



# CoastAdapt

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## Financial and funding mechanisms for adaptation to climate change

This web content was produced by Dan Ware, Griffith Centre for Coastal Management, Griffith University

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**Financial mechanisms provide opportunities and create constraints to meeting the expenditure requirements for implementing adaptation projects and as such should be considered within adaptation planning.**

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### At a glance

Implementation of climate change adaptation plans creates new costs for local governments. These new costs result from, first, expenditure for direct adaptation initiatives, such as the construction of coastal protection structures and, second, increasing costs of existing service delivery, such as raising roads above future sea level to avoid inundation.

The capacity of existing revenue sources has a number of practical constraints, which act as a limit on the ability of organisations to implement climate change adaptation plans. Adaptation planning needs to take account of these constraints, and to consider potential mechanisms for financing adaptation actions.

Financial mechanisms for climate change adaptation comprise a range of existing mechanisms which, while they have not been extensively applied to climate change adaptation, have been applied to other areas of local government expenditure such as infrastructure delivery.

Here we describe the range of commonly used mechanisms, and identify some of the issues around financing that need to be considered within adaptation planning by organisations.

### Main text

Adaptation to climate change is increasingly falling within the remit of local governments, creating new costs (seawalls and beach nourishment) and increasing the costs of existing responsibilities (roads, drainage and water supply). In the development of adaptation plans, it is critical that emphasis on selecting a course of action considers not only the cost-benefit ratio ([Monetary and non-monetary valuation](#)) but also the practicalities of how such initiatives will be funded and the possibilities for financing.

To date, there has been relatively limited attention given to financial mechanisms for adaptation to climate change within developed countries. What discussion there has been tends to conflate similar but differentiated terms such as financing and funding (see Box 1). This suggests a lack of clarity regarding foundation concepts among adaptation professionals, creating a barrier to interaction with finance professionals.

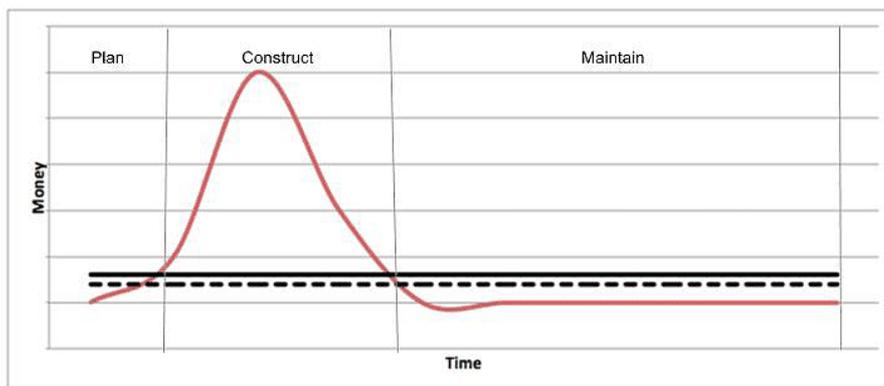
### Box 1: Some definitions

**Finance** - relates to the management of the capital or wealth. Within local government, 'finance' is commonly understood as a functional area responsible for managing the budgeting process and allocation of resources and distribution of income sources.

**Financing** - money available on the basis of an agreement with the expectation to be repaid via funding (often with interest, usually provided by an external entity e.g. financial intermediary).

**Funding** - money available to spend, which may or may not be subject to an agreement. For local governments this covers taxation, user-charges, and grants, etc.

In making a distinction between funding and financing it is important to recognise that financing requires funding. However, financing also impacts on the nature of funding required for a given project. To illustrate this, Figure 1 illustrates the costs (red line), available funding (black line) and repayments for debt financing of the costs (black dash line) for a local government that decides to hold the line against a retreating shoreline and to do this by constructing a seawall. The curve of the red line shows that there is an initial planning cost followed by a steep increase in costs for construction which then drops off into maintenance. For a local government with the level of funding available as indicated by the black line, the project could not move beyond the planning stage without raising a loan. By using debt finance with repayment costs indicated by the dashed line, the project can proceed into construction because the available funding can meet the financing repayments.



