficient, but it is much harder to reach the same level of efficiency in an existing building which might, for instance, have inefficient heating and cooling systems, low 'thermal mass', poor ventilation, inappropriate orientation, and many other intractable problems. Even when the building is replaced, factors conspire to lock the replacement into the same pattern. For instance, planners and architects have been trained to regard existing designs as 'normal' and regard more efficient approaches as risky and abnormal.

The same applies to larger systems. For instance, car and air travel have become much cheaper, which has resulted in greater distances being travelled on a regular basis by more people, and a widespread perception that this is 'normal', which then resists attempts to change relative prices. Changing an embedded technological system, such as that for oil production and refining, or – particularly relevant to car travel – to the fuel storage and distribution system (for instance to replace it with a hydrogen system) is normally prohibitively expensive (Appendix D, §3).

Individual habits

Individual habits are a major block to 'pro-environmental behaviour' (Appendix D, §6). For instance, people become used to using a car rather than a bicycle for short journeys, to leaving electrical equipment switched on, to using central heating rather than put on more clothes, to flying abroad on holiday several times each year. Such choices fall out of what one researcher calls 'discursive consciousness' into what she called 'practical consciousness', where they are not even considered (Appendix D, §8, c).

Group conservatism

Beyond individual habits, what is seen as important enough to warrant action is strongly defined by membership of groups (Appendix D, §s 3, 4). Groups recognise risk very differently (for instance being concerned about the safety of trains but not so much of cars) and construe appropriate responses very differently (for instance, 'leave it to the experts' or 'the market and technology will sort it out'. These limit the capacity of individuals to conceive of different approaches, let alone carry them out (Appendix D, §8).

Perverse consequences

It can be very difficult to predict the effect of an action, and this may often be perverse. For instance, saving money from energy efficiency leaves cash in the pocket, which can then be spent on other things. Since energy use[10] has been shown to be very closely

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[10] Specifically energy use corrected for the efficiency of its use.

correlated with economic activity, there is a strong probability that the spare cash will be spent in ways that create further, perhaps worse, carbon emissions.

This means that there are real difficulties with attempts to change behaviour through market forces unless a comprehensive solution could perhaps be identified and negotiated.

Lack of feedback processes

We discovered that the ability of people to monitor the effectiveness of attempts to change behaviour is extremely limited – for instance in tracking changes in energy consumption in the household or in small businesses (Appendix E, §1). People do not get information in a form that enables change.

This also means that organisations that work to promote change lack information in a form that helps them to decide what works and what doesn't. Changes in energy consumption over time are difficult to assess, but must be helpful. Even at the level of a large organisation, it is rare to have data in a form that can be directly compared and so that are adequate to draw conclusions.[11]

2.3 Inadequacy of awareness-led processes for change

Probably the majority of change programmes begin with the assumption that increasing awareness leads to behavioural change.[12] The analysis above shows why this is not the case. For instance:

- More information increases the urge to avoid the subject;
- More information increases understanding of what blocks change, and so decreases perceptions of agency, thereby further reducing the capacity to receive information;
- Any move to change is blocked by wider group suppression, leaving individuals who persist risking both isolation and further reductions in agency.

But the situation is not hopeless. In the next sections we will identify what <u>does</u> enable and reinforce change.

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[11] Seasonal factors and business activity levels change, as does the mix of activities. Activities move across boundaries – for instance in make or buy decisions. Information is needed frequently, but is normally available only quarterly, and very imperfectly.

[12] For instance, the UK Government's 'Going for Green' programme in the late 1990s. Agyeman and Kollmuss make this point strongly (summarised in Appendix D, §6).

3. A critical factor: the strategic role of context

Probably sooner rather than later, change programmes on climate change will run up against one or another of the limiting factors described above. Many may be described as *contextual barriers* to change. That is to say, they normally fall outside the immediate scope of work to promote change.

Such barriers can arise both at the *personal* level and at the *collective* level. They can consist either of *subjective* barriers (for instance, ways of seeing the world that prevent us from seeing what might be possible) or *objective* barriers (for instance laws or systems of technology that 'lock' unsustainable practice into place).

These contextual factors can be mapped onto a simple 2 x 2 matrix as developed by the American author Ken Wilber, who argues that efforts for transformation of human systems need to take account of the need for change in each of the four dimensions.

1. Individual subjective factors (Limiting personal values, worldview, assumptions, etc)	*2. Individual objective factors* (Limitations of one's role, skills, knowledge, relationship set, etc)
3. Collective subjective factors (Group cultures, shared norms, etc)	*4. Collective objective factors* (Political, economic, social, technological, legal, environmental)

Figure 1. Ken Wilber's four quadrant structure[13]

Examples of *Individual subjective barriers* include our limiting personal values, worldviews and assumptions. If, for example, we see ourselves as powerless, or as incapable of change, then we will find it hard to take on a huge issue such as climate change. If our personal values do not extend to caring about people in other parts of the world, or future generations, then we will be unlikely to take their needs into account.

Examples of *Individual objective barriers* include the limitations of one's role, skills, experience, knowledge, socio-demographics and relationship set. If we do not have the skills to build a low-carbon building, we need to acquire them. If we are not used to speaking in public, we may find it difficult to gather support from other people.

Examples of *Collective subjective barriers* include group cultures and shared norms. If people in a community are exceptionally status-oriented, for instance, this is likely to make them less willing to choose less wasteful products or services. If a dominant religious belief is widely interpreted in a way that does not take account of environmental sustainability, again this will seriously limit change.

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[13] See, for instance, *Integral Psychology*, Shambhala, 2000.

Examples of *Collective objective barriers* include the commonly used 'PESTLE' of corporate strategy: political, economic, social, technological, legal and environmental blockages to change.[14] If, for instance, a technological system is widespread and expensive to change, uses large amounts of energy (as does petroleum distribution), and blocks other changes, that is a major contextual barrier. If a significant legal system prevents more sustainable products from being specified (as some think the World Trade Organisation sometimes does), that is another significant barrier to change.

One or another of these barriers can come into play at any time, and they are often interlinked. For instance, work on a technical adaptation response (quadrant 4) may run into organisational power dynamics (also quadrant 4) which may result from a shared mindset about how decisions should be taken (quadrant 3). One's personal skills and role (quadrant 2) may make it difficult to address this mindset, as may personal assumptions (quadrant 1) such as '*climate change is such a huge issue that there is nothing that a person like me can do about it*' (this has been shown to be a particularly strong assumption among many people). Change efforts will continually come up against 'hard' and 'soft' constraints at different levels in this way; either can cripple efforts for change.

Programmes for change need therefore to recognise that contextual factors will continually and often surprisingly block change. The need to keep looking at the wider context when such a barrier arises, to identify 'a difference that might make a difference', is one of the factors that makes work on climate change intrinsically strategic. People who successfully lead programmes for change in this area need to be able to recognise and address such contextual factors.

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[14] See, for instance, http://www.number-10.gov.uk/su/survivalguide/skills/s_pestle.htm

4. Some key enablers of change

Here is a list of some of the themes that have emerged from our work and of the enablers that are implied by them.

a) Start with action that people want to take, then build awareness

The evidence suggests that people are much more likely to move to awareness from action than to action from awareness. In Appendix E, §9, for instance, once the cargo handlers made concrete changes in their working practices they could see the wider benefits for themselves. Other cases are given in Appendix D, §14.

However, both research and case studies demonstrate that it is a waste of time to try to engage most people with issues such as 'climate change' or 'sustainable development'. People need to have issues offered to them in a way that they regard as relevant in their particular context. We cannot generalise as to what that means for different people, because we all differ, but these will typically be issues that affect people in their everyday lives: climate change initiatives need to be translated to this level for there to be much hope of change occurring.

As described in the source documents for Appendix D, §s 8 & 14, if people care about saving money, that is where the programme should start, if they care more about their local wildlife, or about refurbishing a local temple, then that is better. There is strong evidence that this is possible – e.g. that most people and organisations can connect with their current interests in a way that links to climate change as an issue.

However awareness raising will not necessarily happen automatically as a consequence of action, but will need actively to be developed. Since higher levels of awareness are quite rare, this will probably be the case at all levels, not just for beginners.

> **Enabler:** Find initiatives that are seen as relevant by people but which can also make a link to the climate change agenda. The key enabler is to understand what interests key target groups for behaviour change programmes. But then plan for awareness raising.

b) Develop deeper levels of awareness, but slowly and related to action

As mentioned above in §2.2, there are at least three levels of awareness of climate change as an issue. Although there is very high awareness of the concept of climate change, of its causes, etc.,(the first level of awareness) this is at a very simple level. The great majority of the population do not 'get' the urgency of climate change, which is the second level of awareness. Those in a position of leadership, the 'champions', mostly do. Even fewer understand the structure of climate change as a systemic issue (the third level of awareness), but it is at this level that strategically useful points for intervention begin to become apparent. (Appendix D, §1).

It is overwhelmingly clear that providing information (unless supported by action and the development of 'agency') does not normally stimulate behavioural change, but is more likely to block it. Nonetheless developing deeper levels of awareness of the issues is crucial in programmes (if not necessarily for all participant) because without it the need to act may be missed and because those who wish to act may do so inappropriately or may not even recognise the opportunities to act.

Enabler: Developing awareness is a helpful process but must be done with respect for people's capacity to take it in, which means that it must be progressive and related to the development of agency.

c) Take steps to develop people's sense of agency by addressing context

Research is clear that people will not sustain action, and will also resist awareness, if they can see no way to take meaningful action ('agency') in response to distressing environmental issues (Appendix D, §2). Because the external context (laws, infrastructure, etc) is so crucial, and because each person's contribution to the problem is typically so tiny in relation to the issue, this means that programmes must find a way to address context in a way that the individual finds meaningful if change is to last.

As an example, Appendix E, §2, shows how Energy Manager Dave Pickles is addressing different contextual issues to increase the capacity of his initiative to generate change:

Stimulus	Contextual constraints	Response
Warm Homes Act, aiming to eradicate fuel poverty risk from housing stock	Inadequate energy performance data on homes to enable carbon management	Householder survey. Link address gazetteer to GIS for comprehensive analysis. Update database regularly. Feedback savings.
Home Energy Conservation Act	Capital investment in insulation, boilers etc needed. Tenants unlikely to respond.	Holistic cost benefit analysis to justify council/Energy Agency investment in targeted house by house action.
Residential Carbon Management	Low householder awareness.	Action (new boilers, insulation etc) coupled with "global to local" messages, raises awareness. Council/E.A. is successful champion. Initiative extended to privately owned properties.

Enabler: If they involve an increase in awareness, as most significant change initiatives should, initiatives should be positioned as part of larger processes that have the capacity to address wider contextual issues.

d) Recognise that this is inevitably a learning process

"I think it's made me more conscious and I know I never used to put lids onto saucepans and I do that now…I used to leave my TV on stand-by at night and I just turn it off at the mains, which I never, never did before."

(A participant in Global Action Plan's "Action at Home" Programme).

Change is best seen as a learning process. This is true both at the individual and at the organisational and cross-organisational levels. At the individual level, as shown by the example of Global Action Plans Eco-Teams in Appendix E, §6, programmes are effective when individuals reconsider habitual actions, habits being one of the most potent contextual barriers to change. At a higher level of engagement, action and reflection processes structured along learning lines are widely recommended and as shown in Appendix E, §9, there is evidence that this can bring about significant shifts in people's engagement with climate change issues. At the organisational and cross-organisational levels, people need to learn what the internal and external barriers to change are in the specific circumstance and then address them in a structured way. (Appendix D, §s 7, 8, 14).

