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Climate Change Adaptation
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Adaptation Research Network
SETTLEMENTS AND INFRASTRUCTURE

Barriers to Effective Climate Change Adaptation
Productivity Commission
LB2 Collins St East
Melbourne VIC 8003

Submission to the Australian Productivity Commission Issues Paper:

"Barriers to Effective Climate Change Adaptation"

On behalf of the Australian Climate Change Adaptation Research Network for Settlements and Infrastructure (ACCARNSI), we thank the Productivity Commission for the opportunity to present this submission to the 'Barriers to Effective Climate Change Adaptation' Inquiry.

ACCARNSI is hosted by the School of Civil and Environmental Engineering at the University of New South Wales (UNSW). It is one of nine Adaptation Research Networks hosted by the National Climate Change Adaptation Research Facility (NCCARF), Griffith University.

The aim of ACCARNSI is to initiate and develop effective strategies to respond to climate change through adaptation and implementation. It brings together researchers and stakeholders with an interest in climate change adaptation, focussing on Coastal Settlements, Infrastructure, the Built Environment, and Urban and Regional Planning. Research is directed to assist government, the private sector, and vulnerable regions and communities to make informed decisions on how best to educate, plan and manage adaptation for the risks of climate change.

This submission collates the results of a workshop that was run on the 21st November 2011 at ACCARNSI's 6th Early Career Research (ECR) Forum in Maroochydore, Queensland. ACCARNSI hosts ECR Forums each year to bring together researchers from around Australia with an interest in climate change adaptation research related to Settlements and Infrastructure. The ECR Forums highlight the broad range of climate change adaptation research being carried out in Australia as well as presenting the potential to influence the future direction of climate change adaptation research in Australia.

Participants at the 6th ECR Forum included researchers from educational institutions and industry bodies across Australia. The participants are all currently undertaking research projects which span a range of sectors, including engineering, science, urban planning, social sciences and economics, and are each concerned with climate change adaptation.

Participants were provided with a copy of the Productivity Commission's Issues Paper prior to the workshop. During the workshop, participants were split into three groups, based on their area of research, under the headings of Coastal Settlements and Planning, Infrastructure, and Built Environment. Five simple questions were posed to the groups, based on the major concerns raised in the Issues Paper. These questions were:

1. How is 'effective adaptation' best defined, and how can it be assessed/monitored/evaluated?
2. What are the five major barriers to effective adaptation that you have come across in your sector/area of research?
3. What policy tools, adaptation options or options for reform may be used to address the barriers identified in Q2?
4. Identify specific instances where government intervention may be appropriate to address these barriers. Which level/s of governance should be responsible?
5. Prioritise your adaptation options (identified in Q4) by weighting their costs and benefits?

The responses of each group to these questions have been collated to form the basis of the following submission.

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1. How is 'effective adaptation' best defined, and how can it be assessed/monitored/evaluated?

Overall, participants were concerned that the Productivity Commission's definition of 'effective adaptation', as 'adaptation that maximises the net benefit to the community as a whole', can be misinterpreted. The concepts of 'net benefit' and 'community' were identified as being difficult to define and quantify. The Coastal Settlements and Planning group discussed that the definition may also be conceptually inadequate, as there may be situations where no 'net benefit' to an entire community can be achieved. This would require a more specific definition, which considers the different levels of community and the different timescales in which this 'net benefit' is to be measured. The Built Environment group highlighted the need to adopt a less economic/rationalist definition in order to take account of intangible 'benefits'. Participants also suggested that the definition of 'effective adaptation' should encompass the concepts of adaptive capacity, sustainability and maladaptation. It was agreed that some reformulation and expansion is needed to more fully define the current concept of 'effective adaptation'.

In terms of monitoring and assessment, participants were quick to identify that adaptation is an iterative and continual learning process. Ongoing evaluation will be required to respond to observed changes and make adjustments to adaptive actions and monitoring processes where required. This could be achieved by incorporating triggers for evaluation into monitoring methodologies. When these triggers are reached, a re-evaluation of the approach should take place.

