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Ecosystem Services Approach: Critical for Community Livelihoods

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***Abstract*: Ecosystem services that nature provides are of great concerns to human being for their livelihoods and well-being. However, anthropogenic and climatic stressors are posing great threat to these common goods and services, where unstainable harvesting is considered as one of the key drivers. With primary research in mid hills of Nepal, this article examines the importance of local ownerships and incentive mechanism to ensure sustainable supply of ecosystem services (ES) to communities with its national importance. This article argues that the ES approach ensuring local ownerships and incentive mechanism is a promising one of the possible instruments to manage CGSs in Nepal and in Himalayas. If designed and implemented appropriately, this will achieve both purposes of enhancing local livelihoods and reducing negative impacts on common and ensure conservation ethics.**

***Keywords*: Livelihoods, Incentive, Ownership, Ecosystem services, Nepal.**

1. Introduction

Ecosystem goods and services (EGS)that nature provides are of great concerns for community livelihoods and wellbeing. These ecosystem services are also 'common resources'', as a reason, there is chance of free riding leading to over exploitation. "Common resources," are of various nature, including pastures and grassland, shrubland, forests, ponds, rivers, lakes and oceans (Ostrom, 1990). Policy makers, local communities and natural resource managers are struggling with the proper management of these common resources, providing support to local livelihoods while reducing negative impacts on them. (Lu *et al*., 2012). The "tragedy of the commons", as described by Hardin in 1968, is seen in many cases, and reality for people whose subsistence livelihoods predominantly depend on the availability of these common resources. (Bezlepkina et al, 2014). While Hardin's theory on ''tragedy of commons' is challenged by scholars, including Ostrom (1990), Agrawal (2001) through an argument that the tragedy situation can be managed and rectified through state control or incentivizing local communities with sharing of benefits. Most importantly, traditional knowledge, local institutions and community-based actions play important role to manage common goods and services, therefore, they need to be engaged and incentivized for sustainable supply of ecosystem services. (Agrawal and Chhatre, 2006; Dressler *et al*., 2010, Ostrom, 2009, Aryal et al, 2018).

2. Materials, Methods and Study Area

The study is based on participatory research tools and qualitative information. The study follows a) literature review, b) review of policies and secondary literature, and c) stakeholders' interviews. Interviews were conducted with the key informants, government actors and representatives from the intermediary organizations. The assessment from the research site is discussed within theoretical perspectives of common goods and services, and provided possible learning for research specific sites. (Fig. 1)

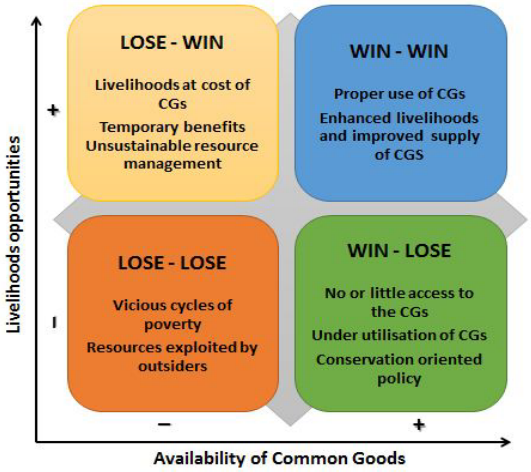

Fig. 1. Linkages among common goods and livelihood opportunities and best possible options for landscape management

3. Discussions

A. Livelihoods and Ecosystem Services

With increasing human population, there is significant demand increase in ecosystem services. Food and Agriculture Organizations of the United Nations (FAO) estimated that demand for water services will be doubled in coming thirty years, whereas timber demand will double in coming fifty years (FAO, 2019). While demand for ecosystem services is

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increasing, there is a significant change occurred in land use impacting on supply of ecosystem services. (Bhatta et al, 2017; Baral *et al*., 2014; Carpenter *et al*., 2009; Wang *et al*., 2012; Zhen *et al*., 2014 , (Inge *et al*., 2013; MEA, 2005; Wunder *et al*., 2008). CGs are particularly important in subsistence economies, where they provide a safety net for many millions of rural people. However, integrating livelihoods and CGs is a difficult undertaking and is generally not balanced in many developing countries. An ES approach may provide 'win-win' outcomes, where livelihood opportunities and CGs are harmonized

In recent years, international communities and governments made an urgent call for action to manage common resources. After 2005 when Millennium Ecosystems Assessment (MEA) was carried out, there is a significant global awareness and lobby around the proper management of common goods for continuous supply of ecosystem services for human wellbeing, resulted positive outcomes at the global and national level. The Economics of Ecosystem and Biodiversity (TEEB) highlights the value of common ecosystem services, which contributed towards positive result at the national policy priority and action plans (Costanza *et al*., 2014; TEEB, 2010). Therefore, ecosystem approach has been well established and taken into consideration for proper management of ecosystem goods and services (Villa *et al*., 2014).

