CAETS 2024

Helsinki

CAETS
Sequel Project

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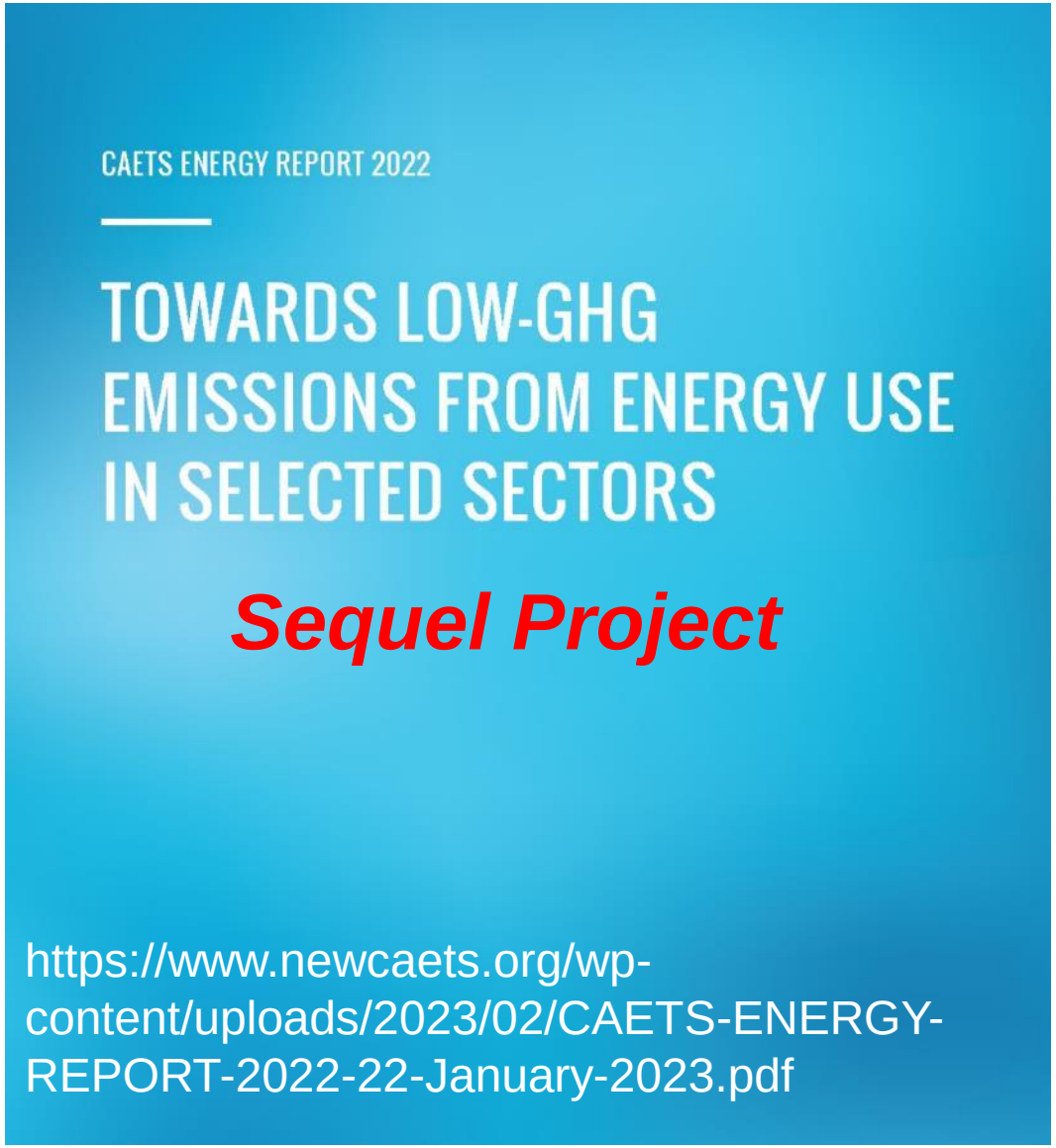


Focal Question:

What actions need to be taken now, and in the near future, so that sufficient technologies are available and realistically deployable to ensure low-GWH emissions from energy use in selected sectors beyond the year 2024?

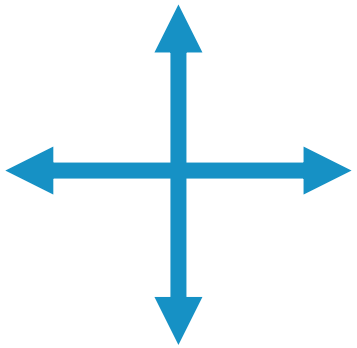
Project Methodology:

Foresight / Scenario Creation

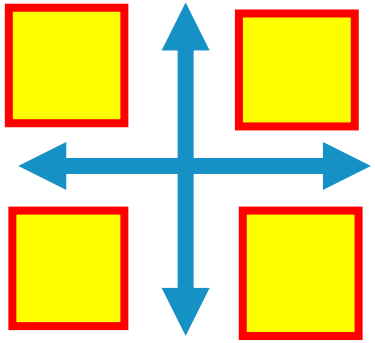
Define the ‘focal question’ and relevant timeframe
Review past events and current knowledge