> **Enabler:** Projects should have a specific learning agenda so that key factors can be identified and addressed. To assist this, action and reflection processes should be built into every project. Some skills in learning facilitation are needed for champions and for those supporting them, and projects should be designed to enable and harness 'learning flows'.

e) Pay attention to monitoring and feedback processes
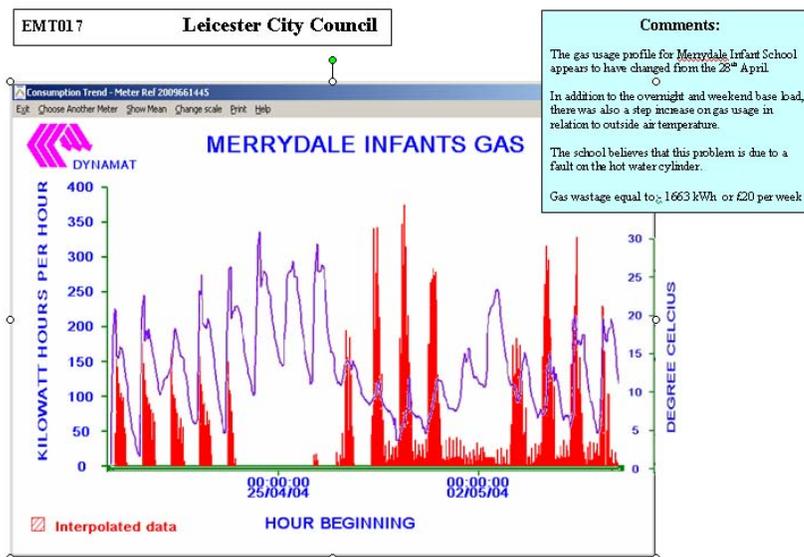
Feedback from Leicester's Intelligent Metering Project

Feedback – evidence – is needed for learning. Its lack is therefore among the most serious of contextual constraints. In addition, people do not trust generalised claims – e.g. that low energy bulbs will pay for themselves several times over. They want proof, or the word of someone they trust who has that proof. Evidence need to be very rapid and meaningful to the behaviour that is being targeted: quarterly meter readings are not enough, even if they are available (and they are not in many organisations). We were amazed to discover how little direct feedback most programmes offer people, or gather

themselves. As shown in Appendix E, §s 1 & 2, some organisations have managed to offer good feedback and the evidence is that their change programmes have prospered as a consequence. So providing good feedback is a crucial element of addressing 'context' in most programmes. (Appendix D, §s 7, 8, 6).

> **Enabler:** Feedback is vitally important. It may need some work to provide this in a way that is robust and that is also meaningful to participants. Feedback is also needed to manage projects.

f) Address all four quadrants of Wilber's matrix

It is clear from the research (and from our direct experience) that any of the contextual dimensions in §3 above need to be addressed in any behavioural programme (Appendix D, §6). At any time, one or the other of these may be a limiting factor and others may be irrelevant. In Appendix E, §7, for instance, people wanted solar panels but there were not enough fitters available to meet the demand. On the other hand, social cultures may be a constraint (Appendix D, §s 3, 4, 6).

> **Enabler:** Projects should be set up with the potential to address all four quadrants (both personal and collective issues, whether 'subjective' or 'objective') and should be resourced accordingly. This means in practice that they should be capable of addressing the deeper levels of learning, where the purposes, values, assumptions and strategies behind actions, and not just the effectiveness of actions themselves, are brought into the learning process (Appendix D, §7).

g) Seize the opportunities

Change is often stimulated by an external shift – for instance in legislation, in taxation or other fiscal policy, in industry standards, etc. The Environment Centre in Southampton (Appendix E, §4) told us that they had many inquiries whenever, for instance, the Environment Agency sends out a letter about new regulations.

> **Enabler:** These external moments provide very significant opportunities and provide a way of engaging in actions at a time that people want to take them.

h) Provide structured top-down support

The cross-cutting nature of climate change responses means that no one organisation can easily deal with all the contextual issues. Research[15] also shows that very few organisations indeed are used to moving far enough outside their own field of operations to address the wider context. As shown in Appendix E, §2 and Appendix D, §13, this means that some organisation (a 'linking-pin' organisation) needs to take on this role and co-ordinate the various actions that are needed to give an initiative a chance of success..

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[15] See Organizational Change for Corporate Sustainability Dunphy, Dexter, et al, Routledge, 2003, Appendix to Ch. 1.

> **Enabler:** Organised project management processes are needed, managed by an organisation that has the capacity to address the key issues that emerge.

i) Develop groups into 'action networks'

"At each meeting I go to, I feel inspired to take one step."

(Attendee at a Llanidloes Energy Solutions meeting- Appendix E, §8.)

Usually, people's social groups do not particularly support action on climate change. As supported by Appendix E, §s 6 & 9 and Appendix D, §s 13 & 14, research evidence is strong that the support of a group is very important to people who are trying to make behavioural changes, partly because it normalises 'pro-environmental' behaviour. Appendix E, §s 12 (the end of the slave trade) & 7 and 8 (Llanidloes), shows that working through networks, involving people who are good at sharing information rather than those in the right hierarchical position, can radically accelerate change.

A note of caution is that this may be unhelpful if there is a significant learning agenda: in such cases it is very easy for sub-optimal changes to become embedded. People planning programmes need to consider whether the primary need is currently learning or dissemination, and then take account of this in design. In Appendix E, §9, for instance, the group was relatively closed for the first few months of the project and then opened out to include a wider constituency later in the process. On balance, action networks are probably best designed around clear task agendas with their strongest relationships being to a 'linking-pin' organisation rather than to each other. Change may be somewhat slower but is likely ultimately to be deeper. (Appendix D, §s 11, 12 & 13).

> **Enabler:** The 'action network' model should be adopted wherever possible. The lessons from 'tipping point' theory (Appendix D, §11) should be used in selecting people to be involved when dissemination is the priority.

j) Expect and plan for some emotional disturbance

"Marketing and Publicity hasn't been as full on about climate change as it has about smoking and drink-driving. The stuff on energy is not hard-hitting enough. Climate change is scary. If people thought about it they might be prepared to take action. Not scare tactics but a reality check."

Stephanie Evans, The Environment Centre, Southampton

One of the reasons that most people back off the subject of climate change is because they know that it is emotionally challenging. Probably the majority of people will not explore the issue in enough depth to become disturbed, and nor should they be made to. Some will, however, and – as shown in Appendix E, §s 9, 10 and 11 and supported by the above comments from §4 – the evidence is that being personally disturbed by climate change can be extremely important in developing motivation to act and new champions for the future. Progressive programmes need to be aware of this and should subtly offer people confidence that they will have appropriate support when and if it is needed. (Appendix D, §s 2, 10, 9).

> **Enabler:** We do not think that people should be 'forced' to face difficult emotions, but should be given support in doing so when and if they are ready to do so.
>
> This is particularly important for those who may become champions.

k) Pay attention to developing champions

We saw a crucial role for 'champions' in all cases – for instance in Appendix E, §s 1 and 2 (though the term was strongly resisted by a person in §7 to whom we would also have applied it!) – and in the literature. These people may or may not have a formal organisational position on climate change – having such a position is certainly no guarantee that a person will become a champion. What effective champions have in common is a strong emotional, intellectual and perhaps even a spiritual connection to the issues that gives them the resilience to keep going over long periods of time and to keep reinventing programmes to take on different external and internal constraints. While the ordinary person sees a constraint as a constraint, a champion will be much more likely at least to find a way around it or even paradoxically to use it as a resource. Some would find ways to remove the barrier altogether. As exemplified in Appendix E, §6, we saw more emphasis being put on recruiting people into action at the first level of awareness than on offering people with longer experience a pathway to deeper engagement and perhaps to becoming a champion. The evidence is strong that the learning needs of champions are even greater than for others, since their role is so crucial. There is also evidence that champions often have had a strong experiential connection with the issues, either in nature (perhaps as a child) or by encountering environmental damage directly. (Appendix D, §s 9, 7, 8, 10).

> **Enabler:** 'Champions' are perhaps the key enablers! Pathways for people to become champions should be offered. These should give people every opportunity to develop deeper levels of awareness, to engage in radical learning and to engage directly with climate change issues.

l) Be patient!

As demonstrated by cases, for instance, all of the above takes a considerable amount of time (Appendix E, §s1, 2, 9, 10 & 11. As Gwen Prince at Llanidloes says, '*it's important to be patient*' (Appendix E, §7). Our own work suggests that significant and lasting changes in awareness at the individual level take around six months on average, even in a supportive environment. Undertaking the research for a significant change and then rolling out takes longer. (Appendix D, §14).

> **Enabler:** If significant awareness changes are the objective, people need to be given enough time.

The need for an integrated approach

We found that a number of the case studies had good practice in one area but that relatively few are putting them together into a coherent programme. For instance the

Democs game (Appendix E, §3) is excellent at building initial awareness but does not yet support people in taking the next step into action. CRED (§5) provides information and encourages people to make a commitment to change but does not seem to support them during the action phase. The UKCIP process (as revealed in a workshop that we attended) engages stakeholders in single day workshops but does not seem to provide support when they go back into organisations. Usually the emphasis is primarily on information, but all the evidence suggests that much more than this is needed.

The evidence shows that behavioural change is not feasible in one step but that it involves a series of steps that together form a journey. The longer that journey lasts, the more likely it is to be a successful one.

Enabler: A programme needs to engage people where they are, whether it be reacting to a supplier audit, or wanting to improve local countryside to encourage more birdlife, or wanting to save money or have affordable heat in their homes, or indeed to make a difference on climate change. From this starting point, people will certainly walk at different speeds, and some will go much further than others.

5. Four A's for change[16]

The list above is lengthy. To summarise, three key *conditions* and a key *process* can be identified that are required in addressing these contextual issues. These are as follows:

1) '**Awareness**' of what is happening and of what is required. As mentioned, such awareness can be at various levels. Almost every UK adult has 'brand recognition' type awareness of climate change: there is little payoff from further attention at this level. Relatively few, however, are aware of the urgency and scale of the issues. Fewer still have adequate awareness of their systemic structure: of the delays, of the contextual barriers that need to be overcome, of how and when windows of opportunity to address them open up. While awareness is a poor way into these issues, there is a clear need to develop it further, recognising that sometimes this may involve encounter with difficult emotions. (Appendix D, §s 1, 10)

2) As shown above, '**Agency**', or the ability to find a response that seems personally meaningful in the face of these immense and often intractable issues, is vital in unlocking the door to awareness. To build agency requires that the key blocks to change discussed in §2.2 and §3 above are brought into play. (Appendix D, §2)

3) '**Association**' with other people in groups and networks has also been shown to be crucial in encouraging people to act on sustainability issues – indeed it may be the single most important factor. This is partly because of a 'weight watchers' effect, with pro-environmental behaviour being reinforced and normalised, and partly because groups offer 'agency'. Developing 'agency' on key contextual issues often requires extending beyond existing association to new people and groups.

Each of these three conditions is necessary but insufficient in isolation. For instance, low awareness prevents agency being recognised and also prevents groups working effectively on the issue to develop association. This means that any change programme needs to work across all three, developing them in parallel, probably (at least initially) in small steps.

Beginning the process successfully, indeed beginning at all, and then developing it to go beyond what is required to address the key contextual issues that will arise, requires the key process referred to above, that of:

4) '**Action and reflection**'. **Action** is the point of developing the other three conditions: actions speak louder than words. However the evidence suggests that the move from action to awareness is far more common than vice versa, particularly if this action is in groups. (Appendix D, §s 6, 14). This may be because to act with others is to begin to develop agency. Perhaps surprisingly, it dos not particularly matter what the motivations for the initial action are: acting to restore a local amenity, or to save money, or to gain ISO 14001, all have the capacity to develop into action on broader sustainable development issues, provided that the links are made explicit at some stage. But action alone is not enough. **Reflection** is also

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[16] 'Using Learning Processes to Promote Change for Sustainable Development' by David Ballard, Action Research 3 (2) (Special Issue on Change for Sustainable Development), June 2005. This paper was revised for publication in parallel with this research, both informing it and, to a degree, being informed by it.

required to identify contextual blocks to change and therefore to discovering agency; it is also needed to prevent association processes in groups from bogging down (which they often do). To a 'champion' or other leader, reflection helps identify where a process is getting stuck and how it might unstick again. It opens up the gateway to the higher levels of strategy, where limiting assumptions are identified and challenged (see Appendix D, §7).

Addressing all four of these 'A's' in parallel is not easy but will reliably enable changes in some, if not all, participants. There will often be a sudden shift in awareness at some stage – often after about six months. There may be some emotional disturbance at this time, but many people may reorient their priorities very significantly. Following this, faster progress will usually be possible, but the search for agency in particular usually remains a lengthy one.

6. The potentially vital role of local government

Building on the analysis in §s 2 to 5 above, it is clear that local government could occupy a potentially crucial role in behavioural responses to issues such as climate change. Why is this?