B. Ecosystem Service Approach for Common Property Management

The value of ecosystem services is hardly taken into account in land use planning process (Bateman *et al*., 2013). At the same time, ecosystem goods and services are under threat and continuously degrading with climatic and anthropogenic stresses. Therefore, there is a need to have clear understanding on value of ecosystem services to community livelihoods as described by the Millenium Ecosystem Assessment (MEA, 2005). Managing CGs over space and time in human-dominated landscapes where there are often competing demands for different goods and services is challenging Felipe-Lucia *et al*, 2014 strongly argued that management of common goods and services over space and time is challenging with the increased demand for sustaining livelihoods, therefore, proper land use planning needs to consider trad offs and coherence among different ecosystem goods and services. At the same time, trade-offs among different ecosystem services and their interdependency are poorly understood at the landscape level (Carpenter *et al*., 2009).

C. Science and Policy Interface in Ecosystem Goods and Services

Despite a global debate and awareness has been increased on ecosystem goods and services, there is still a limited space prioritized within global research and national policy priority There is still a gap on scientific knowledge and policy process related to ecosystem services (Carpenter *et al*., 2009), therefore, these needs be a priority. Understanding poverty nexus, land degradation and ecosystem services, especially in developing countries, needs a better understanding (Nesheim *et al*., 2014) for the sustainable supply of ecosystem services.

Despite limited focus in scientific research and policy domain, ecosystem service-based approach has gained momentum in recent years. A number of bilateral and multilateral agencies, such as, the World Bank, the Inter-American Development Bank, and the World Business Council for Sustainable Development (WBCSD), included ecosystem in their agenda for sustainable development. While scientists and practitioners agreeing on the need of integrated multidisciplinary research, this is equally important to understand local and customary practices on managing CG and ES in order to support policy makers for wider policy implications, and implementation at landscape level. This is also equally important to leverage transboundary cooperation in managing landscape resources, as number of ES are of transboundary nature.

D. Sustainable Supply of Ecosystem Services: Beyond the Science Thinking

Communication is considered as an effective but challenging to ensure mainstreaming the ecosystem service approach in development planning. A regular interface and interaction among scientists, practitioners and policymakers provide for improved communication among them (Holt and Hattam, 2009) leading to proper management of ecosystem goods and services. Multi-stakeholder forums and discussions among experts can create a context conducive to better management of ecosystem services, supporting transfer of technologies and management tools. However, social acceptance to these technologies and management tools is the primary concern in translating policies into practice. More importantly, which often ignored, issue is to engage private sector entities in ecosystem services. The private sector investment in common services is taken not only as a challenge but also discussed as ownership issue. The conducive policy domain that encourages private sector investment can be seen as pre condition in successful private sector role.

4. Conclusion and The Way Forward

Ecosystem services are part and parcel of local livelihoods, and ecosystem service approach provides an opportunity for land use planning to ensure sustainable supply of these resources. However, the improved livelihoods through sustainable supply of ecosystem services needs a vital policy support. The important issue is to assess value of these services and provide equal benefits from these resources. Although valuation of these ecosystem services is important for a healthy landscape, ensuring interlinkages with local livelihoods is equally challenging in countries like Nepal. Valuing ecosystem services alone does not provide a solution: analyses are required that compare the costs of provision of different services and the benefits of enhanced supply for economic development and human wellbeing in order to properly integrate ecosystem services with local livelihoods into land use planning and decision-making process.

In order to integrate traditional and indigenous knowledge into global ES debate and discussions, there is a further need to

increase participation from developing countries, and indigenous communities in decision making process.

More important is to further integrate ecosystem science with social science to ensure benefits at large to the communities dependent upon these resources. Therefore, the concept of incentivizing communities for ecosystem services has emerged ensuring both social and ecosystem dynamics.

References

[1] Agrawal, A., 2001. Common Property Institutions and Sustainable Governance of Resources. World Dev. 29, 1649–1672.

[2] Agrawal, A., Chhatre, A., 2006. Explaining success on the commons: Community Forest governance in the Indian Himalaya. World Dev. 34, 149–166.

[3] Aryal, K., Bhatta, L. D., Thapa, P. S., Ranabhat, S., Neupane, N., Joshi, J., Shrestha, S., Shrestha, A.B., (2018), Payment for ecosystem services: could it be sustainable financing mechanism for watershed services in Nepal?. Green Finance. 1(3): 221–236.

[4] Baral, H., Keenan, R.J., Sharma, S.K., Stork, N.E., Kasel, S., 2014. Economic evaluation of ecosystem goods and services under different landscape management scenarios. Land Use Policy 39, 54–64.

[5] Bateman, I.J., Harwood, A.R., Mace, G.M., Watson, R.T., Abson, D.J., Andrews, B., Binner, A., Crowe, A., Day, B.H., Dugdale, S., Fezzi, C., Foden, J., Hadley, D., Haines-Young, R., Hulme, M., Kontoleon, A., Lovett, A. a, Munday, P., Pascual, U., Paterson, J., Perino, G., Sen, A., Siriwardena, G., van Soest, D., Termansen, M., 2013. Bringing ecosystem services into economic decision-making: land use in the United Kingdom. Science 341, 45–50.

