



Australian Government  
Productivity Commission



Australian Government  
Productivity Commission

# Barriers to Effective Climate Change Adaptation

---

## Issues Paper Submission

*Prepared by:* **Alianne Rance**

---

December 15, 2011

**Alianne Rance** BSc Natural Resource Management (Hons.)

Environmental Consultant

PhD Student (*Climate Change: Developing Metrics to Evaluate Effective Adaptation*)

**EcoLogical Water Solutions**

Suite 5, Level 7 330 Collins Street Melbourne



## Section 2: What does adaptation to climate change mean?

### *How is effective adaptation best defined?*

Throughout my research, I have identified that Adaptation is best defined by considering the *ongoing*, iterative process of adaptation as response/aim of vulnerability reduction on various spatial, temporal and functional scales. A suitable definition of Adaptation requires the inclusion of the concept as a response mechanism to climate change and climate variability, including all direct and indirect risks and impacts associated.

### *How can it be assessed? In other words, is the rate of adaptation 'too much' or 'not enough', 'too soon' or 'too late'?*

In terms of including adaptation in planning and policy-making this means addressing climate risks/impacts through strategies with an in-built monitoring and evaluation stage. This would enable assessment of the 'adaptedness' of the system in question, at whatever scale. Application of an evaluation methodology would also facilitate the avoidance of 'maladaptation' which is an essential component of any suitable definition of adaptation. Furthermore, as a bi-product, an evaluation methodology would highlight adaptive capacity in systems either lacking the resources or impetus to adapt.

Through my PhD research, "Climate Change Adaptation: Developing Metrics to Evaluate Effective Adaptation" I am attempting to develop an Adaptation Evaluation Matrix or framework, building on previous work I have completed under this banner. This tool, classifying via impact sector, permits evaluation of local government Authorities (LGAs) to determine a baseline of adaptation (current state) and further, an ongoing auditing tool to track effective adaptation.

Early research and application on case studies across varying geo-political scales indicate that this approach promising. Further development through ongoing coastal LGA case study application will increase the robustness of the tool. Property developers too may benefit from application of such a framework in that inclusion of adaptation measures in new coastal development can occur in a logical, cost-effective manner guided by monitoring and evaluation.

### *What other considerations may be relevant for maximising the net benefits to the community from adaptation?*

My research indicates that 'social adaptation' or community-led adaptation is present in some LGA's, also referred to as autonomous adaptation in scholarly literature. In some cases, where the LGA does not have the formal capacity to adapt (either through lack of funding or lack of information); the community takes the lead in vulnerability reduction via adaptation implementation at a household and community scale. Despite best efforts, at times adaptation action from a community perspective is not entirely effective or suitable for many reasons. However community participation is a powerful tool if guided by an informed adaptation decision making framework implemented by the LGA.

By including an 'Education' sector within the evaluation framework, social or community adaptation can be assessed. This facilitates net benefits to the community through adaptation, highlighting



where adaptation is occurring within this sector and where a more focused improvement can be made.

***What kinds of adaptation to climate change (and variability) have proven most effective to date?***

Adaptation options that span more than one impact sector can be classified as the 'most effective'. However it is difficult to classify this broadly as adaptation occurs differently at varying scales. For example, through my research I have highlighted that adaptation occurs most effectively at local government level (as scholarly literature agrees), facilitated by top-down guidance and inclusion of stakeholders and community. Adaptation options such as retrofitting existing properties with measures such as sustainable insulation may act to reduce heat stress on home owners, whilst increasing energy efficiency. Further, implementation of rain harvesting, rain gardens, grey water re-use and Blackwater treatment to Class A in communities acts to reduce potable water usage, as a protection against fire and ensures a semi-self sustaining community under threat of natural disaster.

It is however, through a combination of adaptation measures implemented effectively that vulnerability reduction occurs through adaptation. This would be facilitated through an Adaptation Evaluation Matrix which would allow a baseline evaluation of a system prior to a formal adaptation strategy, then ongoing auditing to ensure effective adaptation.

***How can uncertainty be addressed in the context of adaptation to climate change?***

Uncertainty is inherent due to the variable timescales, unknown future states based around GHG emissions and climate modelling. It is therefore imperative that despite uncertainty, adaptation action is taken with a 'no regrets' policy. For example; build cyclone-proof houses in communities with even 'low' risk of being affected. Informed adaptation can occur with downscaled regional modelling, combined with expert collaboration and local knowledge. From this point, adaptation must occur despite uncertainty as the precautionary principle states and LGAs will become more robust as a result; there will be no negative implications.

