

## The Vicious and Virtuous Cycles in Ecosystem Services and Valuation

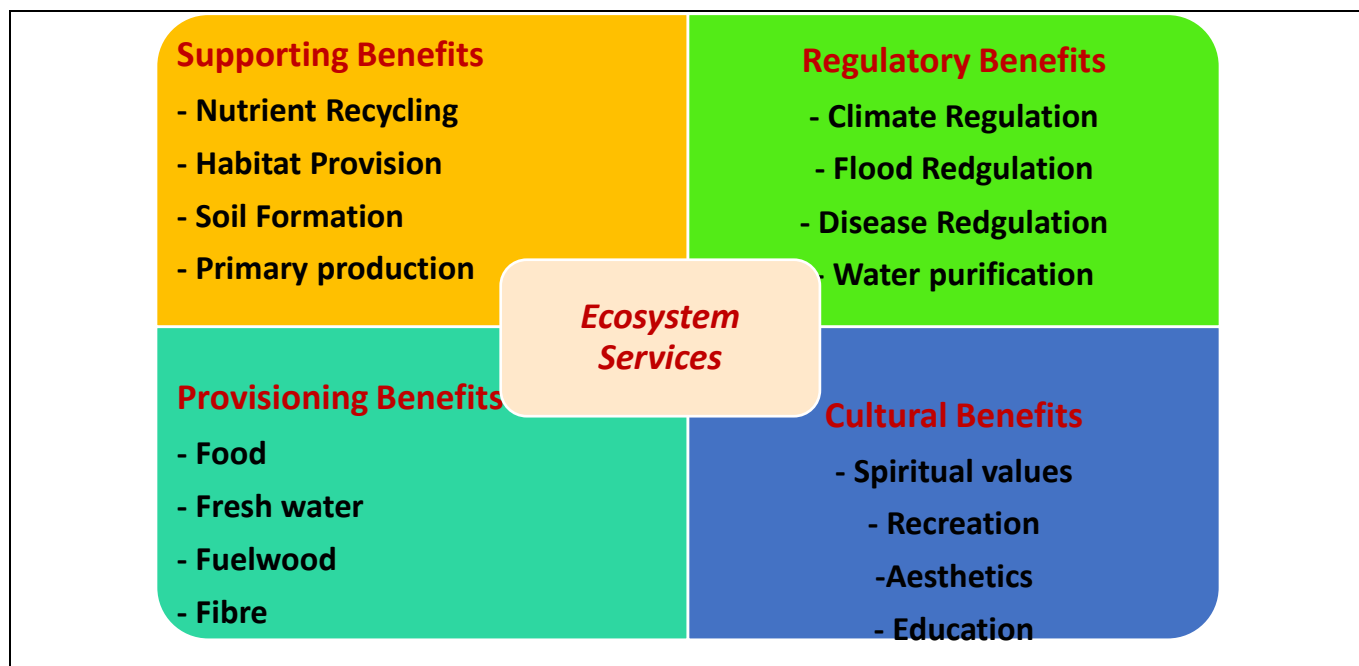
As we continue to appreciate the Natural Capital Accounting (NCA) approach in natural resource management, in this article we explore the interdependence between ecosystems, the services they provide and human wellbeing. We ground this in a common management approach, systems thinking.

Systems thinking is an approach to integration postulates that parts of a system will act differently when isolated from the system's environment or other parts of the system. This, therefore, implies that components may tend to act in such a way that benefits them and not the system as a whole. The impact of this is that in most cases this undermines the entire system.

Taking an example of the ecosystems, humans are as important to the ecosystem as other biophysical components such as forests, wetlands, water resources, fisheries, soil, air, etc. There is a direct relationship between human wellbeing and ecosystems.

Humans have direct impacts both positive and negative on the health and functioning of ecosystems. Positively, humans are pollination agents, breathe out carbon dioxide vital for photosynthesis, their excreta can be used as organic matter, sometimes protectors of these ecosystems via in-situ and ex-situ conservation, etc.

At the same time, functioning ecosystems provide a wide array of benefits (goods and services) that enhance human wellbeing. These can be categorised as supporting benefits, regulatory benefits, provisioning benefits and cultural benefits. *See the figure below.*



Most of the above benefits from ecosystems are undervalued hence this creates a lower appreciation for such resources leading to even higher impacts on them. The increased human impacts through

activities that introduce pollutants to air, water, soil, etc. as well as deforestation, overfishing, mining, swamp reclamation and others that have led to destruction of entire ecosystems. This is mainly because humans seek to satiate short-term needs. The destruction of these ecosystems undermines their functionality to produce these services creating challenges for human wellbeing.

The result is a vicious cycle in which the undervaluation of ecosystems and the services they provide creates a feedback loop that reinforces the degradation of these ecosystems by humans ultimately decreasing the benefits.

On the other hand, if we holistically understand the value of ecosystems, we can incorporate this value into the fabric socioeconomic lives. This certainly will decrease the negative impacts of our activities on the natural capital. This as well will create a feedback loop that leads to positive outcomes, a virtuous cycle. *See the illustrations below.*



The process of ecosystem valuation as exemplified by Natural Capital Accounting is a key ingredient in catalysing this virtuous cycle. By fully understanding the stocks and flows of environmental resources, planners and decision-makers will then be able to make decisions that foster sustainable livelihoods of communities. This is because such decisions will then be based on information that considers the use (direct, indirect and optional values) and non-use (bequest, altruist and existence) values of ecosystems all of which are vital for human wellbeing both presently and in the future.