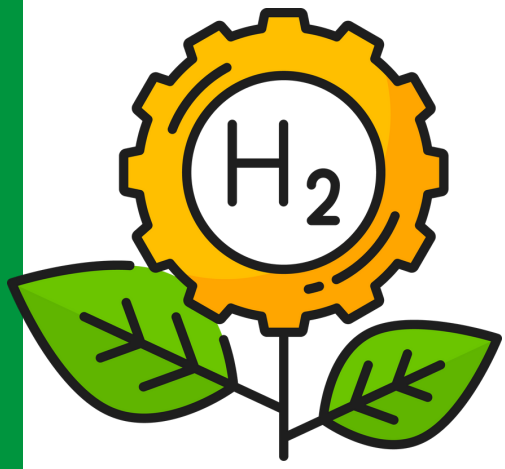
CHALLENGE 3:

Design green hydrogen production projects.



STATUS QUO PROBLEM

Air pollution has become a key issue in Europe. Close to 30 million Europeans are living in areas with **small particle concentrations** that are at least four times the WHO guidelines.

Almost all residents in seven countries in eastern Europe – Serbia, Romania, Albania, North Macedonia, Poland, Slovakia and Hungary – have double the WHO guidance.

More than half the population of North Macedonia and Serbia live with four times the WHO figure. In Germany, three-quarters of the population lives with more than twice the WHO guidance. In Spain that figure is 49%, and in France it is 37%. **Traffic, industry, domestic heating, and agriculture are the main sources of PM2.5** and the impact are often felt disproportionately by the poorest communities.

DESCRIPTION OF CHALLENGE:

Green hydrogen produced from renewable energy is being considered as one of the promising solutions to achieve Net Zero plans, as hydrogen-powered fuel cell electric vehicles emit none of these harmful substances —only water (H2O) and warm air.

However, Green hydrogen projects will require **significant amounts of renewable energy and water** as inputs for electrolysers, and this will likely put pressure on land allocation for hydrogen production and water supplies. How to design thoughtful green hydrogen production projects which properly manage impacts on water supply and land used has become a pressing challenge for businesses.

Project example: H2SITE

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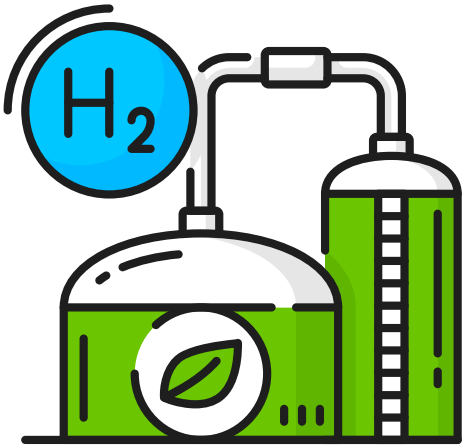
RES4CITY

DESCRIPTION GUIDING PRINCIPLES

(TO HELP YOU WITH YOUR RESEARCH, WE SUGGEST THAT YOU READ ABOUT):

- The current **cost of producing green hydrogen** is still higher than other forms of hydrogen.
- **Future demand** for green hydrogen is not guaranteed.
- **Public acceptance** of green hydrogen projects should be considered.
- Techniques to use soils in urban areas to capture CO2, **taking advantage of the capacity of plants to absorb carbon.**



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