1. Local government can offer **leverage on contextual issues**. It is small enough and local enough for ordinary people to engage with (unlike Defra and other national bodies). On the other hand, it is large enough both to mount significant projects and for what it does to influence policy at a national level and also internationally through local authority networks and processes such as ESPACE and Aalborg. In learning flow terms (Appendix D, §7) it is at a position where it can influence both policy advice from Government and operational processes on the ground (for instance in adaptation responses).
2. Local government can offer **meaningful projects**. Because it is intrinsically local, has an operational role, and is democratically grounded, it can recognise, organise and invite participation in projects that ordinary members of the public regard as important. Many of these will be easy to connect with climate change.
3. Bringing these two aspects together, local government offers realistic **agency**: leverage for change in areas that people regard as meaningful.
4. Local government has significant **'convening power'**, or the capacity, democratic legitimacy and resources to call significant numbers of people together. It therefore offers the possibility of meaningful **association** and potentially opens up powerful **network effects**.
5. Local government has the resources to organise and support **action and reflection processes**. For instance, HCC's own 'leading for success' programme is an example of such an approach, which means that there is both capacity and experience to extend more widely.
6. As respected organisations with a strong educational remit, local government is at least as well placed as any other organisation (and probably better than most) to support the development of **awareness**.

There is substantial research supporting this view. For instance, the key Lancashire research that identified the central role of 'agency' in 1995 (referenced in Appendix D, §2) was itself commissioned by local government (Lancashire County Council) and the report stressed the key role that such organisations could play in change for sustainable development.

The key role of a **'linking pin organisation'** in managing sustainable development projects through **action networks** was identified by Michael Carling and Ian Christie and is summarised in Appendix D, §13.

For these reasons, it is hard to think of another class of organisation that has greater potential scope to influence individual, organisational and social change in response to climate change than local government.

7 A template for behavioural change projects

We propose the following process to address the themes in §s 4 and 5 above. Building on experience from the quality movement, it is based on the general learning approach to change outlined in Appendix D, §7 and, we think, has the potential to engage with people where they currently are while also taking both them and HCC much further.

Preliminary: Initial stimulus

This could be external (e.g. taxation or legislation) or might arise from an interest of the group (e.g. money saving or local regeneration). The first move might come directly from the group, as in the case of the case studies quoted in Appendix D, §14, or might be suggested to the group, as in the case of the work of the Global Action Plan (Appendix E, §6). It would of course be quite possible actively to recruit at this stage, for instance as a follow-up to a letter about a new regulation from a body such as the Environment Agency. Whichever it is, and as recommended by the HCC interviewees in the stakeholder survey, it is important that the proposal makes sense from the perspective of the potential participant.

 Whether or not an explicit connection with climate change is made at this point is a matter of judgement. There is some evidence that for some groups, the environmental movement – and by extension an issue such as climate change – has a tofu-eating, sandal-wearing image that can be quite negative for many (but for others this may be less of an issue, or even an advantage).
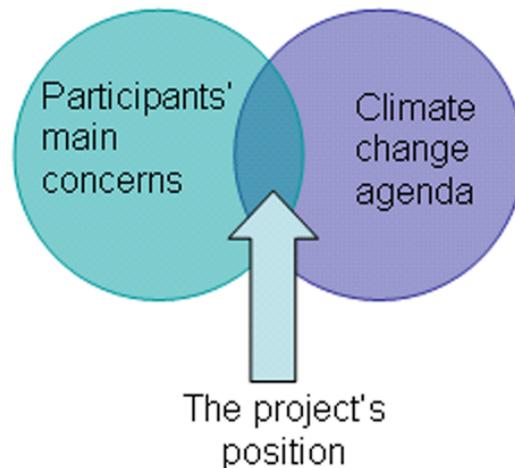
Figure 2: Projects must make sense both for climate change and to participants

 We would say that from an ethical point of view it is important that the group's initial purpose (saving money, improving local habitats, avoiding prosecution, etc) is respected throughout, whether or not this expands to include climate change-related issues later in the process. Apart from the research evidence (Appendix D, §14), to respect this signals that it <u>is</u> possible to take climate change seriously while also building a good life from the perspective of ordinary members of the community.

Some likely questions that might arise at this stage include:
- Why should this issue interest the target group?
- What is the potential link to climate change?
- How explicit should we make that link?

Step 1. Setting up the project

After the possibility has been identified, Step 1 begins to make the project happen. This involves agreeing the scope of the work so as to respect both the participants' concerns and the climate change agenda (see diagram above), defining a meaningful & attainable objective, identifying the resources that are likely to be needed, particularly given the importance of finding 'agency' for the participants (see §5), involving appropriate institutions and people to assist with this, clarifying roles in the project, and finding a champion (if one is not already evident).

Some likely questions that might arise at this stage include:
- What might practically be possible?
- Where might 'agency' be possible and how might that be enacted?
- How can the links between climate change and the participants' interests be developed?
- Which organisation is best placed to take the 'linking-pin' role, as summarised in Appendix D, §13?
- Who might take the champion role and what help might (s)he need?
- Do we have an appropriate mix of people including appropriate variety (Appendix D, §4), people from both formal and informal systems, 'connectors' (Appendix D, §11), etc.?
- Who else might be involved?
- How might the objectives need to change as a consequence?
- What other resources or skills might be needed and who might provide them?

Step 2. Design the process

The design stage is important but it is not necessary to work everything out in advance. If 'cycling' begins to happen, with the project being refocused in the light of experience, then it is not necessary to sort out all the details at the beginning: many of these can be identified and addressed in later stages of the project. More important is to establish the appropriate 'culture' of the project. Since people's day-to-day relationships will normally not put climate change high on the agenda, it is important that the project does, while also fully respecting participants' interests where they are different. In addition, the project should establish a sense of being both fun and stimulating.

Some likely questions that might arise at this stage include:
- What is the capacity of this group to do this work and how might we both use it (e.g. by engaging participants' creativity) and further develop it?
- How can the group be encouraged to become both 'supportive' and 'appropriately challenging' – i.e. to become a learning group? (For instance in Appendix E, §10, the group practiced 'dialogue' principles to aid creative work together).
- Is any specific information needed by participants at this stage?
- What facilitation or other support does the group need?

- What are the planned learning flows, so that what is discovered either flows back into later stages of the project or is taken to people who might be interested / able to address the issues?

Step 3. Choose initial focus and plan first steps

The research (Appendix D, §2 & 6 in particular) and the cases (particularly Appendix E, §1 & 2) both demonstrate that 'success' depends on complex internal and external blockages. Appendix D, §7 demonstrates that initial steps very often only make the problem worse. On the other hand, it is important to establish a culture of success, particularly faced with an issue of the scale of climate change. For both reasons, it makes sense to start with very small actions rather than by trying to do something very large. For instance, it is probably better to investigate opportunities to save money on energy in one property, or for one activity, than at a larger level. It may even be better to begin by gathering some base information: how much energy do we actually use in a day? Because of the importance of feedback (Appendix D, §8), it is crucial some attention should be put into data gathering in a meaningful way.

Some likely questions that might arise at this stage include:
- Are the actions achievable?
- Might they make a difference?
- Is there an opportunity for hands-on action?
- How might we monitor outcomes?

Step 4. Action

It is common for some people to try to avoid the action altogether. For instance, they may run a department and delegate the action to other people and (literally) avoid getting their own hands dirty. It is far better when everybody gets involved in action in one form or another (see, for instance, Appendix E, §8). Learning processes are typically significantly constrained without direct lived experience. Significant insights can come from identifying and inquiring into resistance at this stage, In addition, people usually enjoy it, once they begin.

Some likely questions that might arise at this stage include:
- What stops us from acting? (This points to some of the contextual issues). And what helps?
- What do we notice externally – i.e. in the outside world – when we do? And what do we notice internally – i.e. in our own thoughts and feelings? (Both may also point to important contextual information)
- What do we find difficult / easy?

Step 5. Identify outcomes and reflect on progress against objectives

This is an absolutely critical phase. Many of the research papers in Appendix D, in addition to the cases in Appendix E, demonstrate that making progress on climate change requires that a whole series of 'contextual issues' be addressed. This is the point in the process when these can be identified. For instance, the action phase may have started well but then run out of steam. Why was that? Perhaps, for instance, attempts to improve local ecology were spoiled when participants went on holiday. What difference might have

made a difference? By looking non-judgementally at what happened, and drawing conclusions, lessons can be learned and future actions can take account of these.

This is often the point when initially disparate agendas – e.g. improving local ecology and climate change – can begin to be drawn together. As people begin to have trust in the project process they may begin to wish to learn more, and both research and case experience suggests that they will increasingly be capable of learning more. Those leading the project may subtly deepen the issues at this point, recognising that people might react in different ways and that it is important to be both respectful and supportive, particularly at such times.

Some likely questions that might arise at this stage include:
- What happened that we did / didn't expect?
- What didn't happen?
- How are we doing against the purpose of the project and its objectives?
- Is this a good time to deepen awareness? How might that be done?
- How did the way that we approached this affect the outcomes?
- What did we learn about external factors?
- What did we learn about internal factors?
- What might we do differently / the same in future cycles?

Step 6. Identify next steps

In most cases, it will be appropriate to engage in a further round of action. Appendix E, §10, for instance, describes a process which had six action rounds that lasted for over one year. The evidence suggests that people's engagement will not significantly deepen for at least six months, and most projects of any significance will need at least that long to identify and begin to address contextual issues. Projects that do not address the context at all are unlikely to make a difference.

At this point it is appropriate to return to Step 1. Some minor changes might be necessary – for instance by bringing in other people. In addition, some issues may have been identified that are of wider interest and it may be appropriate to share these more widely.

Some likely questions that might arise at this stage include:
- What is an achievable focus as the work continues?
- What changes need to be made as the work continues?
- How can we bring more factors into play?
- Are any changes to the project's membership needed (though these changes will normally be minor)?

Closing: Endings and new beginnings

In due course, the project will have run its course. This would normally take about six to eight cycles of work, typically of around one to two months each. In other words, the project as a whole would typically last between six and fifteen months.

People will have been affected by the project in different ways. Some, for instance, may have retained their main interest in other areas – for example helping elderly people cut heating bills, running companies at lower cost, etc. Others may have been profoundly affected by what they have learned and some of these may want to go further (as in

Appendix E, §9). Others may want to start a new project linked to the first, perhaps in another area, perhaps looking at some of the issues raised in more depth in a different setting. Some may now be capable of and interested in leading new projects, others might be interested but need further support.

Dissemination of learning is also important. At this stage, people often feel very proud of what they have done and wish to share it. they may wish others to know that they have acquired some understanding and expertise so that they can offer help if it is needed. Some planning for this is appropriate.

In addition, the 'host' institution (see §6 above) will typically have had some objectives for the project and will wish to have the learning fed back to it along with the project's progress in other areas.

Some likely questions that might arise at this stage include:
- How can what we have learned be disseminated, and to whom?
- How can the process end well?
- What issues have we identified that need to be addressed, and how might that best be done?
- Who might be interested in going further, and what support do they need?
- Who might be interested in taking a 'champion' role in other projects?

Part 2: Planning for human responses to climate change in Hampshire

8. Adaptation, spatial planning and behavioural change

8.1 The planning challenges posed by climate change[17]

Climate change is expected to present many challenges for planners in north-west Europe. Two of the most pressing are:

1. The accelerated hydrological cycle will make it harder for dense human populations to thrive amidst larger and more violently fluctuating volumes of water;
2. Rising sea levels will challenge the viability of many coastal settlements and economic enterprises

In addition to these two core challenges, there is a host of other ways in which expected climate change will have some impact on spatial planning. Farming patterns may become less long-lasting; changes to soil structure will affect the positioning of infrastructure; people may need to live nearer their place of work. The list is by its nature open-ended – there can be no firm predictions of how our own societies will respond to climate change and how therefore planners will have to plan.

All of these might be called "hard" planning problems – they are simply-stated physical challenges. But since any adequate responses to these challenges will involve great expense and great disruption to many people's ways of life, there is also a social/political challenge for planners. In order to meet the physical challenges posed by climate change, it will probably be necessary to change the social space in which planning occurs.

In sum, there are four great challenges posed for planners by climate change. As well as the two grand problems of water outlined above, there are the facts that:

3. The type and severity and distribution of impact are all unknown, and planning mechanisms will have to take this very uncertainty into account in a systematic way;
4. Any successful response will have to overcome inertia or even resistance on the part of policy-makers and the general population (the nature of which is explored in §2.2 of this report).

Any contributions to challenges 1 or 2 are also indirectly contributions to challenges 3 and 4. 1 and 2 relate to questions of immediate physical survival; and to the extent that they are successfully addressed there will be some gains in our understanding of the wider planning implications of climate change (challenge 3) and in the general acceptance that a lot needs to be done (challenge 4).

