



LOCOMOTION

Low-carbon society:
An enhanced modelling tool for the transition to sustainability

A future in modelling

LOCOMOTION: The power to model sustainable futures in your hands

Zoom event, 16 February 2021

Khaled Diab, European Environmental Bureau (EEB)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 821105.



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“LOCOMOTION aims to enhance the existing MEDEAS IAMs to provide policy-makers and relevant other stakeholders with and open source, well-documented model to assess the feasibility, effectiveness, costs and impacts of different sustainability policy options”

The project



CONTACT: Prof. Luis Javier Miguel González
Nathalie Wergles
Energy Economy and System Dynamics Group
University of Valladolid



info@locomotion-h2020.eu

www.locomotion-h2020.eu



Universidad de Valladolid

- ❖ Duration: 1st June 2019 – 31th May 2023
- ❖ Coordinator: Universidad de Valladolid (Spain)
- ❖ Partners:



UNIPI



SDEWES



AUSTRIAN ENERGY AGENCY

AEA



BC3



CESAR



UoI



CRES



FC.ID



UNU-EHS



EEB



CREAF



CARTIF



INN

Introducing LOCOMOTION



What is a model?

No, not that kind of model...

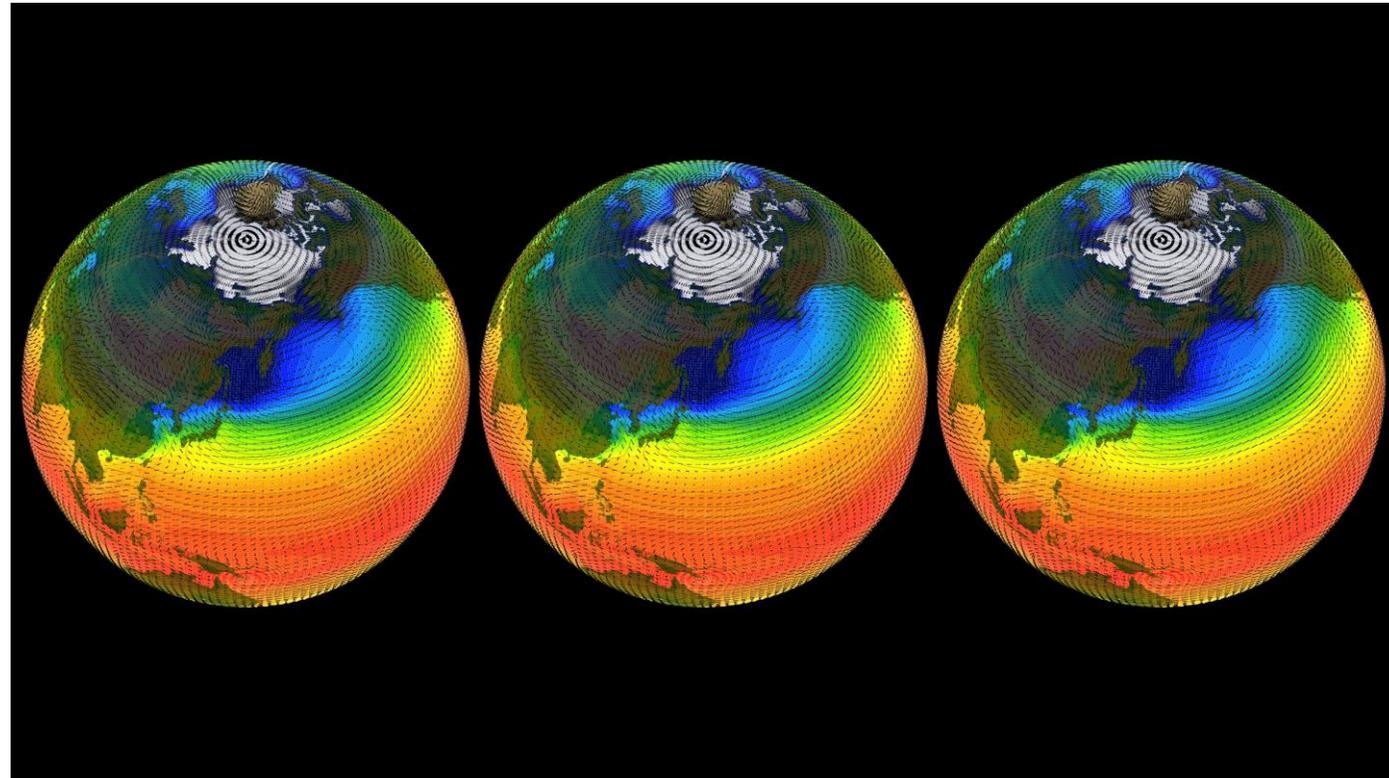


What is a model?

A model is basically a scaled down representation or approximation of reality