The Infrastructure group highlighted the need to develop appropriate quantitative and qualitative assessment criteria and/or multi-criteria metrics for effective adaptation. These could include detailed monitoring of extreme events, risk analysis and set timelines for evaluation and monitoring. Without these it will be impossible to determine whether a particular adaptation strategy has

been/is effective. This could be an opportunity for the Federal government to lead in the development of such assessment criteria in collaboration with the State and Territory governments.

All participants recognised the need to build uncertainty into assessment methodologies. The Infrastructure group suggested that this could be achieved by using a combination of methods, such as analysing historical climate data, investing in further research and development, developing projections in the form of climate scenarios, and planning for each of these scenarios through 'adaptive pathways'.

The Coastal Settlements and Planning group emphasised the importance of understanding the limits and robustness of the chosen policy or strategy under a range of different climate scenarios, and of identifying points at which a policy or strategy is no longer effective and should be re-assessed. They also suggested that 'no regrets' options should be implemented now – for example, housing infrastructure should be built to withstand cyclones in cyclone-prone areas despite the fact that these events have not occurred for the past 20 years. This could significantly reduce potential loss as well as the need for post-event relief efforts.

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2. ***What are the five major barriers to effective adaptation that you have come across in your sector/area of research?***

The participants identified several major barriers that can impede effective adaptation.

Communication barriers consisted of the perceived **lack of communication** about climate change and the **lack of education** on this issue. The Coastal Settlements and Planning group highlighted that there is currently a disconnect between the community and climate scientists: in this case, the participants felt that climate scientists are not communicating important information about climate change in a way that is comprehensible to the wider public. The participants suggested that one way to overcome this issue would be to frame climate change in a public-friendly way. This could be achieved for instance using less scientific terms and providing robust clearly articulated information, which would be easier to comprehend. Some participants also raised the issue of education in terms of providing more climate change information and education particularly for decision-makers in order to enable them to make "climate-smart" decisions. Media was also understood to skew some of the information, which has lead to increased misunderstandings and mistrust in both scientists and politicians.

The Coastal Settlements and Planning group identified **organisational barriers** in relation to the historical acceptance of current standards and guidelines since these have been and are embedded in an organisational culture. This makes it difficult to change the way decision- and policy-making processes work. The Built Environment group in turn identified the following organisational barriers: lack of internalisation of knowledge, intra-organisation barriers, lack of internal capacity and skills to deal with climate change issues, path dependency (trends are hard to change when initial investments have already been made) and lack of understanding of the value of prevention and preparedness.

Behavioural changes were perceived to relate to cultural values and behaviour. The participants in the Coastal Settlements and Planning group expressed discontent with the current development agenda, which favours development in high risk areas such as the coast. This was perceived to be a cultural issue where the coast is so highly valued that developers and homeowners do not want to understand the risks involved. This was not because information is not available but rather because of the attractiveness of certain lifestyles. The participants deemed this barrier to be particularly difficult to change as it is deeply embedded in the Australian culture. One suggestion was to have dedicated staff in each project that would have responsibility for managing behavioural reactions within the community when planning for climate adaptation. The Built Environment group also identified community apathy and complacency for climate change policies and planning as an area in need of behavioural change.

Weak policies and legislation–The Coastal Settlements and Planning group expressed concern that the current regulatory and legal frameworks are not strong enough. For example, the Victorian State Planning Policy was flagged as being unable to prevent development occurring in vulnerable coastal areas, despite the inclusion of an erosion-prone-areas policy. The participants identified the lack of federal constitutional power to legislate with regard to climate change and planning as one reason for this weakness. State, Territory and local governments are constrained by limited budgets and resources for implementation. The complexity of legislative frameworks, with layers of common law and statute law that are often contradictory, was also flagged as an issue.

Also, confusion in regards to legal responsibilities between different levels of government for climate adaptation is an issue, which in itself can become a barrier for effective adaptation. This issue was perceived to relate to lack of leadership and guidance in adaptation planning. Local governments were not perceived to have the resources available to restrict development in hazardous areas, particularly with regards to wealthy residents who most often choose to build e.g. on the foreshore. State Planning Policies in general were not deemed effective: although these can identify erosion prone high risk areas, they still are not strong enough to stop development there. The Infrastructure and Built Environment groups in particular identified these regulatory barriers as a major impediment for effective adaptation.