Also, contributions to 3 are indirectly contributions to 4. The more that planning decisions are seen as systematic but flexible, the more likelihood they have of winning acceptance or support.

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[17] This section of the report (§s8.1, 5.2 and 5.4 in particular) is largely taken from an initial draft by our colleagues from Rosslyn Research Ltd which is included in its original form in Appendix C.

8.2 How ESPACE projects relate to these challenges

Using this four-part schema of the challenges posed by climate change, we can see that the different national traditions which the ESPACE partners draw on have their own contributions to make.

- Challenge 1 is most directly addressed by the VROM/WRVL collaboration. Drawing on the Netherlands' centuries-old expertise in maintaining a complex high-density society in the midst of great volumes of water, the project provides a pointer for neighbouring countries which are only now – in the face of climate change – having to put water-planning right at the centre of spatial planning. In particular, the social aspect of planning-around-water (especially the need to take housing, leisure and farming into account simultaneously) is elaborated in the Guiding Models project in a way that other partners (e.g. SEERA in the UK) regard as exemplary.

- Challenge 2 is most directly addressed by West Sussex County Council's (WSCC's) Manhood Peninsula project. But there are wider lessons to be drawn from this localised experiment in engaging an affected community. Although it is bound to be easier to achieve on such a small scale with such a directly-affected population, it can provide some pointers to how to tackle challenges 3 and 4 on a wider scale.

- In different ways, challenge 3 is addressed both by Bayerisches Landesamt fur Wasserwirtschaft (LFW) in Germany and by much of the UK contribution to ESPACE. LFW is working towards achieving a fine-grained mapping system, which will integrate with systematic planning. This will provide crucial guidance on how to address local, regional, international and global climate change at the appropriate geographical scale. This in turn will provide a platform of uncontested observation and prediction on which sometimes painful planning decisions can be made with a maximum of informed consent from those affected. We suggest that without good maps there will be no justice; and without justice there will be no consensus.

  The UK contribution to ESPACE is thoroughly infused with the knowledge that the effects of climate change go far beyond the core problems of water (challenges 1 and 2). In particular the South East of England Regional Assembly (SEERA) plans to push for legislation, for both lower-water-consumption and lower-energy-consumption housing design are direct examples of this broader perspective.

- Challenge 4 is directly addressed by WSCC and also by RLZZZ in Belgium, but as argued above it is indirectly addressed throughout the entire ESPACE project.

8.3 Relevance of the behavioural change agenda in spatial planning

We noted that different types of spatial policy would require different levels of participation by wider stakeholder groups. For instance:

- **Participation required by expert groups.** Technical specifications on engineering projects for which there is widespread public support would only need the participation of a relatively small number of people. Such may be the case in major sea defence projects in the Netherlands, but these are of course less common within the UK. Even in this case, however, we cannot assume that there

will necessarily be no concerns, since the lack of awareness of urgency and scale summarised in §2.2 above might be expected to apply to an expert population as much as to the general public. David Ballard's research in the construction sector in the UK, for instance, confirms this, showing that the level of understanding of likely climate impacts among architects, construction companies and clients is at a comparably low level to that of the general population and that there is very little adequate planning for impacts taking place (Appendix E, §10, Appendix I).[18]

- **Adaptations in practice required.** At another level, manageable changes in practice may be required to ensure that an issue is brought under control. In the farming industry, for instance, plans for water storage are being addressed at the level of the individual farm, but the need for wider cross-farm water management strategies is, we found, barely recognised among the farming community (Appendix H). The problem is again related to the lack of awareness of urgency and scale referred to in §2.2 above, but in this case the 'target' population extends much more widely and might, therefore, be expected to be much more of a problem.

- **Much wider 'buy in' required.** Where a policy of 'managed retreat', or another adaptation strategy that is highly disturbing and / or costly for individual members of the public is required (such as, for instance, major changes to energy prices on the mitigation side), then major issues of awareness and behaviour change are involved. Research carried out for WSCC by Rosslyn Research Ltd. as part of the ESPACE project showed how great a challenge this is likely to be: the awareness of flooding risk of people in flood plains is statistically significantly lower than that of the wider population. The danger here is that informed expert opinion might become disconnected from the wider group whose support will be needed for policies to be implemented, leading to a lack of democratic support for, and so the failure of, adaptation strategies.

8.4 The interconnectedness of the adaptation and mitigation agendas

The examples above show that at no level can it be assumed that any population will necessarily have sufficient awareness to make appropriate choices. The factors in §s 2 to 5 above are likely to apply, with emotional factors playing a part in the choices.

The adaptation and mitigation agendas are completely interwoven. There is no prospect of avoiding the need for major adaptation even were major mitigation measures to be pulled out of a hat tomorrow: the delays in the climate system already condemn us to certain impacts. Equally, for longer term adaptation to be feasible, mitigation measures are essential.[19]

Oxford University's Professor Steve Rayner[20] has made the point that the adaptation agenda is particularly well suited to the development of 'agency': preserving

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[18] See also research published by Sanders and Phillipson for the Building Research Establishment, 2003. As this report was completed, CIRIA published a guide to construction for climate impacts that may help address this.

[19] Grubb, M. (2004). The Climate Change Challenge 1: Scientific Evidence and Implications. London: The Carbon Trust.

[20] In an interview with the authors published in 2002.

homes and social facilities for the foreseeable future is in many ways easier than addressing the mitigation agenda, where success needs to be worldwide.

This opens up a potential pathway to behavioural change. If a sense of agency can be developed among a group of people, then awareness may follow (with appropriate support) and if it does there may be scope naturally to shift actions to the mitigation agenda. We have found (Appendix E, §10) that there is some basis for this position.

This implies that there may be value not only in looking at who **must** be involved in adaptation issues, but also whom it might be **possible** and **appropriate** to involve. Expert-led processes risk missing the opportunity to stimulate wider changes.

On the other hand, the same challenge of awakening sufficient awareness for action seems to apply, with the suppressed awareness of those liable to flooding in West Sussex as strong evidence that it does. This potential pathway cannot be assumed to open up without careful design and execution. Indeed the greater the degree of emotional suppression of information, the less easy it may be to work productively on the issue.

We suggest therefore that the issues be treated as two doors into the same process. As described in §7 above, the question is, where can a particular group's interests overlap with the climate change agenda? How then can this overlap of interest be turned into action, how can reflective processes be introduced, how can awareness be developed, and how can strong association be developed? As awareness develops, how can the reflection process support people in taking stock of what has been learned and of what is needed, and how can moves between the adaptation and mitigation agendas be made so as to build the overall quality of responses?

9. What are the particular issues in Hampshire?

9.1 Scoping the Hampshire context

We undertook early desk research to help us in prioritising areas to look at in greater detail in the later phases of the project. We planned first to identify areas likely to be subject to major climate impacts, second to identify the pattern of energy use in the County, recognising that this would inevitably be far from perfect but would nonetheless be a necessary step in prioritising options for behavioural change programmes.

Because of the inevitably rough-and-ready nature of the review that we anticipated, we originally thought it likely that we would recommend that HCC commission a UK Climate Impacts Programme (UKCIP) survey in developing its climate strategy. We were therefore delighted to find that a UKCIP report (Rising to the Challenge) had already been carried out for the South East Climate Change Partnership (SECCP) in 1999 and updated in 2004 (South East Climate Threats and Opportunities Research Study – SECTORS), giving guidance as to the likely priority areas for climate impacts in the County, and so offering us insight into possible priority areas.

Some of the key areas identified as particularly likely to be affected by climate impacts were identified by the two UKCIP processes as follows:

- Agriculture (flooding and drought, changes to crop varieties). RTC said in 1999: *"The greatest concern is the availability of adequate water supplies and the increased risk of drought. There will need to be more on-farm water storage reservoirs but these are expensive to install and will not be enough in isolation."*
- Biodiversity (major changes to ecosystems, flooding). Some species (e.g. beech trees) will be stressed, others will be favoured. As the MONARCH study indicated in 2001, however, ecosystems need to be considered as a whole and shifts in the mix of species (as migration occurs at different rates) create knock on consequences which pose major challenges for conservation bodies.
- Emergency planning (particularly flooding of rivers and in coastal areas). As RTC pointed out, *"more extreme conditions are inevitable in the next* (i.e. the 21st) *century."*
- Health (operational impacts, impact of heat waves, etc). Air quality might be affected and heat stroke was an issue in Europe in 2003. As the SECTORS report identified, disruption to other services could affect access to health provision.
- Tourism & leisure, which (according to RTC) could benefit, depending on adequate infrastructure (such as transport) being developed.
- Utilities and infrastructure, with water availability – already stressed at times – being a key issue and with concerns about the suitability of building and drainage design for a climate with more extremes.
- Business and industry. Here RTC pointed out that the predominantly service-based economy of the region led to business representatives mostly discounting the impact of climate, but the sector employs 1.5 million people in the region *"all of whom will be affected as patterns of transport, health and the nature of the working environment shift…"*.
- Spatial planning, ensuring that developments take account of these and other factors, this of course being one of the prime objectives of the ESPACE project.

On the mitigation side, we were able to use Government and Regional statistics to get an overview of the pattern of energy use in the Region and, where possible, in the County, using national statistics to set a context where appropriate.

We found:

- Very light industrial energy use. We identified only 20 locations registered as potentially subject to carbon emissions trading with most of these being in the services sector (hospitals and military bases in particular). Bar a brewery, a couple of brick works, and the area around Fawley, we found little else of significance.

- The few companies with higher energy use are for the most part members of significant industrial groups (such as Exxon). Such companies can reasonably be expected to look internally rather than to their local authority for energy advice. We therefore did not see heavy industry as a priority area.

- Despite this, a high level of economic activity, with a high proportion of start-ups and many service industries. 'Rising to the Challenge' (RTC) identified the main industries of the South East as being (in 1999) the service sector, public administration, banking and insurance. Energy will be a strategic cost for only a very small proportion of such businesses, even with the likely higher fuel prices of the future.

- The region has the lowest proportion of people in fuel poverty in the UK. While this does not mean that this is not a distressing issue for those in that situation, and while we recognise that the issue will apply in pockets in the county, the level is so much lower than, for instance, in Northern regions that we did not regard this as a strategic priority area for behavioural change with a specifically climate change focus.[21]

- Energy use that is heavily concentrated on transport and on space and water heating in homes and in commercial premises. Indeed analysing national data from the DTI suggested that an unusually high proportion of energy use in the county is likely to be strongly influenced by the behaviour of individual consumers. This poses a considerable challenge for HCC. The DTI data show that energy waste in the domestic sector is tremendous, with this being almost the only area which has <u>reduced</u> in efficiency (as well as in absolute volume terms) in recent years and decades.

- We agreed with one of our initial interviewees, who implied that the main poverty in the region is time poverty (Appendix A). In addition, evidence from work carried out by SPRU at the University of Sussex has shown that energy efficiency measures are only poorly taken up in businesses across Europe even when clearly cost effective, with money being 'left on the table'. We came to the conclusion that it would not be easy to use marginal energy cost savings as a route into behaviour change.

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[21] We do not, of course, wish to suggest that there might not be other very valid reasons for action on fuel poverty in the county, nor that any such programme could not be of assistance to behavioural change on climate change. Indeed such programmes potentially fit very well within the process described in §7 above.

9.2 Stakeholder perceptions in the county

Appendix B is a report on the interviews that our colleagues from Rosslyn Research carried out in the first part of the project to help us identify the areas where we might focus attention later in the process. Drawing on the perspectives and concerns of different groups, these summarised findings provide initial indications both of how to catalyse action through different stakeholder motivations and of what HCC's role as a linking-pin organisation might be. Our conclusions from them are italicised :

a) National/International Opinion Leaders

These people see the main problem as being to learn how to communicate expert assessment of an intrinsically uncertain area accurately to political leaders and the public, and thereby have climate change acknowledged as a globally urgent issue, when there is such uncertainty in the scientific data. Non-experts are worryingly ill-informed; not only about the facts but even about the *type or structure* of factual information that already exists.

Most of our interviewees thought that the most urgent need is to work with policy-makers to raise the profile of the issue of climate change, to have funding and projects organised more permanently and centrally, and subsequently to address public attitudes and behaviour.

