# Literature review

## Decision taking in times of uncertainty: Towards an efficient strategy to manage risk and uncertainty in climate change adaptation

**Jens Zinn and Patricia Fitzsimons**

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# Executive summary

This literature review constitutes the conceptual basis for the research project Decision Taking in Times of Uncertainty: Towards an Efficient Strategy to Manage Risk and Uncertainty in Climate Change Adaptation, funded by the Victorian Centre for Climate Change Adaptation Research (VCCCAR). The project seeks to improve our understanding of how complex decision-making processes deal with the challenges posed by climate change. It aims to develop guidelines for good governance in climate change adaptation by examining strategic planning processes currently underway in Gippsland; specifically the decision making processes linked to and within the Latrobe Valley Transition Committee.

A key finding of this review is that improved decision-making and planning for climate change adaptation is contingent on recognising the importance of broader public management, planning and social changes. Therefore, this review canvasses several areas of research, including risk communication, risk perception, risk governance and urban and regional planning.

This literature review shows that planning is challenged by:

- the uncertainty of knowledge regarding the local impacts of climate change
- the need to support the legitimacy of planning processes in increasingly complex and volatile social environments with multiple stakeholders and vulnerable social groups
- internal changes in public administration that emphasise financial risk management over other concerns
- increased media scrutiny of public policy and planning.

New solutions for public policy in relation to climate change adaptation involve:

- *co-production and exchange of knowledge to assist decision-making* (for example, local knowledge, knowledge held by groups outside of decision-making processes and qualitative tacit knowledge)
- *fostering public debates and more open decision making processes* (for example, through developing and nourishing policy networks and establishing authoritative but flexible hybrid organisations between government and community that are responsive to changing circumstances
- *shifting planning practice away from a focus on risk management to developing a process of positive strategic visioning* that informs, reframes and directs planning and public debate whilst fostering behaviours that allow for testing and learning to achieve innovative change
- *main-streaming climate change adaptation planning into specific local histories, social contexts and unique regional requirements*.

This literature review has identified the following key issues that should be considered when engaging in the above processes:

- Although science generally has the capacity to provide authoritative knowledge, *climate change knowledge is generally perceived as too uncertain and complex to readily inform political decision making*.
- *All planning and decision making has a social context that informs and shapes processes and the outcomes.* There is no one size fits all approach.
- *Climate change adaptation takes place in a context characterised by the different rationales and values of people, organisations and stakeholders involved in the process. As a result, participation does not always lead to consensus or straight-forward solutions.*

As decision making and planning still has to take place in the absence of consensus and/or certainty of knowledge, new strategies and attitudes are needed. When responding to climate change decision makers need to consider the following:

- Where certainty is not achievable, and a lack of knowledge is more common, *implementing actions followed by ongoing evaluation and re-evaluation is a better strategy than neglecting or ignoring uncertainties*.
- Strategies based solely on (defensive) financial risk management alone are not sufficient. *Positive aims and values should be identified to guide decision making and planning in the first instance; risk assessment can compliment such approaches but should not dictate them*.
- *Public participation is not an essential pre requisite for all sound decision making situations but it is important when decisions are likely to be controversial*. Openness in regards to planning processes and their normative basis is essential to build trust and legitimacy for long term planning and implementation.
- Controversy, involving a difference in rationales, is likely in many decision-making situations. Rather than undesirable, *strongly-held views can be used to improve decision making*. Sharing responsibility, re-framing the problem, stretching decisions over time and sharing the gains amongst others are all strategies that can be successfully employed to recognise the legitimacy of contested points of view while progressing effective decision making.

The Decision Taking in Times of Uncertainty project examines the economic challenges faced by the Latrobe Valley, a region heavily dependent upon brown coal mining and coal fired electricity generation, to determine how stakeholders with different interests and backgrounds agreed on a transformation process to enable the region to create a more diversified economy with the potential to create a greater range of employment opportunities in the face of a range of economic, political and climate

challenges. This agreed transformation was achieved through the development of a 'roadmap' based on a set of key priorities for future policy and planning aimed at guiding decision making of federal, state and local governments and private industry.

## Findings from the Literature Review – policy issues

The challenges posed by climate change call for improvements in our understanding of complex decision making processes. Whilst uncertainty in our knowledge and understanding of climate has always existed, responding to human-induced climate change requires new approaches to managing the risks associated with climate variability, including rising average temperatures, increased rainfall variability, greatly increased fire risk and a general increase in the unpredictability and magnitude of extreme events.

To this end the Victorian Government enacted the Climate Change Act (2010) and more recently released the Victorian Climate Change Adaptation Plan (VCCAP) (2013) to establish a legislative framework to guide decision making and report on progress. The guiding principles in the Climate Change Act seek more comprehensive information on the impacts of climate change; integrated decision making that considers the long and short term social, environmental, economic and health impacts of climate change; an assessment of the risks associated with potential impacts; actions that complement the response by the Commonwealth Government; consideration for future generations; and the involvement of the community in decision making. The VCCAP focuses on ensuring robust decision making and providing clear directions for decision making when considering climate change impacts.

While establishing principles helps guide decision making, further work is needed to turn principles into practical decision making processes. Guided by a review of the literature on risk communication, risk perception and risk governance along with urban and regional planning, questions of governance and deliberative policy processes, research commissioned by VCCCAR has identified some key points to assist decision makers and the community to develop practical responses to the principles set out in the Climate Change Act 2010 and the Victorian Climate Change Adaptation Plan 2013.

This review builds on the above work to identify key issues that should be factored into decision making to enable decision makers and the community plan for and implement appropriate responses to climate change.

## Knowledge management

Generating complex, systemic knowledge to understand feedback loops, the effects of a broad range of interactions and the unexpected side-effects of social developments requires different kinds of information, e.g. scientific, practical and tacit knowledge from different social domains, and includes experiences from different social groups. Key factors that inform the development of a more holistic approach to decision making that provides for better planning outcomes include:

- Instead of a linear process starting with authoritative knowledge based decision making, *knowledge generation is a process with uncertain outcomes that requires legitimacy*. As a result it is more open to the political process. *Who decides about acceptable knowledge sources in the debate is crucial.*
- Facing an uncertain future, *the concrete outcomes and effects of planning and decision making require ongoing evaluation and observation*. An experimental approach to innovation requires openness to the effects of a decision or non-decision. This is also about the kinds of knowledge that are legitimately included or excluded.
- *Gathering information and generating knowledge is a learning process that is selective and includes risk taking and failure*. This cannot be prevented. It is rather a question of how to accommodate undesirable outcomes when occurring.
- *Social learning, co-production of knowledge and inclusion of different forms of knowledge and from different social areas are better strategies to generate responses to new challenges than neglecting or ignoring the uncertainty of the future*.

## Complexity in decision making

Our case study of the Latrobe Valley highlights examples where people will distrust or oppose decisions or regional planning outcomes where they feel excluded from those decision making processes that have a direct effect on them. This is particularly the case when things go wrong or social groups are negatively affected by such decisions. Key factors in decision making include:

- In practice there is no one size fits all approach to decision making and regional planning. Regional planning and decision making has to consider the specific institutional contexts, the local history, the social conditions and the unique identity of a region that significantly influence what is considered as appropriate and politically legitimate.

- Since knowledge is often uncertain in the decision making process it is even more important to generate confidence in the process by involving stakeholders and the community in decision making.
- There are examples of how Government agencies have responded to this situation by taking an active role in organising public debates and decision making processes by *developing and nourishing policy networks and establishing hybrid organisations able to respond to changing circumstances*. These organisations transcend traditional top down approaches as they can include different governmental tiers (federal, state, regional) and a range of private and public stakeholders.

## Assessment of risks

There is a tendency to prioritise a narrow range of technical, economic and financial considerations under the rubric of risk management. Broader social dimensions of change and long term aims become secondary considerations.

Generating long term innovative social change planning practice and decision making requires positive strategic visioning that informs and reframes the risk towards directing planning and public debates to fostering positive risk taking.

Innovative risk taking requires establishing a positive and socially inclusive vision on a broad social basis. In this perspective risk assessment is a complementary process primarily structured around and informed by the values of those who are impacted by the decision making process.

## Decision making under uncertainty

Decision making and planning has to take place even when neither consensus nor certainty of knowledge is available. This requires particular strategies and attitudes, including:

- sharing responsibility and gaining legitimacy by involving a large diversity of stakeholders and groups
- improving exchange of knowledge and coordinating decision making by integrating different tiers of government and stakeholders in hybrid organisations
- reframing a problem to allow groups with contradicting interests to contribute to the management of issues
- allowing unconventional and innovative ideas and perspectives to be heard to improve the quality of long term planning and decision making

- stretching decisions over time to allow stakeholders to accommodate its effects in long term planning
- sharing gains among the whole community
- using controversy and differences of opinions as important sources to inform and improve decision making (e.g. generating new knowledge, considering a variety of impacts).
- developing open participative approaches enables social learning, provides legitimacy and fosters trust in social planning and decision making thereby facilitating the development of new visions of innovative social change.

# 1.    The context

This literature review constitutes the conceptual basis for the Decision Taking in Times of Uncertainty project funded by VCCCAR. The project sets out to improve our understanding of how complex decision-making processes deal with the challenges posed by climate change and the implications of uncertain knowledge. It draws on expertise from the disciplines of psychology, sociology, economics, and (human) geography. It will provide decision-makers at different levels of government, in industry and the community with guidelines to support better policy and investment decisions whilst recognising the uncertainty inherent in climate variability and change, and the different and competing rationales of stakeholders who are involved in complex societal decision-making processes.

Climate change challenges governments and stakeholders at local, regional and national levels due to the uncertainty of its impacts. The negotiation of knowledge on which decisions can be based is an important part of debates among experts, the public and political decision-makers. Complex models, such as climate scenarios, land suitability analysis and population growth projections are used to make decisions towards an uncertain future while different stakeholders (e.g. industry groups, the public) follow different rationales when responding to the challenges of climate change.

The project aims to develop guidelines for good governance in climate change adaptation by examining strategic planning processes currently underway in Gippsland, with a particular focus on the decision making processes linked to and within the Latrobe Valley Transition Committee. The Latrobe Valley Transition Committee (LVTC) was established in October 2011 and included representatives from the Victorian and Commonwealth governments, the region's three local councils (Baw Baw, Latrobe City and Wellington), the Regional Development Australia Gippsland committee, Victorian Employers' Chamber of Commerce and Industry, Gippsland Trades and Labour Council, Monash University and Latrobe Community Health Services. The LVTC was tasked with providing a report to the Joint Ministerial Forum by June 2012 providing advice that would:

- identify the challenges and opportunities facing the region's economy
- set a clear, long term direction for industry development and employment growth
- outline processes to support coordinated planning and investment between levels of government, regional institutions and businesses.

The first major output of the Transition Committee was the publication of the *Latrobe Valley Industry and Employment Roadmap* (State Government of Victoria 2012) in July 2012. The Roadmap was developed in response to two significant economic events in Australia. The first was the introduction of a carbon pricing system on 1 July 2012 by the Commonwealth Government to which the Roadmap was largely designed to respond. The other was the 2010 global financial crisis.

