

Circular Economy: Manufacturing Inclusion with Social Technology



Capital
Digital



01.



Vision

Social well-being and inclusion through the circular economy and technology

Societies require a model of production and consumption that is more respectful of the environment while ensuring the well-being of individuals. Well-being is a subjective concept related not only to economic development but also to the development of fair and inclusive societies. The inclusion of people with disabilities enhances well-being in societies, enriching them socially, culturally, and economically.

The CIEC Madrid approach:



Social innovation and inclusion



Education



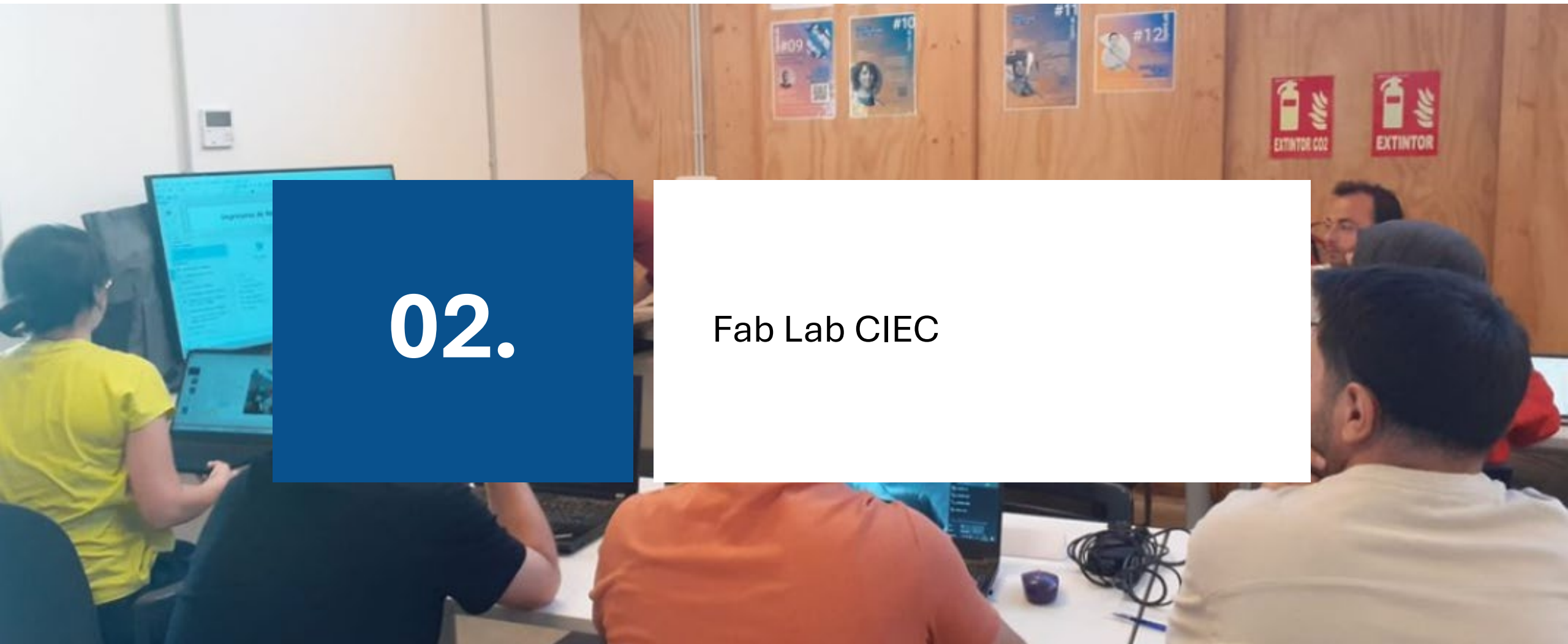
Entrepreneurship



Nature-based solutions



Technology



02.

Fab Lab CIEC



Role of Technology in the Circular Economy and FabLabs

How the combination of these elements is transforming the way we produce and consume, promoting a more sustainable future.



The Circular Economy

The circular economy aims to reduce waste and maximise resource use through recycling, reuse, and redesigning products and processes. Its goal is to create a closed loop where materials remain in use for as long as possible, minimising environmental impact.



Fablabs

FabLabs (Fabrication Laboratories) are digital fabrication workshops where prototypes and customised products can be created using technologies such as 3D printers, laser cutters, and CNC milling machines.

These spaces promote open innovation, education, and access to tools that enable individuals to manufacture nearly anything on a local scale.



¿Which technologies?

Technology, including 3D printing, AI, digitalisation, automation, and the Internet of Things (IoT), plays a crucial role in facilitating more efficient and sustainable processes. Advanced technologies enable the design and manufacture of products more precisely and with less material waste.



Social technology

Development and distribution of simple, low-cost, and easily applicable technology. Open-source philosophy and collaborative work.

BENEFITS

- WASTE REDUCTION
- COMMUNITY EMPOWERMENT
- SUSTAINABILITY
- PROMOTION OF INNOVATION
- TRAINING

CHALLENGES

- Encourage education and access to FabLabs in more communities.
- Incentivise collaboration between businesses, governments, and citizens to drive the circular economy.
- Continue innovating in technologies, materials, and processes that maximise efficiency and minimise environmental impact.

OPPORTUNITIES

- Education and Awareness: The need to train more individuals in circular design and digital technologies.
- Reduction in the costs of implementing advanced technology and equipping FabLabs.
- Regulations and Norms: Adaptation and sensitivity of governance to facilitate the circular economy.



Highlighted Projects

Hackathon EELISA/FabLab CIEC-UPM-ITU-startups CIEC – Digital Fabrication for a Circular Economy (September 2023).

- Sustainable product design
- Waste reduction and upcycling
- Repair and remanufacturing
- Innovation in sustainable materials

Collaboration with the circularisation programme for companies at the Madrid Centre for Innovation in Circular Economy. Co-creation session of challenges (January 2024).

- Organisation and support.

Collaboration with South Summit Street Fest (June 2024).

- Support in digital fabrication.





03.

SBN Lab



SBN, EC e IoT

Nature-Based Solutions can provide a valuable approach to addressing some of the challenges of the circular economy.

The Internet of Things plays a fundamental and necessary role in monitoring impacts and managing infrastructures in Nature-Based Solutions.



Image copyright: IUCN. <https://www.iucn.org/node/28778>



A Nature-Based Solutions lab at the CIEC Madrid



- The SBNLab aims to support inclusive experimentation experiences in bioclimatic building, urban horticulture, waste valorisation, and gardening adapted to climate change.
- The laboratory is equipped with monitoring systems, impact measurement, and support for information accessibility.
- The articulation of inclusive access to the laboratory is facilitated through citizen science and participation programs.

Highlighted Milestones



- **Generation of multidisciplinary experimentation spaces.**
 - Design of processes and working methodologies in experimentation.
 - Participation of leading research entities and SMEs.
- **Citizen participation programs.**
 - Composting pilot project.
 - Green roofs learning community.
- **Events.**
 - European Researchers' Night.
 - Webinar on Social Economy and Real Estate: Inclusion and Sustainability.

04.

Final remarks



Societies require new ways of thinking to address emerging environmental challenges and ensure the well-being of individuals.

The development of inclusive innovation initiatives in the circular economy that utilise technology as a tool for accessibility can be key to the success of a fair digital and green transition.