12 RESPONSIBLE CONSUMPTION AND PRODUCTION

ESTABLISHING SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS

cnrs

The CNRS supporting the 2030 Agenda – a few examples:

Since the Industrial Revolution, production and consumption patterns have changed, furthering the development of populations but exploiting the planet's resources – especially non-renewable resources – to a greater extent. These dynamics are very disparate and depend on countries and their resources, waste production and recycling efforts. Ecological footprint measurements show the efforts made by States to change production and consumption patterns in order to limit the harm or destruction of resources that are vital to human activities. These developments are studied at the CNRS through research programmes focusing on sustainability, socio-ecological transitions and new forms of production and consumption of goods, the evolution of practices in the different commodity chains, modes of resource exploitation and management, and the development of the circular economy and social justice. Many researchers are also involved in research into new materials and new resources, particularly from recycling, with a view to eradicating toxins and pollution.

SUSTAINABLE DEVELOPMENT GOALS

ANALYSING THE ROLE OF INEQUALITY IN SUSTAINABLE CONSUMPTION PRACTICES

Shifting consumption patterns towards 'sustainable' consumption is one of the priorities of environmental policy. A survey carried out in France by teams from the Research Group on Theoretical and Applied Economics (GREThA) and the Research Group on Law, Economics and Management (GREDEG) involving more than 3,000 households, has qualified profiles according to varying degrees of 'eco-friendliness' based on practices such as waste sorting, energy, transport modes and food purchases.

The results also underline the importance of the usual variables in determining profiles: age, socio-professional category, education level, region and gender. On a more innovative side, they stress the importance of social embedding: consumption is highly dependent on the practices of one's entourage. This result is both statistically significant and scientifically original. It leads to public policy recommendations that take greater account of the collective dimension of sustainable consumption.

WHEN OUR PLASTICS BECOME RECYCLABLE HIGH-PERFORMANCE MATERIALS

Wind turbines, cars, tubing, robotics or portable electronics call for lighter, more resistant materials that are but cheaper and reusable.

Can we transform everyday plastics into high-performance materials? 'Yes!' according to a team from the Soft Matter and Chemistry Laboratory in Paris. A new chemical reaction assembles the macromolecules in the plastic into a dynamic network – a vitrimer – using conventional production methods. With their unique combination of properties, vitrimers could revolutionise the world of plastics. In fact, this new chemical process paves the way for recycling different plastics with no prior sorting required, transforming them into a vitrimer alloy.

Find out more: www.mmc.espci.fr

REDUCE THE NEGATIVE IMPACTS OF ICTS

The EcoInfo service group (GDS) coordinates efforts and expertise aimed at promoting the sustainable use of information and communication technologies (ICTs), focusing on the full range of environmental and social impacts of the equipment in question, which includes computer hardware and software.

These impacts concern resource management, local, regional and global pollution, and the consequences on human life and biodiversity. The area under study includes data centres and servers, workstations, printers and other electronic equipment in frequent use.

The methodology involves product life cycle analyses, the definition of good practices, and the critical study and synthesis of scientific articles.

The GDS provides its services to any organisation concerned about limiting its environmental impact and offers:
- awareness-raising initiatives and information
- training initiatives
- advice and change management support
- Appraisals and audits

Find out more: ecoinfo.cnrs.fr

DECONTAMINATING SOILS WITH HYPER-ACCUMULATING PLANTS… AND REUSING THE SUBSTANCES…

These projects aim to decontaminate soils and reuse the incriminated materials and are the subject of dozens of patents, including a CNRS Innovation Medal awarded to Claude Grison in 2014.

As well as being degraded and unvegetated, soils at abandoned mine sites may contain metals. Metal-accumulative plants have the capacity to naturally absorb these metals and gradually decontaminate the soil.

The green chemistry processes developed by the researchers aim to harvest these plants to capture the substances that they absorb and reuse them, while stabilising and revegetating the land.

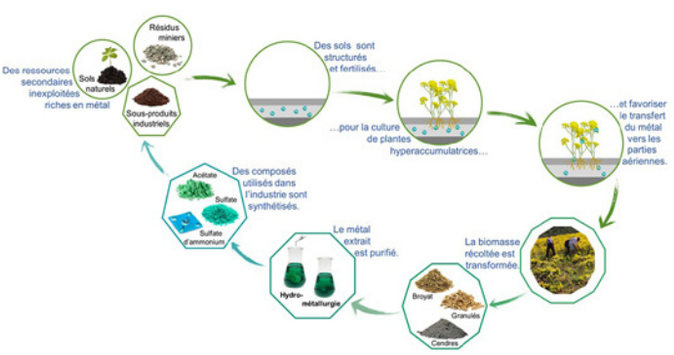
From an anticancer agent derived from monastrol to cosmetic products, there are multiple applications for the complex molecules derived from these plants. The waste is converted into metals and molecules. Palladium, for example, which is essential for many drugs, is a dwindling resource.

Aquatic mint has the capacity to purify water loaded with metallic and organic elements. Used in powder or live form, it can be used to clean up contaminated water directly on industrial sites.
The start-up Bio Inspir' transfers the work carried out on this plant by the Bio-inspired Chemistry and Ecological Innovations laboratory to the industrial world.

BIOSOURCED NICKEL

Econick: plants used to extract metals from the soil

This start-up, founded in August 2016, produces nickel salts from a hyper-accumulating plant that extracts the metal from the soil. The patented process is the result of a partnership between the Reactions and Process Engineering Laboratory and the Laboratory of Soils and Environmental Sciences.



Find out more: ra2017cnrs.fr/les-plantes-de-conick-aiment-les-metaux

COLLECTIVE SCIENTIFIC EXPERTISE:
Environmental impacts of the exploration and exploitation of deep mineral resources

The depletion of continental metal resources and international tensions over the supply of certain metals have prompted many stakeholders to turn their interest to the exploitation of mineral resources in the deep sea.
This collective scientific expertise, entrusted to the CNRS and Ifremer in 2014 by the French ministries of research and sustainable development, establishes a synthesis of the scientific knowledge available on the subject at the international level and identifies the scientific obstacles to be overcome, as well as the research and development activities to be undertaken to achieve this.

Find out more: lejournal.cnrs.fr/articles/exploiter-les-profondeurs-de-locean

CNRS
3, rue Michel-Ange 75016 Paris - France
+33 1 44 96 40 00
www.cnrs.fr

Contact : **agenda2030@cnrs.fr**