Development of the *Latrobe Valley Industry and Employment Roadmap* was designed to respond to a range of challenges affecting the Latrobe Valley economy including: its reliance on brown coal energy production; the potential challenges associated with the impact of carbon pricing; the long-term impacts of restructuring in the energy sector (started in the early 1990s); and subsequent difficulties associated with inadequate investment in workforce development and economic infrastructure over the past two decades.

The *Roadmap* project identified that the introduction of carbon pricing would lead to a decline in the production of energy from brown coal (and its contribution to the Gippsland economy) with projections that beyond 2020 closure of brown coal power electricity generation plants was likely. The research also identified that given the significance of the sector to the State economy, there would be significant 'flow on' impacts throughout the regional economy related to the concentrated loss of high income jobs and the loss of the energy sector companies as major purchasers of local services and goods.

Whilst the LVTC report was written primarily in response to the Federal Government's policies to mitigate the effects of projected climate change, it was also shaped by the broader issues of structural adjustment as a consequence of macro-economic changes in the Latrobe Valley as well as the climate adaptation challenges faced by the Latrobe Valley as it faced the likelihood of increasing weather variability and occurrence of extreme events, particularly flooding, under climate modelling. (A foretaste of this was provided by a severe rain event in 2012 when the Morwell River diversion failed and released water into the Yallourn open cut coal mine requiring substantial repair work. Another rain event in June 2013 again led to flooding in the mine and halted production.)

It is therefore important to investigate the context in which decision making is occurring in the LVTC given the multiplicity of issues that they are dealing with.

As a consequence of this context the following research questions are investigated:

- At what level of government are decisions made in relation to adaptation to climate change and who is involved?
- What are the negotiated processes of decision-making? (e.g. What is accepted as the knowledge base? How is responsibility shared or shifted?)
- What are the identifiable rationales of involved stakeholders?
- How are the views of the public incorporated into decision-making?
- How does uncertainty in climate scenarios, suitability analysis or population projections and other forms of uncertainty influence planning?

This literature review aims to contribute to a better understanding of the complexities, uncertainties, and ambiguities that challenge decision making and planning for climate challenges and provides the basis for the Decision Taking in Times of Uncertainty project. It combines a number of different streams of research spanning from debates on risk communication, risk perception and risk governance to urban and regional planning and questions of governance.

# 2.    Decision taking in times of uncertainty

Decision making under conditions of uncertainty is a common experience for politicians, entrepreneurs and planners. It is a key issue in strategic and regional planning, where long term planning-needs have to deal with unexpected developments (e.g. carbon tax, population growth, economic downturns, bush-fires and flooding), uncertain knowledge (e.g. climate variability, political change) and growing complexity (e.g. issues which require joined up efforts across national, state and local boundaries; socio-culturally diverse communities; contradictor political objectives; vested interests). Decision making in planning is also affected by challenges to its legitimacy, such as the role of the market, ability to establish land use and development controls, new forms of governance arrangements and political interventions.

In order to better understand the different challenges for decision making and planning for climate change adaptation and mitigation it seems necessary to review a broad range of different research streams from regional planning, to studies on risk perception, regulation and governance. For the purpose of accessibility we have structured our review around five key issues:

- Understanding and use of complex and uncertain knowledge
- Strategies to engage with the public and multiple stakeholders
- Framing of decision making by (media) discourses and (local) history;
- Changing boundaries of decision making from bureaucracies to networks and hybrid organisations
- Communicative planning

## The central insights from our review

In order to find out how decision-making and planning for climate change adaptation can be improved it is necessary to see climate change adaptation in the context of more general changes in public management and planning as well as social changes.

The provision of authoritative knowledge about climate change and its effects at regional and local levels is important; good practice in risk communication is also central to this. However, it is important to see knowledge as a social process of how knowledge is produced and become authoritative and trustworthy. This helps to be more aware of the weaknesses and strengths of different kinds of knowledge such as scientific, tacit, intuitive or local knowledge and to acknowledge the strengths and weaknesses of the expertise of scientists, professionals, lay-people and locals. Seeing knowledge as a process of production also shifts our attention of the processes that lead to the inclusion and exclusion of specific kinds of knowledge.

As a result, decision making regarding climate change has to go beyond issues of dealing with probabilistic and uncertain knowledge. The increasing success and

importance of deliberative processes results not only from the requirement to gain access to the right kind of knowledge; it might even be more important that deliberative processes provide legitimacy for planning decisions. Research has proven that collaborative decision making is not an easy process since the social realm is characterised by stakeholders with contradicting interests and a public that is diverse and fragmented. Therefore, consensus on the right strategy to respond to climate challenges is unlikely to be achieved. Instead, it becomes crucial to develop strategies that enable legitimate collaborative decision making and action in the absence of full consensus.

Such processes are embedded in specific social contexts with a shared knowledge about the history of successful and unsuccessful decision making and planning. Media discourses are an important part of the framing of social issues and for the authority of decision making and planning. They also contribute to its erosion and distrust when bad practices become obvious. Public debates are the spaces where new ideas are manifested and become commonplace but also where stigmas stick.

Public management has responded to the pressure to cut costs and a greater level of public scrutiny by shifting to economic management tools, such as outsourcing service provision and full privatisation. There is a shift in emphasis towards decision making and planning. The organisation of decision making processes has become more important than making concrete decisions about content whilst financial efficiency is secured. In practice, the organisation of decision making networks and hybrid organisations that deal with particular challenges (e.g. the Latrobe Valley Transition Committee) has become crucial for dealing with the challenges of new public management.

As a result, what we call *communicative planning*, requires a shift from 'top down' planning to planning as an interactive process among multiple stakeholders that has a stronger focus on setting-up networks and hybrid organisations and public participation that contributes to the shaping of guiding ideas that can lead to strategic developments that transform regions.

# 3. Understanding complex knowledge and risk in climate change adaptation

One of the key concerns in the debates about climate change mitigation and adaptation has been the perception of climate change and the understanding of the underpinning scientific knowledge. A particular focus of debates has been controversies between experts who accept climate change or at least climate variability and climate change sceptics. With a broader social acceptance of climate change, e.g. with the *Intergovernmental Panel on Climate Change* report on climate change, the focus shifted to the reasons for climate change denial.  A large part of the debate focused on the knowledge dimension, assuming that the basis for climate change denial is a lack of knowledge or a lack of understanding the facts. A major issue has been the understanding of uncertain knowledge particularly in relation to the likelihoods and probabilities involved in climate modelling. The understanding of probabilistic knowledge is also a key issue when it comes to regional planning and how this knowledge can be communicated from experts to decision makers and then to the public.

The dominant perspective of these debates is similar to the long tradition of risk communication research which is underpinned by research on risk perception (*psychometric paradigm*: Slovic 2000, 2010), *mental modelling* (Atman et al. 1994; Breakwell 2001) and research on *decision-making* (Tversky & Kahneman 1974; Kahneman 2011). This research which developed from the 1960s onwards clearly shows the limits of a purely knowledge based approach to risk and broadened the perspective of efficient societal risk management to a range of dimensions. However, firstly the idea of knowledge had been broadened to include *local knowledge*, *lay knowledge* and *tacit knowledge*. More importantly, it became clear that there is a need to foster *trust* and *legitimacy* and to clarify and debate underlying *values* and *interests* when dealing with risks such as climate change. As a result, a fundamental shift in emphasise took place from risk communication (educating the public) to a more integrative approach which sees *collaborative decision-making* (that means engaging the public and stakeholders) as an important part of an effective risk management strategy.

The roots of the educational or knowledge based approach to risk communication can be found in path breaking research in the 1970s and 1980s. Evolutionary economists and cognitive psychologists have shown that the capacity of the human brain is limited and has difficulties making *rational decisions* under conditions of limited knowledge and time availability (e.g. Tversky & Kahneman 1974, 1981; compare Box 1). Instead, people refer to *short cuts* or *heuristics* which whilst valuable can lead to systematic deviations from optimal decisions. While it is assumed that experts usually have access to knowledge upon which to make better decisions, under conditions of limited time

and knowledge experts as much as lay-people revert to similar heuristics and short cuts.

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*Box 1: Heuristics and Biases (source Tversky & Kahneman 1974, 1981)*

Tversky and Kahneman identified a number of heuristics and biases such as *representativeness*, *availability*, *anchoring*, *adjustment* or *framing*.

*Representativeness* stands for the tendency to compare issues with others by superficial indicators which do not causally link to other characteristics. You might assume that politicians which are in the same party than you are more trustworthy than politicians from another party.

People often judge the probability that an event will happen by the ease with which it comes to mind (*availability*). As a result there is a tendency to overestimate events such as fatal aviation accidents which are highly reported in the media but underestimate the risk of smoking or travelling by car which are less prominent in the media.

The *framing effect* shows that people make different judgements depending on the way how problems are formulated while the concept of rationality assumes that the same problem however formulated should always lead to same results. A problem can be presented as a gain (200 people of 600 will be saved) or as a loss (400 people of 600 will die). The first formulation usually leads to risk aversion while the second leads to risk seeking behaviour.

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The long tradition of the *psychometric paradigm* (compare Box 2) examined the risk perception of lay people and experts assuming that experts have a more realistic and better understanding of risks (Slovic 2000). The central outcome of this research has been that lay-people's judgements about the severity of risks are based on their familiarity with a risk (e.g. nuclear power as high risk compared to smoking or driving a car as low risk) and the perceived severity of a risk (the death or disability of your own child or a significant catastrophe). This research clearly indicated that risk perception is influenced by social factors as well as gender, ethnicity or regional origin (Renn & Rohrmann 2000). For example, the *white male effect* indicated that white males in the US are least concerned about risk. This attitude was attributed to their particularly advantageous position in US society. Consequently Olofsson and Rashid (2011) have not found significant effects for gender in Sweden where it is believed that the social democratic welfare state reduces the experience of social disadvantage. However,

they showed that ethnicity is still an important factor for explaining differences in risk perception.

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Box 2: The psychometric paradigm (source: Slovic 2000)

Typically, people were asked with the help of standardised questionnaires to rate the risks associated with various sets of hazardous activities, substances, and technologies, such as nuclear power, genetic engineering, motorcycles, smoking or drinking. A number of other factors were examined considered as influencing risk perception such as the number of fatalities, the catastrophic potential, knowledge about a risk and others.

Results have shown that risks with low probability and high consequences are perceived as more threatening than more probable risks with low or medium consequences. Risks we are taking voluntarily are perceived as being less risky than risks we are exposed to by others.

Multivariate analysis of the relations between these factors that showed that they can be related to mainly two (sometimes three) underlying factors which can explain most of the variance of the judgements. The dreadfulness of risk (e.g. severity, dreadfulness, terror, lack of controllability, involuntariness, concern for future generations) and degree of familiarity and knowledge about the risks explain most of the observable variance.

Most important result of this research is that for most people risk is not just a combination of size and probability of damage but is influenced by social and subjective dimensions as well which is expressed in relatively complex attitude structures.

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Research in the tradition of the so called *mental modelling approach* has shown that lay people often have artificial or inaccurate understandings of risks. For example, it was found that some people mix up climate change with the thinning of the ozone layer and lack an understanding of how their own behaviour contributes to increased climate change impacts. In the mental modelling perspective lay-people require greater knowledge about the real causes of climate change to make efficient choices to decrease the risks of climate change.

