NETVAL

“Il Trasferimento Tecnologico in transizione: il cambiamento negli scenari e l’impatto nel PNRR”

20 Luglio, 2022, Aci Castello (Catania)

Biodiversity

*The Italian **National Recovery and Resilience Plan** supports the creation of 5 (five) National Centers dedicated to frontier research related to technological areas consistent with the priorities of the European research agenda and with the contents of the National Research Plan 2021-2027.*

1. High performance simulations, computation and data analysis
2. Agricultural Technologies (Agritech)
3. Development of gene therapy and drugs with RNA technology
4. Sustainable mobility

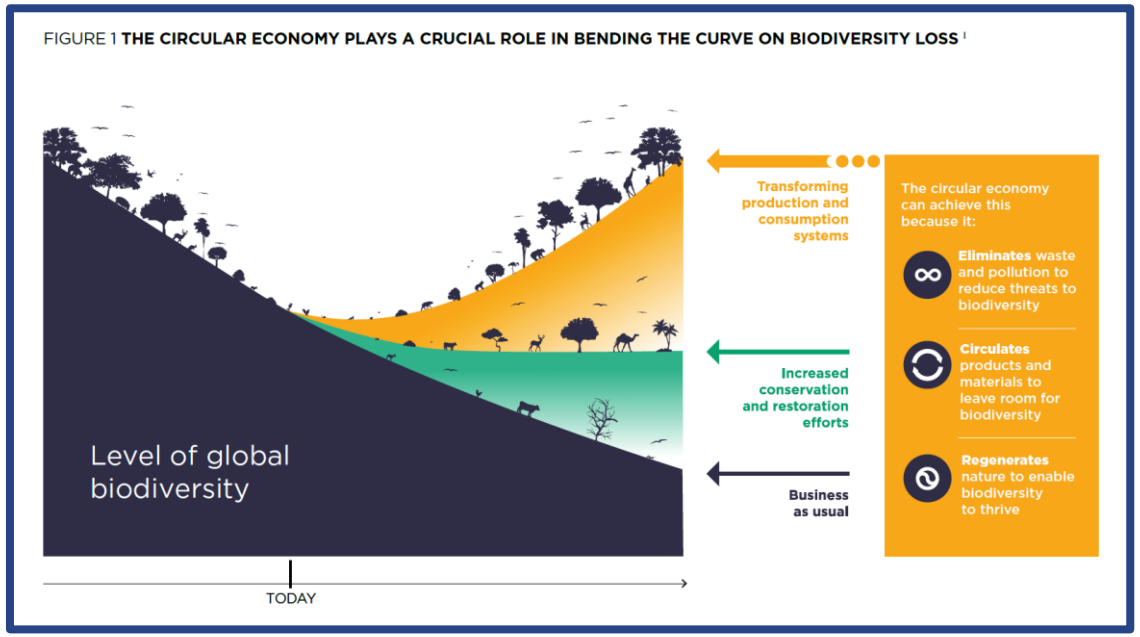
5. **Biodiversity**

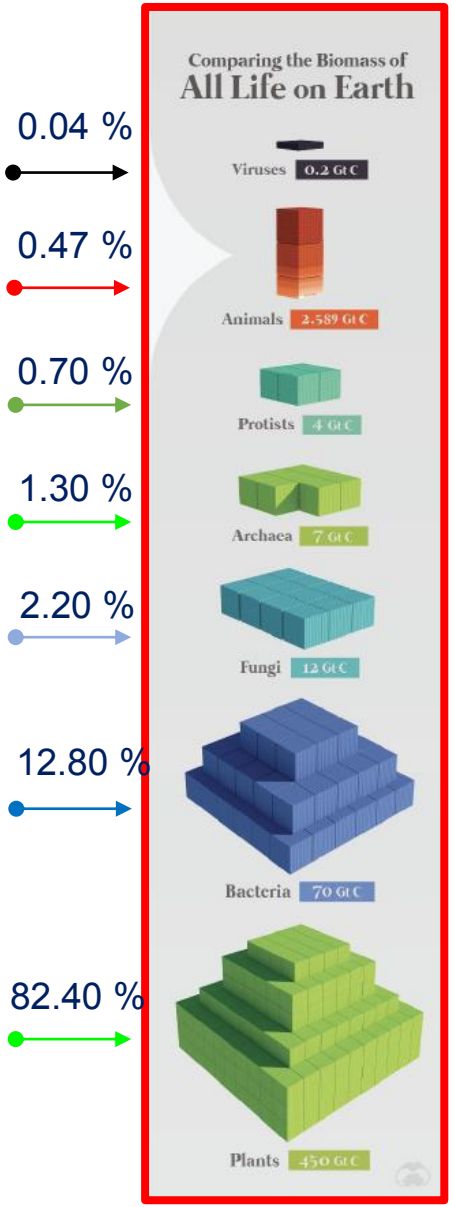
Biodiversity losses: a worldwide problem:

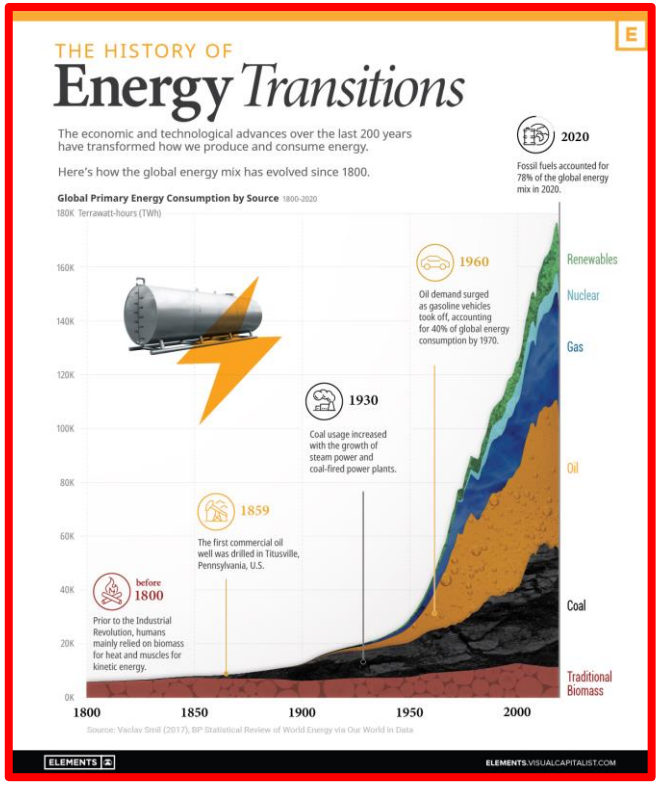
Bending back: are we still on time for moving to action ??

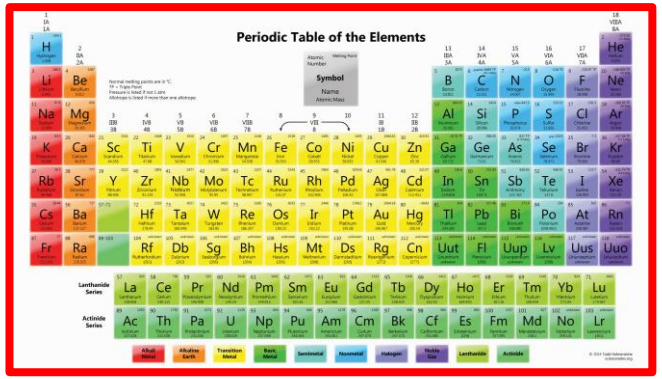
What is biodiversity ?

Biodiversity underpins **all life** on Earth, and refers to biological variety in all its forms, from the genetic make up of viruses, microorganisms, plants and animals **to cultural diversity**.









Benefits of the economic growth …

-The pace of change over the past 50 years has been unprecedented in human history, with **extraordinary increases in world economic output** and **life expectancy**.

-The human population has doubled, the global economy has expanded four-fold and **more than 1 billion** people have been lifted out of **extreme poverty.**

- Globally, we produce more **food**, **energy** and **materials** than **ever before**.
- The improvements in human welfare and aggregate benefits from the accelerated economic growth over the past century have been impressive. **The global middle class**, currently 3.5 billion people, continues to grow by about **160 million people a year**, 70% of whom are in China and India.

