FACULTY OF
BIOSCIENCE ENGINEERING

NATURAL CAPITAL RESEARCH PLATFORM

GHENT
UNIVERSITY

We develop innovative, evidence-based and user-driven approaches to better map, understand, manage and value the world's natural capital.

A CALL FOR ACTION

Natural capital consists of goods or services that originate in ecosystems. In spite of the fact that natural capital lies at the heart of our economy and is a cornerstone for human well-being, its stocks are being depleted. Big challenges lie ahead: the global population is expected to rise to approximately 10 billion people by the middle of the 21st century and the global climate is predicted to change to a degree that ecosystems—and the services they deliver—will be threatened.

Safeguarding and restoring natural capital for future generations therefore calls for U(r)Gent action. It is encouraging to notice that policy makers at all levels, from local to global, are becoming more and more aware of the urgency. This has resulted in an increasing number of policy initiatives (Covenant of Mayors for Climate & Energy, EU 2020 Biodiversity Strategy, COP 21 Paris Climate Conference Agreement, etc.).

The success of these policies depends on the incorporation of scientific knowledge. The recently established Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) aims to bridge the gap that exists between science and policy.

However, platforms such as IPBES rely on the efforts of scientists who work together to provide the most up-to-date information and insights. Indeed, truly integrated, interdisciplinary approaches are needed, given the holistic nature and complexity of natural capital.

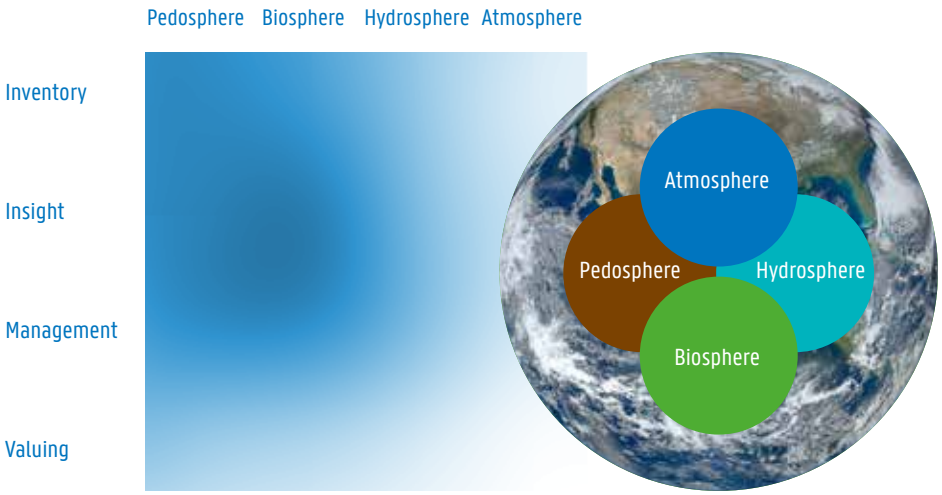
To help resolve the huge challenges that lie ahead, the Natural Capital Platform at the Ghent University Faculty of Bioscience Engineering has committed to developing innovative, evidence-based and user-driven approaches for better mapping, understanding, managing and valuing the world's natural capital.

We interact with stakeholders worldwide to research, raise awareness among the public and develop independent and critical views on current issues related to natural capital.

OUR EXPERTISE

The platform brings together 20 professors and over 100 researchers. Their research covers all ecosystem components and the interactions between them. The platform focuses on:

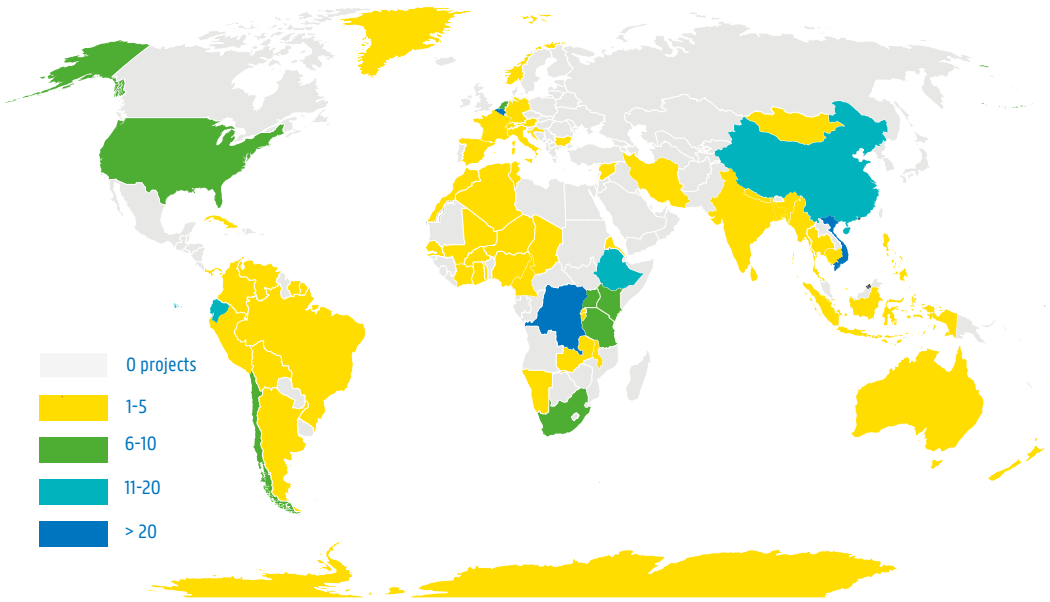
- gaining mechanistic insight into the processes underlying the provision of goods and services by ecosystems;
- quantifying, mapping and valuing natural capital;
- designing optimal management solutions.