All these insights have supported an *educational approach* to climate change. It assumes that experts know best about the risks and the future and lay-people require education or enlightenment to come to similar conclusions as the experts. These views are still widely shared in the academic community and among experts and decision

makers and have driven the publication of a growing body of literature on how best to communicate risks and technical models to decision makers, non-experts or the public in general (e.g. CCSP 2009; RRAC 2009; CRED 2009). There is little wrong with the assumption that excellent knowledge is needed to understand climate change and to respond appropriately. However, this approach has neglected other social aspects of decision-making and knowledge production. This includes the conditions in which the production of objective knowledge is produced or the institutional processes that foster the idea that some knowledge is accepted as *truth* whilst others are not.

For example, with the growing complexity and uncertainty of knowledge probabilistic modelling has become more central to planning and decision making, whether financial modelling, models of population growth, traffic congestion or climate change. Such models that are meant to support decision making are often seen as finished products while the underlying complex decisions tend to be hidden (Moser 2009). This can be problematic when such assumptions are contested or have large political impacts. Therefore scholars increasingly emphasise the need for openness in regards to the underlying decision making processes that inform modelling (Burgman 2005; Spiegelhalter 2011) so that these assumptions remain accessible to the broader debates on the issues being discussed. Although, being open about the underlying decisions is important, this perspective follows the assumption that good decision making is predominantly about understanding the evidence.

From a science point of view, knowledge about a problem such as climate change represents objective facts that are independent from its process of production. Therefore, solutions can more or less be derived. A contradictory perspective from social science is that knowledge is produced through social processes. That means even good practice is influenced by unwritten rules, norms and believes systems (Knorr-Cetina 1999) that inform the processes of knowledge production. For example, predictions for the US energy consumption in 2000 changed over time but all the predictions provided by different experts and organisations significantly overestimated the real level of consumption (compare Box 3, Fischhoff & Kadvany 2011: 58). This indicates that even though scientific predictions are often very good they can also fail because they are routed in the real world production process of knowledge. That does not mean that we had any other or better source of knowledge or that we should rely on ideology, beliefs or everyday wisdom instead. It means that we should be aware of the limits of our knowledge, how it is framed by our everyday beliefs and the potential lack of imagination regarding the future from today's perspective. We have to revisit our assumptions and test them on a regular basis and should carefully balance them against the impact that radical responses might have.

Box 3: Forecasts of US primary energy consumption (source: Fischhoff & Kadvany 2011: 58)
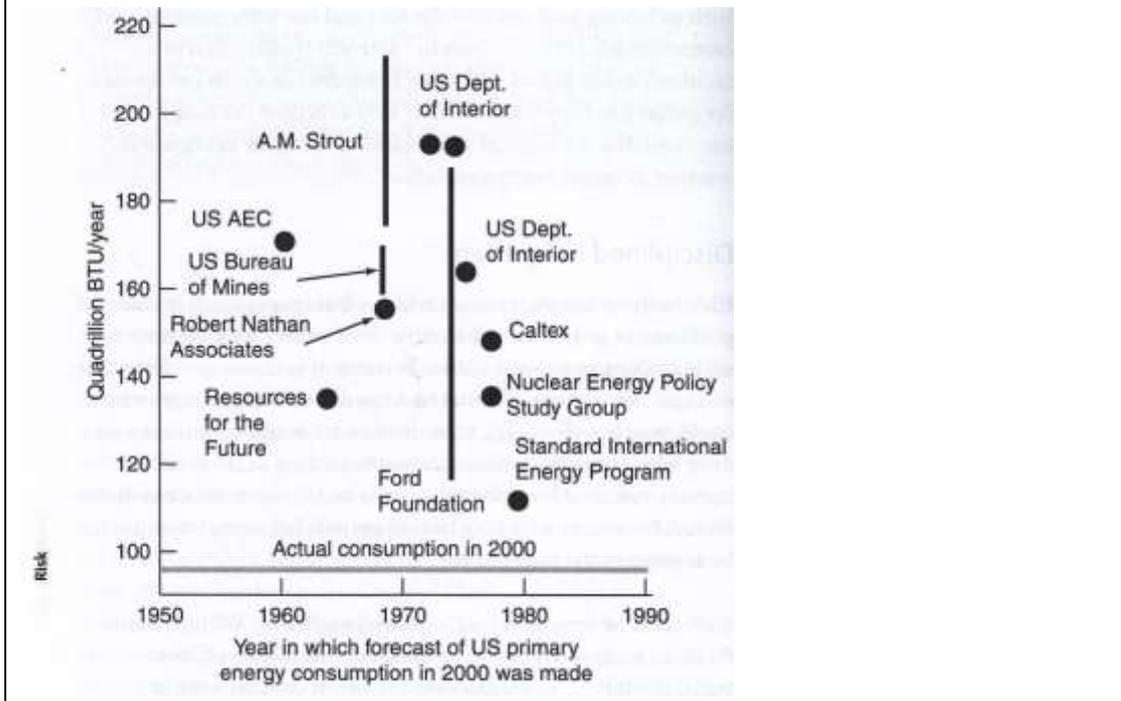
The last decades have shown the need for a more differentiated understanding of the problems in communicating risks or technological knowledge to non-experts and the public. Adding to the research of heuristics and biases, evolutionary economics contributed two important insights. Gigerenzer has shown that it is not only lay people but also experts that often do not understand the numbers. In his research on doctors he has shown that probabilities are difficult to understand. Doctors, judging the likelihood of breast cancer after a positive mammography, received all the right probabilities but still had huge problems to come up with the right answer. Most of them highly overestimated the chances of breast cancer. Another group that had been provided with natural frequencies showed a much better understanding (Gigerenzer 2002, compare: Box 4).

Further research has shown that sometimes experts have too much knowledge from which to make good decisions under uncertainty. Gigerenzer examined the conditions under which heuristics are more likely than rational-decision making to achieve the best results. Under conditions where complexity is high and knowledge limited such as in the case of the stock market a sample of laypeople using the *recognition heuristic* might be a much better basis on which to make predictions on the direction of the stock market than trying to use all the complexity of expert knowledge (Borges et al. 2001).

**Natural Frequencies**

1,000 people

8 disease — 992 no disease

7 positive — 1 negative — 70 positive — 922 negative

$$p(disease \mid positive) = \frac{7}{7 + 70}$$

**Probabilities**

p(disease) = .008
p(pos | disease) = .90
p(pos | no disease) = .07

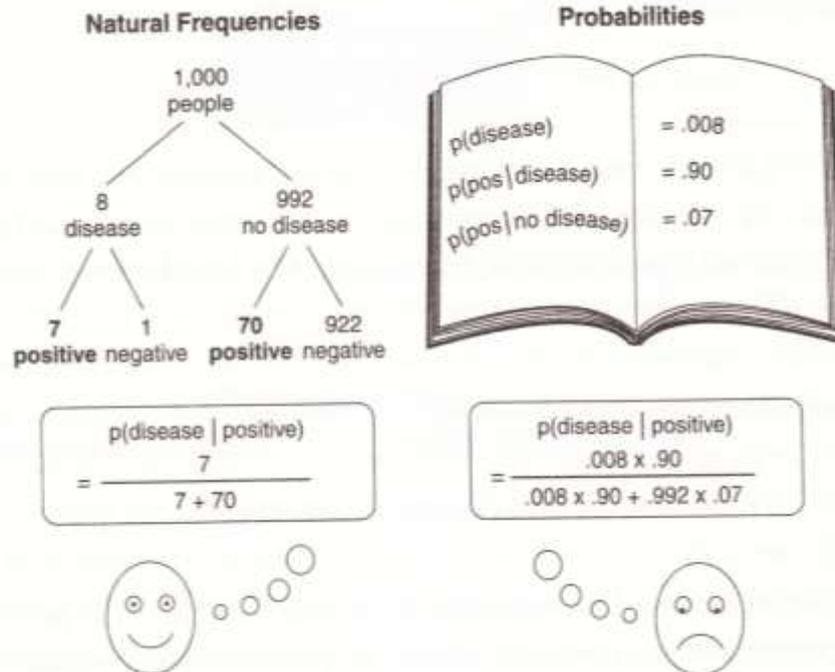$$p(disease \mid positive) = \frac{.008 \times .90}{.008 \times .90 + .992 \times .07}$$

FIGURE 4-2. *How natural frequencies facilitate Bayesian computations.* The happy person received the relevant information in natural frequencies and has an easy time estimating the chances of disease given a positive test (or symptom). The reason is that she only has to pay attention to two numbers, the number of patients with a positive test and the disease ($a = 7$) and the number of patients with a positive test and no disease ($b = 70$). The person with the unhappy face has received the same information in probabilities and has a hard time making this estimation. The structure of his equation is exactly the same as the one the happy person used— $a/(a + b)$—but the natural frequencies $a$ and $b$ have been transformed into conditional probabilities, making the formula for probabilities much more complex.

While evolutionary economists such as Gigerenzer or Kahneman refer to the evolutionary development of the brain to explain the use of heuristics/short cuts in decision making, Klein (1999; compare also: Salas et al. 2009) has argued that when experts make decisions they refer to a kind of *complex pattern recognition* relying on tacit knowledge that results from their experience (for a recent debate between these two approaches: Kahneman & Klein 2009). For example, when nurses make decisions about the illness of a baby or fire fighters about the dangerousness of a burning house they make quick decisions and refer not only to formalised expert knowledge but also to their experiences developed on the basis of personal experience and judgement.

These insights open the debate on the basis of decision making under conditions of incomplete knowledge. While officially, decision making has to be presented as being based on quality knowledge and rational judgements, in practice intuitive knowledge derived from long term experiences is a complementary factor that informs decision making under uncertainty. At the same time the decisions of experts are threatened by overconfidence (Kahneman & Klein 2009). This means that there are limits regarding the knowledge we rely upon. There is a point where we have to trust the knowledge source, its honesty and its expertise, whilst recognising that mistakes are unpreventable (Möllering 2006).

Consequently, risk communication research has shown that a better understanding of *risk* is not just an issue of properly understanding the evidence though that is a necessary first step. There has been an increasing recognition of the importance of the relationship between the public or perceivers of technological information and the providers of this information (Fischhoff 1998). Since non-experts have no direct access to knowledge but access this knowledge via experts who do not only produce and present knowledge but explain its meaning, *trust* in experts has become a crucial aspect in successful risk communication and the question of how the development of trust can be supported (Poortinga & Pidgeon 2005; Möllering 2006). There is no doubt that this is an issue for decision makers as well. They have to be confident or have trust in their information sources whether it is about the political basis of decision making or the underpinning projections and models urban or regional planning is based on. Research has shown that perceived ideological closeness to a source of information, perceived expertise or perceived honesty and other factors are supportive for the development of trust of an information source (e.g. Poortinga & Pidgeon 2005).

However, many scholars claim that in present day societies citizens have become much more critical about experts and traditional institutions (Giddens 2001; Beck 1993) though the concrete reasons for this change might still be contested. Historical developments have led to a *risk society* or *reflexive modernity* (Beck 1993, 2009) where decision makers are much more dependent on being able to present evidence and to disclose good practice to public scrutiny (Moran 2003; Hutter 2003; Power 1997).

