

**COASTAL ADAPTATION – A NATIONAL PERSPECTIVE**  
**Presentation to National Climate Change Forum on Coastal Adaptation**

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**Introduction**

I am pleased to be here today contributing to the progress of a relatively new aspect of climate change policy – coastal adaptation.

We have heard in the last day and a half about the nature of climate change risks in the coastal zone, and the wide range of actions which could be pursued to help Australia prepare to manage those risks.

A key challenge will be in moving from a broad menu of possible adaptation action, to a targeted set of national priority actions that need to be progressed in the next few years. This will require inter-jurisdictional collaboration and engagement of business and the community.

To assist this prioritisation, I intend to cover three things in my remarks today.

- First I will provide a national perspective of coastal adaptation
- Second I will outline how the Australian Government perceives its role in adaptation more broadly; and
- Third I will explore a number of key issues for all levels of government in developing a framework to enable effective adaptation.

**National perspective on coastal adaptation**

Adaptation to climate change in the coast is a complex social and economic challenge. As with other “wicked problems”, coastal climate change impacts are multi-causal and regionally variable, and effective approaches to coastal adaptation

will have many interdependencies, involve behaviour change, and be socially complex.

The magnitude of the climate change risks to coastal assets is also large. As noted earlier in this Forum, the value of coastal assets exposed to the impacts of climate change is immense. While much of this exposure relates to a legacy of past decisions and investments, the disruption that could occur if some of these assets became unserviceable would reverberate through regional societies and economies and beyond.

Adaptation solutions will span many organisations and involve decisions about land-use planning, infrastructure maintenance and investment, provision of essential services, preparedness and recovery from disasters, environment protection and social welfare. Mainstreaming adaptation will therefore be critical.

But we also need to be aware that climate change is rarely the key driver for decisions. For example we build a power station primarily to provide electricity, but in doing so we have to ensure climate futures are considered in the decision making process.

The recently released intergenerational report, *Australia to 2050: future challenges*, identifies climate change as the defining intergenerational issue of our time. Along with an ageing population and escalating pressures on the health system, climate change could place substantial pressure on Australia's economy, living standards and government finances over the next 40 years.

Importantly, significantly larger climate change impacts can be expected mid-century, at the same time that other national trends will increase pressure on the economy and budgets.

This does not mean that we should delay action for decades. Decisions we take now will have lasting consequences. In some areas we need to deal quickly with the legacy of exposure from past decisions. And it is becoming clearer that delayed action may be costlier action. As Minister Wong observed yesterday, no responsible Government can ignore such a risk.

However, it is important to recognise that ineffective interventions – to be seen to be acting for the sake of acting – can sometimes be worse than doing nothing as it can undermine public support for action.

It is clear that while much adaptation action will need to be taken by business, industry, communities and households, there is a critical role for governments at all levels. Governments will need to create the right conditions and incentives for business and the community to make efficient investment decision and manage risks from climate change impacts.

Governments have particular roles in land-use planning, environment protection, public health and emergency preparedness. And governments have a role in providing information and tools that will drive efficient markets for adaptation.

### **Australian Government's role**

The states and local governments have a wealth of experience in how best to deliver services in their jurisdictions. Clearly they need room to innovate and tailor solutions that best fit their needs.

At the same time there is an important role for policy leadership by the Commonwealth. Climate change adaptation, as with other big challenges facing the economy, is an issue that needs to be addressed through governments working in partnership.

The Australian Government has four key roles which will contribute to coastal adaptation.

The first of these roles is to maintain a strong and flexible economy and social safety net.

A strong and flexible economy ensures resources are available to manage emerging risks and that price signals can be used to drive efficient decision-making. Indeed, our capacity to respond effectively to climate change today is a consequence of the economic reforms of recent decades that have delivered us a strong and flexible economy.

A strong economy also underpins Australia's social safety net. The Government will need to assist those who may otherwise have difficulty in adapting, for example, vulnerable groups such as the aged, the poor and indigenous communities.

Assistance for vulnerable groups is especially important in the context of developing a coastal response.

The second role of the Australian Government is to manage Commonwealth assets and programs that are exposed to climate change impacts. These include defence facilities, federal national parks, and a range of public good services for which the Commonwealth provides substantial funding.

For example, key projects under the Government's \$20 billion Building Australia Fund will support infrastructure in the coastal zone, and these need to incorporate the impacts of climate change in their design and planning.

The third role is to generate national science and information. Individuals and businesses can only take effective action if they are well informed about potential impacts and risks. The provision of information is an enabler of reform.

The Australian Government is best placed to generate much of the public good science that will be needed for Australia to adapt to the impacts of climate change. National investment in building and maintaining our climate science capability, which is too costly for disparate organisations with smaller scale interests, also enables applied regional questions to be answered.

Key examples of public good science that is essential for understanding risks to the coastal zone include regional climate change scenarios, the establishment of consistent and interoperable data sets on elevation and geomorphology, and best practice approaches to risk assessment.

In addition Australia will need to pursue a targeted reform agenda to avoid costly disruption and to smooth adjustment.

So, the fourth role of the Australian Government is leadership in areas of national reform. One obvious candidate for reform would be siting and design practices or standards for major infrastructure and buildings.

In finding a path forward it is important that we define well the various responsibilities of different levels of government and of business and the community. Broad considerations on how to approach this are spelt in the Australian Government's adaptation position paper to be released today.

### **Key issues for governments in driving adaptation reform agenda**

Translating these roles and responsibilities into a practical and effective approach to national coastal adaptation must enable us to grasp the big picture and the myriad inter-relationships; must be both systematic and flexible; and it must engage stakeholders and the community to drive behavioural change; and all in a way that tolerates, indeed embraces, uncertainty.

