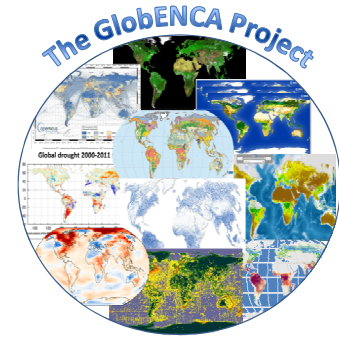


TOWARDS ECOLOGICAL STEWARDSHIP BASED ON ECOSYSTEM NATURAL CAPITAL ACCOUNTS

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Science, the media and politicians are daily reminders of the importance of global challenges in climate, biodiversity and natural resources. The probability of meeting in time the vital targets stated by the UN Conventions on climate change, biodiversity and desertification and the UN Sustainable Development Goals are low. Conventional policies deliver limited results which are not of the magnitude required by the situation. The main reason is that the economy is not paying the complete cost of its activity, in particular costs related to ecosystem overuse and degradation. Therefore, we are not paying the full price of what we consume. The consequence is that consumption is distorted towards excessive use of the ecosystem resource for our benefit at the expense of ecosystem own reproductive functions. It compromises sustainable provision of ecosystems goods and services in the longer term and other nature's vital functions.

Ecosystem degradation impacts on biodiversity, desertification, food security, climate change and adaptation, water regulation, exposure to natural risks, health and the sustainability of ecosystem services. Associated socio-economic issues relate to the accountability of economic sectors and agents to their impacts on ecosystems. It includes the way to count for ecosystem degradation and related monetary costs (Depreciation, Restoration, Avoidance, Offset...) in accounting standards from which they are at present absent.

Ecosystem impacts are de facto hidden ecological debts. When the economy develops at the expense of ecosystems, ecosystem impacts transform into financial risks, if not in the short run, certainly in the longer run. Risks for financial stability can be classified into three categories¹: **physical risks** (property and trade damage: asset losses and loss of investor confidence, increased cost of credit), **liability risks** (compensation for victims: fines, damages, insurance indemnities and potential risk for the institutions that financed the activities complained of) and

transition risks (effects of changes in policies, technology and physical risks on asset values: disruption of business models, disordered sector revaluations).

Conventional policies must be supplemented by a broader commitment of all, economic actors and citizens. For that, it is needed to know and measure what is the worth of nature and our own accountability regarding its maintenance, what is the size of our impacts. The key points here are the **measurement and accounting of the ecosystem intrinsic value** that we want to conserve. Market prices result from consensus established during transactions. Intrinsic values require as well a consensus on a price-equivalent based on a set of criteria to be considered and the way to combine them. While utilitarian values in money express the point of view of the economy, intrinsic values are established from the standpoint of the ecosystem.

The CBD Technical Series report No. 77 of 2014 entitled "**Ecosystem Natural Capital Accounts: A Quick Start Package for implementing Aichi Biodiversity Target 2 on Integration of Biodiversity Values in National Accounting Systems in the context of the SEEA Experimental Ecosystem Accounts**" (ENCA-QSP) proposes a new metrics in the form of a composite currency to measure ecosystem intrinsic values. It is called Ecosystem Capability Unit (ECU). **Capability** refers to the potential of healthy ecosystems to provide goods and services in a sustainable way. It is measured by combining quantitative measurements and qualitative indexes on the three components of the ENCA model: bio-carbon, water and systems integrity and biodiversity. The **ECU composite currency** allows measuring ecosystems and their changes in holistic way. It is possible with ECU to express with one single number the result of opposite variations of an ecosystem's component. For example, if increase of bio-carbon leads to negative change of water or/and biodiversity, the ECU result will tell if the ecosystem taken as a whole has degraded or enhanced or kept stable. Accounts in ECU can be established for all kinds of terrestrial ecosystems, natural, agricultural, urban as well as for the ocean and the atmosphere. They are based on geographical data and can be compiled at any scale, from global to national and local levels and for the enterprises.