People sometimes distrust or oppose decisions or regional planning outcomes because they were excluded from the decision making processes that directly affected them (e.g. Japp 1996, 2000). One of the reasons might be that decision making and planning has in the past neglected *local knowledge* and prioritised expert knowledge resulting in poor decision making. In the realm of risk it became clear that relying on the idealised assumptions of the real world based on laboratory experiments has too often contributed to the continuation of harmful practices. Wynne, through the example of agent-orange based pesticides, showed how the reliance on expert laboratory

knowledge and expertise allowed the application of the pesticide that was harmful to the health of the workers applying the pesticide (Wynne 1982).

Similarly, in the planning context it is important to recognise that not all citizens are equally able to participate in the planning process. This could be the result of political processes – they were not invited; they represent vested interests; they held contrary political positions; or it could be to do with socio-cultural factors in regards to their history, culture, language, class, education, or gender, to name a few. Yannow (2003) has called for practical guidelines to translate into practice the local knowledge held by communities to highlight the way in which meaning is socially situated and is bounded by a shared understanding based on beliefs, values, and feelings.

Hajer and Wagenaar (2003) go further than Yarrow in seeking an assessment of knowledge based on its relevance and usefulness for concrete real-world problems. They argue that rather than a straightforward inclusion of those that are affected by the decision, the process of inclusion must go beyond the dominant belief in the certainty of scientific knowledge about policy problems towards developing the capacity of those involved in the policy making process to enhance the collective capacity for productive inquiry. One example from the US highlights the way in which African Americans have faced great difficulty obtaining equitable rights to participate in local democracy and governance (Ghose, 2005). New programs based on the notion of 'flexible citizenships' have assisted in building the capacity of local actors to contribute to planning processes, aided by philanthropic organisations and planning consultants. New community organizations have been established that build skills to enable citizens to insert their local knowledge into planning processes through the building of new networks of collaboration along with an understanding of new technologies such as GIS.

In summary, participative approaches have become commonplace in risk communication for a number of reasons. Participation provides access to local knowledge that is necessary to link knowledge developed in the laboratory or abstract models to a concrete real world. It also helps to foster trust between experts, decision makers and the public as long as public concerns are taken seriously. It also provides legitimacy of decision making where the people affected by the decision have often been excluded from decision making processes. This is also a link to the normative commitment of many planners and planning literature to protect and to give voice to the vulnerable in planning processes whilst also recognising the potential transformational effects that not only affect the process of decision making but reshape it.

However, many scholars have warned that public participation in the broadest sense has to prove that the involved public actually has a say and are able to contribute to the process if these practices are to be successful (Renn 2008). It is still unclear under

which conditions participative approaches provide the appropriate tools to deal with risky decisions, however, the literature provides us with some guidance on the importance of identifying the purpose of the engagement process as well the capacity of members to fully participate.

# 4.    Engaging with the public and multiple stakeholders

As argued above, there are a number of reasons for the trend towards greater involvement of stakeholders and the public (e.g. local communities) in the development of public policy (e.g. risk communication, planning). The need to integrate local knowledge and to organise multiple stakeholders for efficient decision making (e.g. when problems cross jurisdictional boundaries as in the case of the Murray Darling Basin), to foster legitimacy of and trust in planning processes to prevent public resistance or secure public engagement, and the need to mediate between complex and contradicting interests and values in a region and on different social levels (e.g. global, national, regional, local). There is also a strong normative argument brought forward by the planning profession that highlights the need for participation in democratic societies to protect and give voice to vulnerable social groups (e.g. March & Low 2005; Fincher & Iveson 2012). Following an era of market regulation some scholars claim that the need for greater community involvement has been acknowledged in public management (Hess & Adams 2002) while others more critically argue that the centralized nature of the system restrains any form of democratic conviction at the local level and that the market is favoured over equity (March & Low 2005).

Whilst there is consensus that involving stakeholders is necessary it is not clear who exactly should become involved, to what extent the public has to be involved and what kind of involvement and decision making procedures are adequate for what kind of problems and planning processes. There is also a clear tension between centralised planning and control systems and decision making cultures and the requirement to prove that the contribution of the public leads to a successful outcome (Renn 2008).

Over the last few decades stakeholder involvement as well as public involvement have been applied in all kinds of contexts from risk communication to regional planning with mixed results. Public involvement does not necessarily result in smooth decision making processes or the building of consensus between stakeholders, sometimes it leads to increased conflicts (e.g. STAGE 2005).

It is becoming clearer that a more systematic approach is needed as to when and how the public and different stakeholders should be involved and under what circumstances strategies such as scenario planning (Wiseman et al. 2011), systems thinking (e.g. Ison 2010), hearings, round table discussions, citizen advisory committees, consensus conferences (Renn 2008: 303) or hybrid institutional forms such as public-private partnerships, special purpose bodies, policy networks (Skelcher et al. 2013: 2) are likely to contribute to efficient decision making and planning. This requires a better understanding of the social world and how it functions.

From a scientific point of view knowledge about a problem such as climate change is objective and independent from its production. Therefore, solutions can more or less be derived directly from it. From a social science perspective knowledge is produced as part of a social process (Knorr-Cetina 1999). That does not mean that we have any other or better sources of knowledge or that we should rely upon ideology, belief systems or everyday wisdom instead. It means that we should be aware of the limits of our knowledge and the possible lack of today's imagination for tomorrow's issues (compare sections: *5. The Social Contexts* and *7. Communicative Planning*). We have to revisit our assumptions and test them on a regular basis to carefully balance them against the impact that radical responses might have.

But why is it so difficult to agree on climate change adaptation when the science for climate change is increasingly supported by good evidence? There are two social science approaches which help to understand why a narrowed understanding of evidence based decision making is limited: The *cultural approach* (Douglas & Wildavsky 1982; Douglas 1985, 1990) and *modern systems theory* (Luhmann 1989, 1993, 1995).

The cultural approach on risk, introduced by Douglas (1985, 1990) and Douglas and Wildavsky (1982) and further developed by Thompson et al. (1990) has made an important contribution to the understanding of risk perception.

The key insight is that the selection and perception of risk is determined by individual embeddedness in a socio-cultural background and identity as a member of a social group, rather than through individual cognition, as is proposed by mainstream economics and cognitive psychologists (Douglas & Wildavsky 1982: 6-7). This means, concerns about risk such as climate change are mainly driven by values rather than the characteristic of a risk itself. The ways societies or social groups understand risks and dangers would depend on the form of social organisation seen as desirable rather than the reality of risk.

Douglas and Wildavsky developed a framework of ideal types which can be used to describe the different empirically existing cultures (compare Box 5, Thompson, Ellis, and Wildavsky 1990: 62-6). They distinguished two dimensions to 'grid' and 'group'. *Grid* stands for the degree to which an individual's life is regulated or prescribed by the roles in a social group. It is high in hierarchical organizations and low in egalitarian organisations. The *group* dimension stands for the degree of identification with a particular group. It is strong when the individual is a member of a group and weak when the individual does not belong (Douglas 1992: 192).

"The cultural type of competition or individualism, typified by the market and entrepreneurial perspective on risk, interprets risk-taking as an opportunity to pursue personal goals in competition with others. Group cohesion is weak and the normative bonding into the group is low. In contrast, strong group incorporation and low

hierarchy characterize the cultural type of egalitarianism or enclave (the earlier sectarian type). People belonging to this type emphasize cooperation and equality, and have a strong sense of solidarity. They tend to focus on the long-term effects of human activities and are more likely to abandon an activity than to take chances. A strong group cohesion and highly regulated social life are associated with hierarchy, or bureaucracy. Cultural types falling into this category rely heavily on rules and procedures as provided by social institutions to manage risks and uncertainties. The last type stands for isolation, fatalism, or atomised respectively stratified individuals which believe in hierarchies but do not identify with the hierarch they belong to. They rely on themselves and are very reluctant to accept risks imposed by others." (Zinn & Taylor-Gooby 2006: 38)

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Box 5: Cultural Approach to Risk
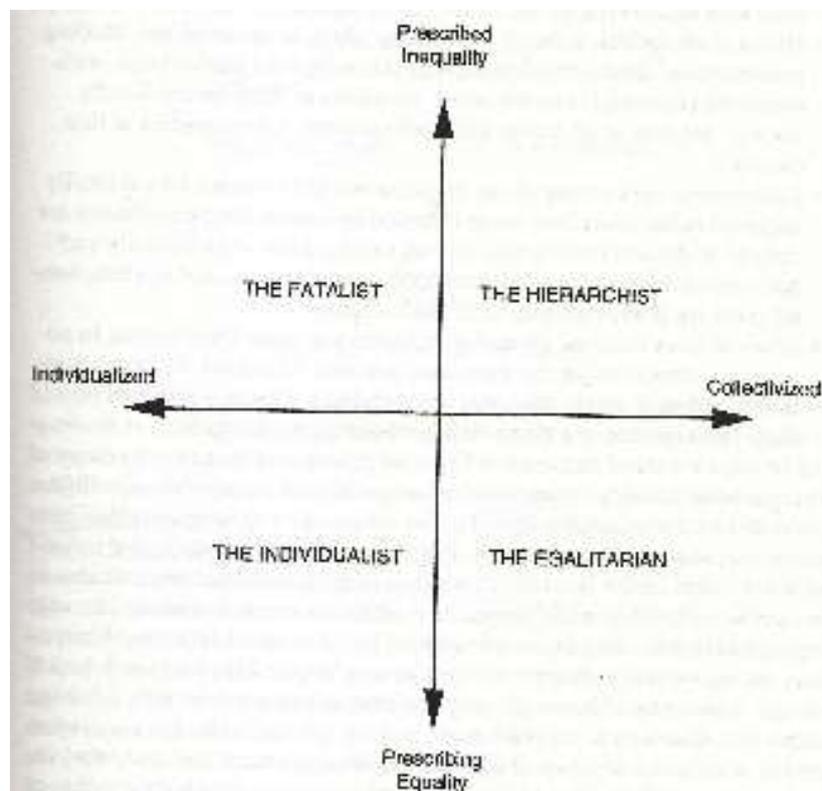


(source: Adams 1995: 35)

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The important insight of this approach is that all attitudes have to be recognised to secure social cohesion with society. Different *worldviews* or *values* are linked to the positioning of social groups within society, whether they are central or to be found along the boundaries. While social groups hold contradicting positions that are difficult to reconcile they can also be seen as a resource to understand the different effects

social planning and risk management has on the different social groups. Neglecting one of these perspectives has usually negative effects on social cohesion.

Though the cultural approach has been somehow contested (Renn 2008) it is still a valuable approach to understand a number of phenomena. Kahan et al. (2012) have recently shown that it is not scientific literacy but different social values that divide climate change proponents and deniers. People who hold egalitarian communitarian values perceive climate change risks as being much higher than holders of hierarchical individualist values.