There are many kinds of models:

- Physical models
- Mathematical models
- Conceptual models
- Climate and environmental models
- Economic and social models



A world in crisis

The world stands at a historic turning point:

- The climate is reaching boiling point
- Species are dying out at a scale unseen in millions of year
- Ecosystems are stretched or collapsing
- Our finite resources are being overexploited
- The economy is in crisis



Scientific crystal balls

Models can help us:

- Understand how the world is changing
- Project the future consequences of current actions
- Forecast the likely outcomes of change
- Compare different future scenarios

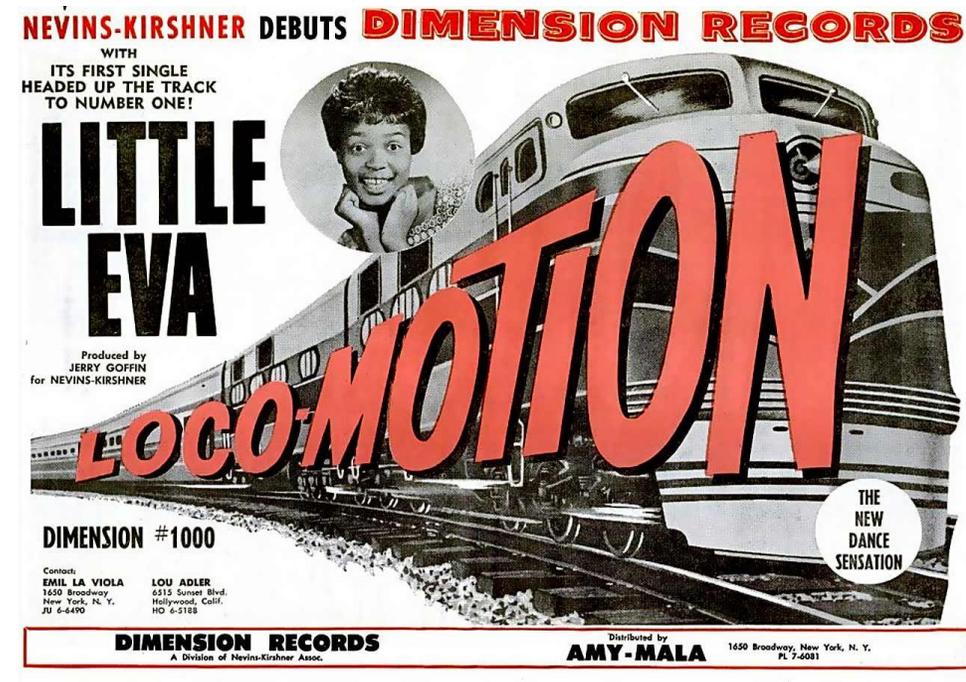


Doing the locomotion

LOCOMOTION is developing sophisticated models and tools to assess the socioeconomic and environmental impact of different policy options in order to help society make informed decisions about the transition to a sustainable, low-carbon future.

LOCOMOTION's models will assess:

- The European Green Deal
- The transition to climate neutrality by 2050
- The effects of pandemics
- And much more



Introducing WILIAM

WILIAM stands for Within Limit Integrated Assessment Model. It is made up of several interrelated models.