¹ Mark Carney, Governor of the Bank of England: "*Breaking the tragedy of the horizon - climate change and financial stability*", 29 September 2015, <https://www.bankofengland.co.uk/speech/2015/breaking-the-tragedy-of-the-horizon-climate-change-and-financial-stability>.

Once measured, ecosystem intrinsic value has to be integrated in an appropriate way into the accounting standards of companies (financial accounts), governments (public budgets and accounts) and countries (national accounts) in order to assess performances and liabilities, and the corresponding ecological debts. Assessments will be done by the actors themselves as a basis for estimating monetary costs of impacts' remediation, offset or avoidance and to calculate the full cost of the commodities that they produce. They will be carried out as well by those who sustain enterprises' activity by providing funds and public services. It includes shareholders and investment funds, banks, insurances, and governments which all have to know the financial risks taken by activities impacting the environment, as well as the financial rating agencies eager to integrating the environmental factor in their diagnoses of sovereign and private debts.

Bookkeeping for ecosystem degradation will support policies to halt or mitigate ecosystem degradation and policies to support ecosystem conservation and enhancement.

Policies to halt or mitigate ecosystem degradation which will benefit from bookkeeping ecosystem degradation are firstly conventional policies of command and control, fiscal policy (green taxes). Novel or emerging policies involving actors relate the extension of the polluter pays principle to ecosystem degradation, to green finance, to sovereign and private financial risks rating and Integration of Environmental, Social and Governances (ESG) risks factors (OECD) in investment decision, to the estimation of commodities full price by internalising ecosystem depreciation, to the development of offset payments leading to offset banking systems, to public procurements (conditionality to no degradation), and to Private-Public Partnerships.

In the same way, **policies to support ecosystem conservation and enhancement** encompass as well traditional policies such as public investments, and subsidies to programmes (conservation, reforestation, organic agriculture, water treatment...) as well as novel or emerging policies such as green finance, offset payments and banking to support conservation policies and the development and management of protected areas, public procurements (priority given to sustainable products), and Private-Public Partnerships.

GlobENCA is a project to implement a first generation of ecosystem natural capital accounts at the global scale. It matches the challenges put forward by the global market and would supplement the IPCC carbon budgets with variables on water, ecosystem functions and biodiversity. GlobENCA would help framing global policies and boost up

their implementation with relevant, comparable, and verifiable and updated data. Such information is needed for better coordination of the 3 Rio Conventions and for many of the Sustainable Development Goals. Not only SDG 15.9 states that *"By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts"* but several other goals refer to variables contained in the ENCA framework. The most explicit on is Goal 15 to *"Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss"*. ENCA is relevant to other goals as well, for example Goal 2 *"Zero hunger"* (sustainable agriculture), Goal 3 *"Health"* (air and water related diseases), Goal 6 *"Water"* (access to water, quality of water bodies), Goal 12 *"Sustainable production and consumption"* (material balances of biocarbone and water and corresponding footprints), and *"Climate change"* (disasters' impacts).

Regarding countries GlobENCA will provide contextual information and first assessments of ecosystem state and trends. In addition, the GlobENCA information system will be an **open platform** for access to data and development of applications. The information system will be prone at being upgraded with more detailed data for countries willing to endeavour producing their own ENCA for their own requirements. Other economic actors will benefit of similar opportunity. In return, national and local application will contribute improving the accuracy of the global system.

Because of the fast progress of computing facilities and the development of databases addressing many of the variables needed, the production of a first GlobENCA can be undertaken now. Best available data and statistics will be downloaded from international or regional websites. They will be assimilated into a 1 km x 1 km grid allowing the production of thematic maps of the various variables of the biocarbone, water and functional infrastructure accounts. Data will be integrated according to the ENCA-QSP methodology. Ecosystem total capability will be measured at several dates in order to assess ecosystem stability, degradation or enhancement. Synthesis will be presented by countries, administrative regions, river catchments, and geographical areas such as mountains and coastal zones.

It is still time to present GlobENCA at the CBD COP 15, in November 2020 in Beijing.

<http://www.ecosystemaccounting.net/>