**Section 3: Are there barriers to adaptation?**

***What is the most useful way to classify, define and identify barriers to adaptation? Are the categories set out above appropriate? Are there other types of barriers?***

There will always be barriers to adaptation at many scales, as it is often allocated low priority on policy agendas. Further it is highlighted as a 'wicked' problem and as such, is often left in the 'too-hard' pile. Through my research I have highlighted that by utilising evaluation methodologies, allocating scores to 'adaptation sectors', low scoring systems or sectors can be investigated further and any existing barriers identified. Furthermore, where effective adaptation is occurring, highlighted through evaluation, lessons can be learnt to overcome adaptation barriers.

***Are there examples of policy or regulatory barriers that could inhibit adaptation? What are these? Could the objectives of these policies or regulations be met in alternative ways that have greater benefits and/or lower costs and distortions?***



State planning policy does not facilitate or promote adaptation in new developments and therefore could be termed a 'barrier'. For example, if adaptation measures such as waste water treatment plants on site in new communities and tri-generation power to name just two, were promoted through 'Adaptation planning' then vulnerability to climate change would be effectively reduced. Currently, property developers are hindered by planning policy and water authorities. There is also a liability issue in these instances that requires addressing.

This barrier could be overcome by an Adaptation Framework implemented at State or even Federal level to guide effective adaptation in new developments. In my experience and recent research, property developers are keen to adopt adaptation in new development moving forward but are unsure of how to proceed. A framework would facilitate this.

***What other significant barriers (for example, behavioural or organisational) might inhibit adaptation? What effects might these have on decisions about whether and how to adapt to climate change?***

Long embedded standards and guidelines that exclude adaptation in many disciplines are hard to bypass and are therefore a potential barrier to adaptation (behavioural or cultural barrier). In many cases these may inhibit effective adaptation on many scales as effective adaptation requires an inter-sectoral effort. For example; engineers should be open to the concept of adaptation and include climate change impacts (both direct and indirect) in risk assessments on projects. Many adaptation measures hinge on engineering innovations and thus without the collaboration between engineers and adaptation scientists, effective adaptation could be hindered.

The cultural concept of the 'desirability' of coastal living and the sea-change phenomenon is not only a planning issue but poses a barrier to adaptation. In many cases, residents in high hazard coastal zones do not care or wish to care about the risks surrounding their real estate unless effects can be physically seen. This can pose an issue to effective adaptation implementation in that community effort and participation is required.

The insurance market can be utilised as an effective tool to facilitate adaptation, but in many ways it can also pose a barrier. If the specific scope of climate change impacts are not fairly defined within insurance policy, and adaptation included to attenuate these impacts; confusion abounds. Customers and individuals may then feel that despite their perceived best efforts to adapt, they will still lose through insurance.

The key cause of many barriers to adaptation still surrounds the perception and attitude held toward climate change and its associated impacts. Many communities still feel that it is not a significant threat worth spending time (and money) dealing with, essentially adaptation. This issue has only been amplified by the media fuelling the fire, as well as disconnect between scientists and the community at large.

**Section 4: What policy instruments could be used to address these barriers? (Page 15)**

***Which broad-based reforms also offer potential benefits for facilitating adaptation to climate change?***



As mentioned earlier, a framework that endeavours to guide effective adaptation through quantification would highlight local governments that are facilitating adaptation. Effective adaptation highlighted through this framework methodology, employed federally could be rewarded in the form of financial incentives; rebates and funding.

Rebates or funding would provide incentive for local government to spend money in the adaptation effort. As my research indicates, lack of adaptation action at local government level is directly linked to lack of funding from State and Federal bodies.

Through government regulation of insurance bodies, where the specific scope of climate change impacts are defined, the insurance market can be utilised as a mechanism to promote adaptation. Insurance agencies are well aware of the impacts; overall insured and uninsured losses, that have exponentially increased since 1980 (Munich RE for example) and may be attributable to climate change. This industry is well along the way to developing standards surrounding these impacts and the inclusion of adaptation. If there is no government regulation of these standards, insurance mechanisms may pose more of a barrier than an aid to adaptation.

