

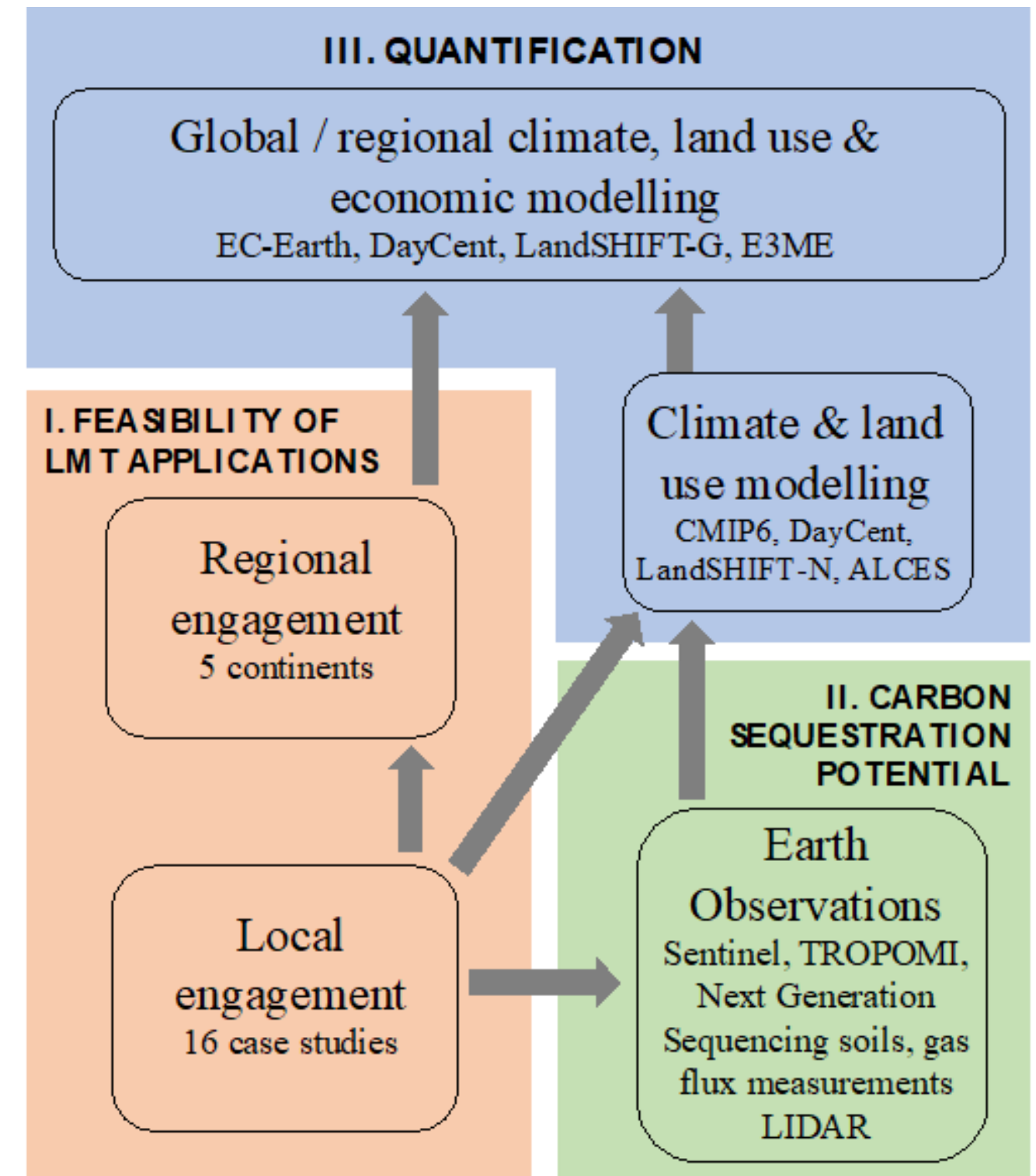


An Introduction to LANDMARC



Overall concept

- The LANDMARC project looks at the **land-climate-development nexus**
- To better understand the impacts of Land-based CDR through:
 - **Earth Observations**
 - **Simulation modelling**
 - **Stakeholder engagement**
 - **Assessment of climate resilience + co-benefits & trade-offs**