Participants in the Coastal Settlements and Planning group also identified the role of the insurance industry as a possible barrier. Insurance companies were perceived to be merely making money: they insure people in high risk areas but not for all impacts and events, such as inundation by sea water. This relates to the definitions used in insurance documents and the classification of events, which are not currently consistent.

Participants noted strong **regional differences** across such a large continent as Australia with climate, population, geographic and cultural differences creating major differences in what may be considered effective climate change adaptation. The difference between **greenfield and brownfield sites** in implementation of Climate Change Adaptation policy was highlighted. It is relatively easier to implement Climate Change Adaptation coastal policy in greenfield (undeveloped) areas whilst extremely difficult and contentious in highly developed high value coastal communities like the Gold Coast or Sydney.

3. *What policy tools, adaptation options or options for reform may be used to address the barriers identified in Q2?*

There were many suggestions put forth by participants including policy tools, adaptation options and reforms to overcome barriers to adaptation.

The Coastal Settlements and Planning group determined that consistent policy frameworks between the States and Territories would aid in overcoming adaptation barriers. A standard national policy framework for coastal development, that promotes the inclusion of adaptation and is nonpartisan in approach, would facilitate sustainable coastal development in the light of climate change. Adaptation should not merely become a selling point of one political party, but underpin a policy lasting for decades, as the impact horizons being dealt with will far outlast any party's longevity. A long-term policy with review horizons to develop and grow with increases in knowledge, technology and science is required. Lastly, a change in conveying laws was suggested; promoting a move from freehold to leasehold may overcome weak local planning policies, which currently create barriers to adaptation.

It was suggested that local government could be utilised to overcome the behavioural and cultural barrier of the 'desirability' of living on the coast or high hazard areas. For instance, in these high hazard areas, local government could refuse to upgrade infrastructure and homeowners would therefore be encouraged to adapt or retreat in some cases. It was suggested that insurance could be utilised in a similar manner to deter development in high risk/vulnerability zones and also to address issues surrounding liability. This could be done in two ways: firstly, it would be difficult to get insurance for such high risk areas, which could in turn shift preferences to choose safer areas. And secondly, adaptation could be integrated in insurance cover together with consistent and fair definitions of what counts as a climate change impact. Utilising insurance markets may also overcome the issue of liability in coastal development.

It was suggested by the Built Environment group that Local Government needs to be better resourced to build capacity for more effectively managing Climate Change Adaptation issues locally. This train of thought was echoed by the Infrastructure Group through the suggestion of improved education at a local level surrounding adaptation and its implementation, which could help in overcoming ingrained behavioural, cultural and educational barriers.

All groups agreed that a review of design codes and professional guidelines inclusive of climate change, implemented at a National level would promote a shift in adaptation action. To inform such changes, and overcome education and organisational barriers, an increase in funding to adaptation research bodies will allow research and development to effectively facilitate adaptation planning.

4. Identify specific instances where government intervention may be appropriate to address these barriers. Which level/s of governance should be responsible?

i. Nationally: introduce **tax incentives** to drive adaptive buildings and infrastructure/asset resilience. Projects that demonstrate '5+ adaptation or resilience stars' gain a financial incentive, and competitive advantage from 'doing the right thing'.

ii. Conversely, conditional funding criteria stipulating that national grants and subsidies to states and local governments will be cut or withheld from infrastructure, asset and building projects, such as new hospitals and emergency services, that are *maladaptive* or for example vulnerable to coastal hazards and/or flooding. Developing monitoring and evaluation guidelines to assess adaptation's effectiveness and benefits could be an opportunity for the Federal government to lead in guaranteeing that adaptation actions are truly effective across the nation.