#### ***Regulatory Approaches (Page 17)***

***Are any new regulations justified to facilitate adaptation? What would be the costs and benefits to the wider community?***

Yes, new regulations that guide effective adaptation rather than facilitate maladaptation or inaction and enhance vulnerability. The benefits to the wider community if an evaluation framework was imposed federally with an incentivised participation scheme would be far-reaching. Local governments wouldn't feel so helpless in coping with the impacts of climate change and the community would receive guidance in a manner that is neither overwhelming nor beyond their control. Financial incentive would create the impetus for those unwilling to be simply 'proactive' in adaptation and gains would become ever more apparent as impacts are felt. Lastly, there is absolutely no downside to creating a more robust community.

#### ***(Page 18-19)***

***How have state and local governments responded to the potential impacts of climate change through their planning and zoning policies?***

There are some instances at local government level where, given location and vulnerability, planning proposals have been rejected on the grounds of climate risk, particularly sea level risk and associated impacts. There are some instances where specific requirements must be met in high vulnerability zones before planning is approved. However, this is not a highly common or regulated area and requires guidance and vertical integrated from both state and federal levels.

***Are there existing planning policies that could constrain the ability of individuals and businesses to adapt, or reduce their flexibility? What reforms may be needed to meet community objectives while facilitating effective adaptation-are there good examples?***



Each state has developed individual standards on sea level rise (e.g. plan for no less than 0.8m sea level rise by 2100-VIC), either in draft or policy form with no consensus between the states. Local government then, is unsure how to implement or enforce these standards upon individuals and businesses in their area. Instead of promoting effective adaptation options to reduce vulnerability there is a site by site assessment lacking standards and equity. By quantifying adaptation through a framework that can be applied across the board, weighted by local vulnerability, a standard would exist to fairly compare sites and facilitate effective adaptation whilst meeting community objectives.

***What implications might climate change have for local councils' planning policies and development approval processes? Has concern about legal liability restricted the ability of councils to achieve good economic, social or environmental outcomes?***

Yes, legal liability is a huge concern for councils; especially in terms of approving new developments within the coastal, medium-high vulnerability zone. Given that there is no standard on how to proceed when considering climate change impacts in planning, often positive outcomes addressing the triple bottom line are missed. Local councils have no guidance or understanding of how to proceed when considering climate change impacts in planning, and it has been widely acknowledged that we are currently placed in time where we are waiting for a party, any party to set the standard. If there is no regulation, despite legal liability concerns, we will be dealing with a whole new generation of vulnerable developments in the not-to-distant future.

***How might building regulation affect the ability of individuals and businesses to adapt to climate change? Are there any inconsistencies across the States and Territories that could impede adaptation?***

As aforementioned, sea level rise policies between the States display significant inconsistencies and are potentially impeding effective adaptation. Sea level rise projections included in draft State policy do not provide effective guidance on vulnerability reduction. If anything, this inconsistency confuses individuals and businesses on how to proceed and whether any hard evidence or regulation exists behind these figures. If building regulation were to include adaptation standards to specific climate change impacts, then individuals and businesses would be able to effectively adapt.

***What would be the costs and benefits of changing the way that the building code is applied across different geographies or climatic zones, or to establish new zones (for example, to allow for greater variation across regions)?***

The benefits of zoning according to vulnerability and risk across various geo-political and climatic scales would be limitless in the regulation of new development. Methodology would have to be consistent across the board to allow for equitable comparison, but this would limit the ad-hoc nature of planning for climate change impacts and allow guidance for effective adaptation.

***Government provision of public goods (page 19-20)***

***What kinds of information are already provided by governments to help individuals or businesses to understand risks? Is there a case for more government provision of climate-related information, or to disseminate this differently?***



The information provided by governments to aid in understanding the risks of climate change are very broad, and is not necessarily suitable to facilitate effective adaptation. Local governments want to know how climate change will affect them and what they can do to attenuate the impacts. This can be done by providing information on regional/downscaled modelling, and more guidance on how local governments can adapt effectively. It may be a case of creating an interactive forum where individuals or businesses are able to ask questions on what they are concerned with directly. This could be facilitated through web-based tools; webinars, chat-rooms or via community/business workshops.

The government should facilitate something like this, but information needs to come from a body that is both more available, and approachable to the target audience. This gap could be filled potentially by an NCCARF-like body that is empowered with scientists who can communicate information on an understandable level to individuals or businesses.

