

L'AS «RISORSE NATURALE ED ECOSISTEMI» ed il suo POSSIBILE CONTRIBUTO AL NEW GREEN DEAL

SA "NATURAL RESOURCES AND ECOSYSTEMS" and its POSSIBLE CONTRIBUTION TO THE NEW GREEN DEAL

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SA «NATURAL RESOURCES AND ECOSYSTEMS»

One of the 4 AS @ DSSTTA CNR

Focus on

- Aquatic and terrestrial **ecosystems**, including seas and oceans, surface waters, forests, soils and the lithosphere
- Their biological, hydrological and geological **resources**, and the urban and agriculture systems

Main aims

- Study of the ecosystems, **processes** and the **services** they provide
- Sustainable use of **natural** resources (bio-, water and energy (biomass, marine, solar, wind) and underground (ground water, geothermal energy, minerals) as well as secondary raw materials), along with the quantification/management of the anthropogenic impact on ecosystems, and the development/use of environmental technologies for mitigation
- Study of the **interactions** between organisms/environments, biodiversity, metabolic processes and ecosystem **dynamics**, trophic webs and energy fluxes within and across ecosystems, the evolution and ecosystem-level properties, biology/ecology of terrestrial and aquatic species, also to allow the identification of priority areas for conservation/management, to assess ecosystems' adaptive responses and ecological resilience to global change and anthropic pressures, and to promote a sustainable use of natural (biotic, abiotic) resources



Studio degli ecosistemi acquatici e terrestri, della biodiversità, dell'evoluzione, ecologia e fenologia delle specie anche per identificare aree prioritarie per la conservazione e la gestione, e considerando possibili cambiamenti di regime a scala ecosistemica. Gli ambienti di interesse sono quelli marini, di acqua dolce, agro-forestali ed urbani. Importanti obiettivi sono valutazioni quantitative della risposta degli ecosistemi alle forzanti naturali ed antropiche, delle interazioni tra organismi e ambienti, i processi e le dinamiche dell'ecosistema, le reti trofiche ed i flussi di energia. Vengono considerati i diversi livelli di organizzazione e i diversi livelli di naturalità.

Utilizzo e gestione sostenibile delle risorse biologiche negli ecosistemi terrestri ed acquatici, sviluppo di processi e tecnologie per la loro valorizzazione, e loro uso appropriato in una logica di economia circolare. Comprensione e valutazione dei servizi ecosistemici e della qualità delle risorse biologiche, finalizzati anche al recupero, riciclo e riutilizzo per generare nuove catene del valore (prodotti sostenibili, energia rinnovabile ecc.) e favorire una nuova bioeconomia sostenibile in aree continentali, transizionali e *offshore*.

Identificazione, uso sostenibile e gestione delle risorse geotermiche e di altre energie rinnovabili. Ricerca di risorse minerarie incluse le terre rare su continenti e fondali marini. Gestione e utilizzo delle risorse idriche superficiali e sotterranee (acquiferi), stima della loro quantità e qualità. Sviluppo ed applicazione di modelli per la pianificazione dell'uso delle risorse; realizzazione partecipata di pratiche gestionali per le risorse idriche; definizione di strategie per situazioni di crisi di approvvigionamento di risorse; definizione di metodi di *science to policy* e decisione partecipativa con il supporto scientifico alla implementazione di normative nazionali ed internazionali.

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The focus is on **different organization levels** (gene, organism, species, communities, ecosystems) and **different levels of naturalness** (from pristine, natural reserves to highly anthropized urban areas)

The result is an **improved comprehension** on natural resources, ecosystem processes and services and biodiversity, that are essential to mankind, with the aim also to mitigate the **human impact** and provide indices and forecast models to support **management** actions, environmental policies and a new sustainable economy and development



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Italy's (and EU's) **natural capital** under growing cumulative pressure from intensive agriculture, fisheries and forestry, and urban sprawl.

During the Anthropocene we have

transformed 75% of the natural environments and significantly impacted 66% of ecosystems

changed climate as well as biogeochemical cycles of C, N, P

produced huge amounts of (new) toxic/harmful substances not metabolized by natural systems

changed the water cycle and acidified the oceans

eroded (and continue to erode) biodiversity in every corner of the planet, putting at least one million plant and animal species at risk after having erased an undetermined number of them

Orienting agendas (including PNRR!) towards nature-based solutions for an ecological transition that looks to the

- restoration of destroyed or fragmented natural habitats
- correct management of terrestrial and marine ecosystems and resources, conservation of species, soil defense
- promotion of green infrastructures
- dissemination of awareness of the importance of nature as a capital and heritage, to be used wisely and to be preserved.