Costs of the economic growth …

- However, this remarkable growth and prosperity has come at a **heavy cost !**

- Human activities have already severely altered **75% of land** and **66% of marine environments**.

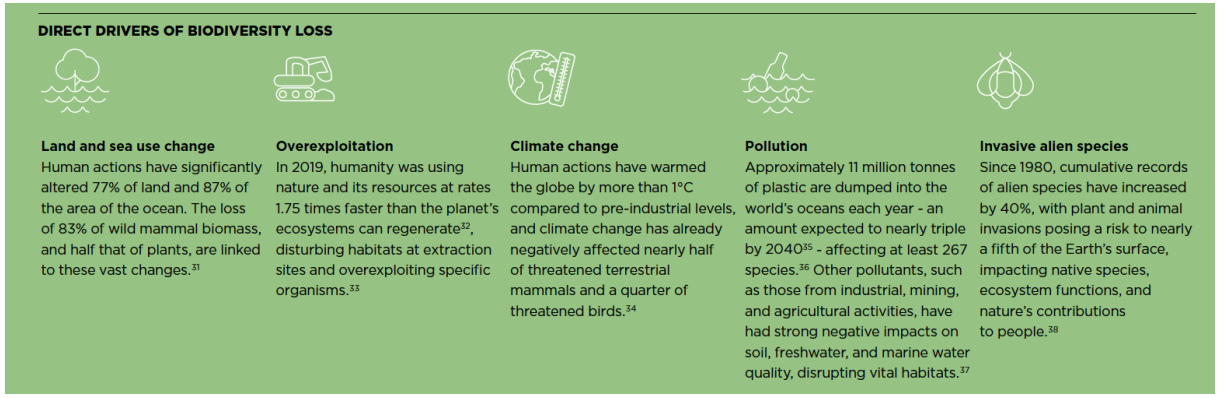
- Around 25% of assessed plant and animal species are threatened by human actions, with a **million species facing extinction**, many within decades.

- Western civilization has so far reacted to the natural forces that the environment exerts on every growth process, **relying on science and technology**. This response has always been crowned with success, so much so that a cultural tradition has formed which tends **to exalt** the battle for overcoming natural limits. However, the time has come to look **how to live within these limits**.

Drivers of nature loss

- Although the world's 7.6 billion people represent only **0.01%** of all living things by weight, humans have already caused **the loss of 83%** of all wild mammals and half of all plants.

- The current rate of extinction is tens to hundreds of times higher than the average over the past 10 million years, … and it is accelerating.



- The impacts on the planet by a single species, humans, are so profound that scientists have coined a new geological epoch: the **Anthropocene**, or the period when humans are the key driver of geological change on the planet.

- Five direct **drivers** of change in nature have accounted for more than 90% of nature loss in the past 50 years

Risks emerging from dependency of business on nature

- $ **44 trillion** of economic value generation – more than half of the world's total GDP is moderately or highly **dependent on nature** and its services, and therefore exposed to risks from nature loss.

- Industries that are highly dependent on nature generate 15% of global GDP ($13 trillion), while moderately dependent industries generate 37% ($31 trillion).

- Construction ($4 trillion), agriculture ($2.5 trillion) and food and beverages ($1.4 trillion) are the main industrial sectors. This is roughly **twice the size** of the German economy.

- Indirectly, biodiversity loss affect livelihoods, income, local migration and may even cause or exacerbate **political conflict**.

HORIZON
EUROPE
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Four Key Strategic Orientations

KSO A: Promoting an open strategic autonomy by leading the development of key digital, enabling and emerging technologies, sectors and value chains to accelerate and steer the digital and green transitions through human- centred technologies and innovations

KSO B: Restoring Europe's ecosystems and biodiversity, and managing sustainably natural resources to ensure food security and a clean and healthy environment

KSO C: Making Europe the first digitally enabled circular, climate-neutral and sustainable economy through the transformation of its mobility, energy, construction and production systems

KSO D: Creating a more resilient, inclusive and democratic European society, prepared and responsive to threats and disasters, addressing inequalities and providing high-quality health care, and empowering all citizens to act in the green and digital transitions