***Who bears climate-related risks in public-private partnerships and other government contracts? Is there a scope to further clarify who bears the burden of such risks in a manner that would have net benefits for the community?***

Liability is an ongoing issue. In an ideal world in terms of new development, the land developer should bear the responsibility of developing an adaptation strategy in collaboration with the respective local government. During the development of that property, the property developer bears all risk until all assets are sold and are also responsible for tracking adaptation implementation. Given that ideally, the adaptation strategy to deal with climate risks would have been developed in liaison with the local government, the burden of climate risks then lies with the local government to manage. If adaptation strategies are implemented this way, with monitoring and evaluation built in, managing climate risks becomes a transparent and quantifiable process.

***Which governments are responsible for addressing the barriers to adaptation? (page 21-23)***

***Are there significant overlaps or inconsistencies between the adaptation policies of different levels of government? If so, what are these and what problems might there cause for effective adaptation?***

Yes, to a certain extent. Researchers and policy-makers alike agree that adaptation occurs most effectively at the local scale, attenuating local impacts. However this action requires guidance and support, as well as integration from State and Federal levels. Currently there is a significant disconnect. Many issues are not addressed specifically at State and Federal levels, and the impacts that are (i.e. sea level rise) hold no consensus between States and are difficult to utilise in planning at a local level. *Adapting to Climate Change in Australia* was very broad and has not fulfilled the capacity building and integration between all levels of governance that is sorely required. States and Territories have then taken their own approaches, enhancing this disconnect further. Adaptation strategies at local government level Australia-wide are ad-hoc at best given the lack of guidance from higher levels of governance, and often demonstrate confusion between mitigation and adaptation.



It is clear though, that with these efforts at all levels of governance, the impetus to adapt is very real. With this in mind, it is ever more apparent that focus on facilitating effective adaptation, promoting vertical integration is vital. Again, a quantifiable framework applicable at a local level, but imposed from higher levels of governance may facilitate this, and research is underway.

***Is there a need to alter policy responsibilities (or clarify responsibilities) across the different levels of government in order to facilitate adaptation?***

Yes, in order to overcome the very common behavioural/cultural barrier that climate change is not a risk, or not a risk applicable to communities/individuals, it is vital that a strong Federal lead be taken. A top-down guidance approach would facilitate adaptation policy at State level and implementation where it is most effective, at local government level. Currently local government find themselves caught without funding, or information to effectively adapt and this could be remedied through vertical integration.

***Are local governments adequately resources and equipped to respond to climate change and implement policies developed by state and territory governments?***

No, they currently are not. My research indicates the often the most vulnerable of local government areas do not receive the funding to conduct formal vulnerability assessment, let alone develop suitable adaptation strategies to address local impacts. In some instances however, larger LGAs are well equipped and should be seen as good examples of climate change response. There should be more consistency between LGAs across varying geo-political scales.

***What are the most appropriate governance arrangements for overseeing adaptation responses at the local level?***

Federal funding with adaptation guidance principles to ensure effective State and Territory policy participation should be the starting point. State policy should then implement key performance indicators or quantification methodology for local government adaptation. If this methodology was weighted according to vulnerability on a local level then adaptation responses would be fair, equitable and quantifiable to ensure effectiveness. This approach must originate from the highest level of governance in order to facilitate integration which is essential for adaptation.

***Section 5: Setting priorities for reform (page 23-24)***

***Are these criteria relevant for assessing reforms to reduce barriers to adaptation?***

Yes, I believe this is an appropriate set of criteria for assessing reforms to reduce barriers to adaptation. It could potentially be expanded to include the temporality of climate change impacts and therefore the reforms to address them.

***Are there other key considerations or criteria the Commission should take into account to assess the likely costs and benefits of reform options?***

Potentially the scale of the reform should be considered in a temporal sense given that the impacts of climate change occur on multiple scales: spatial, temporal and functional.





*What reform options might satisfy these criteria?*

As discussed earlier, my research indicates that by developing an Adaptation Evaluation Matrix, with quantitative and qualitative evaluation capacity, effective adaptation to climate change can be assessed and facilitated. As a by-product of this approach, adaptive capacity can be highlighted and potential barriers to adaptation including lack of resources, or lack of impetus to adapt through other barriers.

Further application of this approach to increase robustness is currently underway, but early results indicate positive improvements in the facilitation of effective adaptation.

Please do not hesitate to contact me should more information regarding my ongoing research or work be required.

Thank you kindly for the consideration and time put into the Issues Paper, and Submission process.

**Alianne Rance** BSc Natural Resource Management (Hons.)  
Environmental Consultant  
PhD Student (*Climate Change: Developing Metrics to Evaluate Effective Adaptation*)  
**EcoLogical Water Solutions**  
Suite 5, Level 7 330 Collins Street Melbourne