Modern systems theory (Luhmann 1993) highlights another social dimension to explain the difficulties for social planning and decision making. Central to this approach is the assumption that top-down governing becomes increasingly difficult in modern industrialised societies that are increasingly *functionally differentiated*. That means that societies have developed relatively independent domains such as science, politics, economics, religion etc. which are specialised in dealing with specific social problems. Science is dealing with issues of truth, politics with power, economics with the allocation of goods and services etc. It is important to understand that these systems constitute closed jobs, they follow their own rationales and they are particularly effective in regards to the specific dimensions of a social problem they are specialised in. In regards to climate change, science deals with the question of the truth of climate change, politics sees climate change predominantly from a perspective of what legitimate decisions have to be made. For the economic systems climate change is a question of the allocation of financial resources and who has to pay for and who profits from climate change adaptation or mitigation? In short, every system sees climate change from its own perspective. We could say that the problem of climate change is transformed or reconstructed through the rationale of each system.

Systems theory claims that the systems are specialised in solving specific problems. Since they are relatively independent and follow their own logic they cannot engage in the logic of other systems. Science is not primarily about money but truth; politics is not mainly about truth but power, etc. This is important because solutions regarding climate change are only likely to proceed when they satisfy the perspectives of all functional systems. That does not mean that these systems produce the same kind of knowledge. The often-celebrated *co-production of knowledge* does not mean that systems produce the same knowledge or have to agree on a specific knowledge but all produce a different kind of knowledge that fits their unique rationale. That does not mean that knowledge within a system is always uncontested. Instead there are system specific rules in regards to how knowledge is produced. However, since decision making within every system follows different priorities (e.g. truth, power, money, ethics, etc.) it is difficult to combine them. Maximising one perspective can easily lead to undesirable effects in other systems, for example, when climate change is dealt with

only as long as it is economically efficient or when everything is mobilised to stop climate change regardless of the economic costs.

What seems obvious is an explanation for a common observation. What has to be done about climate change is a complex process where consensus is highly unlikely but a number of different and ongoing negotiations are undertaken that allow a range of solutions. There is never only one option but a number of different solutions that might all be 'good' but none of them is likely to satisfy all perspectives.

There is one very clear message resulting from these approaches: to agree on specific measures or strategies regarding regional development, responses to climate challenges or the reality of climate change is highly unlikely. It also helps to understand why different experts and stakeholders trying to agree on issues around climate change adaptation have so many difficulties in constructing or finding a shared model of social reality (e.g. MacCallum 2009). Such models probably do not exist. Instead we expect complex and ongoing controversial negotiations and debates. It is important to understand why real consensus is unlikely for decision making and planning so that we can develop better and new ideas on how to organise good decision making processes and planning without consensus.

## Fostering complex decision making in practice

Renn (2008: 286ff.) integrated these and other insights into a strategy for better risk governance but it also seems applicable for planning and decision making more generally where all kinds of risks are involved. It is important to distinguish at least four social domains, that is the production of expertise to determine what is the case (science, expert knowledge), the financial impacts and requirements (economics), the legitimacy of decisions (politics, legislation) and whether they are in line with commonly shared values (civil society, community).

Complex, uncertain and ambiguous planning requires a knowledge base that considers and includes scientific knowledge as well as local and intuitive knowledge. Deliberation is necessary to find an appropriate way of dealing with uncertainty in an efficient and fair way in order to find legitimate solutions. It has finally to deal with the different values and identities of affected social groups (Renn 2008: 294).

How do we organise decision making processes? What should be their major focus? Renn (2008: 294ff.) gives a helpful overview about a number of different deliberative approaches he labelled as functionalist, neo-liberal, deliberative, anthropological,
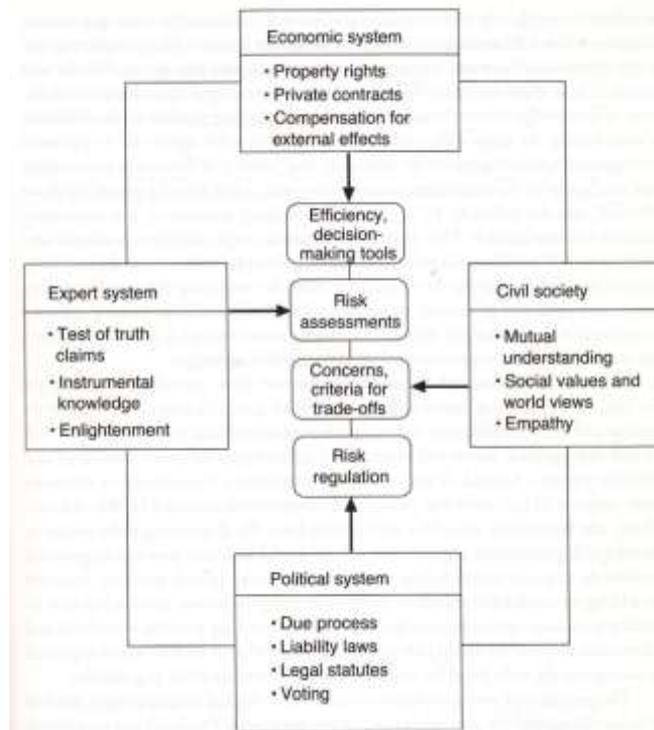
emancipatory and postmodern. They constitute ideal types that inform the way participation is organised in practice. They differ in their primary goal. For example, functionalist approaches focus on the quality of decision output and are mainly concerned with the integration of different kinds of knowledge and worldviews. The neoliberal perspective focuses on the representation of all values and preferences in proportion to their share in the affected population. Deliberative approaches focus on the criteria of truth and normative validity. If participation is more informed by an emancipatory concept the major aim is empowering less privileged groups and individuals (Renn 2008: 303). These concepts might in practice appear in mixed forms and there seem to be a shift from functionalist and neo-liberal approaches to deliberative and emancipatory approaches.

There are three major concerns about deliberative processes:

1. Participation would compromise the quality of the outputs due to a lack of knowledge and intuitive biases in lay people's decision making.
2. Participation would lead to distortions in the representation of the public will since there are systematic power differences among stakeholders and differences in the easiness of how social groups organise their interests.
3. Participation would produce either political paralysis or trivial results that would delay decision making processes. (Renn 2008: 306ff.)

Firstly, as we have argued in section three above, there is little doubt that distorted knowledge and biases exist among the public. However, research has shown that biases can also be observed among experts and in many decision making contexts experiential and local knowledge has proven to be as equally important as expert knowledge. We have also argued that expert knowledge has its own problems and that bounded rationality might be superior. The quality of decision making resulting from collaborative processes might be difficult to judge but under conditions of incomplete and uncertain knowledge participative approaches allow for more choices and account for different knowledge and values that foster greater legitimacy and acceptance.

Secondly, the tension between representative and deliberative approaches might be overemphasised. Planning and decision making requires expert knowledge to be considered and that includes the danger that groups that are better organised and more powerful are more influential in both representative and deliberative processes. Decision making and planning would gain particular legitimacy when as part of the process the knowledge and interests of vulnerable and not so well organised groups are included. The success and legitimacy of deliberate processes therefore depends heavily on the organisation of the process and who is invited and who is excluded.

Thirdly, are the outcomes of deliberative processes rather trivial and the process itself time consuming and inefficient? Any judgement in this respect has to be linked to expectations. As we have argued, consensus might not be achievable but is still a better and broader basis for decision making. The shared learning process of stakeholders, the public and the decision makers might foster trust in the decision making process and therefore prevent resistance. A key issue is that realistic but clear expectations should guide deliberative processes.

A vast number of articles and books on deliberative processes have been published since the 1980s that identify a number of key issues as being crucial for deliberative processes (compare for an overview: Renn 2008: 318-9):

- A clear mandate for participants of a deliberative process is required and clarification of the aims and deliverables. Participant obligations or promises of voluntary compliance should be stated at the beginning of the process once an agreement has been reached.
- A deliberative process is unlikely to be effective if there is no openness regarding the results. If a participative approach is set up mainly to 'sell' a decision already made somewhere else the process is unlikely to accomplish its goal.
- There should be a clear understanding in regards to the scope of available options and permissible outcomes of the process.
- A predefined timetable is necessary that provides enough time for debate but also includes clear deadlines to assure an efficient process.

- A methodology in developed that allows eliciting values, preferences and priorities (e.g. Renn 2006b).
- A climate of equality, where everyone has a say (Habermas 1971, 1991b) is necessary though that does not mean that everyone has the same power but the internal discourse rules give everyone the same rights and status in the debate. Usually a rule of consensus applies.
- The facilitator of the process should be neutral and should be respected by the participating parties.
- A mutual understanding of how the results of the process will be integrated in the decision making process of a regulator/planning process.

Experience in creating scenarios for climate change adaptation in Victoria (Wiseman et al. 2011) highlight some of the key issues identified above as crucial for participative approaches: the need for clarity of the purpose of such processes and the need to have a clear and obvious link to decision making. Both were identified as central concerns of the participants that were not achieved in practice.

Systems thinking is suggested as a technique to deal with complex adaptation issues that involve multiple stakeholders and multi-level decision making (Ison 2010). It is considered by many to be a valuable tool to think differently when dealing with complex or so called 'wicked problems'. It encourages thinking through processes and complex feedback loops rather than through linear cause-effect relationships. Considering our arguments above, this approach is most valuable when it helps to foster trust, deliberation and the acknowledgement of different forms of expertise and knowledge. It is less helpful when it supports a perspective that considers climate change adaptations as being predominantly a problem of complexity that neglects questions of power, values and competing interests. Lacking a consensus in climate change adaptation as we have argued is not the result of a lack of knowledge.

In summary, there is a tension in the literature between approaches that assume a kind of consensus or agreement is possible and desirable and the observation that such outcomes are not always achievable. Systems theory and also the cultural approach provide explanations as to why consensus might be too high an expectation. Similarly cultural theory provides a better understanding of how different worldviews and people's judgements are relied upon.

As a result scholars have started to think about how 'solutions' for decision making problems can be found when consensus is not reachable. For example, shifting the framing of a problem (Japp 1996, 2000), e.g. from climate change to climate variability, or rephrasing climate adaptation not as a burden for industry but as an economic opportunity or from economic efficiency to social well-being.

We will also argue in the following section that decision making and planning depends on prominent interpretative patterns (discourses) and particular local/global histories that inform how climate change adaptation is understood in particular social contexts. These contexts are crucial for decision making and planning.

# 5. The social contexts – media discourses and history

Decision making and planning take place within social contexts. Past planning decisions have impacts on communities and will be well remembered in particular when they failed. For example, the long lasting impact of the privatisation of the energy sector in Victoria in the 1990s left the Latrobe Valley region with high unemployment rates which devastated families. Such experiences become part of local knowledge and can become reactivated when new political decisions are made such as the introduction of a carbon tax and the question of the closure of power plants such as Hazelwood.

This kind of local knowledge has been well described in the literature. For example, Wynne's study (1996) on sheep farmers in North Cumbria has shown how that by covering up a major accident in the nuclear power plant Sellafield (England) in 1957, though many decades ago, was still present in local knowledge in 1986 when experts discussed the impact of the Chernobyl disaster on sheep farming in the region. When experts again made wrong decisions, ignoring the concerns of the farmers and challenging their expertise, old resentments were re-activated and aggressive resistance developed.

Mairal's (2008) analysis of Spanish print media has shown how new risks, though not yet properly understood, become linked to earlier experiences and inform the fantasies of possible impacts. Even when new risks are fully unknown he showed how they became connected to the past to make sense of an unknown future. This helps to understand, how, on the basis of past experiences with the privatisation of the energy sector, the carbon tax quickly became an issue of major concern for the region that mobilised the regional leadership to support political engagement not only of the State but the Commonwealth and regional government as well as the public.