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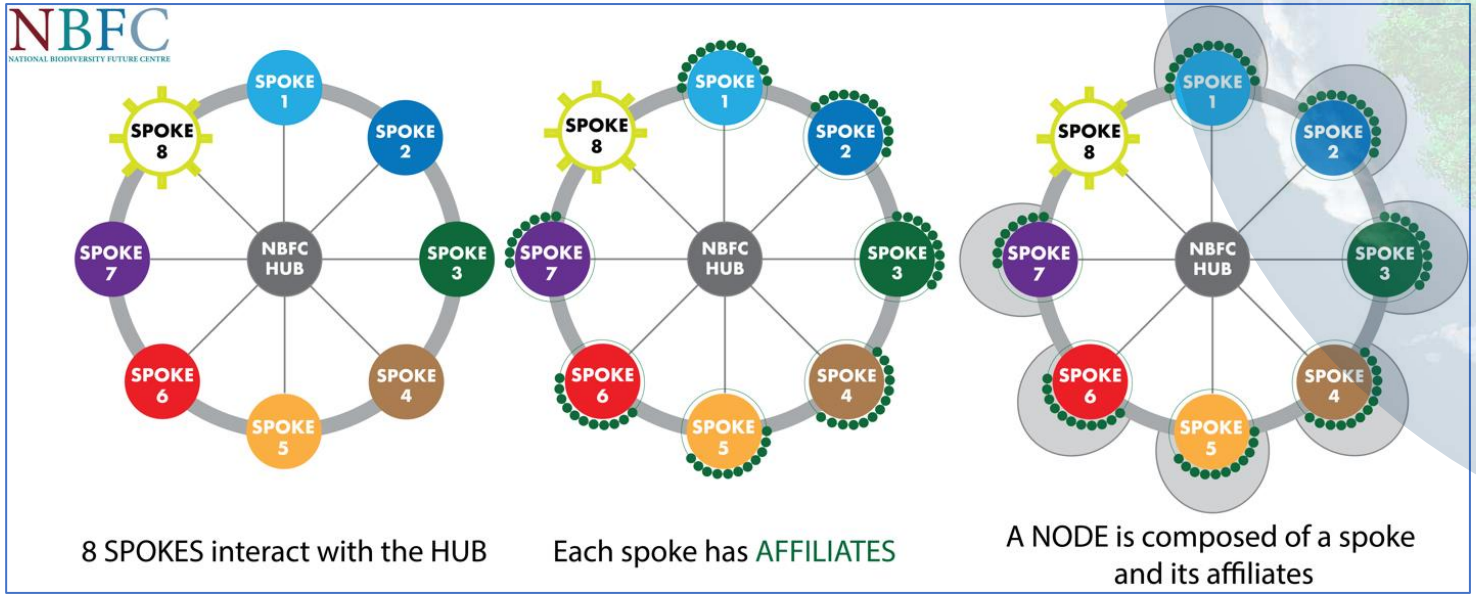
*The **general objectives** of such a unique cross-disciplinary and innovative platform are:*

1) Understand and address direct drivers for biodiversity decline at marine, terrestrial and urban level.

2) Valorizing biodiversity to make it a central element for sustainable development.



SEA

LAND

URBAN

IMPACT

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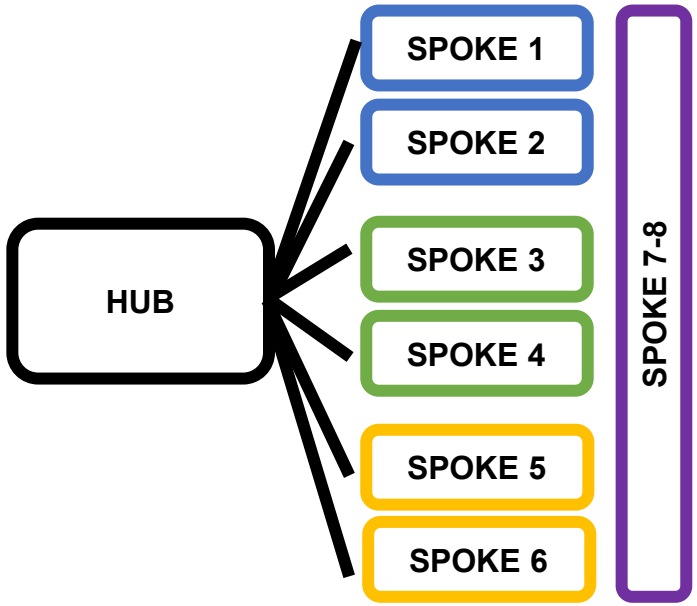
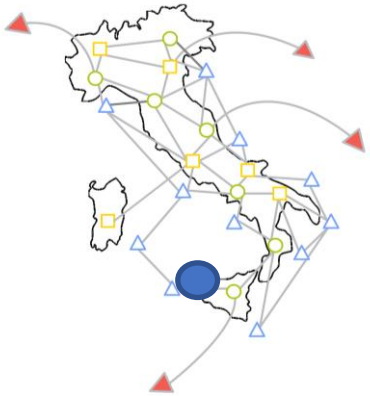