Canada

Willow plantations on abandoned mine sites

Partner: Innolab Space

Sweden

Biochar applications

Partner: Stockholm Environment Institute

Germany

Forest management, restoration & conservation

Partner: Okö Institut

The Netherlands

Agroforestry & palidiculture

Partners: Bioclear Earth & Joint Implementation Network

Switzerland

Reduced tillage & Organic cropping

Partner: ETH Zürich

Nepal

Improving farm resilience and reducing emissions through sustainable rice production

Partner: University of Sussex

Vietnam

Sustainable coffee and pepper production in Vietnam

Partner: Int. Centre for Tropical Agriculture

Indonesia

Decarbonisation from composts including biogas in Indonesia.

Partner: Sustainability & Resilience Company

Kenya

Strengthening carbon and water observatory rangeland in Kenya using a case study of ring-fencing in upper Ewaso Ng'iro North river basin & integrated soil fertility management..

Partner: ETH Zürich

South Africa

Eddy Covariance flux measurements to calibrate and validate satellite EO estimates on the of vegetation in carbon sequestration

Partner: eLEAF

Venezuela

Indigenous ways of fire management to prevent catastrophic wildfires and preserve carbon sinks through sustainable agricultural practices in the Amazon forests.

Partner: Cobra Collective

Portugal

Agroecosystems In Southwest of the Iberian Peninsula in Spain (dehesas) and Portugal (montados).

Partner: Agroinsider

Spain

Carbon sequestration capacity and degraded agricultural lands reforestation program in Extremadura

Partner: Agroinsider

Burkina Faso

Support the World Bank Forest Investment Program (FIP) to assess its investments (integrated policy to reduce GHG emissions from land use changes and forestry

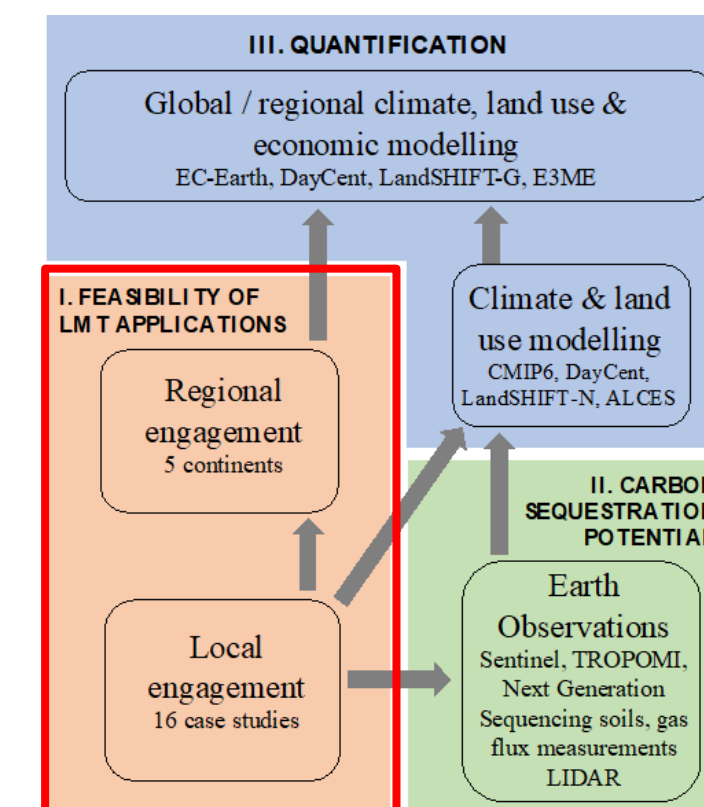
Partner: eLEAF

Regional Platforms

Five regional clusters for scenario development, knowledge exchange in:

- Europe
- Asia
- Africa
- North America
- South America

Partner: Stockholm Environment Institute



- 16 Case studies
- 5 Regional platforms

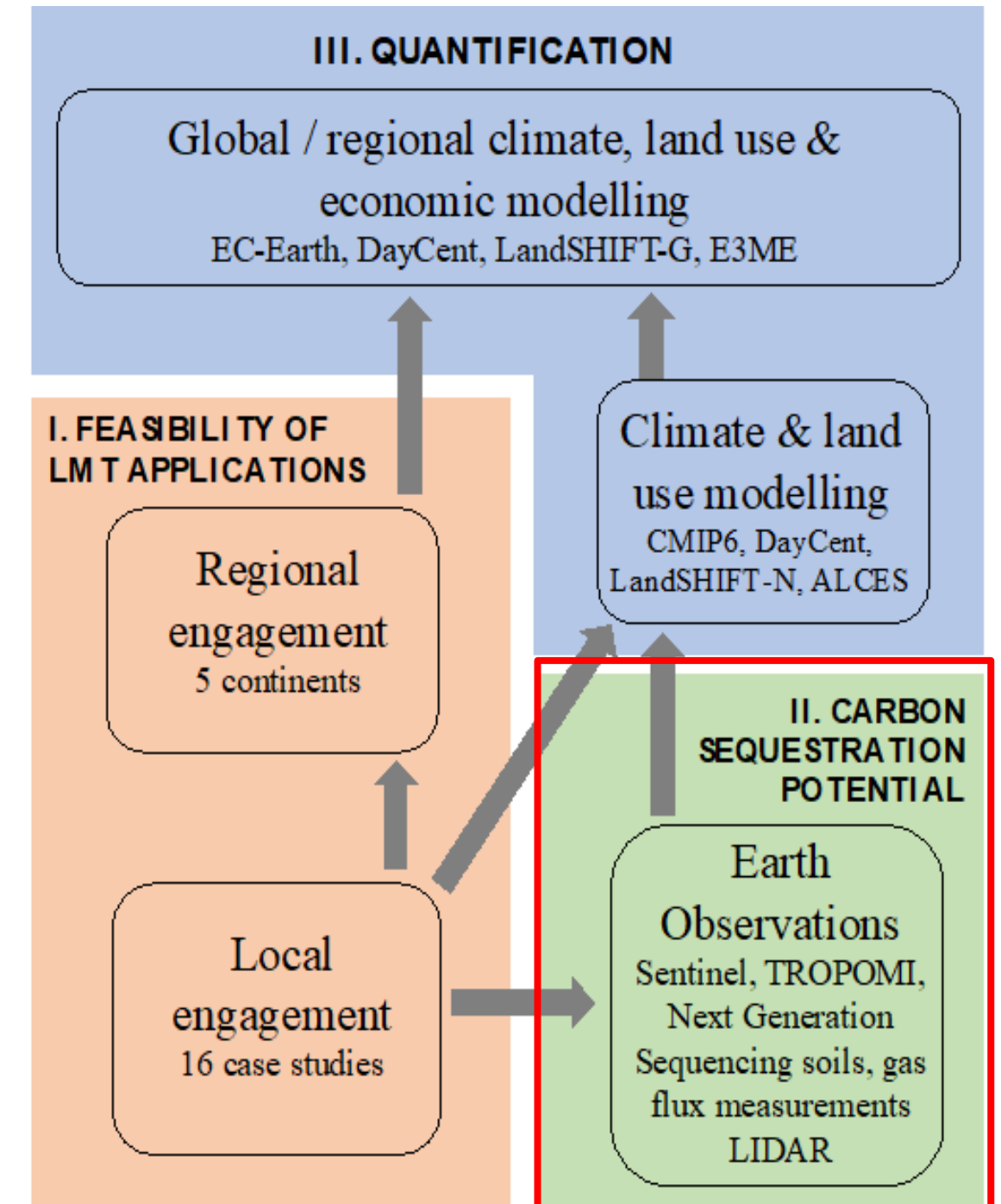
Stakeholder engagement, data collection and co-design of scaling scenarios