- Economy and finance
- Renewable and non-renewable energy
- Raw materials
- Energy infrastructure and technologies
- Environment
- Climate change
- Population and society



WILIAM storylines

Fossil-fuel dominated *business as usual*

fossil fuels, inertia, conflict of interests, climate impacts

Green Growth (market tools and technological development)

economic growth, absolute decoupling, global economic convergence; fast diffusion of low carbon technologies, sector coupling, efficiency improvements

Green New Deal (market tools and technological development complemented with public intervention)

social inequality reduction; public investments; welfare state; public ownership of energy utilities; job guarantee

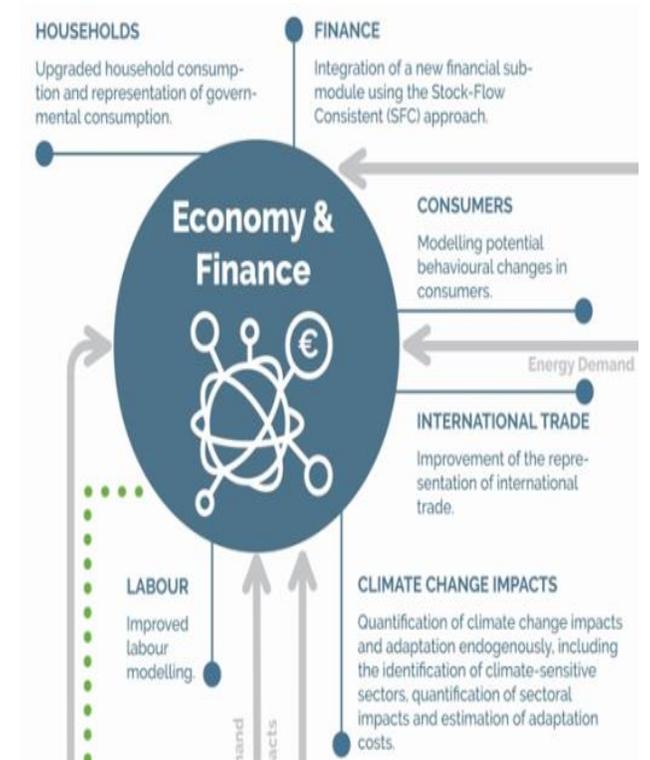
Degrowth (voluntary downscaling)

relocalization, sharing economy, self-organization, commons, conviviality, voluntary behavioural changes; sufficiency

Economy and finance models

LOCOMOTION's economy and finance models represent the intricate and intimate relationships between the economy and ecology.

- Household and government consumption
- Corporate and industry production
- Labour dynamics
- International trade
- Economic impact of climate change



Population and society models

LOCOMOTION's social and demographic models explore the interconnections between demography, society and sustainable transitions

- Humanise the modelling process and content
- Accurate representation of demographic and societal factors
- Attainment of Sustainable Development Goals