Working Group @ DSSTTA CNR SA «NATURAL RESOURCES AND ECOSYSTEMS»

Responsabile: Gian Marco Luna (IRBIM) dall'Aprile 2020 ad oggi, in precedenza Carlo Calfapietra (IRET). Da oggi Elena Paoletti (IRET)

Referenti (fino ad oggi) degli Istituti

Davide Scrocca (IGAG)

Maurizio Polemio (IRPI)

Matteo Lelli (IGG)

Alberto Battistelli (IRET)

Anna Barra Caracciolo (IRSA)

Fabio Badalamenti (IAS)

Paola Rinelli (IRBIM)

Il GdL ha prodotto un **White Paper di AS**



Centrality of the themes of THE as in international strategies – trajectories - agendas

Over the last decades, policies and initiatives put in place at global, EU, regional and national levels to reverse the negative trend in the loss of natural resources, biodiversity and ecosystem functions and services :

The Convention on Biological Diversity (CBD) & CBD strategic plan for Biodiversity 2011-2020

The EU Forest Strategy

The Habitat Directive (HD)

The Marine Strategy Framework Directive (MSFD)

The Water Framework Directive (WFD)

The Common Fisheries Policy (CFP)

The nationally designated Protected Areas

The Biodiversity Strategy for 2030

Sustainable Development Goals (SDGs) for a sustainable development embracing economic growth, social inclusion and environmental protection. This will require the necessity to "Living in Harmony with Nature" and to achieving that "biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people."

Finally, the "One Health" Concept recognizes that the health of humans on the planet is tightly connected to the health of animals and the environment, and involves a focus on issues at the human, animal (both domestic and wildlife) and environmental interfaces in today's rapidly changing world.



Centrality of the themes of THE as in international strategies – trajectories - agendas

*“Whereas nature contributes substantially into our economy, it is largely invisible in our economic statistics. We need to transform **how we view and value nature** and make its contribution to our life part of the economic equation. For that, we need robust methods to track investments, impacts and dependencies on nature. The new framework is a major step in this direction, as it could fundamentally reorient economic and policy planning toward sustainable development.”*

Direttorato Ambiente EU (11 Marzo 2021)



The screenshot shows the top part of a news article on the European Commission website. At the top left is the European Commission logo. To its right is a language selector set to 'English' and a search bar. Below this is a dark blue navigation bar with the word 'Environment' in white. Underneath is a breadcrumb trail: 'Home > News > Biodiversity: ground-breaking change to economic reporting accounting for nature's contribution to economy'. The main heading of the article is 'Biodiversity: ground-breaking change to economic reporting accounting for nature's contribution to economy'. Below the heading is a short introductory paragraph: 'A new statistical framework to better account for biodiversity and ecosystems in national economic planning and policy decision-making, approved yesterday, allows countries worldwide to use a common set of rules and methods to track changes in ecosystems and their services. The European Commission supported the United Nations in the development of this framework with contributions'.



Centrality of the themes of THE as in international strategies – trajectories - agendas

The EU Green Deal

“The European Green Deal is a response to these challenges. It is a new growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use.

It also aims to protect, conserve and enhance the EU's natural capital, and protect the health and well-being of citizens from environment-related risks and impacts.”

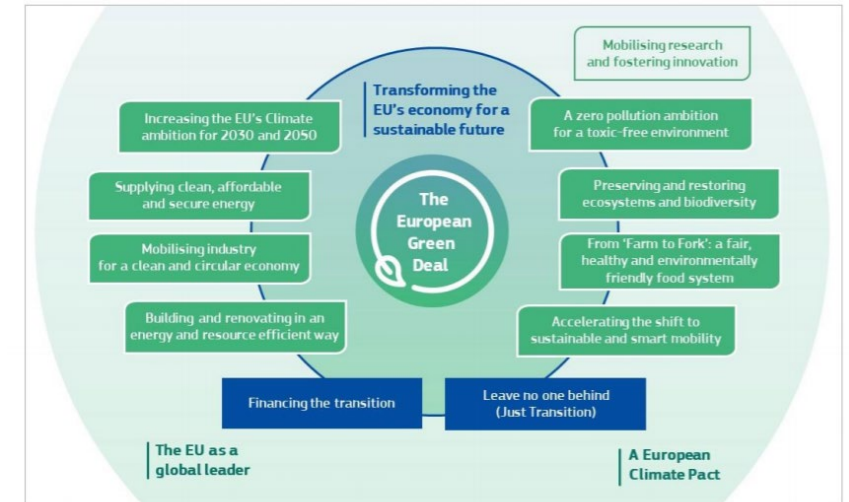


Figure 1: The European Green Deal

grand challenges OF THIS AS

Advancing **knowledge** on biodiversity, natural resources and ecosystems, in light of global change

Quantifying the key natural resources in the terrestrial and marine biosphere to promote their sustainable use

Understanding **multiple human impacts** on terrestrial and aquatic ecosystems, and identifying mitigation strategies

Building a sustainable **economic growth** via circular economy, green chemistry, bioeconomy and renewable energies

Improving scenarios, projections, predictions over spatial and temporal scales (**predictability** as the new frontier)



«WITHIN-CNR» & «WITHIN-OUR COMMUNITY» GRAND CHALLENGES

Clarify (and resolve) **thematic overlaps** with other AS (eg Risks and Technology) (central for “Concorsi”)

Help scientific communities (eg, marine and terrestrial) converge on **large unifying themes** (eg, biodiversity, invasive species, and on)

@Institute Directors: facilitate dialogue, promote interchange, **create opportunities to meet**

Consolidate participation of CNR to **national working groups** and links with decision makers





Grazie

Thank you