Earth Observations

Improve Earth Systems Observations

- Remote sensing and in-situ data collection (primary + secondary)
- Assess effectiveness of land-based negative emission solutions (linked to case studies)
- Explore new Earth Observation business models (i.e. carbon map / monitoring tool)



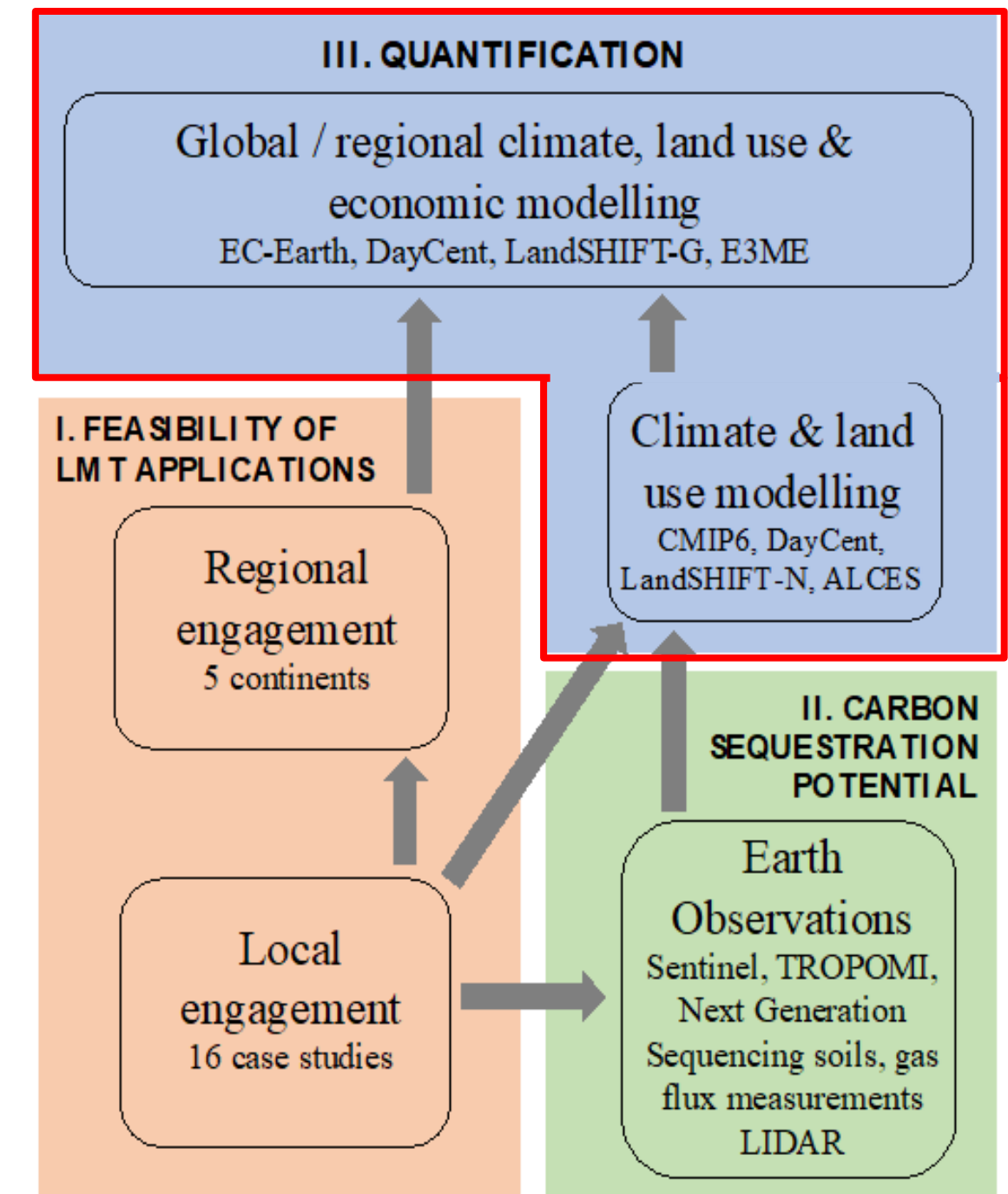
Assessments & simulation modelling (1)