**Figure 1:** Impact of funding and financing on climate change adaptation project lifecycle costs. Source: © Dan Ware.

Based on the example shown, funding is a key barrier to undertaking adaptation projects and financing can under some circumstances be an enabler to overcome this barrier. Following on from this, 'financial mechanisms for adaptation' would include funding and financing applied to initiatives (projects, plans, strategies, etc.) that help society adapt to climate change.

In defining the term 'financial mechanisms for adaptation' we are not implying that adaptation planning requires identifying a revenue source for each and every adaptation expenditure. In many adaptation plans, local governments exclude funding issues for adaptation expenditure on the grounds that adaptation is a public good and therefore should be funded via consolidated revenue. So, while it may be justifiable to explicitly exclude dealing with funding in adaptation plans, there is increasing recognition that identifying funding to meet the expenditure requirements of adaptation plans is beyond the capacity of the current finance structures of local governments.

The following sections introduce funding, financing and insurance mechanisms that may be considered as ways of enabling local governments to meet the cost of implementing adaptation plans.

## Funding mechanisms

### Existing Mechanisms

Several options are available to local governments to cover the costs associated with implementing climate change adaptation. While the exact nature of the revenue sources varies by jurisdiction based on the relevant legislation ([Jurisdictional differences](#)) there are three primary

funding sources in use by most local governments. Table 1 below introduces each of these and outlines preliminary issues in considering each mechanism within adaptation planning.

**Table 1: Existing local government funding mechanisms**

Mechanism	Definition	Issues
<b>Rates</b>	Taxes collected from landowners on the basis of property value. Generally, rates include a minimum charge or fixed charge and a proportion of estimated value component. Rates may consist of general rates and special levies, which may be targeted by location or another variable.	Local governments have significant control over the amount of revenue that they can collect via rates; however there are also some limitations – both economic and political – which act as powerful incentives to minimise the amount collected via rates; <ul style="list-style-type: none"> <li>• Capacity to pay</li> <li>• Willingness to pay</li> <li>• Competition with other areas.</li> </ul>
<b>User Charges</b>	Revenue derived from the direct provision of goods and services.	In the context of funding climate change adaptation through user charges, the primary challenge is that user charges are misaligned with the project lifecycle costs. User charges require a service to be delivered, but delivering adaptation services generally require significant expenditure prior to the service being available. While revenue flows from user fees are misaligned with expenditure requirements for coastal protection works, user fees do provide an opportunity for governments to generate revenue to service debt so in this way they can form part of a package of mechanisms to fund coastal protection works.
<b>Intergovernmental fiscal transfers (grants)</b>	The payment of funds from one level of government to another. Includes mechanisms such as the financial assistance grants scheme and the national disaster relief and recovery arrangements, and short term programs such as the former coastal adaptation pathways program.	There are limits around the amount of control available to local governments regarding the sums available, timing and purpose of the funding.

## Alternative Mechanisms

In addition to traditional mechanisms, there are alternative funding mechanisms that, for the most part, represent variations within the category of user charges in Table 1. Table 2 introduces each of these funding mechanisms and outlines preliminary issues in considering each within adaptation planning.

**Table 2:** Alternative local government funding mechanisms for adaptation.

Mechanism	Definition	Issues
<b>Infrastructure charges</b>	<p>"Infrastructure charges (sometimes called 'developer charges' or 'developer contributions') are fees levied on developers to compensate governments for providing facilities necessary for land development" (Henry 2009 p. 423).</p>	<p>Benefits - Infrastructure charges facilitate the efficient allocation of land by providing a price signal that encourages developers to locate development where infrastructure can be provided at the least cost. Infrastructure can generally be provided at a lower cost in centralised locations and the cost of provision increases with distance.</p> <p>Problems with infrastructure charges - often infrastructure charges do not directly reflect the cost of the provision of infrastructure and as a result they can act as a disincentive to the development of land.</p>
<b>Value capture</b>	<p>Value capture funding methods identify and collect an equitable portion of the value released through new zoning and other public improvements so the communities that create this value share in the wealth it generates (Langley 2015).</p>	<p>This is an emerging approach and concerns have been expressed that it just displaces revenue sources for governments and that the administration may be overly complex.</p>
<b>Tradeable development rights (TDR)</b>	<p>"TDR is the sale of one parcel's development rights to the owner of another parcel, which allows more development on the second parcel while reducing or preventing development on the originating parcel. Under such a program, development rights are severed from a lot designated for protection (sending area), and the severed rights are transferred to a lot in an area where additional development is permitted (receiving area)" (Johnston and Madison 1997 p. 365).</p>	<p>Unless the holder of the development rights and/or land is the state, the mechanism is probably more a means of achieving a planning process than a funding mechanism.</p>
<b>Strategic asset management</b>	<p>Strategic asset management involves inventorying public assets and making economic decisions as to how to extract maximum value from them, including land and developed property.</p>	<p>This will most likely involve sales of assets and privatisation of assets, the implementation of which can have significant political challenges.</p>