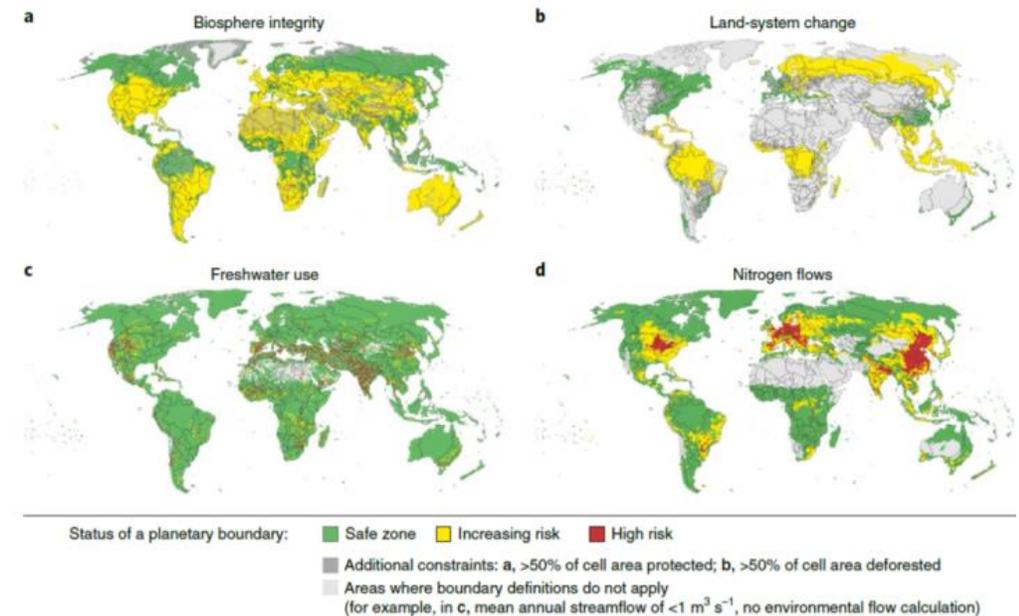


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Environmental models

LOCOMOTION's environmental models examine the two-way relationship between human activity and the environment

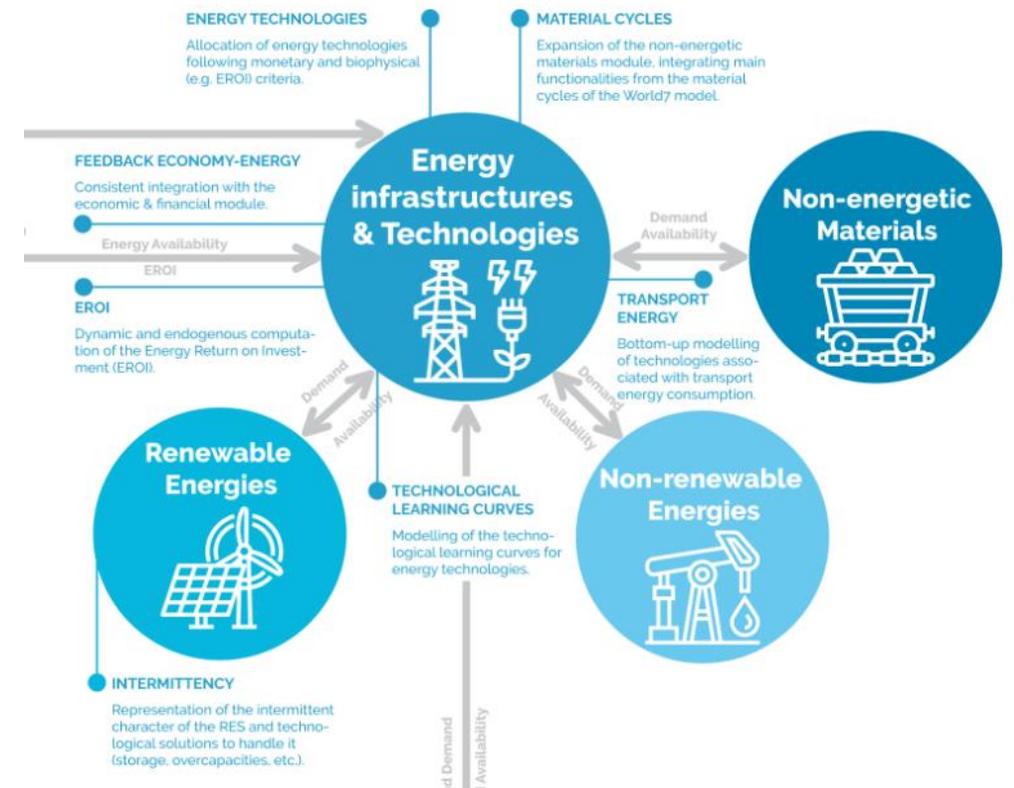
- Increasing pressure on land, food water and energy resources
- Ongoing 6th mass extinction
- Land competition between food, feed, energy and nature
- Food production, demand and diets
- Water supply, demand and allocation
- Planetary boundaries and tipping points