Climate sensitivities and risk assessment

- How robust are land-based CDR in a changing climate?
- Qualitative assessment (local stakeholders)
- Quantitative assessment (climate scenario modelling)

Scaling-up scenario's and policy portfolios

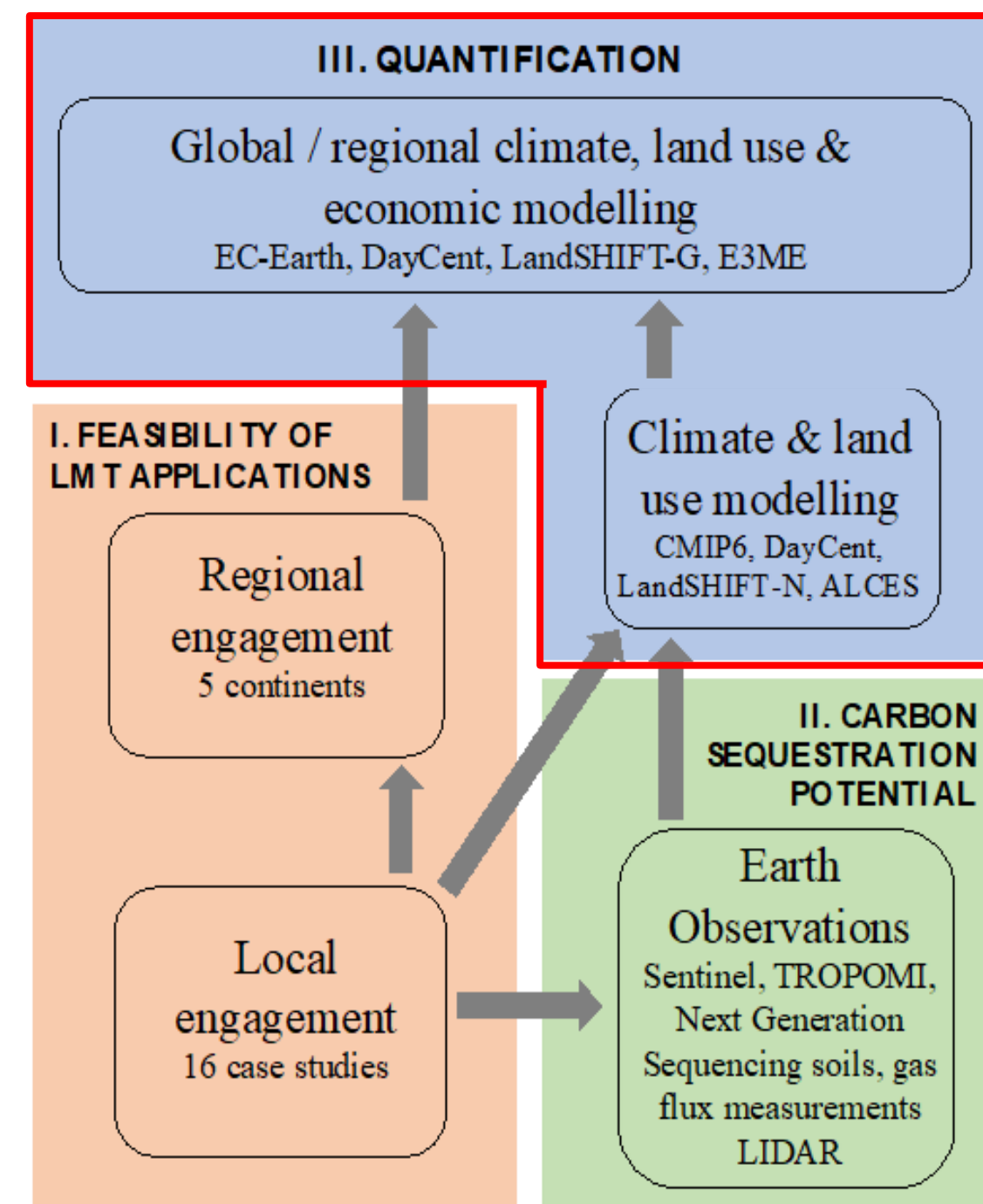
- Risk co-benefit & trade-off assessment
- Model simulations with model suite
- Policy barriers & policy packages