> *Implication: Local Government could assume an important role in compiling robustly sourced information on climate change and in the sharing and dissemination of information (but subject to the concerns identified in §s 4&5 above). It is particularly well suited to bringing together communities of interest in dialogue around the implications of climate change, perhaps using tools such as DEMOCS (Appendix E, §3).*

b) Regional NGO Representatives

These people are concerned by fragmentary funding and non-coordination of initiatives. Lack of quantitative measures of success is a major barrier to securing funding. The actual process of applying for funding is very complex and demanding.

They think that communication should be personal and local where possible but backed up by centralized information infrastructure. The interviewees saw the biggest challenge as being that of integrating not-for-profit and at times apparently anti-profit (or perhaps anti profit as currently conceived) initiatives into the economic mainstream.

> *Implication: Local Government could play a helpful role by using tools such as Holistic Cost Benefit Analysis (Appendix E, §2) and helping to co-ordinate bids for funding.*

c) Regional / Local Public Sector Decision Makers

In structural terms, these people think that the next development should be integration of various existing research programmes and other initiatives. In terms of substance, there is great readiness for and expectation of transport-based mitigation programmes.

The public sector must lead by example if they are to bring about behavioural change, e.g. with regard to car use.

Simple robust quantitative measures are a good communication/motivation tool for bringing about behavioural change, and in particular they are the key to persuading the public that a lot of small individual behavioural changes can have a large overall impact.

Many initiatives are expensive and difficult to set up but easy and cheap to run once they are in place. Our interviewees thought that it is important to convince policy-makers and the public in general that once you are over the "energy barrier" of setting up an initiative, you are at a new state of equilibrium which can continue without constant external input of money and effort.

> *Implication: The concern about the lack of quantitative measures is consistent with our concern about the lack of quantitative feedback processes (§2.2 above) and the concern about demonstrating a large impact is consistent with research on the vital role of 'agency' (§5). There may be much greater scope for HCC to communicate the many things that it is indeed doing in transport and other areas and demonstrating how these may be spread more widely.[22] We see the need for programmes to last much longer than at present, or at least to be better integrated so that the crucial longer-duration opportunity for participation can be offered to the public – see §s 5, 7.*

d) Hampshire County Council Staff

Our interviewees felt that the best way to motivate the public is by extending their existing concerns. For instance:

- Pollution (greenhouse gas emissions pollute as well as warm)
- Recycling (less landfill = fewer greenhouse gas emissions)
- Financial savings (insulated house = lower heating bills)
- Quality of life issues (fewer journeys by private car = more pleasant journeys when they are made, more biodiverse and less car-centred urban areas are climate-change mitigation measures but also improve quality of life)

They saw three major problems:

- It is hard to persuade the public away from an exclusive focus on mitigation and towards adaptation (especially managed retreat from coast)
- It is hard to persuade the public that a great number of small changes can have a great impact
- Initiatives are too localized and fragmented

In contrast to the national opinion leaders, they felt that the public must be involved from an early stage. In their view, the public will not readily address their own behaviour unless it is through dialogue.

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[22] Our impression is that many initiatives – e.g. intelligent bus shelters – are somewhat 'undersold' on the HCC website at present.

> *Implication: The wider research (Appendix D, §14 in particular) is entirely consistent with this: it is almost always more effective to start from an area that already interests the general public in its own right and then make the connections to climate change than vice versa. We discuss the mitigation / adaptation issue in §8.4 above. The two latter problem areas are very consistent with research on the vital role of 'agency' (§5). HCC could make use of structured dialogue processes such as the Democs game (Appendix E, §3), particularly if it can be offered as a route into action on issues that interest the group.*

e) Business

For commercial organisations keeping costs down is the main determinant factor for taking up climate change initiatives. Therefore promoting low-energy practices as cost-effective is crucial in this area. Where savings can be made in fuel bills for example this is seen as good business sense rather than a mitigation measure.

Apart from simple commercial self-interest, interviewees identified three other ways in which businesses may come to address climate change issues:

- Government regulation
- For smaller businesses, local sense of community
- For larger businesses, enlightened self-interest, which might drive companies towards adaptation and mitigation measures

> *Implication: Again, this is consistent with learning from wider case studies and with the research that shows that it is better to start from existing concerns and move towards climate change than to attempt to go in the other direction. The Environment Centre (Southampton) has considerable experience in this area on which HCC could draw.*

f) Local Opinion Leaders

On a local level, there is a great interest in environmental initiatives taken on by government agencies such as the Environment Agency and English Nature, as they directly affect people's everyday lives. This has led to opposition by local parties concerned, in particular farmers who see land left for managed retreat as a threat to their livelihoods. There is also widespread opposition to wind farms, on the grounds that they degrade the amenity of the countryside where they are located.

There appears to be competing interests between local government and environmental agencies on management of coastlines and housing issues as well as competing interests amongst local groups on matters such as water management. There also seems to be a pressing need to consider how to accommodate environmental issues in a way that addresses the interests of all the interested parties.

> *Implication: Local Government may have a vital role as 'honest broker' ensuring that different voices are identified and heard and providing structures within which issues can be explored.*

10. Identifying and testing possible response strategies in Hampshire

How might the process described in §7 be applied in the county? We identified a set of areas for further research where we thought that HCC might have the potential to stimulate behavioural programmes with reasonable prospects for success. In each of these areas we undertook some desk analysis of issues and did further case study research. Where we saw possibilities for a useful initiative, and where possible, we then identified a potential behavioural change proposition for testing in a limited market research exercise. In other cases we identified specific information needs from local stakeholders, again through limited market research. In the remaining areas, that is where possibilities for intervention looked limited, we took no further action.

10.1 Governing principles for interventions

We identified (see §s 4 & 5 in particular) a number of key elements that are likely to be present in successful behavioural change projects. These include:
- Duration – significant changes in awareness will probably take at least six months, where they occur. If they do occur, there should be some time before the process ends for new awareness to consolidate.
- Win: win: win outcomes. Clearly any process has to benefit the environment, in this context by mitigating climate emissions or by preparing for climate impacts, ideally both. In addition, research shows conclusively that you have to meet people where they are interested themselves, e.g. by offering financial rewards or by benefiting a valued community project. It looks likely that people in Hampshire are time-poor rather than money-poor, so direct financial savings, while perhaps necessary, are unlikely to be enough. Win : win: win means therefore a benefit for the individual, for a valued community project, and for climate change mitigation and / or adaptation.
- Projects should be 'sold' acknowledging all of these three motivations and evaluating against all three.
- There should be a series of cycles of action and reflection with each lasting perhaps a couple of months.
- Clear and easy action. This should ideally be physical and not just holding meetings.
- Opportunities for reflection. At the end of each 'cycle' of action there should be opportunities to evaluate against each element of the win: win: win. There should also be an opportunity to build awareness of climate change and to draw out learning for the next phase before committing to the next phase.
- Timely monitoring is key – e.g. through metering.
- Learning about 'context' shared with and probably actioned by a 'linking-pin organisation' such as HCC itself, or perhaps a body wholly or partly supported by HCC. 'Context' means things beyond the remit of the group that could make the success of the group against all three elements of the win: win: win easier or more significant. (For instance, it might mean a change to council procurement processes, or setting up discussions with a local transport operator, or changing

specifications for new build, etc). This gives 'agency', which is a key element in people building awareness.

- Work in groups. This is key: people are unlikely to change behaviour unless there is a social setting that validates what they are doing. Ideally this would extend to involving councillors and other community leaders.
- Opportunities for 'tipping point' and other network effects. This can lead to sudden wider shifts in awareness and behaviour. The ideal group would be no bigger than around 150. It will be networked to other groups primarily through the 'linking-pin' organisation. Within the group, however, opportunities will be taken to involve appropriate people ('mavens', 'connectors', 'salespeople', etc., as described in Appendix D, §11) and to build in 'stickiness' ('irreversibility'). There will be opportunities to learn about and address context, as described above.
- Expert support, including facilitation. Groups need to be enabled by skilled advice and by making sure that supporting services (such as a supply of materials, supporting services such as installers of equipment, etc) are in place. Facilitators need to be able to lead reflective discussions and should have enough awareness themselves to be able to handle shifts in awareness. They should have appropriate support – e.g. their own learning or supervision process.
- There should be support for local 'champions' and an opportunity to identify and develop potential future 'champions'.

10.2 Possible areas for behavioural change initiatives in Hampshire

Building on this list, in agreement with HCC representatives, we developed a list of seven areas for further research in the latter half of this project. These are listed below, along with a brief note of why they were chosen. In general, we tried to balance mitigation and adaptation areas and to do so in a way that gave the project an opportunity to engage with ordinary members of the public in a variety of settings, thereby preparing for eventual action at the conclusion of this project.

Here are the seven areas:
a) **Education:** We saw schools as potentially providing a powerful a link into the wider community of roughly an appropriate scale as recommended in 'Tipping Point' theory, thereby allowing us to look for network effects (Appendix D, §11, 12). In addition, there may be greater salience of energy costs in schools than in many people's domestic lives. There is experience to build on in the County and several interviewees were keen for us to pursue this agenda.
b) **Farming:** This adaptation area was recommended by one of our interviewees and was among the most important of the areas highlighted in the SECTORS and the Rising to the Challenge reports.
c) **Construction:** Highly relevant to energy use in the County, particularly given the likely pressure on house building in the Region.[23] There is also a significant adaptation agenda. We also saw this as an opportunity to include the business community.

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[23] Post-election press coverage of the Deputy Prime Minister's potential 'Solent Gateway' came after our research and was not identified in that level of detail by any of our interviewees.

d) **Coastal impacts:** Again, this was recommended by interviewees and was identified as a likely climate impact area in the two reports.

e) **Biodiversity:** Another adaptation area recommended by several interviewees and referenced in the two reports above. We wanted to investigate whether this might give HCC the possibility to engage with members of the public with an interest in wildlife and then move on to more general climate change issues.

f) **Transport:** We saw this area as being too important to ignore on the mitigation side, and there are useful precedents to learn from within the County, with experience among our interviewees.

g) **Domestic energy saving:** Again, too important to ignore in the context of this particular county. There are strong programmes (Global Action Plan in particular) that are keen to help, also excellent case histories from outside the County (see Appendix E, §1, 6). We had identified other specific case examples outside the county, specifically in the area of 'smart' metering, that we hoped would offer useful insights.

There were two further areas that we considered but decided not to prioritise at this stage:

• **Champions.** Development and support of champions is an important and generally under-researched area. A full study would have been unrealistically ambitious within the budget of this project, but HCC chose to commission a separate report on this which is being prepared in parallel..

• **Hampshire County Council:** We thought, in common with some of our interviewees, that HCC not only provides a good case study in its own right but might also provide a potential basis for further action in the county.

10.3 Initial feasibility reviews

The results of our initial review of the seven areas are at Appendix F. In summary:

a) **Education:** We quickly identified that this was a potentially highly strategic area with a number of characteristics that made it suitable for an intervention by HCC. We therefore devised a potential behavioural change proposition for testing. This is described, and the very favourable results of the testing summarised, in §11 below. The initial review is summarised in Appendix F, area a) The results of the targeted market research exercise are at Appendix G.

b) **Farming:** We found a number of possibilities for intervention in the farming community. These were not direct approaches to adaptation issues but rather market-oriented approaches that local farmers would welcome, that would be relevant to climate change, and that would increase the likelihood of farmers being prepared to discuss climate change issues more seriously in due course. The results of the research are summarised in §12.1 below. The initial review is summarised in Appendix F, area b) The results of the targeted market research exercise are at Appendix H.

c) **Construction:** There is little doubt that the construction sector is important, with major potential agency, but also that it has largely been a black hole in terms of significant corporate responses to climate change. Building on our earlier and relatively successful experience with a major construction company, we identified a scheme that might use professional liability as a route to taking the impacts agenda seriously. This is described, and the rather disappointing results of the

testing summarised, in §12.2 below. The initial review is summarised in Appendix F, area c). The results of the targeted market research exercise are at Appendix I.

d) **Coastal impacts:** We identified interesting case studies where, in a number of cases, communities were able to make a shift to collective action despite facing or experiencing significant impacts which might be devastating. What the case studies point to is the need to break down the barriers between 'experts' and members of the public so that they become less entrenched and move towards collaborative inquiry. Unfortunately the evidence suggested that South Hampshire residents are not yet ready to engage in this way and that they resist creative dialogue, probably because of strong emotions. We therefore looked to identify areas where there might be an overlap between the interests of the coastal community and the climate agenda. The inconclusive results of the research is summarised in §12.3 below. The initial review is summarised in Appendix F, area d) The results of the targeted market research exercise are at Appendix J.

e) **Biodiversity:** To our surprise, we found few cases where this area had been used as a gateway into climate change awareness. We found instead that biodiversity projects in the region were dominated by 'expert' populations who found it difficult (and seem often to regard it as irrelevant) to extend participation to a wider group of local stakeholders. We agreed with HCC representatives that there would be little point in using biodiversity as a route to behavioural change at this stage, in spite of indications from other research that reawakening a connection with the natural world can be transformative.

