METHODS FOR VALUING MARINE ECOSYSTEM SERVICES IN THE PACIFIC

What are ecosystem services and why are they important in the Pacific?

The Pacific marine environment provides a wide range of benefits to the inhabitants of the Pacific and contributes to the well-being of hundreds of millions of people around the world. These benefits (called ecosystem services) are often not visible in business transactions or national economic accounts, and their value is usually perceived only when we lose them. Limited land resources and the dispersed and isolated nature of communities make inhabitants of Pacific island countries uniquely dependent upon the various benefits of marine ecosystems.

Assigning monetary values to the human benefits of marine ecosystems in the Pacific can highlight the importance of those ecosystems, make their benefits comparable to other goods and services, and improve their wise use and management.

How can we value marine ecosystem services in the Pacific?

The values that people place on goods and services, including those derived from the marine environment, are usually observed as prices when they are traded in markets. However, many marine ecosystem services that benefit Pacific Islanders, such as carbon sequestration, nutrient cycling, and cultural identity, are not traded in markets, and therefore alternative methods for estimating their value to society have been developed. These method can be divided into four categories: cost-based methods; production based methods; revealed preference methods; and stated preference methods.

Replacement cost: The value of a natural coral reef sea wall can be estimated as the cost of replacing it with a man-made sea wall.

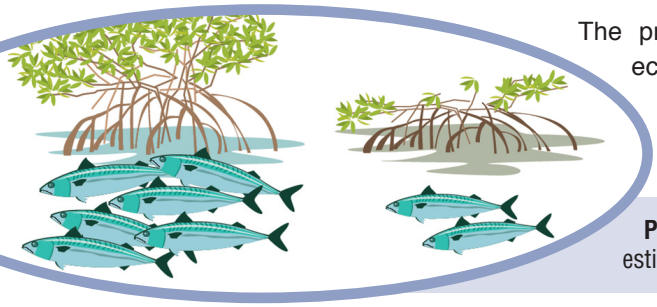
Cost based valuation methods

The replacement cost method estimates the value of ecosystem services as the cost of replacing them with alternative man-made goods and services.

Marine ecosystems in Pacific Island countries (e.g. mangroves, seagrasses, coral reefs) frequently provide protection from extreme weather events. The damage cost avoided method uses the value of property and other assets protected as a measure of the benefits provided by the ecosystem(s).

Damage cost: The monetary value of water retention by mangroves can be estimated as the avoided damage to coastal property.

Production based valuation methods



The production function method estimates the value of a non-marketed ecosystem product or service by assessing its contribution as an input to the production of a commercially marketed good. A production function describes the relationship between inputs (e.g. boats, time, mangroves) and outputs in production (e.g. fish).

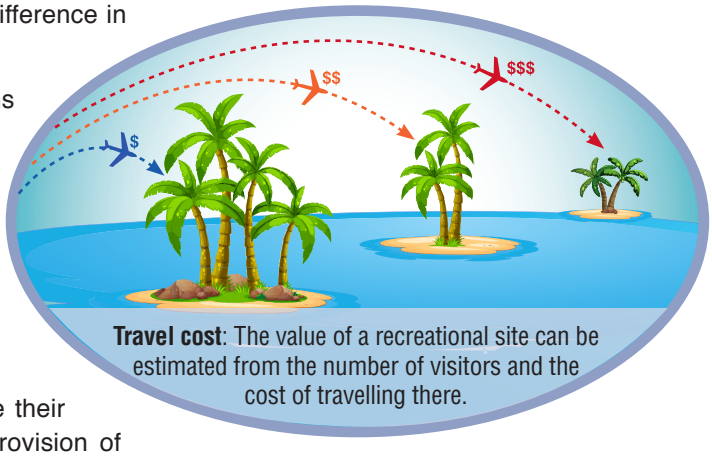
Production function approach: The fishery value of a mangrove can be calculated by estimating the lost value of the catch in a degraded or destroyed mangrove area.

Revealed preference valuation methods

Revealed preference methods are based on consumer behaviour and identify the ways in which a non-marketed good influences actual markets for some other good. Preferences and values for ecosystem services are 'revealed' in related markets.

The hedonic pricing method can be used to estimate economic values of marine ecosystem services that directly affect the price of marketed goods. For example, prices for hotel rooms or dive trips will likely be higher in areas that have healthier ecosystems. The difference in prices can reveal the value of the marine ecosystem services.

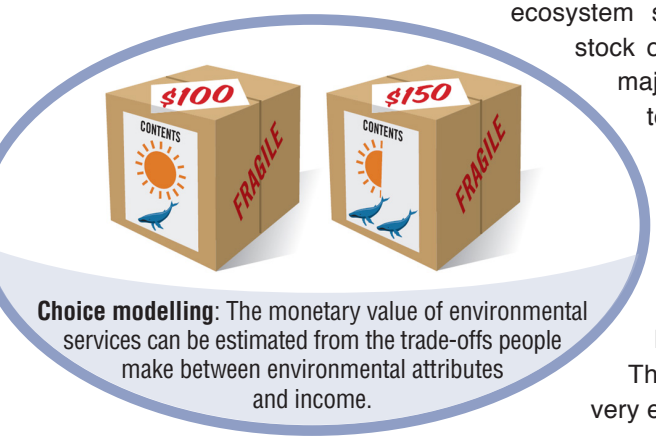
The travel cost method is used to estimate the value of ecosystems or sites that are used for recreation. The idea behind this method is that the travel expenses and time that people spend to visit a site represent the "price" of access to the site. Since travel to many marine destinations in the Pacific is relatively expensive, this method can reveal the high value of Pacific destinations.



Travel cost: The value of a recreational site can be estimated from the number of visitors and the cost of travelling there.

Stated preference methods

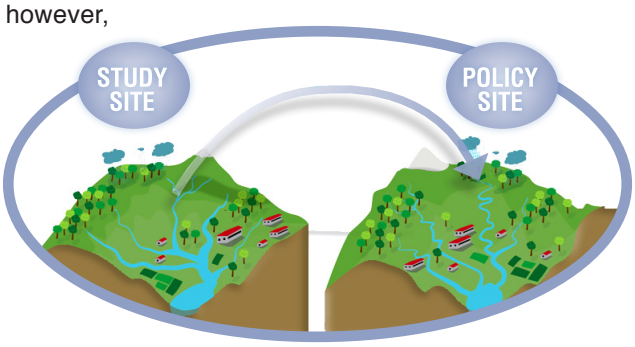
Stated preference methods use surveys to ask people to state their desire for hypothetical changes in the provision of ecosystem services, such as increasing the stock of fish in a fishing area or protecting culturally important species. A major attraction of stated preference methods is that they can be applied to estimate values for all types of ecosystem services and values, including non-use values (the values that people place on the existence and preservation of nature).



Choice modelling: The monetary value of environmental services can be estimated from the trade-offs people make between environmental attributes and income.

The contingent valuation method involves directly asking people how much they would be willing to pay for specific ecosystem services. Choice modelling or choice experiments ask people to make choices between goods with different environmental characteristics and prices. These methods are, however, very expensive to apply.

Value or benefit transfer is the procedure of estimating the value of an ecosystem service using information from existing valuation studies. Values are transferred to a 'policy site' by assigning an existing value estimate for a similar ecosystem at a 'study site'. These methods are important in the Pacific where resources for collecting and analysing data, especially on marine ecosystem services, are limited.



FURTHER READING: www.macbio-pacific.info/marine-ecosystem-service-valuation/

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MACBIO
Marine and Coastal Biodiversity Management in Pacific Island Countries

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