In the minutes I have remaining, I'd like to highlight a few key issues for governments in developing such an approach, and in particular in optimising investment in adaptation approaches.

### Understanding risks

Responding to climate change is a risk management issue and this underpins my department's entire approach – we need measured, pragmatic responses and we must avoid panicked actions or delay through denial.

The *Climate Change Risks to Australia's Coast* report is an excellent first pass national assessment which provides a quantitative basis to appreciate whether or not residential properties are at risk. However, there are major information gaps on risks to infrastructure and services.

For example we do not have a good picture of how climate change could affect the delivery of essential services in the coast, or an understanding of the distribution of highly vulnerable communities and their adaptive capacity. We also don't yet understand how social phenomenon such as sea change or population aging will interact with these vulnerabilities.

More quantitative information is also needed on the nature and spread of risks. Without investment in building good information to understand risk, which links biophysical and socio-economic data, we are short-changing our ability as a nation to set priorities for action based on robust evidence.

It is also time that such data was standardised and widely accessible for public good purposes. This will prove invaluable to support future policy responses such as upgrades to codes and standards.

## Developing a framework to optimise adaptation investment

The second issue that will require considerable attention by governments is a framework to optimise investment in adaptation.

Very little information is available on the comparative costs and benefits of adaptation options, and at what timeframe or quantum of climate change a particular adaptation option becomes cost-effective.

Analysis undertaken by the CSIRO Climate Adaptation National Research Flagship led by Andrew Ash, estimates that the damage impacts of a 1 in 500 year storm surge in 2030 on residential buildings in south-east Queensland would be around \$4 billion in net present value terms.

The capacity of adaptation action to reduce damage costs was assessed. With a tightening of planning regulations now, the damage costs could be reduced from \$4 billion to \$2.7 billion by 2030. Should tighter planning regulations be combined with stronger action to retrofit properties and reclaim high risk land, the damage cost could be reduced even further to around \$1.5 billion by 2030.

While illustrative, damage avoided approaches can underestimate the benefits of adaptation because they do not reflect consumer priorities and preferences.

An interesting study on coastal inundation at Narrabeen lagoon on Sydney's northern beaches, which the Department has recently completed in collaboration with Pittwater Council, assessed the social costs and benefits of six adaptation options, and identified when each would become economically viable.

Three adaptation measures were found to be cost-effective now – a flood awareness and early warning system; planning controls to increase the minimum floor height of all new buildings and building renovations; and works to increase the height and length of the Lakeside levee.

But these measures will not be sufficient over time. By 2035 a permanent opening of the lagoon entrance so that flood waters can more quickly flow out is cost-effective. And construction of new levees at Progress Park and Nareen Creek may become economically justifiable around the end of this century.

A key characteristic of this approach is that it supports effective long-term planning so that foreseeable sharp and disruptive adjustments can be avoided.

Importantly, the study demonstrates that planning to prepare to manage risks does not mean that all investment needs to occur up-front.

An effective framework to guide adaptation investment also needs to recognise the considerable uncertainty that will continue to exist around the nature and timing of actual regional climate changes. We can deal with this by breaking down adaptation investment into a carefully chosen sequence of steps over time. Economists term this a real options approach. It can help avoid the risks of both under and over-investment in adaptation, while retaining flexibility.

An example of real options applied to coastal adaptation would be to acquire now the land on which a sea wall could be built in the future when risks increase, or to build only the strong foundation for a sea wall now. As storm surges begin to increase provisional measures such as the laying of sandbags on the foundation can occur. When storm surges become more extreme, a permanent wall can be incrementally constructed.

Governments will also need to be clear about their respective priorities in investing in adaptation. A framework to optimise investment will need to guide priority setting, and ensure communities that are most vulnerable can engage in the near term in developing a strategy to build their resilience to climate change.

## Addressing barriers to adaptation

The third broad issue that will require attention by governments is the need to address barriers to adaptation.

At this stage market forces alone are unlikely to lead to efficient adaptation by business and across the community. This is due to uncertainty and imperfect information, missing or misaligned markets or financial constraints.

Evidence is emerging in the United States that consumers often fail to invest in even low-cost protection against weather hazards. Property owners appear not to value the benefits over time from spending money now on protection measures. Some may not be in a position to finance the investment. Others may expect the government to bail them out.

Governments have a responsibility to reduce these barriers to adaptation, otherwise they are actively encouraging continued mal-adaptation, with costs and consequences for the community that will only increase over time.

## **Conclusion**

To conclude, parts of coastal adaptation are clearly a national reform agenda and will require collaboration between governments and with business and the community.

Governments need to develop a coastal adaptation strategy that clarifies responsibilities and outlines key next steps.

This strategy needs to be based on our knowledge of risks and barriers and it needs to identify early priorities for action. It will be important to support those most vulnerable to climate change and to ensure that we are not unduly transferring risks to the future.

Good planning will allow us to avoid sharp and disruptive adjustment. An effective framework for adaptation, which focuses on what decision-makers need to optimise investment, will also enable scarce resources to be well targeted. Emerging tools, including social cost-benefit analysis, hedging and real options can ensure that the risk of mal-adaptation is minimised.

We also must not postpone addressing major challenges that we know are coming. The impacts of climate change are already beginning to be felt around Australia.

When in future our grown children look back, it should be with a realisation that decision-makers in 2010 and the years following demonstrated the foresight to tackle this agenda.

Whether it is mitigation or adaptation, inaction is not a national option.