The *Social Amplification of Risk Framework* (SARF, Pidgeon, Kasperson & Slovic 2003) has argued that risks such as the closure of the Hazelwood Power Station or other events can be amplified or attenuated in public debates through the media, stakeholders and the public independent of the reality of risk. Events such as the privatisation of the energy sector can become a stigma for a region or plants such as the Hazelwood Power Station, which was listed as the least carbon efficient power station in the OECD, can become a symbol for irresponsibly contributing to climate change. There is significant research on the mechanisms of how risks, be they natural disasters or the consequence of human error, enter the public arena and are shaped by the media. Research on the newsworthiness emphasise, for example, that concrete disasters (e.g. bushfire, flooding) that provide personal stories and pictures are more newsworthy than silent processes (Kitzinger 1999). As a result, climate change has faced difficulties in attracting media attention until iconic pictures such as the polar bear on a melting iceberg became a symbol for climate change. As a result, it is much easier to communicate and mobilise people for clearly communicable climate change

related risks such as heatwaves or flooding and acute lack of drinking water rather than longer term risks that silently accumulate and require long term changes in behaviour (e.g. the water usage restrictions for Melbourne have been invalidated quickly after increased rainfalls and the investment in the desalination plant became publicly highly controversial).

## Mediatisation of politics and planning

There is good evidence for a transformation in the governing of societies from bureaucratic top down government based on centralised knowledge (often driven by an economic rationality) to governance where government is only one among many stakeholders involved in negotiating policies and their implementation. As part of this shift the media became increasingly important for the governing of societies in general and for urban and regional planning.

As Hajer claims (2009) policy making nowadays is much more about performance under conditions of uncertainty where decision makers have to perform on the public stage to create meaning. In this sense for Hajer (2009: 6) governance "is and has always been first and foremost about the authoritative enactment of meaning". He goes on to emphasise that "politicians need to act not on the basis of rational calculation but out of a feel for the game that they have accumulated over time and in environments inside and outside of politics." (8).

"What is crucially new nowadays is that political actors must constantly reckon with the fact that what they say at one stage to one particular public will often, almost instantaneously, reach another public that might 'read' what has been said in a radically different way and mobilize because of what it heard." (9-10)

Planners are concerned about the way in which issues are being presented in the media. Articles appear each day that discuss the increasing congestion on our roads, the consequences of urban sprawl, the effects of urban consolidation on the liveability of inner city residents, the impact of climate change on infrastructure, lack of investment in public transport, the need for new roads, the effect of wind farms on regional communities, etc. The judgement of Planning Ministers is also called into question, a recent case regarding the decision by Planning Minister Matthew Guy to approve a subdivision in Ventnor on Phillip Island highlights the significant power of the Minister that is enacted through the Planning and Environment Act 1987 to intervene or call in any land development proposal. The consequences are that a current court case will test his authority as well as expose the underlying desire of developers to exploit strategic planning processes to ensure quick profits. The focus of the media is to draw attention to the clandestine processes of government, firstly in the way that a meeting was held in a kitchen and assurances provided that the land

would be rezoned to allow for residential subdivision, then on the reversal which upheld the Councils decision not to allow a rezoning of the land and more recently on the way in which compensation may be paid to avoid public exposure through the courts. The emphasis is not on planning but the political process of planning. It has created drama and highlighted disunity within the Government and across the sectors of Government. Hajer (2009) draws our attention to the way in which the dramaturgical reality of mediatized politics has significant consequences in the performance of governance. The political drama of this case has the potential to spin out of control. It is pertinent to our case study because it relates to the processes of strategic planning and who actually determines the future of a region, in our case the Latrobe Valley.

Storylines have been circulating in regards to the political decision by the Federal Government not to enforce the contract of closure of the highest polluting coal fired power stations. Once the negotiations collapsed the media reported on the political ramifications of the decision and not on the impacts of the decision on the community or in relation to increased $CO_2$ emissions. The consequences for this mediatized process is that the performance of governance changes, adapts and responds to present arguments in a way that is palatable to a public groomed on the narrative form that thrives on climactic events that require a crisis as opposed to carefully crafted negotiated outcomes. This provides an insight into how politicians and planners perform in what are often highly charged situations. In the case of the Latrobe Valley, current issues appearing in the media are the opening of a new coal mine and the restrictions placed on the commissioning of new wind farms due to legislation that restricts the building of wind farms within 2 kilometres of a house without their consent and within 5 kilometers of major regional centres. The media is presenting these issues as a conflict between extreme forces and communities are being divided as a consequence. As the issues are being dramatized through the media the credibility of a politician or a planner involved in the decision making process is dependent on their ability to perform in these situations. Hajer (2009) suggests this requires a focus on tactical intelligence developed over years of labour rather than through any pre-given personality traits or as result of its particular setting.

## Framing - reframing

Related to the increasing importance of the media for politics and planning is an insight from discourse studies (Foucault, 1965; 1980; 1982). The way in which problems are communicated, reported, formulated, what phrases are used and how they are presented – or in more technical terms, how things are framed - is significant for politics and planning. These insights highlight the way in which social reality is constructed or the way frames structure our imagination about possible futures as well as defining what we consider as an appropriate response to issues. Framing very much guides how we think and what we think and it is often difficult to go beyond the ways of thinking that we are used to. There is increasing interest in the climate change literature that acknowledges the significance of framing and the work of discourse studies for our understanding of climate change related issues.

For example when climate change is framed as an additional burden or an uncertain risk it is mainly framed as something negative and when we are told we should drive our cars less it is perceived as a loss of quality of life, all things that we quite like to forget in our everyday lives. Instead climate change should be framed as an opportunity that could lead to advantages in international competition when we adapt earlier rather than later. Instead of emphasising the need to restrict the driving of cars it would be better to celebrate the advantages of public transport and the increased quality of living the occurs when cars are banned from city centres.

In a similar vein scholars have argued for the importance of reframing when negotiating concrete responses to risk (Japp 1996, 2000). Since consensus in controversial decision making situations with contradicting arguments from vested interests is unlikely it is important not to emphasise the differences but seek reframing to allow decision making without consensus. For example, instead of emphasising the different interests of car drivers and public transport users it would be more appropriate to think about how best to improve or maintain the status of Melbourne as one of the most liveable cities in the world.

An example from the planning literature is van Eeten's discussion on the Randstad Green Heart (van Eeten, 1999). The Green Heart is located in The Netherlands and is a region bounded by the cities of Amsterdam, Leiden, The Hague, Rotterdam and Utrecht. In planning folklore it is a region of open spaces that includes areas set aside for agricultural production, forests and waterways, much like the geography of Gippsland, excluding the hills and valleys. It is seen as the lungs that breathe life into the urban regions. In the reality of 2013 it is a highly diversified region with high population densities consisting of urban overflows from the major cities as well as increasing populations in villages punctuated across the countryside and the intensification of agriculture through glasshouses and large industrial structures. Its role in planning literature is significant as it resonates with the planner's ideal of urban

consolidation and the protection of open spaces.  This narrative still permeates policy making in The Netherlands as well as being influential throughout the world.  What is important to highlight is the effectiveness of narrative in shaping and influencing public policy both in the way in which they restrict alternatives, e.g. the possibility of using the land for an additional railway line or the potential expansion of agricultural industries.  In the case of the Dutch planners who hold on to the authoritative story of the green heart and its symbolic representation of the evils of spontaneous development the potential for an alternative perspective is limited.

Laws and Rein (2003) see framing as providing a particular way of representing knowledge that bounds and orders it from a chaotic situation whilst facilitating a means of interpretation.  This is particularly relevant to intractable policy issues that cannot be observed, such as climate change. Through a series of case studies, Laws and Rein investigate the way in which frames are treated as stable objects or tools used by policy makers to command action or influence such as in the example of the Randstad Green Heart, which obstructs an alternative perspective.  They view frames as systems of belief that intermingle with identity and action.  They suggest that an understanding of the way in which an issue is framed provides an opportunity to shift a policy making process from a contest over conflicting frames onto the interplay between belief and doubt. They are particularly interested in the moments of doubt that occur during policy making processes, when there is a loss of stability when events upset conventional accounts or accepted stories are challenged.  Through their focus on practice, they observe that these are the moments when systems are open to new insights, ideas and behaviours. It is particularly relevant to our understanding of the process undertaken in the development of the Latrobe Valley Industry and Employment Roadmap. In two examples an opportunity to reframe the policy making process occurred, the first when the Federal Government withdrew from negotiations with the owners of the Hazelwood Coal Fired Power Station to provide compensation for the closure of the power plant and the second highlights recent legislation regarding the placing of wind farms.  These policy changes provides us with a moment in time to consider how the Committee responded to the significant changes in policy direction and to investigate how the opportunity was handled by each of the participants and to ask whether different people gained control of the agenda and created new ways of framing the issues?


## Public scrutiny, silent negotiation and authority

Hajer (2009) identified an obvious tension between the mediatised forms of policy and decision making and networking that occurs behind closed doors that enables complex decision making. Participative approaches in planning might even put more pressure on procedural quality and openness where public servants and planners are much

more in the role as networker, provider of information and organiser of debates and decision making processes between different stakeholders and the public rather than decision makers themselves (e.g. Hess & Adams 2002). They might even enjoy authority and public trust for keeping the interests of the public where politicians are prone to inappropriate practice or even corruption.

New authority can be gained by planners through successfully organising good decision making processes which bring together all the relevant stakeholders and protecting and giving voice to commonly excluded social groups. This does not only improve decisions making processes but would also support the normative commitment of many planners to foster good democratic processes.

Planning has to be based on good evidence and at the same time is directed by an increasingly volatile political environment. The tension between long term (strategic) planning processes and the short term life of politics cannot be easily resolved. However, empirical evidence shows that experts recommend (e.g. Tomkins et al. 2010) that climate change adaptation works best where it can be integrated in common planning processes with short term advantages and where long term climate change adaptation or mitigation is a secondary side effect rather than the major driver for planning and behavioural change.

# 6. Organisational, political and administrative decision making

As discussed above decision making and planning is under significant public scrutiny, as a consequence there is an emphasis in the planning community to present itself as rational and evidence based. In practice, as research has shown, organisational and administrative decision making is driven by other forces which deviate from the presented "rational" ideal model. It has been shown that organisations are notoriously risk averse and tend to focus on the risks to their own existence and integrity. Changes to major procedures are only undertaken when significantly threatened. Organisational decision making, far from being highly rational in fulfilling constitutional obligations is being driven by a culture of *muddling through* (Lindblom 1959, 1979), which is a situational short term response to urgent problems and pressures (Luhmann 1971) rather than long term strategic planning.