iii. Nationally: drive regulatory reforms through conditional funding grants and other incentives (preferably supported by COAG agreement) to states, territories and local governments to **develop nationally consistent planning policies and design codes –** including a building code for coastal dwellings - that drive adaptation / resilience and deliver cost benefits to owners and developers by removing time-wasting inconsistencies. This includes recognising the need for local governments to maintain sufficient flexibility to suit contexts i.e. avoid the constraints of the standardised template approach.

iv. Concomitant legal reforms at federal, state /territory and local government levels: **harmonise planning laws** so that federal and state courts rule on similar sets of statutes and design codes that remove Common Law grounds for continuing with maladaptive developments. Again, drive improved legal consistency and therefore cost savings to owners and developers across the states.

v. **Fast track '5+ adaptation or resilience star' developments** - similar to 'Green Door' fast tracking for sustainable designs at federal, state /territory and local government levels, motivating owners and developers to save time and money.

vi. Nationally: Provide direct national funding or co-funding through cooperative State governments to **develop experiential education programs** including work experience programs and industry internships for tertiary students

vii. National and state/territory funding to local government: **provide adaptation training and capacity building programs for local government mayors, councillors and senior staff**, aimed at increasing their participation (buy-in) in developing local and regional adaptation action plans and to better inform councils' decision-making regarding environmental planning. Stipulate that this is a pre-condition for further funding.

viii. Through conditional national and state funding, COAG agreements and eventual constitutional reforms, define the **responsibilities of local government mayors, councillors and senior staff to manage climate change vulnerabilities and risks.**

ix. Nationally agreed criteria for categorising major hazard, vulnerability or disaster levels: Move beyond ad hoc or site-by-site bases, and differences between states.

5. Prioritise your adaptation options (identified in Q4) by weighting their costs and benefits.

- *Depth: will this reform option generate a large benefit? (3=large, 2=med, 1=small)*
- *Breadth: will this reform option generate a large section of the community? (3=large, 2=med, 1=small)*
- *Cost: will there be a high cost to government, business and the community? (3=low cost, 2=med cost, 1=high cost)*

These prioritised reform options focus on tax incentives and conversely financial disincentives, consistent planning laws and design codes, and promoting experiential education:

Reform option	Depth	Breadth	Cost	Total
A. Tax incentives for buildings and infrastructure that gain 5^+ adaptation or resilience stars	3	3 Like bonus for retrofitting	3 Low cost long term	**9**
B. National subsidies /grants to local governments to drive 5^+ star adaptive buildings and infrastructure /asset resilience. Conversely, cut funding to vulnerable new infrastructure projects and maladaptive developments	3	3	3 Initial set up costs high but saves In the long run. Make developers bear all costs of their maladaptive projects	**9**
C. National funding or co-funding with state governments to **develop experiential education programs** including work experience programs and industry internships for tertiary students	3	3	3	**9**
D. Promote nationally consistent planning policies, laws and building design codes specifying adaptation / resilience	2	3	2 Starting from scratch but not a high cost	**7**
E. Fast track appropriately adaptive / resilient developments - quick approval process similar to 'Green Door'	2	2	3	**7**
F. National funding / co-funding with state governments to provide adaptation training and capacity building programs for local government mayors, councillors and senior staff to increase their participation in local and regional adaptation action plans	2	3	2 Cost benefits from improved stakeholder and community buy in	**7**

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ACCARNSI ECR Attendees involved in the Workshop:

Name	Affiliation	Name	Affiliation
Zsuzsa Banhalmi-Zakar	Griffith University	Simon Meares	University of New South Wales
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Anumitra Chand	University of New South Wales	Alianne Rance	EcoLogical Water Services, Victoria
Lily Chen	Griffith University	Millie Rooney	University of Tasmania
Louise Gates	University of New South Wales	Phillip Barend Roos	Deakin University
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Tracie Harvison	University of New South Wales	Dr Jamie Trammell	University of New England
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Preparation of the submission was undertaken by Philip Booth, Ron Cox, Louise Gates, Johanna Mustelin, Alianne Rance, Tamara Rouse and Nadine White.

Finally, we at ACCARNSI trust our ideas and thoughts assist the Commission in its valuable work.

With regards

Ronald J Cox
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