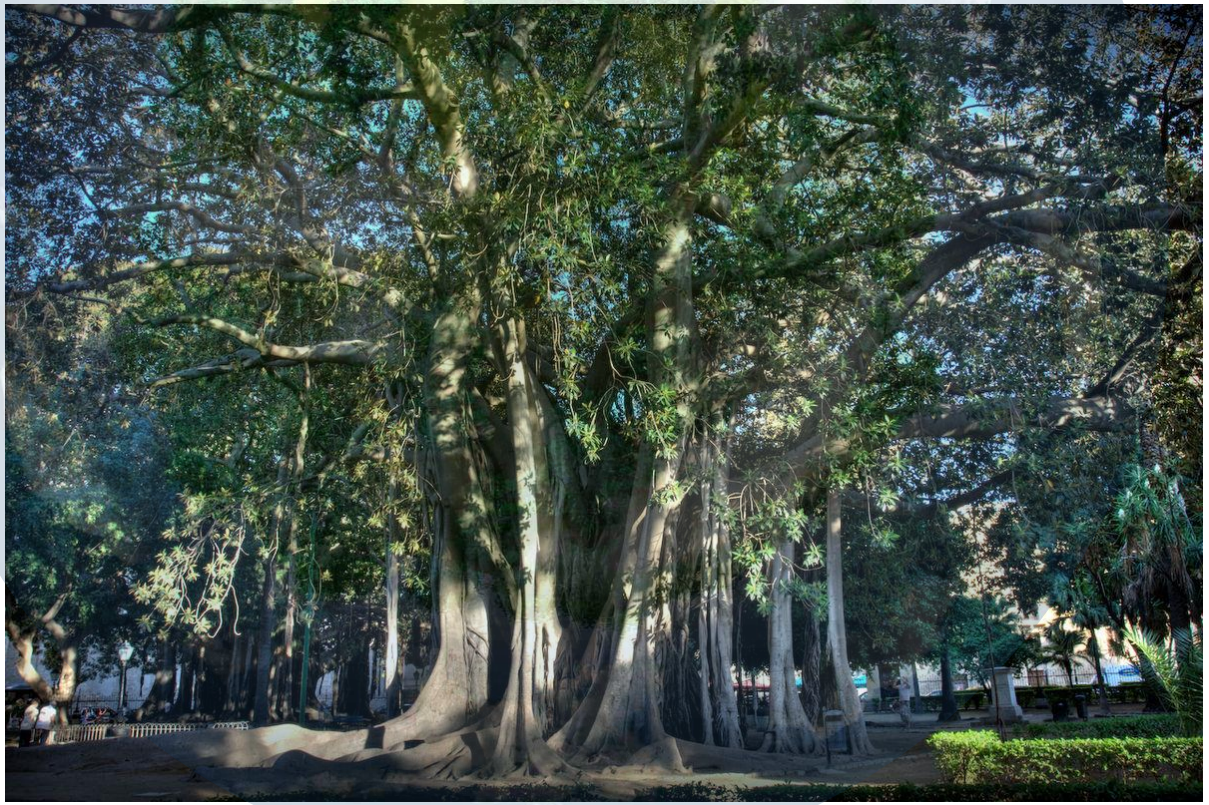
TRANSFORMING CLIMATE AND BIODIVERSITY GOALS INTO SUSTAINABLE RECOVERY OPPORTINITIES