> *Evidence from a recent survey carried out by The Woodland Trust (the results of which were not available until after we had completed our work in this area) showed that half of those who had been involved in the UK phenology network (perhaps as recorders of the changes in the timing of the seasons) were now more convinced that climate change is a serious issue and were changing their behaviour accordingly.*
>
> **Positive results from a recent project by the Woodland Trust**

Extensive work in this area was still being carried out by the Woodland Trust, by the Wiltshire Wildlife Trust, by Treesponsibility in Yorkshire and others at the time of our work in this area. Some of this (as shown below) offers very hopeful results. We conclude, therefore, that there is every reason for revisiting this area in a few months when results may be more conclusive. The initial review is summarised in Appendix F, area e).

f) **Transport:**. We consulted a number of experts and also a substantial research study undertaken by UCL. We found that there is substantial evidence that 'soft' transport measures (travel plans, car sharing schemes, Internet shopping, telecommuting, etc) have good cost-effectiveness and reduce road use. We recognise that HCC has significant experience of using these. It also seems that 'hard' measures (road pricing, reduction of road and parking space, changes to public transport provision and the like) are needed for more significant change. It may be possible to use the soft measures as a strategy to build public support to the point where hard measures become politically realistic, though political will

would still be needed. We saw 'soft' transport initiatives as being relatively easy to integrate within the education plan as described in a) above, and so concentrated later research activity in that area. The initial review is summarised in Appendix F, area f).

g) **Domestic energy saving:** We investigated the potential for smart metering but found that the costs of such metering systems are currently too high, and practice as yet not well enough developed, to allow us to recommend this as an area for detailed testing, at least in domestic properties. On the other hand, we saw the education project in a) above, or a similar project, as such a potentially strong route to domestic energy saving that it would be unnecessary to look more widely. We therefore 'rolled' this area into the education project research at this stage. The initial review is summarised in Appendix F, area g).

Part 3: Researching the options and concluding

11. Education: a possible strategic project

How might the process described in abstract terms in §7 above be applied in practice in the light of this research? We observed that people often go to some lengths to support fund raising initiatives for their children's schools and wondered whether an initiative that could raise money to that end might connect to the climate change agenda.

There was evidence from case studies (Appendix E, §1 in particular) that there may be opportunities for energy savings in some schools and that these energy savings may be non-trivial in the context of school budgetary pressures.

One of our initial interviewees spoke with some enthusiasm of the role that the county could play in promoting energy efficiency in schools and perhaps also in supporting initiatives in the wider curriculum. The shift towards increasing self-management in schools certainly leaves HCC with a need to reinvent its relationship with schools, and it is quite possible that its role as landlord might provide such an opportunity.

We found that we could fairly easily conceive of an initiative around these observations.

11.1 Summary of the proposal

In conceiving of an initiative it is often helpful to distinguish between strategic factors (purpose, principles, parameters) and operational ones (programme, process, people).

Strategic factor 1: Purpose

The primary purpose of the project would be to use energy saving measures in schools as a stimulus towards their wider adoption in the community around the school and so both to reversing the social pressures that prevent people from taking sensible energy efficiency measures and also to providing a process capable of leading to more transformative change in due course.

We argue that it is important to be able to relate this primary purpose to other purposes that would be seen as worthwhile by the various stakeholders.

a. **For the environment.** To save energy directly (in the school and in participants' homes).
b. **For the school.** To generate money for educational purposes first by reducing energy use in the school, second by the PTA acting as a paid distributor of energy saving and related measures into the wider community.
c. **For the parents.** To raise money for a cause that they hold dear (their children's school) and to do so in a way that saves them money too (through energy saving in their own homes).
d. **For students.** To offer those interested (anecdotally the issue of climate change does seriously concern many young people) a route to action that is supported and guided by adults and institutions.
e. **For the wider process of behavioural change.** To involve a significant number of people in 'pro-environmental action'. To do so in a way that makes 'tipping

point' and other network effects more likely (Appendix D, §s 11 & 12). To use the process to increase awareness of the need for these actions and so to help people to make the connection between what they care about (in this case their children) and the broader issue of climate change. To offer agency to the parents and others through scale and through the role of HCC as 'linking pin' organisation. To provide a process of sufficient duration and with sufficient opportunities for association and for action and reflection to fulfil the criteria for a successful change project in this area.

f. **For HCC.** To shift its role with schools further towards that of helpful enabler. To use the project as a process for engaging communities in wider adaptation and mitigation issues, such as flood defences or waste and transport issues. To identify a route for the identification and development of potential community champions.

Strategic factor 2: Operating principles

a. Parents should be actively involved in the process (for instance through the PTA) whether in auditing energy use, in agreeing priorities for capital expenditure with HCC staff, in raising capital, or in participating in work parties to improve energy efficiency directly.

b. Savings and money raised should be made available to the school.

c. Students and teachers should be involved in these activities either where appropriate links can be made to the curriculum and teachers support this or where they actively choose to be involved.

d. The school should be used as a hub for promoting energy saving ideas in the wider community with the PTA (or another appropriate body) both promoting the take up of such ideas and benefiting from a margin when a 'sale' is made (e.g. of – say – £1 per energy saving light bulb installed) and so further contributing to school funds for educational purposes.

e. The process should be used to promote action (in the school and at home) and reflection and so to raise awareness of climate change issues relevant to the school and the community (but at a pace that is incremental).

f. HCC should use the process strategically – for instance to develop and support champions and to identify and address wider constraints to behavioural change.

Strategic factor 3: Operating parameters

a. Projects should be aimed at meeting all of the criteria and at demonstrating through measurement that they are being met. We stress that purposes a), b) and c) are obviously highly measurable and that appropriate surrogate measures (e.g. number of people attending meetings or work days, number of people who inquire about community champion training in the field) could easily be developed for the other purpose areas.

b. Participation should be entirely voluntary

Operational factor 1: Process for participating schools

In participating schools, the PTA would set up a group of parents to take energy efficiency measures in the school. In the first instance, such a measure might be an energy audit, probably carried out with expert advice from HCC's specialists and / or

from more local specialists. Following that a plan for capital expenditure (including areas such as passive solar heating and demonstration micro-wind turbines), for minor modifications (e.g. low energy lighting, thermostat control, minor insulation measures) and for behavioural initiatives (e.g. for travel to and from school) might be drawn up.

The PTA would organise working parties to undertake minor modifications – for instance, to modify office lighting fittings in the school. Alternatively, the PTA might approach local businesses for financial support for some of the capital projects identified.

Where appropriate links can be made to the curriculum, students and teachers might participate in some of these initiatives.

After each round of action, the PTA would promote the idea being taken up by parents, with the school taking a referral fee for each successful 'sale'. For instance, parents might be encouraged to undertake a simple energy audit with the pro-forma (prepared by HCC) being sold to parents by the PTA, or parents might install cavity wall insulation, again with contractors offering a referral fee to the PTA.

Following each round – perhaps at three-monthly intervals – progress would be assessed against the various objectives (e.g. money saved, money raised, participating homes, carbon saved, etc) and (to build and reinforce awareness) links would be made between the programme and climate change. Planning for the next phase would take place in the light of experience – where is the process successful or unsuccessful – who is involved / not involved, etc.

The initiative can be extended to cover improved energy monitoring in schools and homes, adaptation (schools and homes being made safer in high winds, cooler in high summer temperatures, using less water) and to travel planning. In due course it might be extended to other sustainable development agendas, such as waste reduction and recycling.

Apart from setting up and supporting the initiative, the county council might in due course extend the programme to provide a competitive element (e.g. the best school in each ward, in each District, in the County) with extra prizes for the funds of successful schools.

Operational factor 2: Programme

One of the key dangers would be that of trying to do too much too quickly, particularly given the enthusiastic support that was given to this idea during its detailed exploration with stakeholders. We suggest that it would be best to conduct an initial trial in four locations: two modern schools, two older schools, one of each being primary and the other secondary. We think that this would be manageable and would both provide strong experience on the issues that would need to be addressed in wider roll-out and also offer the time to develop capacity to undertake such a project.[24]

Because of the delay (in our experience typically six months) between such an initiative starting and awareness deepening, and the need for time to build confidence and capacity from that time onwards, we think that the pilots should run for at least 12 months before further roll-out. This is an area where the larger benefits would be threatened by excessive haste.

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[24] This suggestion builds on extremely modern 'complementarity theory' approaches to strategic change. These suggest that major change is intrinsically easier than smaller scale change provided that extreme attention is paid to identifying and addressing contextual constraints to wider change.

The pilot schools would certainly need a much higher level of support than later roll-out. This is because the internal capacity to cope with later roll-out would need to be developed at that time, and serious processes would need to be devise both operational and strategic lessons.

The output of the pilots would include: much greater appreciation of potential financial costs and benefits, including of energy profiles and the scope to improve them in different types of school; a trained cadre of champions to support a phased roll-out, a detailed understanding of of the challenges that need to be addressed, of what needs to be in place for the process to work well and particularly of the package of support from the local business community that would be needed.

From that point roll out would be in phases, possibly extending in due course to other potential 'hub' organisations such as churches, sports facilities, and possibly even in businesses (for instance with a charity as the beneficiary organisation)

Operational factor 3: People

Our initial research suggested that teachers are, and feel, too stressed to run such an initiative themselves. We thought that the most natural body to lead such an initiative would be the PTA, with the Governors or a more informal group also being possible. What is key is that the group contains people with credibility in the wider community and with some of the network leader qualities identified in 'tipping point' theory (Appendix D, §11).

We saw a local 'champion' or 'champion group' as being needed actually to run the project. We see it as critical that this group be carefully supported over the duration of the project with training being offered and with attention being paid to providing a supportive 'association' within which reflection can take place after action and within which awareness can gradually be developed. We have produced a separate report on use and development of champions and refer the reader to that document for advice on how to identify and support such people.

Careful thought would be needed to design appropriate action and reflection processes for wider participant groups, and for any students involved. It would be particularly important to ensure that opportunities for participants to 'go deeper' were available for those that wished them.

A contact officer would need to be provided by HCC to fulfil the latter's role as 'linking pin organisation' (see §6 above and Appendix D, §13). Such a person might play such a role for a number of communities and would have important responsibilities as a champion: providing learning and reflection support, providing services to the community, harnessing learning and passing strategic learning to the appropriate place. This is a classic 'champion' role and such people would certainly need structured support and supervision processes.[25]

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[25] This role is classically at least at the 'achiever : individualist' transition described in the Champions report and would be highly developmental, particularly in the first few iterations.

11.2 Results of market testing

We tested this idea with school head teachers, governors and other potentially interested parties in the county. The results were extremely encouraging and led us to the conclusion that this is a potentially strong area for an intervention by HCC.

Here is the summary of the research as drafted by our colleagues from Rosslyn Research Ltd.:

1. The proposed plan was extremely well-received. This is seen as an exemplary idea for a school project:
   - An energy audit would systematize some of the measures already being undertaken in schools, so it would be easy to integrate into the current way of operating
   - It would save money
   - It would fit very well into the curriculum, so the time taken to run it and follow it up would not be time lost from regular schooling
   - It would have the support of the wider community
   - Most important of all, it would have the support of the students, who are the most important stakeholders in any school

2. Most respondents are also optimistic about the possibility of its having a positive effect amongst parents and the general community.
3. At the level of detail, there is a wide range of attitudes to the proposed project, with many reservations of many sorts expressed. But it cannot be too strongly emphasized that the basic suggestion has met with great enthusiasm from teachers and governors alike.
4. The main recommendations that follow from the interviews conducted are that:
   - As far as possible, students should actually do the auditing and save the energy themselves
   - At inception there should be explicit targets for energy reduction and cost-saving within a prearranged time-period
   - The ongoing project should involve actually changing the fabric of the school in a noticeable way, and not just changing behaviour
   - The project should be explicitly presented as a response to the challenge of climate change
   - HCC should provide expert help with initial auditing (using independent consultants rather than energy company employees), should plan educational materials to accompany the project, and if possible should co-fund any energy-saving improvements to the fabric of the school
   - HCC should set up a "Healthy Schools" award scheme for schools on the lines of the "Investors in People" awards

   5. Rolling out the project so that it involved parents auditing their own homes would need to be done with somewhat different emphases in primary and secondary schools. Contact with parents is much closer in primary schools, so there the rollout would happen more directly: parents would have to be involved in the school's own initial audit. In secondary schools, the students themselves would ideally run much of the project, and any rolling out to homes would have to happen through them.