3. Identify Drivers

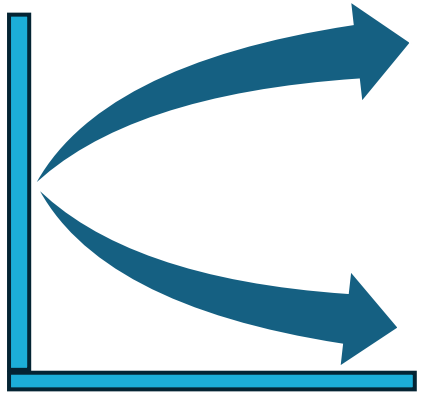
4. Identify Critical Uncertainties



5. Develop Scenario Characteristics



6. Determine Implications & Strategies



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Forestry Industry Strategies

- Quantifying, managing and increasing the value of forests
- Developing novel products, especially from lignin and hemicellulose

Agriculture and Food Strategies

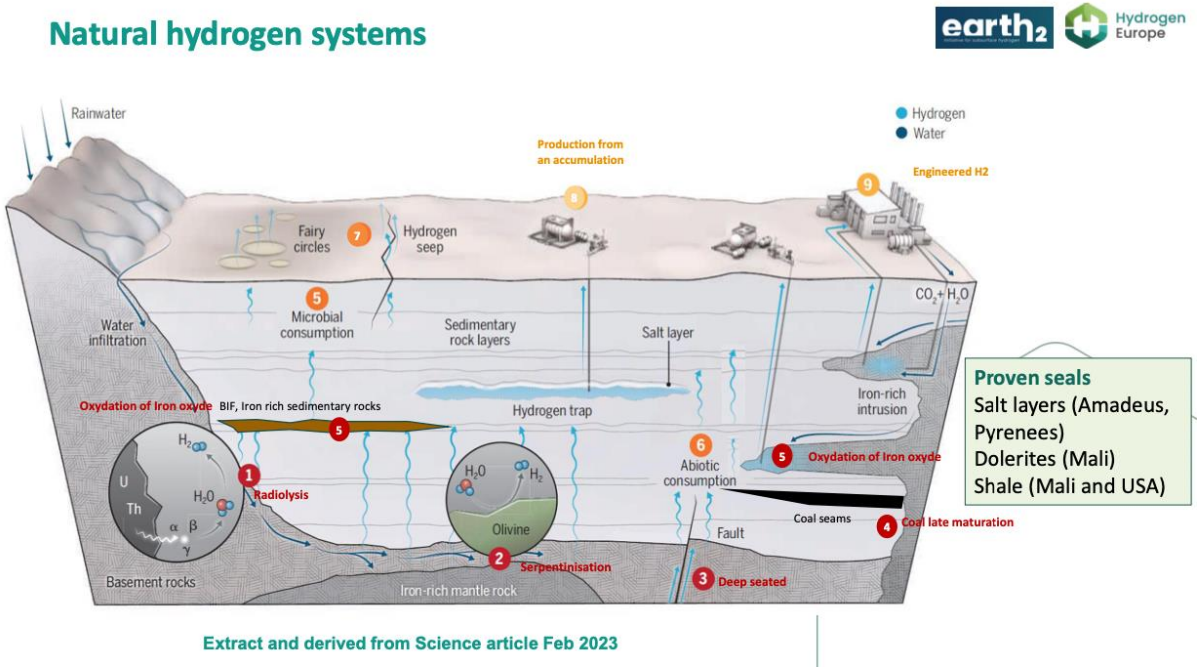
- Enhancing ecosystem health, specifically soil health, to increase natural GHG storage capacity

Oil & Gas Industry Strategies

- Deploying small modular refineries under special conditions
- Electrifying process technologies using electricity derived from low-carbon sources
- Producing new products in addition to energy products

Hydrogen Strategies

- Developing advanced electrolysers powered by low-carbon electricity
- Exploring and validating the potential of geologic hydrogen



Carbon Capture and Storage (CCS) Strategies

- Developing new CO_2 separation processes and scaling up current ones while reducing costs

- Accelerating the approval of storage sites that meet regulatory requirements and community expectations

Chemical Industry Strategies

- Enhancing efficiencies and reducing GHG emissions through process electrification based on low-carbon electricity
- Developing new catalytic, separation, and electrochemical processes
- Developing and producing new products

Cement Industry Strategies

- Utilising unconventional raw materials and moving to blended cements
- Scaling up novel production processes that maximize the use of low-carbon electricity
- Accelerating fact-based changes in materials specifications, design codes and construction practices

Iron & Steel Industry Strategies

- Further developing current innovative production processes based on hydrogen and/or electricity
- Reducing contaminant buildup in recycled steel

Buildings and Smart Cities Strategies

- Reducing electricity and thermal energy requirements through the deployment of smart technologies
- Nurturing social inclusion, technological adoption, and economic advancement through stakeholder collaboration