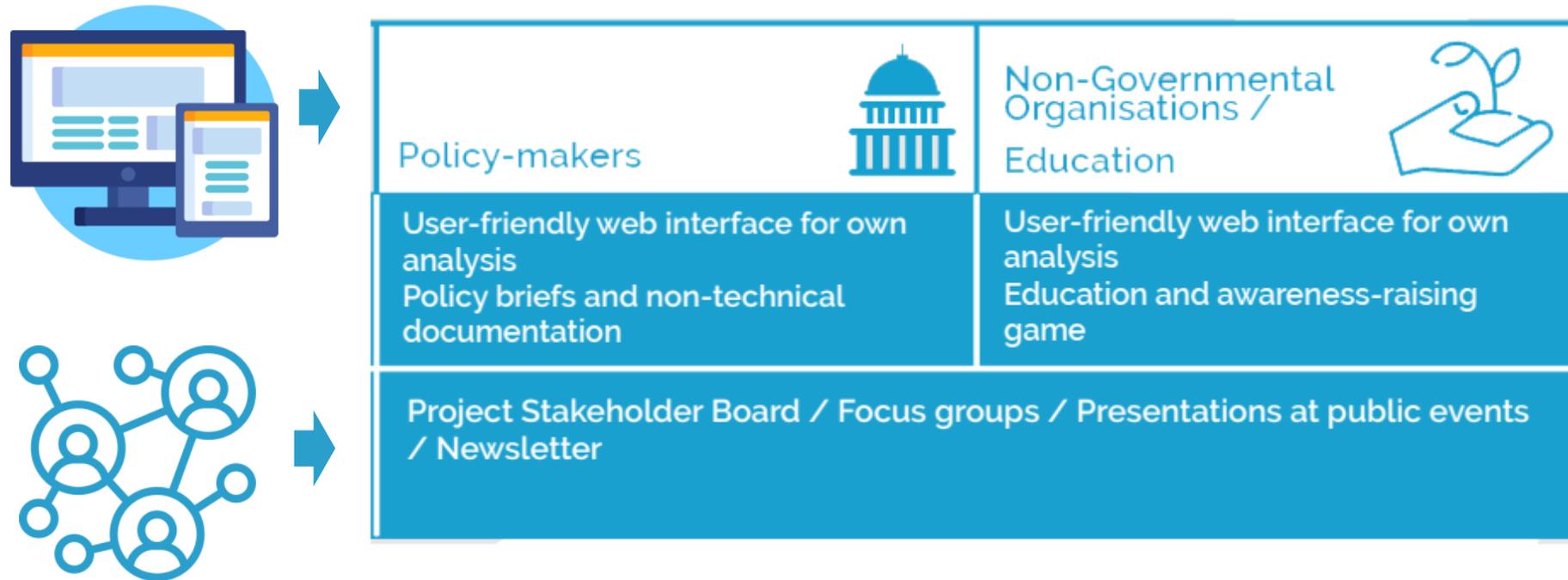
Energy and raw materials models

LOCOMOTION's energy and raw materials models examine the energy transition and its impact on society and the environment

- Different scenarios for the transition to renewable energy technologies
- The impact of the energy transition
- The impact of the changing supply and demand of raw materials
- Necessary social and economic change to make the transition sustainable



Tools for stakeholders



Modelling in your hands

LOCOMOTION is developing user-friendly tools to place the power of its models in the hands of stakeholders.

- **Model Analyser:** Easy-to-use interface to design policies and test out scenarios.
- **Model Explorer:** User-friendly web-based app to explore and run LOCOMOTION's models.
- **Global Sustainability Crossroads II:** Simulation game enabling players to explore different future scenarios.