INVESTMENTS	% SOUTH	% DIGITAL	% GREEN
328.217.375,39	42 %	31 %	69 %

CRITICAL MASS	% WOMEN	% NRRP 022	% NRRP 023
1300 RESEARCHERS	50%	54%	22%

- ***NRRP 022**: Research and innovation processes focused on the low-carbon economy*
- ***NRRP 023**: Research and innovation processes focused on the circular economy*

NBFC governance ……



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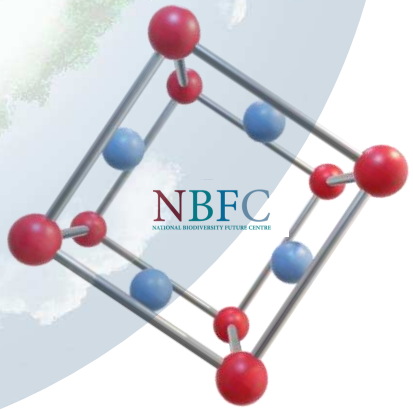
- Regional S3 -**SMART SPECIALIZATION STRATEGIES** –at regional level … (aligned with EU)

- PNR (**National Research Programme**) (aligned with HE)

- PNIR (**National Infrastructure Research Programme**) (aligned with HE)

- PNRR (**National Recovery and Resilience Facility**) (approved by EU)
  - ✓ -Ministry of University and Research
  - ✓ -Ministry of Agricultural, Food and Forestry Policies
  - ✓ -Ministry of Ecological Transition
  - ✓ -Ministry of Economic Development
  - ✓ -Ministry of Health

- **Horizon Europe, Knowledge and Innovation Communities** (Climate, Digital, Food, Health, RAwMaterials) and **beyond**



NBFC goals

… 3 years

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THE BIODIVERSITY MOONSHOT

KETs — DEMAND-PULL EFFECT

TECHNOLOGY-PUSH EFFECT

1 GOAL

Scientists

to educate of a new generation of scientists

2 GOAL

Open Data

4 platforms to enable future research and development of science and technology through data

3 GOAL

Deployment of KETs

to enable future research and development of science and technology through data

5 GOAL

Biodiversity Gateway

to engage citizens, innovators, display and explain the tangible and intangible value of biodiversity

4 GOAL

Go to Market

to exploit the value of new research findings in biodiversity

SUPPORT TO RESEARCH

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-NBFC's model relies on four pillars:

First, knowledge within the NBFC team (1300 researchers);

Second, access to a very large network of investors, industry experts and government experts;

Third, the availability of incubators with; state-of-the-art laboratory facilities spread all over Italy

Fourth, friendly financing in the form of convertible loans to start-ups and of grants for academic company-creation projects.

-Scale is important for securing good applicants to our programs, for attracting high-quality staff and for building an extensive network.

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The ultimate aim is that NBFC should become self-financed and therefore self-sustainable. To achieve this goal appropriate revenues have to be generated by exploitation of IP developed via NBFC activities. This income shall then be used for investing in future NBFC activities.

The question is: how will NBFC develop revenue streams and become eventually self-sustainable? This question needs to be resolved based on the long term goals and business model of the National Center.

Organization Chart
IP Board and Mechanisms for decision making
Ownership of the NBFC Results

Overheads from the participation to public-private projects, **Revenues** following NBFC services, **Return** on investment, **Exploitation** by NBFC of NBFC results

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-To enter NBFC's portfolio, companies should/must provide a clear strategy for how they can achieve financing, typically from venture capital funds, so they can move toward an exit.

-The NBFC goal program is to attract top-level scientists to address societal and sustainable challenges. To accomplish this, the NBFC team performs strategic analysis of high **unmet needs** in society that could benefit from innovative evidence-based solutions that deliver new solutions and new products.

The strategic analysis is based on both experiences gained by the NBFC team and by engaging with external key opinion leaders, investors and industry experts.

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National Research Council of Italy

Ministero dell'Università e della Ricerca
Segretariato Generale
Direzione generale della ricerca
Ufficio VIII

… for Science and People

… let's move to action …. together !!!