However so called *windows of opportunity* sometimes open, for example as a result of promises made during an election campaign that require at least symbolic activities. That was the genesis of the Latrobe Valley Transition Committee whereby during the 2010 Victorian State Government election campaign the Liberal Party, a surprise winner, promised a financial commitment and engagement process to support the transition of the Gippsland region as a consequence of the introduction of a carbon tax. *Windows of opportunity* not only open in the context of elections but also when significant events, particularly major disasters such as bushfires or flooding require immediate responses. Such events can trigger quite dramatic political decisions that have longer term effects such as the response of the German government to the Fukushima disaster has shown. In the context of the disaster the conservatives experienced a landslide defeat in a state election with the first Governor from the Green Party assuming power. In this context the conservative German government undertook a 180 degree turn around in energy politics abandoning the long held commitment to nuclear power. These decisions are obviously driven by a political rationale rather than a complex understanding of the environmental impacts of nuclear power or complex knowledge about the economic situation of the Latrobe Valley.

It is important to keep in mind, as has been argued above, that not only lay-people but also decision-makers lack capacity or competence for the complicated information processing required for rational decision making (e.g. Kahneman & Tversky 1973; March & Simon 1958). Therefore, some authors have argued that decision makers, problems solving solutions and policy choice opportunities may interact randomly (Cohen et al. 1972 cit. in Brunsson 1990: 48). It might also be that the situation itself is too complex or uncertain for rational decision making at all. Then decisions might be made to dissolve uncertainty and are then guided by intuition and instinct. The insight

from Brunsson (1990: 48), that "organisations have more problems than choice" is central. Organisational decisions are informed by other purposes such as (1) mobilizing organizational action, (2) distributing responsibility, and (3) providing legitimacy.

These insights help to understand why, for example high risk decisions might only be made when enough support by others can be found to prevent being blamed for possible failure. That might also help to understand why "many decision-oriented organizations such as parliaments, councils and governments even specialize in producing decisions and refrain from producing organizational actions at all" (Brunsson 1990: 55). In practice decision makers often have relatively little influence on the outcome of decisions that are prepared by experts (Brunsson & Jönsson 1979).

The last decades have seen a double shift in public management that deal with problems such as responsibility, legitimacy and efficiency. Public administration increasingly applies economic management strategies and tools with a strong focus on efficiency and cost control accompanied by outsourcing and privatisation of services formerly provided by the state. At the same time there is a greater shift towards deliberative approaches in public policy and planning.


## New public management

With the move from social democratic manageralism to corporate liberalism (Gleeson & Low 2000) and new public management (NPM), (financial) risk management in public administration has greater emphasis while strategic planning has been weakened in favour of the self-organising powers of the market (Hess & Adams 2001). This shift has been described as a change from rowing to steering (Barlow & Rober 1988) to secure cost efficiencies. This also affects the type of knowledge generated and highlights the increasing need for decision making. While planning traditionally needs complex knowledge for long term strategic planning new forms of governing shifts the role of planning towards a process of generating piece-meal project based knowledge. Administration increasingly mediates and sets up the processes rather than doing it themselves. When administrative decision making increasingly shifts from positive planning to risk management a number of problems become relevant as identified by Hood and Rothstein (2000) when risk management processes adopted by business are applied to governments.

There is also a tendency to concentrate on *shifting the blame* rather than on solving the problems. An important remedy would be complex approaches such as systems thinking and organisational learning which could help to overcome narrow perspectives on planning and decision making. Another recent tendency is an excessive focus on *organisational risk* at the expense of complex government-wide and social risks. Again, it would be important to develop procedures that allow complex

decision making that includes systemic risk not only situational and organisational risk management. Finally *mechanistic or tokenistic* application of business *risk management* can be countered when considering direct and indirect impacts of decision making. Again, it is important to see the broader social picture.

It has been seen as a common advantage of NPM that decisions and risk management are evidence and efficiency based. However, the language of objectivity and rationality obscures how the selection of knowledge is considered appropriate as it is not neutral but framed by more general discourses, e.g. on efficiency or problem definition. As Hutter and Bostock (2008: 80) clarify, pseudo objective risk analysis is highly normative while using a language of objectivity and rationality. As we have argued in the former section, discourses and framing are central for the understanding of social problems and thereby for public management and planning.

When general positive aims are neglected and financial risk management gets the upper hand major objectives might be threatened. For example, when the investment fund for the Latrobe Valley region focuses on projects that are ready to go with a high probability of direct financial success and independence, more innovative and therefore risky projects might never get up. As a result the potential for bottom up innovation might be narrowed and the money allocated never spent.


## Hybrids, networks and other forms of decision making

The shift towards outsourcing and streamlining in public management has continued as Hess and Adams (2001) argue and increasingly acknowledge the importance not just of how markets are  organised but how social groups, communities and stakeholders are integrated into the decision making process. Since social problems have become increasingly complex, in particular when regional or local solutions have to be found, it is often not possible to make efficient decisions. As we have argued in the section on risk communication, decision making might be opposed just because affected people were not involved in decision making processes while local knowledge is a crucial prerequisite for efficient decision making. As a result there is evidence for a shift in planning and public administration practice. Organising the production of knowledge and mediating between different groups as well as organising debates and collective decision making has become more important to decision making processes. With this shift there is an increasing emphasis in planning on the normative responsibility of planning in democratic societies, particularly the protection of vulnerable groups. Often neglected in planning processes there is concern by many authors to give voice to marginalised social groups as part of a social responsibility of planning.

As a result research has started to increasingly focus on the decision making networks which partly work in the dark or behind closed doors to deal with complex problems

but also with the hybrid organisations, such as the Latrobe Valley Transition Committee which is undertaking a publicly scrutinised decision making process that involves the transition of the Latrobe Valley region towards a low carbon future.

Strategic planning is not just driven by evidence but by ideas and visions. There is good evidence that in an increasingly global world planning ideas are exchanged worldwide as solutions are sought from the experiences of other regions. This has a long tradition in planning. However, there are clear benefits to learning from other places but at the same time there is a need to consider the specific institutional and socio-cultural conditions in which planning takes place and how ideas gathered from across the globe are applied in practice (Healy 2010). It is interesting to consider the idea of urban consolidation. Its origins are to be found in the European planning tradition where they have had much success in applying boundaries around cities to contain urban growth (Salet, Thornley & Kreukels 2003). A great deal of debate has occurred and continues to occur within the Australian planning tradition in regards to the concept of urban consolidation versus linear development or unfettered urban growth (March & Low 2005 ). The question that should be asked is what type of development is appropriate for Melbourne and what enables the achievement of the goals of socio-economic and environment sustainability?

Another important aspect of decision making processes is to understand how innovation occurs. Considine et al. (2009) ask us to consider how network-based accounts of decision making processes help us to understand the relationship between power and innovation. Their interest is in the role of networks and the discovery of how actors are linked to one another either through direct or indirect means, the formational of different patterns of communication and how hierarchies form within networks. Key questions include: do specific patterns emerge; do those who are driving the network occupy certain positions within society; is connectivity only significant when associated with formal structures of government; are new forms of governance and decision making emerging; are innovative practices of decision making leading to innovative outcomes? They argue that networks help identify problems and provide informal opportunities to learn and share information about solutions whilst assisting in navigating through more formal decision making pathways.

Healy (2010) highlights the importance of appropriate governance arrangements and their suitability for the challenge of place making in such a diffuse and fragmented world. She raises a further point in regards to Australian planning, have we inherited or adopted governance arrangements from Europe or the USA and if so are they appropriate to deal with the very specific issues that we face in Australia, particularly the unique risks associated with climate change? Healy (2010) asks what is the appropriate governance capacity to deliver improvements to the quality of local places and respond to local issues? This is highly relevant to the issues of local responses to

climate change. She argues that the solution lies in the quality of the local policy cultures. Key elements of this are considered to be integration, across scales and jurisdictions, being well connected – ensuring that a range of voices contribute to policy development and being well informed so that people involved in decision making have the capability to gather and interpret a wide range of knowledge. Importantly for local decision making, that there is the ability to act – to mobilize and capture opportunities and enhance local conditions.

Whilst these elements are important they appear to be rare in the development of planning policies. Healy explains that the emphasis for many jurisdictions has been to change urban governance capacity towards catalytic projects and partnerships. One Victorian example is the popularity of public/private partnerships on large infrastructure projects. The emphasis has been on providing transport infrastructure, particularly road infrastructure, without integration or consideration of other policy objectives, i.e. sustainability, climate change, land use planning, public transport, to name a few. The Department of Transport Planning and Local Infrastructure is separated from the Department of Planning and Community Development this is separated from the Department of Environment and Primary Industries. This discourages truly integrated responses to fragmented and complex issues such as climate change adaptation.

Establishing a set of clear priorities for strategic planning is rarely articulated in terms of what the intended outcome is for the market, the environment or the community. By priorities, we are not referring to a set of planning outcomes such as the development of a new rail line or a new social housing project, but to articulate what the planning outcomes will have on public good, environmental protection or the development of the private sector and the capacity of communities to manage risk. If there is a clearly articulated outcome solutions become clearer and decision making can be improved. It also enables greater clarity in regards to the potential for integration rather than obscuring linkages.

# 7.    Communicative planning

Planners are increasingly aware that deliberating with the public either for the purposes of developing strategic spatial plans, determining appropriate land use priorities or considering the economic development of a region, it is important to gain the support and trust of the community.  It is clear from the literature that through any engagement process tensions arise between the theory of how to conduct engagement processes and the practice of engaging (Healey 2006; Innes & Booher, 2010; Forester 2009) to name a few.  Whilst there is a body of literature on how to deliberate with the public, often called community engagement, the area of interest for our research is the way in which practice informs the theory, particularly, how theorists have turned to the practice of engagement to guide their theoretical positions combined with eliciting further insights from philosophy, sociology, psychology, cultural theory and critical theory.

Much of the planning literature on engagement emphasizes planning as normative (Harper and Stein, 2006). The emphasis is on understanding the rapidly changing and turbulent environments in which planners make human environments better places to live as well as how they justify the role and purpose of public planning and plan making in our society. It represents a clear shift in planning from a modernist faith in reason and science to a range of postmodernist perspectives that develop a theory aimed at achieving environmental qualities through planning practice (Taylor, 1998).

In their recent research, Harper and Stein (2006) suggest that planning is in a state of turmoil as it struggles to adapt to change and fragmentation that is occurring within the cultural, social and political contexts that have resulted from a shift from modernism to postmodernism. They see that planning has two major streams – communicative-pragmatism and critical. The outcome of their research is to provide a framework in which planners conduct their debates and undertake their work.  This approach advocates for liberal normative values and suggests that planners have a moral obligation to influence the items that get placed on the public agenda and an obligation to democratize the planning process – to promote justice and fairness.

Communicative pragmatism or communicative planning involves a consideration of the role of political involvement in designing and implementing planning strategies and the tactics used to overcome any resistance to change.  It also incorporates the concept of social learning – how to bring together experts and experiential knowledge through face-to-face interaction to enhance the prospect of innovative outcomes that are concerned with institutional and procedural changes, are focused on resource mobilization and are entrepreneurial and decentered - focused on the local (Harper & Stein, 2006).

Whilst different aspect of planning policy in Australia are developed through the three tiers of government; federal, state and local governments, implementation is highly contested at the local level as planners, residents and private developers vie to achieve their desired use and development of the land. This process is explained by March (2013) in his recent book when he suggests that, "spatial planning develops, embodies and applies knowledge, whether this knowledge is implicit, conscious, individual, collected or contested". He goes on to explain that this knowledge is used to steer collective and individual action in the act of planning. The important point for our research is how is this knowledge translated into action or decision taking? He suggests that it is through the application of knowledge (be it gathered through scientific methods or through deliberation with residents) that assists in explaining the successes and failures of urban planning in democratic settings.