Stakeholder involvement

Stakeholder involvement is an important pillar of LOCOMOTION to ensure that our models and tools serve the needs of stakeholders

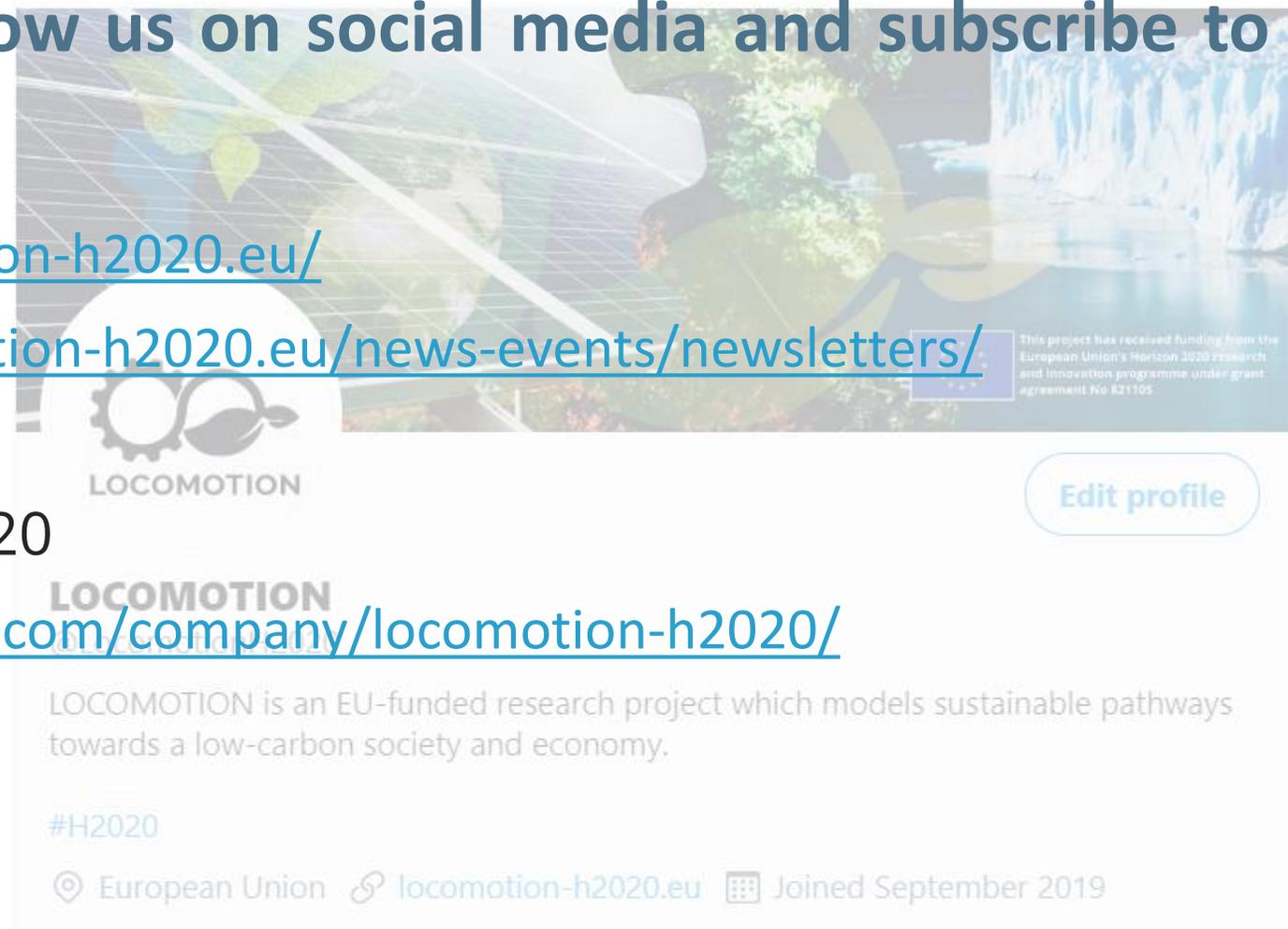
- Pool of stakeholders set up
- Survey of stakeholders
- Focus groups and consultations
- Cognitive mapping
- Still possible to join stakeholder pool



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