Assessments & simulation modelling (2)

Global scaling scenario simulations

- Development of global-level model system
- Simulations with model system
- Assessment of environmental, societal and economic effects



THANK YOU!

LANDMARC Partners

Earth Observation partners

- Royal Dutch Meteorological Institute, NL
- Agroinsider, PT
- eLEAF, NL
- Ambianta, ES
- Bioclear Earth, NL

<https://cordis.europa.eu/project/id/869367>

Simulation modelling partners

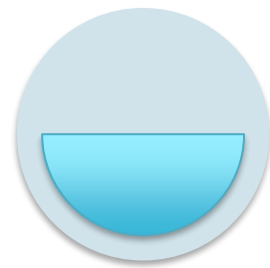
- University of Kassel, DE
- ETH Zürich, CH
- Barcelona Supercomputing Centre, ES
- Cambridge Econometrics, UK

Social science / case study partners

- TU Delft, NL
- Stockholm Environment Institute, SE
- Okö Institut, DE
- BioRecro, SE
- PT Sustainability and Resilience, ID
- Cobra Collective, UK
- University of Sussex, UK
- International Centre for Tropical Agriculture, CO
- JIN Climate & Sustainability, NL
- Innolab Space, CD



LANDMARC Ambition



State of the Art



Improving Earth Observation

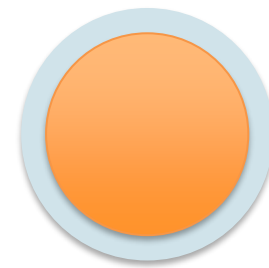
Mainstreaming climate risk assessment in conventional risk assessment practices



Detailed assessment of land-based negative emission solutions potential beyond individual technologies and countries



Stakeholder knowledge for negative emission solution portfolio and scaling scenarios



Beyond the State of the Art



Improving GHG accounting for sustainable land management technologies



Advance science and data availability on the impacts of climate change on soil quality & biodiversity



Advance science and data availability on climate change impacts on vegetation performance & air quality



Unlocking the potential of the carbon markets for negative emission solution finance



Systematic coupling and integration of unique model sets for negative emissions scenario development



LANDMARC Impacts

Contribute to major international scientific assessments such as the IPCC reports and the IPBES, as well as to national and EU impact assessments of possible mitigation options

- New scientific data and results on the impact of LMT scaling on soil quality/ biodiversity
- New scientific data and results on the impacts of LMTs on photosynthesis performance and the carbon uptake of terrestrial vegetation
- New scientific results and data from an experimental application of high resolution atmospheric monitoring of diffuse emissions of air pollutants
- New scientific data and results on future climate change impact and the exposure of LMT scaling in 16 countries and 5 continents

Developing a comprehensive medium-to-long term vision and analytical framework on pathways to achieve climate neutrality in the perspective of reaching the PA goals

- Novel land use scenario pathways to achieve the PA goals.
- Presentation of results of the integrated impact assessment on the co-benefits and trade-offs of scaling up LMT pathways.
- Results from the national/continental LMT policy portfolios can help support the development and testing of a policy decision support framework for scaling sustainable land management strategies.

Improved ex-post, spatially explicit monitoring of the mitigation performance of the land sector

- Advancements in monitoring and accounting of land based emission sources and sinks in National GHG Inventory reporting.
- New business models to determine climate and ecosystem performance of land-use activities

Enhanced international cooperation and increased capacities

- Enhanced local/national cooperation
- Enhanced regional/ continental / global cooperation
- Other added impacts
- Activate the (voluntary) carbon offset markets for LMT solutions