11.3 Taking this further

Further work is clearly needed on a number of key questions. For instance:

- How much energy and money can be saved in a typical school a) easily, b) with a working party over a weekend, c) at low capital cost, d) cost-effectively, but at higher capital cost; e) only at times when other major work is being undertaken – e.g. major refurbishments.
- What facilitation and expert advice is needed and who can provide it?
- What links need to be made with other potentially key bodies – e.g. The Environment Centre (Southampton), District Councils, Global Action Plan. How can appropriate choices be made?
- Who would be responsible for enrolling support from and readiness of local trades – installers etc.?
- What web and other support should be provided?
- What learning processes would be needed in schools and for facilitators etc., and how would learning be directed back to appropriate place in the system?

12. Other areas researched

The outline process that we have described in detail in §7 and can easily see being applied to the Schools project above (§11) can of course also be applied to projects that might be developed in each of the other sectors. Accordingly we looked to identify an area where there might be scope for a suitable win: win initiative. Although the ideas we tested did not evoke the same level of enthusiasm as the schools project, there is scope to refine them in an iterative process involving stakeholders.[26] The summaries that follow, which are adapted from Appendices H, I and J, which were drafted by our colleagues from Rosslyn Research Ltd., is therefore presented as the groundwork for what could become an engaging and creative route for developing climate change behavioural programmes.

12.1 Farming

Earlier interviews within this project had shown that farmers are already aware of the likely need for better water planning at the farm level but that the extent of the adaptation that might be required was not sufficiently understood for the need for larger-scale measures such as cross-farm water planning to be recognised. The plan was to explore in a general way how attitudes to climate change had affected or might affect farmers' behaviour, and how any programmes initiated by public bodies might best be put in place.

Farmers are close to the land and the weather. This direct and constant attention to climate sometimes leads into a passionate involvement with the more abstract and more political notion of anthropogenic climate change. One respondent in particular has been active in Green politics for 15 years. It has been a frustrating experience:

> *"I stood for elections, I've been an agent for others, supported others in standing for elections. But it was futile […]" "I've been and done it; I'm disgusted with the process. It's a taboo subject: people look at you as some kind of freak, spoiling their fun. They just don't understand, they think you're a mad hippy"*

At the other extreme there are a couple who say they really haven't given the matter much thought. But largely the attitude is one of cautious concern:

> *"The information I receive on the news etc. is contradictory... some reports are saying that climate change is a serious issue, others that it's not. I just don't know what to think" "I have a general understanding; whether I fully comprehend the size of the issue is another matter. I just don't know whether this is a small or a large issue, because I get some saying one thing and others another."*

Two potential areas of interest were identified before the interviewing started:

- Biofuels production
- Enhancing local food distribution networks

The relevance of these two areas to climate change issues is straightforward:

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[26] This could be a particularly fruitful exercise if HCC were minded to use champions to spearhead concept development in each sector, as discussed in our parallel report on this subject.

- Biofuels as a replacement for fossil fuels would reduce overall anthropogenic carbon emissions
- Localised food distribution would reduce "food miles" and consequently reduce overall carbon emissions

As is often the case, these mitigation measures can also be seen as adaptation measures, in that they are both adaptations to higher fossil fuel prices. In addition, there is a secondary way in which localised food distribution can be seen as an adaptation measure. Long-distance transportation is sure to be adversely affected by the higher frequency of extreme weather events. So any move towards localising the food economy is an adaptation to worse travelling conditions.

A third area of interest emerged during interviewing in this phase, partly out of the second area above and partly out of parallel work on education. This was the subject of food in schools, and specifically the idea of sourcing as much as possible from local farms. Two of our interviewees dealt specifically with an existing project to supply Hampshire schools with locally-reared organic beef. Other farmers raise the issue in the course of talking about working towards a sustainable local economy.

All would be ready to participate in any biofuels programme as long as there are clear financial incentives for them. The consensus is that biofuels should have been encouraged much earlier – that successful programmes already in place in Austria and Germany should urgently be studied and imitated.

If it's simple and there is money in it, of course farmers will be interested. All they require from authorities is the bare bones of guidance when it comes to water-tank digging, and not much more when it comes to trying out new crops to suit new weather conditions.

In addition to the motive of immediate self-interest, moat of those interviewed are strongly in favour of any measures that increase local self-sufficiency in food, water and fuel.

The picture is a little more complex when it comes to local food distribution programmes. All farmers are in favour; but it is seen as a more complex issue with a lower probability of success. Furthermore, although all see the stranglehold of the supermarkets as the dominant problem facing the rural economy, not all see any climate change angle to this issue.

This, though, is actually a strength and not a weakness. There are many strong emotional and financial forces that drive farmers in particular and the population in general towards the idea that food should be grown and consumed locally. There is another way of life that farmers themselves – and, to a lesser extent, the general public too – want to move to. Emotionally, culturally, it is much bigger than what is seen as a narrow issue of climate change adaptation.

So, on the one hand there are various discrete and easily-achievable improvements, where only a limited amount of support would be needed from HCC or any other public body. On the other hand there is the vast prospect of turning the rural economy around towards local selling and long-term sustainability. And here HCC and other public bodies would have to lead on several fronts at once:

- Reversing the decline in the physical fabric of the rural economy

- Steering consumer demand away from visually perfect produce and towards locally produced food
- Sustaining a politics of local distribution that does not stray into protectionism

All of the farmers interviewed are well aware of the long-term crisis in the rural economy. And most of them see links between the crisis in farming and the fact of anthropogenic climate change. Tantalisingly, many of them feel that the general public is almost on the brink of shopping differently, valuing differently, and acting to regenerate the countryside. There would of course be consequential climate-change benefits if we moved to a more sustainable food economy; but there are positive aspirations for a better way of life, as well as the fear of climate change, which can help people to make the move. Consumers are felt by farmers to be very close already to major behaviour change. Waving the prospect of climate change like a stick over their heads will probably not be the most effective strategy.

When prompted, farmers will tend to fall in readily behind the idea that breaking the stranglehold of the supermarkets will reduce food miles and therefore will contribute to mitigation of climate change. But this is never going to be a decisive argument for most people. In fact, the most effective way to bring climate change awareness into the equation may be to lead on unpredictability rather than temperature increase. Local distribution networks are more resilient. Maybe this point could be stressed in promotions of local produce; it isn't just that it's good to eat local food, it's good not to have to rely on food from the other side of the world. Greater resilience rather than lower carbon emissions would be a more powerful way of bringing climate change into the promotion of the rural economy – it meets people's actual concerns and resonates with their already strong feelings for the countryside.

For further information on this research, please turn to Appendix H.

Reflection: There does seem to be the possibility for a market-based initiative that might engage farmers, although the link to further adaptation measures would need to be demonstrated as a project progressed. That a first step might be made in the market rather than through 'expert' advice seems to be consistent with what might be suggested by cultural theory (Appendix D, §4).

12.2 Construction

Adaptation is a pressing need for the built environment. Research shows, however, that it barely gets onto the radar of construction companies or their clients, whose interest in climate change (so far as it goes, and that is not far) is in the mitigation agenda.[27]

The built environment is vitally important because whenever a project is completed it sets in train a pattern of emissions that might last for as long as fifty years. As noted above (§9.1) the average energy performance of domestic buildings has been getting worse in recent decades. The energy efficiency even of new public and

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[27] Sanders, C. H. and M. C. Phillipson (2003). "UK Adaptation Strategy and Technical Measures: The Impact of Climate Change on Buildings. Published in." Building Research and Information **Special Edition, July 2003**.

commercial buildings is far behind the best available at comparable cost.[28] This is serious because this reduces rather than increases agency on energy savings in the economy. There is some evidence that the liability agenda – the possibility of getting sued if buildings collapse as they are likely to do under climate impacts – can be used successfully to awaken interest in the adaptation agenda.[29] We sought to find out whether a liability-oriented process might startle the construction sector in the county into taking its responsibilities seriously.

We found that building regulations are seen as primarily influencing mitigation responses, for instance through progressively enforcing lower heat loss, though not as strenuously as in other Northern European countries. Some feel that there is a limit to the effectiveness of energy-reduction regulations because materials manufacturers have too strong a say in the drafting of Building Regulations and their interests lie in keeping lower-cost, less energy-efficient methods and materials in place.

Adaptation comes through the planning process – especially there is an expectation that there will be increasingly rigid refusal to allow construction on flood plains. There is some expectation that the existing regulations in Scotland about strength of roofs will be extended to the rest of the UK in response to expected greater frequency of extreme weather.

Major capital-intensive projects, especially PFI projects, are thought to be the area where climate-proof construction will become best entrenched most quickly. But the main driver is expected to be the insurance and finance industry, rather than direct regulation. And insurers will be promoting adaptive buildings more for reasons of cost than directly in order to avoid liability.

HCC could go further than the building regulations in encouraging sustainable construction. But it is widely acknowledged that there is no point in developing a policy unless it is enforced and known to be enforced; and that the only way to achieve that is to promote it vigorously, thus ensuring that infringements are rare, and to penalize those infringements rigorously. There is a consensus that local authorities can lead by example; that with their huge purchasing power they can make a significant impact on common practice. This is particularly stressed in the case of residential construction, which is less directly regulated under statute.

Overall, respondents are doubtful whether it would be useful to use the danger of liability as a lever to enforce better practice in construction.

> *Reflection: We were disappointed that the research did not identify a possible quick win in this important area, but accept its conclusions. This is too important an area to drop. Noting that some councilors are in the construction business, we wonder whether a climate change 'champion' for construction might be a useful appointment, particularly focusing on HCC's own construction program in the first instance and building on*

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[28] The VKR building in Kettering was built at lower cost and more quickly than conventional designs. Running costs are lower and the building saves about 80% of the carbon of a standard design. Productivity data from the new building are better than from normal buildings.

[29] Ballard, D. I. (2005). "Using Learning Processes to Promote Change for Sustainable Development." Action Research **3**(2): 135-156.

> *successful recent projects – for instance in Social Services – before extending more widely through the industry. Some contact with the insurance sector might also be worthwhile – for instance to investigate the possibility of some form of climate change certification in exchange for lower premiums.*

12.3 Coastal

Framing the research

As identified in §10.3 (d) above, we think that this is an area a) where dialogue between experts and non-experts is essential and b) that this will not be easy to bring about at this stage, partly because emotions are already running high in the county on this issue. We began, therefore, to look for an area where creative dialogue might be possible.

For reasons that we still do not fully understand, and at odds with our intentions, the research included people from the Manhood Peninsula in West Sussex and was not restricted to people from Hampshire alone.[30] It revealed a somewhat confused picture. People interviewed held strong opinions and were not by any means well informed as to the adaptation strategies that were in fact being followed in these locations. On the other hand, this itself may be an indication of the difficulty of engaging with the public on this issue. The research also identified an issue – footpaths by the sea – that may have the capacity to bring ordinary residents together to discuss this issue (though we would like to stress that further testing of this idea would be needed before committing resources).

Outcomes of the research

All of the respondents from Manhood claimed to be very well informed on the topic of climate change. This was often stated with a note of exasperation: they had participated in a lot of meetings, they personally felt a responsibility to the land, they composted and recycled and tried to minimise their car use. What exasperates many of them is that they feel that the rhetoric of climate change is being used to suppress their local concerns.

This attitude is also present with one of the Hayling Island respondents; he disputes the idea that the sea-level is rising and insists that all of the erosion is caused by human activity, most especially dredging. In general Hayling Island respondents are concerned about dredging; many of them are sure that it is at least in part the cause of recent changes around the island.

Even in this small number of qualitative interviews, some deep divisions emerge. The concept of "climate change" is pulled into various unusual shapes by different respondents. It is hard enough for anyone to think coherently about global climate change whilst relating it to their own particular neighbourhood and their behaviour patterns. But when there is an imminent prospect of the neighbourhood being reshaped or even obliterated by the sea, the general concept tends to get viewed from the perspective of the particular urgent issue.