The distribution of the Natural Capital Platform's expertise. Darker shading indicates a larger research capacity is available to the platform. Note that all platform members integrate several research domains and natural resources in their research.

NATIONAL AND INTERNATIONAL OUTREACH

The platform has both a national and international focus, pursuing no less than 450 projects over the past 10 years.



Overview of the geographical distribution of Natural Capital Platform research projects over the past 10 years. Not indicated are the 22 projects that covered multiple European countries.

FUNCTIONAL, HIGH-TECH AND INNOVATIVE ANALYTICAL SOLUTIONS

The platform harbours a wide array of instruments, methods, models and (web-based) decision support systems.

Laboratory equipment measures the physico-chemical and (micro-) biological properties of air, water and soil, reveals plant morphology and composition, and tests the mechanical behaviour of vegetative materials.

Biogeochemical fluxes are measured using high-tech sensors, stable and radioisotope analytical tools, or are simulated in a wind tunnel.

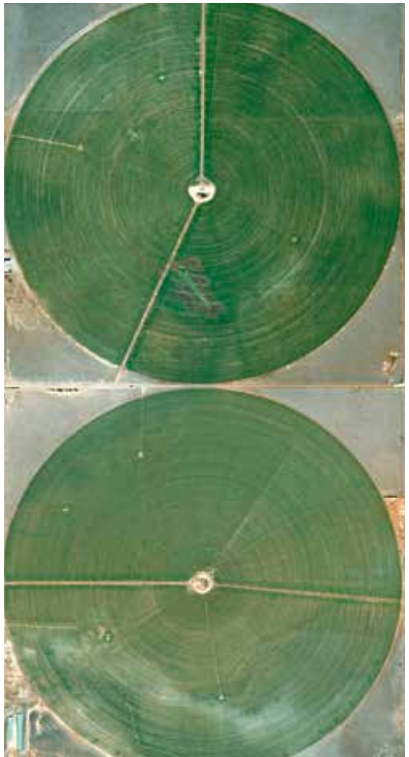
Computed tomography and (image) processing techniques applied to sensors mounted to (un-)manned vehicles and satellites provide 2-D and 3-D images on anything from a nano to a global scale.

Advanced mathematical and statistical data assimilation and envelopment techniques are used in soil-plant-water-atmosphere modelling, natural capital valuations and web-based decision-support tools.

STRATEGIC OBJECTIVES

Because of its interdisciplinary structure, its elaborate range of instruments and methods, and its national and international focus, the Natural Capital Platform is the ideal partner to help resolve the societal challenges relating to natural capital. The free and impartial position of the platform allows out-of-the-box thinking.

From this position, the platform may act as a catalyst to break short-sighted sectorial judgements and move towards integrated ecosystem thinking. Providing both educational and research services, the platform is strongly interwoven with all major pillars of modern society, hence operating as a major source of information on natural capital. This leads to the following four strategic objectives.



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1. RAISE AWARENESS

There is a growing consensus that many natural capital assets such as biodiversity or soil and water resources are limited and vulnerable to depletion or degradation. However, this information does not necessarily influence individual stakeholders and the decisions they make.

Therefore, the first target for the platform is to **raise awareness about the central role of natural capital**. This requires a carefully considered communication strategy that matches appropriate communication tools with the information demands of the different stakeholders.

While scientific stakeholders are informed by high-quality research results in scientific journals, policy makers and managers rely on other types of information such as best-practice guides and scenarios provided by alternative outlets such as audio-visual material, maps, forum papers and online data tools.

Our communication will also need to consider regional differences in the perspectives of stakeholders; the mind-set of people operating in Belgium is likely to differ from that of people in developing countries who work in very different socio-economic realities.

In summary, the platform aims to develop innovative ways to present data and knowledge to properly inform various stakeholders working in different domains and contexts.

2. PERFORM HIGH-QUALITY INTEGRATED RESEARCH

The second target of the Natural Capital Platform is to be recognised for **high-quality integrated research** related to all forms and aspects of natural capital. The research initiated by the platform will move beyond simple collaborations

to integrate data, methodologies and perspectives from specialists participating in projects.

Multidisciplinary teams will assemble and create a common language and framework for discovery and innovation in which ecosystem service and life cycle-analysis frameworks are used for the valuation of the benefits we receive from our environment. Such valuation will be done in economic, biophysical, or social terms.

Moreover, aside from classic experimental set-ups, more cost-efficient methodologies will be explicitly harnessed, including digital soil mapping and proximal soil sensing, remote sensing with ground truthing, 'citizen-science', data-mining of existing big data and the interlinking of such databases through innovative statistics.

3. ACT AS AN INDEPENDENT THINK TANK

Thirdly, the Natural Capital Platform aims to play a role as an **independent think tank** in the context of public debate related to natural capital.

It is expected that research topics covered by the platform (the impact of climate change, biodiversity conservation, natural resource management, etc.) will remain high on the political agenda in the coming decades.

In such a context, the opinion of independent scientific researchers is vital to championing reliable information and long-term visions into public debate.

As such, our platform has a unique role in society. 'Dare to think' is the flag under which UGent sails. It is not a meaningless slogan for our platform either.

We want to be a balanced and insightful voice in society. Fact-based opinions and visions will be developed by the platform and communicated with policy makers, the scientific community and society in general.

4. TAKE UP THE ROLE AS FACILITATOR

Finally, the Natural Capital Platform also wants to take up a **facilitating role** by regularly bringing together different stakeholders. Through the organization of stakeholder dialogues, the platform will get insight into the needs of society and the perspectives of the different types of stakeholders (local authorities, government administrations, research institutes, NGO's, private sector). However, these events will also act as a catalyst for the start-up of new initiatives or collaborations.

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