## Public Private Partnerships (PPP)

Public-private partnerships are widely misunderstood as a form of privatisation of public infrastructure. In fact, public-private partnerships can be more appropriately understood as a spectrum of private sector involvement in public project delivery contracting approaches, which sits between full government control and full privatisation. The various approaches along this spectrum are differentiated by the distribution of risk between the public and private sector. Table 3 explores the characteristics of various project delivery approaches along the PPP spectrum.

By accepting some of the risk, the private sector will seek a return. A public-private partnership will generally involve both a financing and a funding mechanism. In determining between varying project delivery approaches it is important to consider how the allocation of risk and control will support or conflict with project objectives and the objectives of the local government's overall adaptation strategy.

**Table 3:** Public-private partnership spectrum for local government project delivery. Source: McDougall 2004.

Characteristic	Complete public delivery	Traditional public contracting	Services/ management contracts	Lease contracts	BOO, BOOT, BOT Schemes	Concession or franchise agreements	Joint ventures	Full privatisation
Asset ownership	Public	Public	Public	Public	Public	Public	Joint	Private
Contract duration	N/A	Once off	5 to 10 years	Up to 30 years	20 to 30 years	20 to 30 years	Permanent	Permanent
Basis for private sector compensation	N/A	Agreed contract fee	Agreed contract fee	Unit cost plus margin	Public sector guaranteed to purchase	Similar to lease of BOOT	Market driven	Market driven
Revenue collection responsibility	Public	Public	Public	Public	Public	Private	Joint	Private
Capital investment responsibility	Public	Public	Public	Public	Private operator	Private	Public and private	Private
Recurrent expenditure Responsibility	Public	Public	Private	Private	Private	Private	Private	Private
Construction risk	Public	Private	Private	Private	Private	Private	Private	Private
Operation (cost) risk	Public	N/A	Public	Private	Private	Private	Public and Private	Private
Market (revenue) risk	Public	Public	Public	Private	Shared	Private	Public and Private	Public
Non-commercial risks	Public	Public	Public	Public	Public	Public	Joint	Public

## Financing Mechanisms

There is a wide range of financing mechanisms provided by both the public and private sectors. Regarding debt financing, there are two main borrowing options for local governments – debt sourced from private banks and debt sourced through government treasuries. The capacity for local governments to borrow as a source of finance is generally regulated by the respective state or territory through the Local Government Act. Restrictions are typically imposed on one or more of the following:

- the amount borrowed
- the purpose for which it is used
- the source of borrowings.

Table 4 introduces the most widely used financing mechanisms and outlines preliminary issues in considering each mechanism within adaptation planning.

**Table 4:** Financing mechanisms for application to adaptation.

Mechanism	Definition	Main features and limitations
<b>Debt finance</b>	Borrowed money that is paid back with interest within an agreed time frame. Includes both project finance and balance sheet finance.	Distinct from equity finance in that there is no transfer of ownership or control, so that the obligation to the provider is limited to the agreed repayment schedule.
<b>Equity finance</b>	Raising funds for an entity through the sale of partial ownership of the entity or an entity's assets. This generally involves the transfer of shares for a price.	The differentiation from debt finance is that the provider or investor takes partial control of the entity or assets and has influence over management and a claim on any earnings.
<b>Project finance</b>	A form of debt financing where money is borrowed based on the projected cash flows and value of an asset to be created by the project.	Often applied to long-term capital infrastructure. This is distinct from balance sheet finance in that the money borrowed is directly allocated to a project, which limits the flexibility of the borrower; however, avoids the loan creating a liability on the sponsoring organisation's balance sheet.
<b>Balance sheet</b>	A form of debt finance where money is borrowed based on the	This is distinct from project finance in that the money borrowed is not allocated to a project or