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[30] It had not been our intention to carry out research in West Sussex, and certainly not without seeking that authority's permission to approach members of the community. No-one wished to cause any difficulty to those working in this area, whether in Hampshire or more widely. We wish formally to apologise for any inconvenience that may have been caused by this mistake.

The local issue is quite simply what to do about the encroaching sea. The official policy is thought to be one of managed retreat, and people's interpretation of climate change is fundamentally shaped by their attitude to this policy.

There isn't a simple divide between those who might accept such a policy and those who reject it. The divide is more between those who believe that there is a coherent rational policy, reached through a proper scientific and economic analysis of the situation, and those who believe that there is no proper planning, and that they are at the mercy of special-interest groups and an indecisive and cost-obsessed central government.

Between Manhood peninsula and Hayling Island many of the concerns are the same; but the emotional intensity is markedly lower on Hayling Island. Hayling Island respondents tend more to see their situation as one where nearby interests (especially the dredging industry and the yachting interests in Chichester Harbour) are over powerful and some redress is needed. The level of trust in public authorities is higher on Hayling Island, although there is exactly the same general frustration with the vagaries of the planning process and specific grievances against English Nature.

Everyone knows that in the long term the area will be submerged: tectonic movements are sinking the South-East of England and there is nothing that can be done about that. More immediately, almost all respondents believe that sea levels are rising and are certain to continue rising because of global warming. So no one believes that the area can be protected forever.

The question is: is there now the right level of protection, in terms both of geographical spread and of timescale? And secondarily, is the managed retreat being properly managed? The issue of coastal footpaths is particularly relevant to this second question. This research strongly suggests that if a new policy can be found for the footpaths – a policy of maintaining them whilst the coast erodes – then residents will be much more likely to accept the difficult situation in which they find themselves. What is recommended is, in spatial planning terms, a small investment. In terms of adaptation to climate change in this particular area, it could bring huge benefits.

> *Reflection: Whether or not the issue makes sense to experts and officials, if people are interesting in footpaths and concerned that they might lose them to the sea, this makes it a potentially strong gateway to adaptation-oriented dialogue on the issue and also into some form of collective action (if only some form of incident reporting). There may be an opportunity to use a process such as the Democs game (Appendix E, §3) in this community. It cannot be stressed enough, however, that dialogue will be of limited value unless a path to action can be found for at least some of those involved.*

13. Conclusions

As identified in §1.1, our brief was to develop recommendations as to how Hampshire County Council, or another ESPACE partner, can best use its resources "to maximise its influence on the behaviour of stakeholders in response to climate change, carrying out appropriate research into how this can be undertaken."

   A very coherent set of findings has emerged from our research. This is not only based on abstract conceptualisation from academic research but rather is strongly triangulated between such research, the stories told us by practitioners, and our own practical experience of working with human responses to climate change and related change issues. The key findings (as outlined in the executive summary) are as follows:

1. **Both mitigation and adaptation involve behaviour change**. Neither type of change is adequate at present: society is insufficiently adapted to likely impacts, and mitigation measures are not enough to limit future climate changes. Some of the key blockages to change apply to both adaptation and mitigation agendas and we suggest that progress on one enables progress on the other as well. Indeed the two carry so many features in common that they form in practice a single agenda, with each aspect being an opening to and an opportunity to engage with, the other. Everybody has some need to engage with both agendas and each can be an opening to, and should be seen as an opportunity to engage with, the other. The key is where <u>either</u> agenda can overlap with something that people already find meaningful.
   References: *Inter-relationship of mitigation & adaptation agendas is at §s 8.2 & 8.3.*

2. **There are significant contextual blocks to change**. Key to the whole issue of climate responses is engaging with context. This makes behaviour change an intrinsically strategic process. Engaging with context can be seen in a four-fold division: subjective and objective issues at the individual and collective level.. An example of an individual subjective contextual barrier would be one's personal values or one's assumptions about one's agency. An example of an individual objective factor would be one's role, or one's skill set. An example of a collective subjective factor would be the prevailing culture of an organisation, for instance its shared norms. An example of a collective objective factor would be the technological systems in use, or relevant laws. Effective change might involve engaging with any one of these at different times; people who become climate change 'champions' have a particular drive to engage with context.
   References: *Contextual barriers to change are at §s 2.2 and (especially) 3. See also separate report for HCC on climate change champions.*

3. **Awareness-raising needs to happen alongside three other factors**. In working on behavioural change, and in engaging with context and transforming it where possible, we see four A's as being helpful: 1. developing 'Awareness' of the issue that extends far beyond simple familiarity but includes awareness of urgency and scope, and of systemic structure, 2. developing 'Agency' or the felt sense that a person can find something meaningful to do in response to an issue which is of almost unparalleled scale and difficulty, 3. building 'association' with other people who are, or who might usefully be, engaged in action in response to the climate change agenda, and 4. a

process of 'action and reflection', leading to a learning-oriented approach to change. Despite awareness being vital, it has been shown to be an exceptionally poor starting point for change processes. The evidence is that people move from action towards awareness, but rarely the other way. This need not mean that information should not be made available (for no organisation will never know for sure where people are in taking action in their own lives) but no-one should expect behavioural change as a consequence unless the other three A's are also addressed.
References: *The four A's for change are summarised in §5.*

4. **A key enabler: change must start with action where people are**. We identified a series of enablers of change. These are entirely consistent with the 4 A's model outlined in conclusion 3. above. Of all of these, the most important is that projects <u>must</u> start from an issue that people find important according to their own values and current assumptions. There will ideally be a win: win: win agenda: a benefit to the participants themselves; a benefit to a community or other project that they value, a benefit for climate responses. Such an issue might be financial, or community-oriented: it does not matter. While the evidence is that people will be able to make these links, we think that it is more straightforward, and also more likely to succeed, to be upfront about both agendas from the start: stating and <u>showing that authorities respect the win: win: win agenda</u> is important both practically and symbolically.
References: *For a full list of the enablers of change that we identified, see §4. We discuss the necessity to start from people's own interests at greater length in §7.*

5. **Changing context is the route to agency**. Since change is restricted by the contextual barriers summarised above, engaging with and transforming these is key to developing agency and so to human change in response to climate change. We suggest that the need to address such barriers makes much work on climate change responses very strategic, in so far as strategy involves working outside existing operational structures to bring into play issues that are outside the remit of day-to-day operational responsibilities. Using a relatively mechanistic approach to change (regulation, fiscal measures) will of course be a part of the process of change, particularly as people engage with context, but will never be robust unless account is also taken of other contextual constraints.
References: *The strategic nature of work on context is described in §3.*

6. **Change often involves difficult emotions**. Some of the most important contextual constraints involve human emotions. Change usually involves difficult emotions, particularly in this field. However, adequately to engage with them will certainly bring people into contact with troubling information. While this should not be seen as a necessary part of the change process for all participants, for people vary, it is important to prepare for this and not to seek to avoid or 'solve' emotions. Unintended consequences are an ever-present danger when people have not adequately engaged with the issues. To have done so successfully appears to be a key characteristic of climate change 'champions'.

References: *§s 2.3 & 5 explore emotional dimensions in greater depth, as does Appendix D, §s 2 & 10. The separate report for HCC on climate change champions goes further into this issue.*

7. **Change is inevitably a learning process which takes time and requires both management and leadership**. Projects take time and patience: probably at least two years is required for an individual or a group to find their own robust responses to issues of this scale and difficulty (though they can usefully participate in processes led by others during this period). The process of behavioural change is one that takes time and, being a human rather than a mechanistic process, outcomes can never be absolutely guaranteed. There is strong evidence, however, that following the recommendations in this report will enable deeper change for a proportion of those involved. [31] We identified a pro-forma process for behavioural change and applied it to a selection of potential areas for action.
   References: *The pro-forma approach to projects is described in §7.The supporting theory is given in Appendix D, §s 7-9. Examples are given in Appendix E, §s 10 and 11. The potential areas for action are described in the main report, §10.2-10.3, and in Appendix F. Key areas are examined in greater detail in §11 and Appendix G (education) and §12and Appendices H to I (farming, construction and coastal).*

8. **Local authorities have a key role to play**. We concluded that local authorities already have significant agency – and that they are in a perhaps unrivalled position to use it to offer agency to others. The key role that they have to play is that of a 'linking pin' organisation. HCC in particular is already doing much to provide leadership on the climate change agenda, and is widely perceived to be doing so.
   References: *See §6, also Appendix D, §13.*

9. **Choose areas for action taking account of key local issues**. On the adaptation side, HCC, in common with the rest of the South East Region, has benefited from its early involvement in the UK Climate Impacts Programme, which clarified the particular impacts that are most likely to affect the county. These were examined through the 'Rising to the Challenge' and 'SECTORS' reports, the latter a 2004 update to the former. Key impacts were identified as follows:
   - Agriculture, which will suffer from flooding and (particularly) drought and where farmers will need to adapt crop choice;
   - Emergency planning, for river and coastal flooding in particular;
   - Biodiversity impacts, with some species being negatively affected, and some positively, but with the overall effect on ecosystems being negative;
   - Infrastructure, especially water availability and the suitability of public and other buildings to withstand climate impacts;
   - Public health – heatstroke and air quality;
   - Tourism and leisure, which could increase but which will require infrastructure;

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[31] The Woodland Trust's process led to attitudinal and behavioural change for around 50% of participants. The proportion at Bath University is rather higher. The proportion in Appendix E, §10 was roughly similar.

- Business and industry, where stakeholders are largely unaware of impacts but where the 1.5m working in the region will be affected 'as patterns of transport, health and the nature of the working environment shift'.

On the mitigation side, we found very low levels of heavy industry in the county, which is much more service-oriented with a high proportion of start-ups: energy is unlikely to be a strategic cost for such companies. The population is also relatively wealthy – 'money rich, time poor', as one of our contacts put it. There is also a much lower level of fuel poverty than, for instance, in the North of the UK. This means that energy costs, per se, are not likely to be a major driver in change programmes for most energy users in the county. Non-industrial space and water heating, and transport, emerged as the priority mitigation issues.

References: *See §9.*

10. **Schools are very suitable hubs for behaviour change projects**. Education in particular offers significant possibilities, with a potential project in schools potentially fulfilling most if not all of the criteria for effective change projects.

    References: *As noted above, this area is examined in detail in §11, in Appendix F (area a)) and in Appendix G.*

Whether such changes by a proportion of participants will be enough for an effective social response to the pressing dangers of climate change will never be certain. Complexity science perspectives suggest that it is not possible to know for sure. If such a response is eventually forthcoming, as with the long-desired end of the UK slave trade in 1806 (Appendix E, §12), historians may long debate what caused it. We think that that case study offers reassurance, however, that endeavours similar to those recommended in this paper are not without hope.

14. Recommendations

In a sense, this whole paper is a recommendation. What is perhaps most important is that its recipients at all levels engage with it and with its authors and others engaged in its production to seek clarification, to offer perspectives, to test conclusions, and in other ways. Our recommendations are therefore quite modest:

1. Hampshire County Council's interested officers and members, and other interested parties, should read this report and set time aside to discuss it with its authors, probably alongside discussion of the separate research on climate change 'champions'. (This has been costed within the two projects and need incur no additional fee).
2. Following this, and perhaps during that process, the relevance of the report's conclusions – in particular of the 4 A's process – for climate change and related strategies of the county council, and for other relevant bodies and processes, should be considered and modifications considered as appropriate.
3. We strongly recommend that the schools project described in §11 move towards operational planning and that funds be made available for an initial trial of at least 12 months in four schools as recommended in that section.
4. The potentially vital role of HCC (and similar organisations) as a 'linking pin' organisation for such projects (see §6) should be carefully considered and appropriate plans made to include this role in any projects.
5. In particular, the role of such bodies as architects and enablers of learning processes should be explored.
6. As the 'champions' role is developed, HCC should consider assigning appropriate people to the areas discussed in §s 10-12, particularly to farming, to construction, to coastal and to biodiversity, as well as to the schools project.
7. Such champions should be selected and supported with due regard to the findings of the separate report on climate change champions.
8. In this and in other ways, HCC and other recipients of this report should consider setting up and participating in action and reflection processes to improve practice on behavioural change in response to climate change and other environmental sustainability issues.

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A.   Scoping interviews with Hampshire County Council staff

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C.   Interviews with ESPACE partners

D.   Literature review: Moving to action on climate change

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