Strategies applicable to all sectors

- Ensuring well-educated citizenries
- Creating and maintaining expert workforces

EDUCATIONAL INSTITUTION

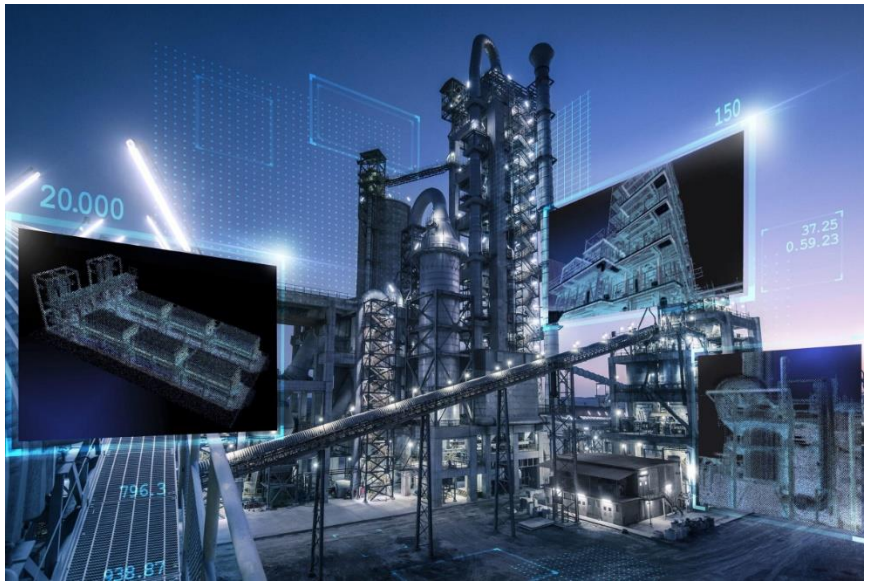
ON THE JOB TRAINING

Strategies applicable to all sectors

- Implementing supportive policies and regulations
- Strengthening collaboration

Strategies applicable to all sectors

- Utilizing digitalization and Artificial Intelligence
- Accounting for local, regional, and national differences



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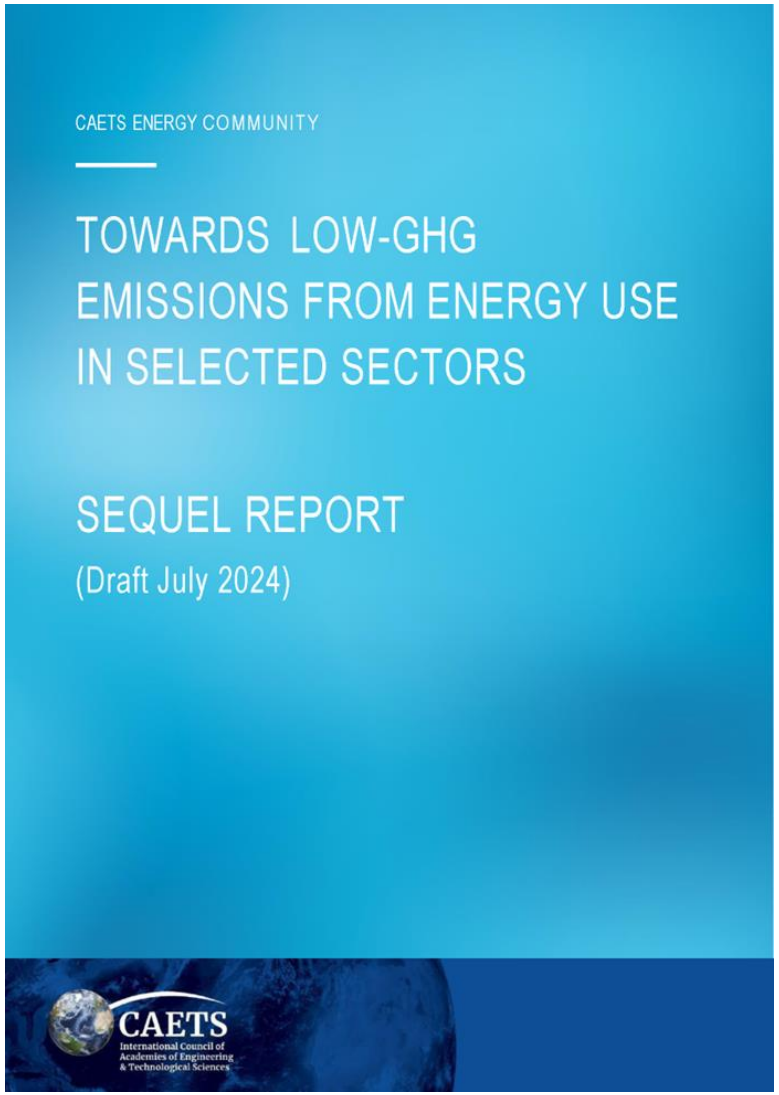

Next steps:

- Completion of chapters
- External reviews

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