

CLIMATE CHANGE ADAPTATION AND MITIGATION OPPORTUNITIES FOR LOCAL GOVERNMENT

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Expanded Abstract

Communities and their local councils, particularly those in coastal areas, are affected by climate change on an immediate basis. The challenges of climate change and the range of issues associated will include how the local governments provide services such as planning and regulation, energy and waste services, transportation and infrastructure, procurement and natural resource management, amongst others.

'Adaptation' and 'Mitigation' are the two key fundamental strategies that are embraced by governments at all levels along with many industries and businesses to address the climate change challenges. Adaptation refers to 'readiness' through carefully evaluated risks posed by climate change, while mitigation refers to 'reducing' the emission of greenhouse gases (GHG), proved to be the root cause of the current climate change phenomenon. Of all stakeholders, local governments have the most direct relationship and interaction with the community and business as a whole and as such, local governments have the opportunity to adopt these strategies on a local level affecting residents in their community and impacting on the wider region.

Local governments need to demonstrate leadership in best practice measures to tackle climate change and the adoption of corporate and operational change to reduce emissions and impacts on the environment. At the same time, as good governance, local governments also need to evaluate the risks posed by climate change, such as sea level rise, extended periods of increased temperature and then undertake sustainable actions to adapt to these risks.

This presentation will discuss why climate change will create new and additional leadership and governance opportunities for local governments. It will expand on 'mitigation' and 'adaptation' measures local councils can put forward to prevent climate change, in particular the impacts on rising sea levels to highlight the range of operational opportunities available to councils.

Introduction

Australia's total GHG emission is around 2.1% of global emissions. Although, it seems small compared to other developed and developing countries (End of 2007 statistics US ~ 23%, China ~ 8%), yet per capita emission for Australia is quite high. In terms of emission at local government level, it is quite variable, depending on the size of the councils, volume of services provided (based on the population), location, infrastructure and planned growth, business and tourism opportunities, amongst other things. Nonetheless, reduction of GHG emission at all levels of governments and society as whole is a significant leadership issue for Australia. As such, the Commonwealth government is pushing for a

series of major changes in the policy sector to reduce Australia's GHG emission. Not only is the government focussing on developing a regulatory and compliance framework, it is also committing significant funding assistance for local government and industrial sectors to embrace the challenges of reducing GHG emission. Although, it is clear that the GHG emission related policies, for example, National Greenhouse and Energy Reporting Act and the proposed emission trading scheme, will have significant impact on businesses and the way we manage our daily life, it demonstrates a strong leadership by Australia in the global platform. Local governments, no doubt, should take this opportunity to show their leadership in helping reduce the emission to reach the targets set by the commonwealth government.

As mentioned above, reducing GHG is just one element in the climate change strategy. There are significant opportunities exist for local governments to develop and implement a range of effective adaptation strategies that will minimise the risk posed by climate change impacts, such as sea level rise. Adaptation is all about readiness to face up to the challenges posed by the climate change impacts. Since local governments are at the forefront in servicing the general population by providing a range of necessary emergency services and protecting us from the risks of natural disasters, it is absolutely vital that the adaptation strategies are developed and implemented to ensure safer communities around the country.

This paper highlights a number of opportunities that the local governments can consider in relation to climate change adaptation when tackling sea level rise and mitigation to contribute in reducing the cause of such issues.

Mitigation

Local governments need to concentrate on reducing its own GHG emission footprint. A range of services provided by the local governments involve a significant GHG emission at a local level. For example,

- Water and wastewater management
- Street lights
- Waste management
- Maintenance and operations of services and utilities
- Parks and open space management
- Local roads and recreational facilities
- Plants and equipments including Council fleet

In setting a mitigation strategy, Councils could consider the following

GHG Inventory ("Carbon Footprint")

Councils need to undertake a listing of all their operations and assess existing footprint. This could also be done at a preferred base line. For example say the year 2000. A good point to start for carbon footprint assessment would be to set up an energy data base and obtain the consumptions from the energy suppliers. Choosing the baseline is important as it needs to be consistent with the baseline set by the commonwealth government in the lead up to setting the emission reduction targets. Inventory needs to be performed on the basis of:

- Council's own operations
- Council boundary wide emissions

Based on the City's growth and projected future demands, the emission footprint also needs to be estimated for a future target time scale, for example 2050.

The current guidelines provide a relatively simple tool to estimate such emission, once the quantum, frequency and the inputs to provide the services and the projected demand are known.

Setting the emission reduction strategy

Based on the emission footprint, council needs to set a 'reduction' strategy. One of the most important aspects in setting a strategy would be to evaluate the impact of setting the targets. This would involve economic and financial modelling and evaluation of social and environmental impacts. The best way to go about doing this is to run a range of scenarios and set progressive targets over the target time span. Targets would be set to reduce emissions from Council's own operations and then the targets should be aimed Council wide.

Council's emission reduction

Civic Leadership and 'lead by example' will be a key to success. As such, Council needs to identify and agree on some 'Low Hanging Fruit' to start with. These initiatives should begin with the introduction of appropriate governance structures. Some easily implemented initiatives include:

- Undertaking a comprehensive awareness and education campaign within Council through mandatory training, information session, incentive schemes and 'championship' program
- Undertaking pilot research involving universities and research organisations in alternative energy (e.g., Pyrolosys, Lucid mini hydro) and in green concrete (cement is one of the highest GHG based building materials).
- Developing a comprehensive change management plans for each and every Council operation and service, in order to incorporate emission reduction initiatives.
- Targeting Council's fleet and plants, particularly executive vehicles to demonstrate strong leadership
- Establishing a performance based (KPI) schemes for the senior management and executives in order to achieving emission reduction targets
- Implementing Carbon Neutral Air Travel scheme by mandatory purchasing of offsets
- Reviewing Council's purchasing policy towards buying more green energy/ low emission based products (take into account of embodied energy)
- Measuring and report on GHG impact on all major projects/decisions.
- Transitioning to office buildings with minimum AGBR 5 Star rated buildings
- Transitioning to sustainable public amenities with low-carbon emission utilities (convert Council pool heating systems to operate on solar energy
- Introducing efficient street lighting
- Purchasing green power and maximising use of solar power for buildings and relevant utilities.
- Invest in companies that own and operate renewable power generation systems (ie buy offsets)
- Deploying appropriate level of human resources by organisational review (e.g sustainability and climate change Branch/office). The role of this unit will be to continuously monitor, evaluate, report and develop innovation to implement emission reduction strategy.

