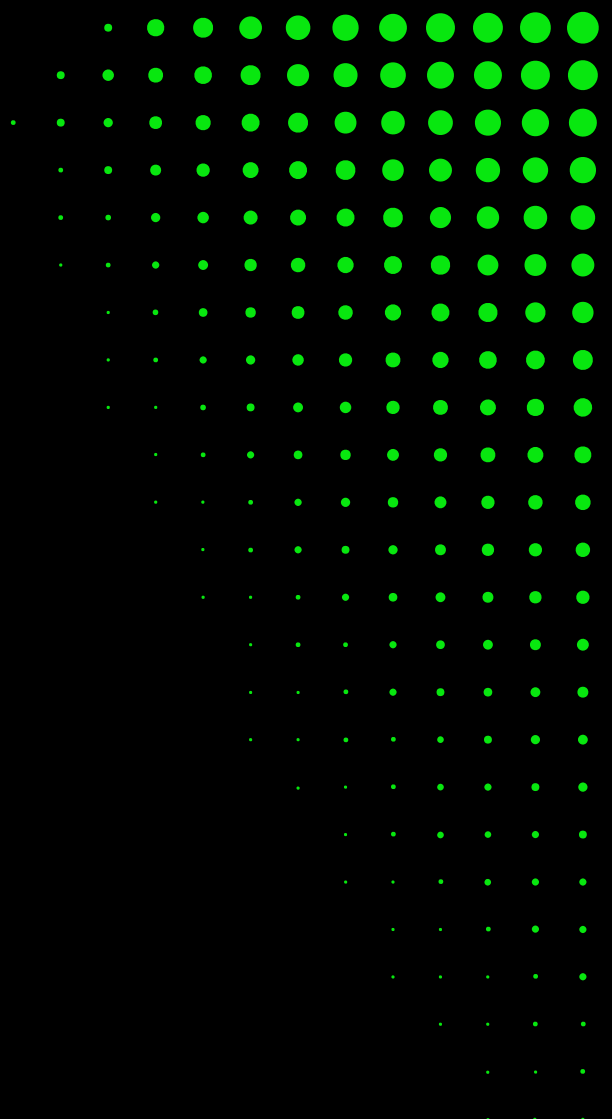


Zhyron



Funded by
the European Union

**Unlocking the value
of steelmaking
by-products using
green hydrogen**



What is the problem?

Each year:

50

million tons recycled but 49 million tons of CO₂ emissions produced

250.000

tons of by-products rich in zinc in landfills

35%

reduction of CO₂ emissions to reach the EU target of carbon neutrality in 2050

The project:

ZHyRON is a EU funded project that seeks to explore advanced circular economy strategies to **transform the way the steel industry handles its by-products**, aiming for a **more sustainable and efficient future**.

In the ZHyRON project, **steel by-products are being innovatively recycled**. Iron oxides are converted into **Direct Reduced Iron (DRI)**, usable in electric arc furnaces. Zinc is extracted as **zinc oxide concentrate**, valuable for zinc smelting or other industries.

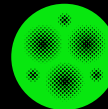
ZHyRON wants to:



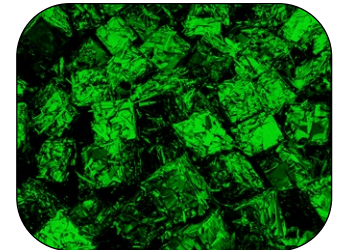
Prepare steelmaking by-products through cold-agglomeration to make them suitable for being processed.



Use green hydrogen to recycle iron-rich and zinc-containing steelmaking, improving the process through multi-physics models.

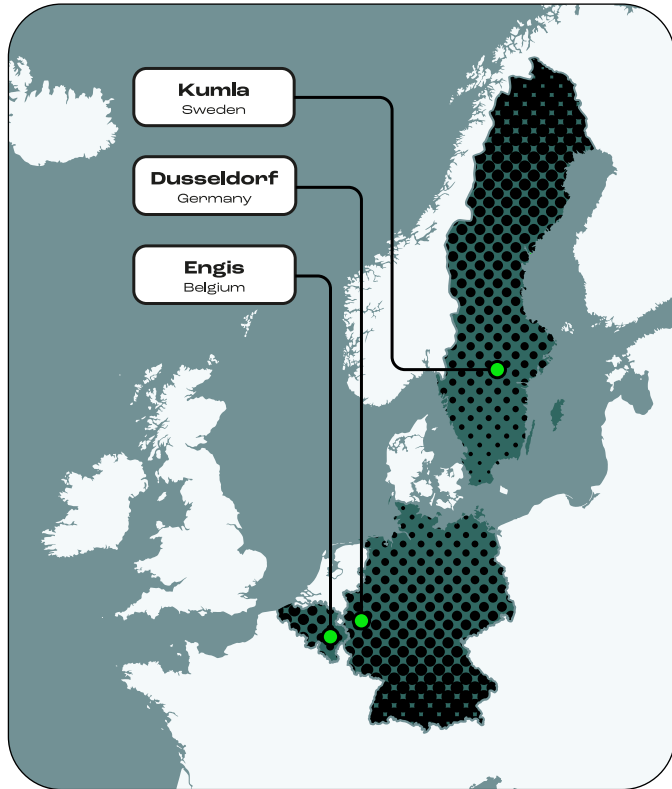


Separate and condition process wastewater and sludges to obtain high-quality zinc-material and safe water for disposal or reuse.



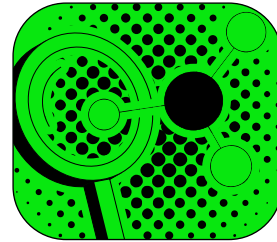
The pilot sites

These methods will be refined and validated through laboratory and pilot-scale trials.



Impacts

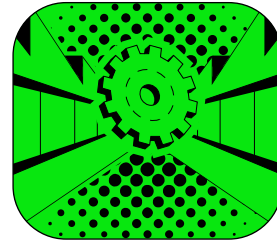
During its lifespan, the project aims to achieve impactful outcomes across three key areas.



Scientific

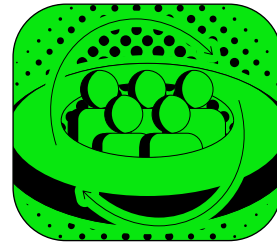
The project will use the new scientific discoveries to **find better ways to handle steelmaking wastes**. This will help **make circular processes more sustainable**.

The project will focus on improving hydrogen thermal reduction, wastewater treatment, and recovering metallic phases beyond what is currently available.



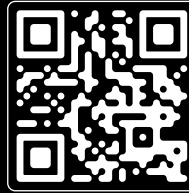
Technological

The project will cut the production costs for iron and zinc derived products by at least 10% and save 15-25% of the energy used in traditional recycling methods. ZHyRON will create industry standards, study how to integrate new solutions, and help set up large recycling plants in the steel industry.



Societal

The project will help fight climate change and **improve social aspects** by making industries more circular and cost-effective. It will also inform policymakers to **adjust regulations wisely and foster new partnerships for circular value chains**.



Discover more:

zhyron.eu

Consortium



GREENIRON



VCI-Betriebsforschungsinstitut GmbH



ICONS

Funded by the European Union.

Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.