Governments of all persuasions are increasingly considering their role in creating a dialogue with the public. However public policy still gives primacy to evidence based policy processes, which inherently mean scientific methodologies based on well tested frameworks (Productivity Commission, 2009). Scientific methods eschew the role of the public in decision making. However, over time, public policy makers have recognised that deliberative approaches enhance the confidence of the public when engaged in the development of policy.

An example of this can be observed in the development of strategic spatial plans for the City of Melbourne. The 1971 *Planning Policies for Metropolitan Melbourne* invited contributions to stimulate public dialogue through participation in seminars that were aimed at considering specific issues, such as the concept of growth corridors, the future of the Central Business District and the development of the Yarra Valley. The strategic plan was developed by the Board of Works[1] after years of scientific analysis and expert advice. Public engagement was not included in the conceptualization of the plan and therefore their input is severely restricted to commenting upon the final version of the strategic plan. The next strategic plan, *Living Suburbs* was published in 1985 and provides a clear directive that the state government requires an economic and planning strategy that builds a new vision for the City of Melbourne with the aim of reducing debt and revitalizing the city. This document is a response to both the economic crisis of the 1980s and a salute to neo-liberal economic policies due to its stated reliance and encouragement of the private sector for infrastructure development. There is however no engagement strategy with the public. It is clearly a directive that responds to changing economic circumstances and creates a perception that it is providing leadership in the face of a crisis.

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[1] The Melbourne and Metropolitan Board of Works was a public utility board when asked to develop a comprehensive plan for Melbourne in 1949. In 1954 the Board was made the chief planning authority for metropolitan Melbourne until it passed to the Minister for Planning and Environment in 1985.

The next strategic plan for the City of Melbourne was *Melbourne 2030* launched in 2002. It is a document developed in very different economic circumstances to that developed in 1985 and takes a much broader view of the City of Melbourne by considering its connectivity to regional Victoria and legislating for an urban growth boundary around the perimeter of the suburbs. Public forums were held to encourage initial input into the development of the plan as well as through public submissions. Once the plan was published, emphasis was on engaging the public in its implementation. A new process to develop a strategic plan for Melbourne commenced in 2012. A series of public forums are being conducted, small gatherings of interested parties are being encouraged as well as online submissions. It is the most extensive deliberative process to date. However, the Minister for Planning has established an advisory committee who has prepared a series of broad directions for the strategic plan through a Discussion Paper, titled *Melbourne, let's talk about the future*. The intent of the paper is to prompt discussion on the challenges for the future, particularly how to make Melbourne liveable and an attractive place to do business. The effect of the Discussion Paper is that it identifies nine key principles that the plan seeks to achieve. They resulted from consultation with experts and the input from advisory committee members. Principle seven places emphasis on living locally through the catchphrase of a '20 minute city'. Laws and Rein (2003) assist us in identifying key questions. What is the role of the '20 minute city' in shaping the planning agenda of the new metropolitan plan for Melbourne? To what extent has it penetrated policy making and culture and guided the action of the proceeding engagement process? To what extent has the agenda been set? At this point it is important to consider how planning processes are conducted when knowledge has already been developed and distributed and whether or not it is possible for an engagement process seeking to identify key issues for the people of Melbourne able to adapt to the challenge of redefining a current agenda?

An important question for our research is what is the role of the community in shaping and implementing planning policies when powerful vested interests are at play? Irwin (2006) argues that public dialogue initiatives should not be simply criticized for their inadequacies but should also be viewed as symptomatic of the state of science-society relations. Assuming this wider analytical significance is important to our research. Given that planning is a political process Forester (2009) asks the question "how best to be deliberative within conflictual, adversarial settings". Planning literature highlights the adversarial nature of planning and provides different perspectives on the root cause whilst suggesting a range of solutions. The emphasis, according to Healey (2006) is to mobilise attention onto the urban area as a whole and to influence the multiple actors involved in decision making. She suggests a clear definition of the key judgements that are required need to be made at the commencement of the process.

Deliberative approaches highlight the role of planners as bridge builders, negotiators and mediators vested with the role of agreeing to trade-offs to achieve their stated aims (Fischer and Forester 1993; Healy 1996; Healey 1998; Healey 1999; Healey 2003; Healey 2006; Forester 1999; Gleeson & Low 2000; Hajer & Wagenaar 2003; March 2012). These authors provide us with a range of perspective that consider the role and function of deliberative practices in planning as well as the theory of policy-making. Ostrom (2010; 2012) argues that polycentric approaches at the local level assist in reducing the risks associated with global climate change by encourage learning from experience. The work of Fischer and Forester (1993) draws on the theories of Foucault, Wittgenstein and Habermas to highlight the interplay of language, action, and power in deliberative processes, thus drawing attention to the important role of persuasion and argument in decision making. Healy (1996, 1998, 2006) is concerned with the challenges faced in building new policy discourses, particularly those that move beyond traditional power elites to recognize different forms of local knowledge as well as building rich social networks to build institutional capital that has the capacity to influence decision making for decades to come. This she sees as a shift from "building places to fostering the institutional capacity in territorial political communities for ongoing place making activities" (Healey, 1998). Healy (1998) highlights the importance of appropriate governance arrangements and their suitability for the challenge of place making in such a diffuse and fragmented world. She raises an important point in regards to Australian planning, have we inherited governance arrangements from Europe or the USA and if so are they appropriate to deal with the very specific issues we face in Australia, particularly in relation to climate change, an ageing population and the increasing differentiation between regional and metropolitan lifestyles.

Fischer (2003) draws on Habermas' theory of communicative action and calls for democratic forms of deliberation to highlight the distorted dimensions of communicative power. He sees citizen participation as the cornerstone of the democratic political process. His theory stems from a normative rationale that seeks to ensure that government decisions reflect the consent of the governed. He sees the expert as a practitioner to serve as a facilitator for public learning and political empowerment. This of course is challenging in practice as experts have a significant contribution to make. The idea that all citizens will consent to government decisions is theoretically sustainable but in practice is not possible. However, the idea is that the more that people are engaged in decision making processes, the greater the understanding and therefore a feeling of confusion and disenfranchisement dissipates to a more meaningful understanding highlighted in the work of Innes and Booher (2010).

Another author that supports Habermas' ideas of communicative rationality is Innes (2008). She argues that a principle for managing engagement processes is the creation of conditions within the group so that the forces of argument are the deciding factor

rather than an individual's power. Dialogue, it is argued, is the core of collaborative rationality as it is within dialogue where ideas and choices emerge and where confusing and conflicting views and knowledge can be transformed into something that is both rational and meaningful (Innes and Booher, 2010).

Forester (1999) draws our attention to the role of values in deliberative settings. He argues that much of the literature, whilst discussing dialogue and democratic argument do not go far enough to do justice to the learning that argumentative processes can promote. The aim is to consider the process rather than the learning that occurs through consideration of local and expert knowledge. As he puts it "the transformations of done-to into doers, spectators and victims into activists, fragmented groups into renewed bodies, old resignation into new beginnings, are lost from our view" (Forster, 1999, p117). He argues that a range of issues are at stake such as identity, memory, hope, confidence and respect to name a few. The point he seeks to make is that transformative processes are not only those of knowledge but of people being able to act practically together to better their lives.

Deliberative processes are found throughout the planning process. Sometimes they take place entirely among government entities sometimes with the community at other times between experts and the results are used in a range of ways, to feed into reports or plans, to gain knowledge or to share knowledge. Innes & Booher (2003) describe traditional perceptions of power that flow up from the public to the decision-maker who in turn make choices which bureaucracies then implement. Collaborative approaches to decision-making subvert this process as they recognize that traditional forms of decision-making do not work in a fragmented, rapidly changing and uncertain world. Agreements reached during deliberative processes are often not implemented due to the influence of last minute political deals. Therefore, agreements are only a small part of the process. It is the intangibles that are more enduring. Innes & Booher (2003) describe these as "shared meaning and purpose, usable new heuristics, increased social and intellectual capital, networks among which information and feedback can flow and the development of a group that has power to implement that public agencies do not". This provides an important point for our research as the Latrobe Valley Transition Committee was made up of partners from government, industry, the unions and the health sector, it is important to identify whether or not the Committee felt that they had a shared meaning and purpose and whether or not this changed over time and if so why?

Albrecht (2006) outlines a process of community consultation for the city of Perth in which four scenarios were presented to stakeholders and citizens, in a process called *Dialogue with the City*. The scenarios were prepared by the Department of Planning and Infrastructure and all focussed on growth. This centralising issue of growth was not questioned by the planners who undertook the engagement process. Albrecht

(2006) argues that the access of citizens and groups to decision making processes influences what issues will be discusses, the way issues are discussed and who participates in the discussion.  If citizens are not able to take an active part in the engagement process then the capacity to respond to problems and challenges and the ability to solve intractable problems remains limited.

As the social and political landscape continues to change and climate change presents us with significant challenges, planners face significant challenges as to how to shape the future of cities and regions within their jurisdiction.  Governments, once a source of trust, are embedded in their own political landscape and face their own social, economic and environmental challenges.  Planners are increasingly turning to their constituents with the hope of building trust and a new political discourse.  As Hajer and Wagenaar (2003) identify, positivist policy analysis has consequences for the kinds of questions that are asked and the information that is acceptable.  A new approach is required that adds a nuanced understanding of society, which celebrates its multiplicity of values and rules.  New voices have to emerge and a new way of thinking about the relationship between scientific procedure and political organization.  As Hajer and Wagenaar (2003) argue, "a fit between a conception of science and knowledge on the one hand and the nature of political organization on the other". This re-conception is a way enabling collective enquiry to seek practical solutions to social problems.

# 8. Key insights

Decision making and planning in times of climate change can only be understood against the background of a number of key environmental and social changes which have contributed to a change in governing and planning.

Planning is challenged by:

- Uncertainty of knowledge regarding the local impact of climate change.
- Need for legitimacy of planning processes in increasingly complex and volatile social environments with multiple stakeholders and vulnerable social groups.
- Internal changes in public administration from *rowing to steering* and financial risk management.
- Mediatised scrutiny of public policy and planning.

As a result new solutions for public management and climate change adaptation are currently shifting towards or require:

- Taking care of the production of authoritative knowledge that includes the co-production and exchange of knowledge (issues: including local knowledge, vulnerable groups and qualitative tacit knowledge)
- Taking actively part in organising public debate and decision making processes (issues: developing and nourish policy networks and set up authoritative hybrid organisations)
- Shifting planning practice from priority of risk management to the development of positive strategic visions which can inform, reframe and direct planning and public debate and can foster risk taking for innovative change.
- (Re-)embedded planning for climate change adaptation into specific local history, social problems and needs of a region.

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# Authors

Dr. Jens O. Zinn is TR Ashworth Associate Professor in Sociology at the University of Melbourne (Email: jzinn@unimelb.edu.au, Phone: 03 8344 3533)

Patricia J. Fitzsimons is a Senior Fellow (Hon) in the School of Land and Environment at the University of Melbourne (Email: fpj@unimelb.edu.au), Phone: 0407 876 272)