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MARKET-BASED INSTRUMENTS FOR NRM CHANGE

Cap-and-trade mechanisms

Limiting, or 'capping', the use of a resource and issuing a formal 'right' to use it is a commonly used sustainability tool. Sometimes these formal rights can be traded. This 'cap-and-trade' approach can allow economic growth within sustainable limits and achieve desired environmental outcomes at the lowest cost.

What is a cap-and-trade mechanism?

'Capping' creates a 'global' limit on the right to use a natural resource. This involves dividing up the global limit, which is usually set by government, so that each resource user has a defined 'permit' or 'right' to the resource. Caps can also be placed on harmful by-products such as salt or pollution to contain them within sustainable limits.

Cap-and-trade mechanisms are quantity-based market-based instruments (MBIs), designed to work in conjunction with other regulatory mechanisms. In a capped system, no new rights can be authorised unless old rights are surrendered or cancelled simultaneously. The holders of the rights can trade them in a formal market. In these systems, new market entrants must purchase permits from existing permit holders at the market price.

The cap-and-trade approach to managing environmental pollution and sustainable natural resource use has been widely applied to industrial air pollution, such as sulphur dioxide, and to natural resources such as fisheries, water and forests. In some instances, cap-and-trade mechanisms have been applied to agricultural issues and landscapes. Examples include:

- managing irrigation water in fully allocated systems
- managing point-source water-pollution emissions, and
- managing dryland salinity and irrigation salinity.

A cap-and-trade mechanism is most likely to be effective when the cap is achievable, the issues are well known and documented, the cap is accepted by stakeholders, and monitoring and enforcement can be undertaken at low cost.

Despite the benefits of cap-and-trade mechanisms, they can be costly to establish and operate. The scale, costs and institutional arrangements required to create and run them generally preclude regional natural resource management (NRM) groups from using them directly as an NRM policy tool. However, there are a number of, as yet largely under-utilised, strategic opportunities for regional NRM groups to be involved in cap-and-trade mechanisms.



Cap-and-trade MBIs are designed to work in conjunction with other regulatory mechanisms where a 'global' limit is placed on the use of a natural resource and formal 'rights' to use the resource are issued. The rights can be traded in formal markets.



Australian Government

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Benefits and costs

There are a number of benefits of using cap-and-trade mechanisms.

- Using a global cap provides a level of certainty that environmental thresholds will not be exceeded.
- Cap-and-trade mechanisms enable economic growth without compromising environmental quality or sustainable resource yield.
- Participants in cap-and-trade markets have a continuous incentive to find the most cost-effective ways to reduce their use of the resource or reduce their discharge of a pollutant because unused rights can be sold to the market. Alternatively, firms with abatement costs higher than the market price can choose to purchase additional rights from the market as required. These 'gains from trade' result in innovation and ongoing efficiency over time.

Cap-and-trade mechanisms can be costly to establish and operate because:

- establishing and distributing initial caps can involve costly scientific (environmental equivalence measures), economic and legal investigations and processes, and
- ongoing market operation and regulation can be expensive, particularly measuring and enforcing compliance with permits and overseeing and verifying market transactions.

Steps in developing cap-and-trade mechanisms

Considerable background work and investment is required to test the real-world potential of a cap-and-trade approach to a particular issue. Typically, this task requires the following steps.

- A background investigation is needed to establish whether a cap-and-trade mechanism is the most appropriate tool for managing harmful by-products (e.g. salt or pollution) or the NRM issue in question.
- A biophysical assessment is needed to set a sustainable threshold and establish the cap. This step involves significant scientific analysis of thresholds, measurement of emissions or resource use, and consideration of ongoing reporting, monitoring and evaluation.
- Market feasibility needs to determine the potential to create permits or rights, and weigh up the benefits and risks of a trading environment. This step should determine if there would be sufficient gains from trade and if there would be sufficient volumes of trade to justify establishing a formal market.
- The market and rules surrounding ownership and trade must be defined. This step includes detailed consideration, negotiation and specification of initial rights to market participants (e.g. grandfathering existing rights, auctioning rights or a hybrid of multiple approaches).
- Promotion and communication is needed to inform potential participants of how the scheme works, why it is being introduced, how it will affect them and how they can participate.



Cap-and-trade mechanisms may create significant benefits as they can provide certainty for environmental outcomes, allow economic development within environmental constraints, and achieve environmental compliance in an efficient manner.



There are several complex steps involved in establishing cap-and-trade mechanisms.

- The market must be developed to facilitate trades as simply and easily as possible, clearly outlining to participants the mechanics of the market, market rules, participants' rights and obligations, and dispute-resolution mechanisms. The market must operate within the bounds of its design and within the bounds of regulation.
- Reporting, monitoring and evaluation involves keeping a register of permits, trades and values, as well as monitoring biophysical changes (e.g. flow rates, salinity levels, levels of pollution). Evaluation of the process involves project review, financial assessment and assessment of environmental outcomes.
- Without an effective regulatory framework combined with enforcement, the permit holders may have more to gain from cheating than by operating within their legal limits.



Key design and implementation principles

There are a number of design and implementation issues regional NRM groups and policy makers should consider.

- A cap-and-trade approach is only reasonable if a sustainable cap can be established and performance can be measured and enforced. The scale of projects can range from very large (e.g. greenhouse gases or ozone-depleting substances) to very small (e.g. pollution in a local waterway). Caps can be fixed, or declining, depending on the environmental problem.
- Creating tradeable rights must be both possible and appropriate. For example, creating tradeable pollution rights or permits is generally more difficult for diffuse-source pollution—quantifying rights at an individual or enterprise level can be difficult.
- There must be benefits from enabling trade. Benefits will be greater with many potential market participants, multiple ways of fixing the problem (e.g. reducing pollution, improving water-use efficiency) with scope for innovation, and where prices for rights or permits vary considerably.
- Cap-and-trade mechanisms should not create negative side effects. For example, some water trade could lead to the development of land that is unsuitable for irrigation, resulting in increased salinity pollution. While trade in water pollution permits may keep catchment pollution within defined limits, the location of new polluters may produce unacceptable impacts at the local level (e.g. a tributary of high natural significance).

These considerations may rule out the use of a cap-and-trade approach for addressing many NRM issues. There may also be pre-existing cap-and-trade systems that can be used to deliver environmental benefits.

Resource and skill requirements

Establishing cap-and-trade mechanisms can be complex and costly, and expert input should be sought from a number of fields including economics, the biophysical sciences, legislation, geographic information systems and information technology. The transaction and administrative costs of cap-and-trade mechanisms can also be significant, particularly the costs associated with technical assessments, monitoring and evaluation.

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Design and implementation issues may rule out cap-and-trade mechanisms for many NRM issues.



Institutional constraints may be too prohibitive for most regional NRM groups to unilaterally establish cap-and-trade mechanisms.

Trends and opportunities for NRM groups

There are a number of, as yet largely under-utilised, strategic opportunities for regional NRM groups to be involved in cap and trade mechanisms. Regional NRM groups could:

- participate in existing cap-and-trade markets to achieve environmental objectives, for example purchase water entitlements to enhance environmental flows in over-allocated catchments
- work with regulatory agencies to establish formal global caps, or
- partner with regulatory agencies to promote, monitor and evaluate market performance for environmental outcomes.

These opportunities may require regional NRM groups to partner with regulatory agencies.



There are other opportunities for regional NRM groups to participate in cap-and-trade mechanisms to achieve their environmental goals, as well as partnering with regulatory agencies to establish and run them.

Pick and plant one of our **Designer Carrots** ideas today, and you could reap the rewards tomorrow.



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