
HARNESSING MULTIPLE BENEFITS FROM RESILIENT MANGROVE SYSTEMS: SOCIAL VALUES FOR ECOSYSTEM SERVICES

Ecosystem services are the benefits people receive from ecosystems. The ways benefits are valued are often used to inform decisions about natural resource management. In this research we identified the social values households in the Red River Delta associate with mangroves, and particular ecosystem service providing places within the system.

Working in Thuy Truong in 2018-2019 we sought to understand if household groups with different capacities to adapt to change in ecosystem service supply valued mangroves differently. This information can facilitate inclusive decision making about mangrove management.

Mangrove ecosystem services

Twelve ecosystem services were evaluated using participatory GIS, household surveys and interviews.

Material services were food, firewood, and medicine, particularly honey. **Non-material** services were opportunities to relax with friends and family, to learn and share knowledge about the mangrove system, and identity affirming benefits. **Regulating** services were sediment accumulation, protection from extreme weather events and erosion, provision of habitat for species valued for purposes other than food, and regulation of water and air quality, and weather patterns.

Biophysical and economic approaches are often used to represent the environmental and monetary value of ecosystems and their benefits. Social valuation is less common, but equally important because it reveals internal process like moral obligation, self-interest and emotion, and factors specific to particular benefits, socio-economic contexts and places. These processes and factors ultimately determine the value of ecosystems to different people.



Collecting activities (above) provide important subsistence and income benefits to some households. Others rely heavily on purchased food for nutrition and cost-saving benefits. Food benefits were less important to households that could obtain similar benefits from ponds.



Involvement in aquaculture increased the value of forest adjacent to ponds for regulating storm impacts and providing habitat to birds, and seedstock.

Adaptive capacity

The ability to adapt to changes in the supply of ecosystem services can reduce associated negative impacts on livelihoods and wellbeing, and deliver additional benefits if opportunities can be exploited. However, households do not all have the same capacity to adapt. This research quantified household adaptive capacity using livelihood asset profiles, and examined how they have been used to adapt to changes in the coastal landscape since the 1980s. Three household groups were identified:

Flexible households have varying access to physical and financial assets. Many have good learning capabilities, flexibility and describe taking control of life outcomes. These households tend to exercise their agency to diversify to progress, or maintain livelihoods and household stability.

Accumulating households typically have good levels of agency, learning capabilities, social networks, and access to financial and physical assets. They maintain back-up income sources, but have largely prospered by specialising in aquaculture and associated industry, which may leave them vulnerable to sector specific shocks.

Coping households generally have a weak asset base, learning capabilities and social support because of low household occupancy and/or limited extended networks. They tend to exert little control over their lives, often because of failing health or caring commitments. These households survive primarily on waged labour, remittances, and/or state assistance.

Key findings

Protection from storms was the ecosystem service valued most by all groups because of security benefits to the sea dike, lives and assets, and freedom from fear and worry. Food, sediment accumulation and habitat provisioning were also of high value to all. The provision of places for learning, water quality regulation, spiritual association and the fuel wood were of least importance.

When preference alone was considered, only food was more or less important to different groups, but valued locations revealed differences for more services. Differences were linked to a combination of environmental knowledge, possession and proximity of assets, and factors like sense of identity and self-determination.

Interlinked habitats and structures were as important as mangrove trees for service provision.



Food collecting places valued by accumulating households were larger mangrove channels and surrounding trees easily accessible by those with equipment and the knowledge needed to find and catch fish and shrimp. Coping households favoured smaller easily accessible channels. Many described losing the physical ability to collect in dense forest, at night, or lacking equipment and knowledge to find familiar species displaced by land elevation due to mangrove growth. Flexible households prioritised the main sluice channel and surrounding forest, often utilising assets to fish where water levels are more optimal and nets less likely to be snagged, and drawing on knowledge and determination to access areas inaccessible to other households (above).

Policy implications

Ability to take advantage of opportunities associated with ecosystem change is afforded to households endowed with adaptive capacities, and enables the adoption of relatively resilient livelihood strategies. Others become disadvantaged because of benefit reduction or loss. How benefit reduction or gain influences the current and future value placed on mangroves locally is an important policy consideration.

Recognition of plural social values in government policy has the potential to foster system sustainability. The value placed on ecosystem services is influenced by maintenance of benefits and influences stewardship at the local level. For instance, households described how propaganda encouraging mangrove planting and conservation became meaningful only when benefits were actually received.

Maps showing economic and environmental ecosystem service valuations are important regulatory tools for managing ecosystem benefits. Social value maps are a complementary approach that can reveal the importance of ecosystem services to different people, even when only minor differences in preference for individual services are recorded. Integrated spatial assessments can facilitate ecosystem management for livelihoods based on multiple dimensions of value, in addition to economic development and environmental protection, and thus compliance with legislation (e.g. the Coastal Forests Decree and Payments for Ecosystem Services regulations).

Maps express particular views at particular points in time and identify valuable areas that are embedded within broader natural, social and economic systems. Incorporating methods within social mapping approaches that elaborate these points, and identify who and what viewpoints they exclude is critical to their success as policy tools.

This work was funded by:



Participating institutions in Vietnam and the UK:



For further information about the project, please contact:

UK: Dr Claire Quinn: c.h.quinn@leeds.ac.uk

Vietnam: Dr Hue Thi van Le: thivanhue@gmail.com