[6] Carpenter, S.R., Mooney, H. a, Agard, J., Capistrano, D., Defries, R.S., Díaz, S., Dietz, T., Duraiappah, A.K., Oteng-Yeboah, A., Pereira, H.M., Perrings, C., Reid, W. V, Sarukhan, J., Scholes, R.J., Whyte, A., 2009. Science for managing ecosystem services: Beyond the Millennium Ecosystem Assessment. Proc. Natl. Acad. Sci. U. S. A. 106, 1305–1312.

[7] Costanza, R., de Groot, R., Sutton, P., van der Ploeg, S., Anderson, S.J., Kubiszewski, I., Farber, S., Turner, R.K., 2014. Changes in the global value of ecosystem services. Glob. Environ. Chang. 26, 152–158.

[8] Dressler, W., Büscher, B., Schoon, M., Brockington, D., Hayes, T., Kull, C. a., Mccarthy, J., Shrestha, K., 2010. From hope to crisis and back again? A critical history of the global CBNRM narrative. Environ. Conserv. 37, 5–15.

[9] Hardin, G. (1968). The tragedy of the commons. Science, 162(3859), 1243–1248.

[10] Hecht, S., 2010. The new rurality: Globalization, peasants and the paradoxes of landscapes. Land Use Policy 27, 161–169.

[11] Holt, A.R., Hattam, C., 2009. Capitalizing on nature: how to implement an ecosystem approach. Biol. Lett. 5, 580–2.

[12] Inge, L., Marije, S., Leo, D.N., Steven, B., Jan, S., Joris, A., Roy, B., 2013. Land Use Policy Developing a value function for nature development and land use policy in. Land Use Policy 30, 549–559.

[13] Lü, Y., Fu, B., Feng, X., Zeng, Y., Liu, Y., Chang, R., Sun, G., Wu, B., 2012. A policy-driven large scale ecological restoration: quantifying ecosystem services changes in the Loess Plateau of China. PLoS One 7, e31782.

[14] María R. Felipe-Lucia, F.A.C. and E.M.B., 2014. Interactions among Ecosystem Services across Land Uses in a Floodplain Agroecosystem. Ecol. Soc. 19, 20.

[15] Millennium Ecosystem Assessment (MEA), 2005. Ecosystems and Human Well- Being: Synthesis. Island Press, Washington, DC.

[16] Nesheim, I., Reidsma, P., Bezlepkina, I., Verburg, R., Abdeladhim, M.A., Bursztyn, M., Chen, L., Cissé, Y., Feng, S., Gicheru, P., Jochen König, H., Novira, N., Purushothaman, S., Rodrigues-Filho, S., Sghaier, M., 2014. Causal chains, policy tradeoffs and sustainability: Analysing land (mis)use in seven countries in the South. Land Use Policy 37, 60–70.

[17] Ostrom, E., 2009. A general framework for analyzing sustainability of social-ecological systems. Science 325, 419–22.

[18] Ostrom, E., 1990. Governing the commons: the evolution of institutions for collective action. Cambridge; New York: Cambridge University Press.

[19] Pagiola, S., 2008. Payments for environmental services in Costa Rica. Ecol. Econ. 65, 712–724.

[20] Porras, I., Barton, D.N., Chacón-cascante, A., Miranda, M., 2013. Learning from 20 years of Payments for Ecosystem Services in Costa Rica. International Institute for Environment and Development, London.

[21] Robalino, J., Pfaff, A., 2013. Eco payments and Deforestation in Costa Rica: A Nationwide Analysis of PSA's Initial Years. Land Econ. 89, 432–448.

[22] Sunderlin, W.D., Angelsen, A., Belcher, B., Burgers, P., Nasi, R., Santoso, L., Wunder, S., 2005. Livelihoods, forests, and conservation in developing countries: An Overview. World Dev. 33, 1383–1402.

[23] TEEB, 2010. Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB. Earthscan, London and Washington.

[24] Villa, F., Voigt, B., Erickson, J.D., 2014. New perspectives in ecosystem services science as instruments to understand environmental securities New perspectives in ecosystem services science as instruments to understand environmental securities. Philos. Trans. R. Soc. B 369, 20120286.

[25] Wang, J., Chen, Y., Shao, X., Zhang, Y., Cao, Y., 2012. Land-use changes and policy dimension driving forces in China: Present, trend and future. Land Use Policy 29, 737–749.

[26] Wunder, S., Engel, S., Pagiola, S., 2008. Taking stock: A comparative analysis of payments for environmental services programs in developed and developing countries. Ecol. Econ. 65, 834–852.

[27] Zhen, N., Fu, B., Lü, Y., Zheng, Z., 2014. Changes of livelihood due to land use shifts: A case study of Yanchang County in the Loess Plateau of China. Land Use Policy 40, 28–35.