Council boundary wide emission reduction

Council boundary wide initiatives may include:

- Planning tools to regulate new developments (including development control plans, growth management plans, etc).
- Partnering with business and industries and peak housing bodies to adopt sustainable development practices.
- Promoting sustainable transport network through maximising public transport
- Supporting planting programs to use as a carbon sink
- Supplying automatic energy tracking devices to households a city-wide awareness campaign
- Increasing the waste bin collection cycles to reduce waste

- Implementing city-wide recycles water reuse program
- Banning use of bottled water within the city
- Reducing parking fees and provide ample parking for Fuel-efficient vehicles
- Implementing comprehensive community greenhouse education program
- Supporting companies to establish website to trade their waste
- Developing a business continuity plan

Some targets set by cities around the world

Council/ City	Reduction Target/ goal	Due Date	Baseline Year
Brisbane	Carbon Neutral	2026	N/A
Melbourne	Carbon Neutral	2020	N/A
Newcastle	30%	2008	1995
North Sydney	50%	2010	1998
Adelaide	20%	2010	1994
Perth	20%	2010	1996
New York	Stabilisation	2017	N/A
Los Angeles	35%	2030	1990
Berlin	25%	2010	1990
Greater London	60%	2050	2000

Adaptation

Whilst climate change impacts are multifaceted with a number of follow-on effects for which the adaptation initiatives could be numerous. For the purpose of sticking to the theme of the conference, the adaptation strategy in the following section refers to “Sea Level Rise” only. The key adaptation initiatives are listed as follows:

Climate change research and investigations

- Undertake research in partnership with research organisations and the Bureau of Meteorology to establish relationship between the change in temperature, ice-melts, sea level rise and the change in rainfall parameters.
- Develop technical tools (and computer based models) that readily predict and display (with sufficient accuracy) the magnitude and extend of impact, e.g., extended inundation and damage caused by increased rainfall intensity or sea-level rise.

Risk Assessment

- Assess the risk in accordance with the risk management framework in AS/NZS 4360:2004 as recommended in the Climate Change Impacts & Risk Management – A guide for Business and Government, Department of Environment & Heritage 2006
- Focus on the worst-case scenarios for low and high climate change projections say for 2030 and 2070 using data from the Intergovernmental Panel on Climate Change Fourth Assessment Report and CSIRO’s Climate Change in Australia – Technical Report 2007, as well as recent information published as part of the Garnaut Climate Change Review.
- In terms of sea-level rise, the risk could simply be the extent and magnitude of inundation and the risks associated with direct and indirect damages to property and lives.
- Undertake an extreme case risk assessment, for example due to a 5 metre rise of sea level on the SE Qld Coastal region.

Planning Controls for future developments

- Setting higher design standards (e.g. higher development levels to take into account of sea-level rise)
- Undertake flood proofing where possible
- Identify areas of high risk and exclude them from future development plans.
- Ensure appropriate infrastructure (road network, water and sewerage, etc) are provided taking into account sea level rise.

Community Engagement

Sea-level rise will invariably result into significant flood inundation in many coastal towns and cities around Australia, particularly areas with relatively flat terrain with dense populations. Historically, flood management has been dealt with through engineering interventions without involving the community in the decision-making. This approach is not consistent with the concept of social and economic sustainability of flood mitigation strategy. Investments made for the structural mitigation works, in the end is borne by the community, therefore it is essential that they are engaged in the decision making and take ownership of resolving this important issue.

Practically, it will be very difficult to adopt any physical flood mitigation strategy in order to deal with sea-level rise. Community participation to enhance awareness and taking ownership through appropriate dissemination of relevant information and risk assessment reports will be the key to success of community engagement. Such participation;

- Improves the quality and the implementation of the decision
- Contributes to public awareness
- Gives the public the opportunity to express its concerns and enables public authorities to take account of such concerns

Community engagement is aimed at exploring the best possible ways of community participation in order to reducing vulnerability through a risk management exercise. The overall purpose of the community engagement is to create a forum that community members can;

- Address community issues in relation to flooding
- Participate in decision-making for flood management, and
- Collectively reach a solution to their perceived problems

Community Engagement Initiatives

- Forming Community Climate Change Watch Program
- Regular dissemination of information
- Local flood and storm-surge monitoring program
- Computer based information system
- Emergency management plan
- Business continuity plan

Conclusion

Local governments face enormous challenges to tackle climate change impacts. Local governments also have a range of opportunities to deal the challenges, however, adoption of these opportunities require significant change in the governance arrangements and strong leadership. Local governments are at the fore front in dealing with the local residents in their well-being and providing necessary services in a sustainable manner. Climate change impact, particularly, sea-level rise has huge implications in disrupting these services and put the lives at significant risk. Therefore local governments cannot afford to 'do nothing' and need to be better prepared and minimise the risk as much as possible. Mitigation and adaptation are they key to this preparation.

References

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