<b>finance</b>	cash flows and assets of an entire organisation.	asset and the borrower will maintain greater control over expenditure.
<b>Bonds</b>	A form of debt finance where an organisation that requires money issues bonds to a public market. The bond issue will have specific characteristics such as the repayment timing and interest rate.	Bonds are distinct from other forms of debt finance in that the ownership of a bond can be traded. This creates flexibility for the providers of money and may make them a more cost-effective option for the borrower than other forms of debt finance.

In considering any of the mechanisms identified in Table 4 it is important to recognise the following.

- While revenue and resources are challenges, local governments have solid asset bases, stable revenue and low debt, which are potentially prized customer characteristics for finance providers.
- Many projects within climate change adaptation plans will be unsuitable for application of financing mechanisms due to their public good characteristics. This should not be construed as a basis for avoiding a particular expenditure. Delivery of public goods is the responsibility of governments and a basis for payment of taxation revenues by citizens.

## Insurance

Insurance provides financial compensation in the event of damages suffered due to unforeseen circumstances or events. Individuals enter into agreements (policies) with an insurer to forego small certain payments (the premium) spread out across time in return for protection from the financial implications of an instantaneous, large, uncertain event. The Insurance sector is viewed as having the potential to enable and/or facilitate adaptation to climate change for coastal communities. In the development of adaptation plans, it is important to be clear about what role the insurance sector can play and what barriers might exist (see [Role of insurance](#)).

The roles the insurance sector can play in enabling adaptation for coastal communities include:

- **Building adaptive capacity:** the insurance industry can enhance adaptive capacity through the financing it provides subsequent to an insured event.
- **Providing incentives:** appropriately designed insurance products can create incentives to engage in adaptive behaviour.
- **Influencing policy:** in the extreme, the threat of insurance withdrawal can compel risk reduction behaviour.
- **Through investment:** as the world's third largest institutional investor (trailing only mutual and pension funds) the industry can strongly influence the propensity to adaptation in institutions.

A range of factors acts to limit the potential for the insurance sector to enable adaptation. These include:

- **Standard 12 month contract terms:** There is a misalignment between contract terms and projected climate change impacts. Standard insurance contracts are for 12 months, which creates a focus on short-term risk reduction rather than the longer time periods over which climate change impacts will occur. Shifting to longer contract terms will enhance the capacity of insurance to enable adaptation.
- **Disaster response and moral hazard:** Moral hazard occurs where an assumption of Government disaster recovery funding motivates an individual to avoid costs to mitigate risks from extreme events, such as taking out insurance. Government disaster recovery schemes should be designed so as to avoid contributing to moral hazard by reducing participation in insurance and its potential to support adaptation.
- **Appropriate information for consumers:** Natural hazards, climate change and insurance are complex subjects and individual consumer's capacity to undertake appropriate risk reduction is contingent upon dealing with this complexity. By improving information and communication about hazards, climate change and risk reduction strategies such as insurance. Governments can encourage participation in appropriate insurance and other risk reduction actions, which will contribute to adaptation.
- **Promoting maladaptation:** This occurs when governments and/or insurers unintentionally promote activity that increases or fails to reduce exposure to climate change, e.g. home insurance policies that provide like-for-like replacement can promote maladaptation following a disaster event. Like-for-like replacement of a house destroyed by a natural hazard event would only create another house equally vulnerable to the next hazard event. By changing like-for-like clauses to build-back-better clauses in policies, insurance could contribute to climate change adaptation.

## Appropriate use of financial mechanisms

This document introduces a wide range of concepts and approaches that, under certain conditions, may be appropriate to enable the implementation of climate change adaptation plans by local governments. Decisions regarding the selection of a particular strategy require specialist professional advice based on the particular context and circumstances of an individual local council.

### Source material

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