Impact analysis and action

With growing interest in hydrogen comes the need to ensure the sector’s technology – and its economy – are as sustainable as possible. That means developing tailored environmental impact tools and greening everything from design to disposal.

FCH JU-funded projects have long promoted such a comprehensive approach. Providing a solid basis, FC-HYGUIDE developed guidance, training materials and courses on how to use Life Cycle Assessments (LCA) to holistically determine a hydrogen technology’s environmental footprint. That initial framework is now being expanded by the SH2E project to include economic and social dimensions, while close collaboration with the European Commission’s Joint Research Centre (JRC) is fostering further critical advances.

Recycle, redesign, GO!

How best to dispose of defunct technology and bolster circularity? With their focus on recycling and dismantling strategies, as well as the recovery and reuse of resources such as platinum, this is where the HYTECHCYCLING and BEST4HY projects come in.

EGHOST, meanwhile, is working on eco-design guidelines to promote efficiency, finding ways to refurbish older technologies and include environmentally friendly design criteria early on in the development of new ones.

Advancing sustainability through truthful sourcing, CERTIFHY created the first EU-wide Guarantee of Origin (GO) scheme for green and low-carbon hydrogen. The project’s current third phase includes building a market for GO trade.

With recycling strategies, eco-design, life-cycle-thinking tools and much more, the FCH JU is boosting the sustainability and circularity of hydrogen technology, preparing the sector and its economy for a planet-friendly roll-out as part of Europe’s clean energy transition.
TOP-NOTCH GREEN TECHNOLOGY

Hydrogen technology must deliver excellent performance on the one hand and sustainability and circularity on the other, promoting an economy that minimises environmental impact and encourages the reuse of resources.

CIRCULAR AND SUSTAINABLE

Encouraging collaboration between industry and research experts to foster the greening of hydrogen technology, from start to finish. **The goal?** To promote a sustainable and circular hydrogen economy that supports the EU’s Green Deal and strategy on energy integration while contributing to the Sustainable Development Goals and Paris Agreement. **Key results?** Tools to assess the impact of hydrogen technologies; advances in recycling, dismantling and resource recovery; a hydrogen-sourcing scheme and steps to develop eco-design guidelines promoting sustainability and circularity.

### KEY ACHIEVEMENTS

**CERTIFHY**
- First EU-wide Guarantee of Origin scheme for green and low-carbon hydrogen
- Pilot projects throughout Europe on production pathways

**FC-HYGUIDE**
- Guide and reporting template for hydrogen-specific LCAs
- Life Cycle Inventory (LCI) data for hydrogen and fuel cell technologies

**HYTECHCYCLING**
- Identification of critical materials and components in hydrogen technology products
- Mapping of existing and new recycling technologies

**JRC COOPERATION**
- Expert workshop on LCAs of hydrogen technologies
- Review of LCAs for 70+ FCH JU projects

### IMPACT

**CERTIFHY**
- New & transparent clean hydrogen market
- Enhanced business case for green hydrogen

**FC-HYGUIDE**
- Tailored resources for measuring hydrogen technology’s environmental footprint
- Bolstered sustainability awareness through broad dissemination of materials

**HYTECHCYCLING**
- New strategies and roadmap for recycling and dismantling
- Harmonisation and regulatory proposals related to recycling and dismantling

**JRC COOPERATION**
- Informed decision-making on sustainability due to continuous monitoring activities
- Strengthened links and data sharing with the European Platform on Life Cycle Assessment

**www.fch.europa.eu/page/fch-ju-projects**
- https://best4hy-project.eu/
- https://www.certifhy.eu/
- https://eghost.eu/project/
- https://cordis.europa.eu/project/id/256328
- https://cordis.europa.eu/project/id/256850
- http://hytechcycling.eu/
- https://sh2e.eu/home/

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