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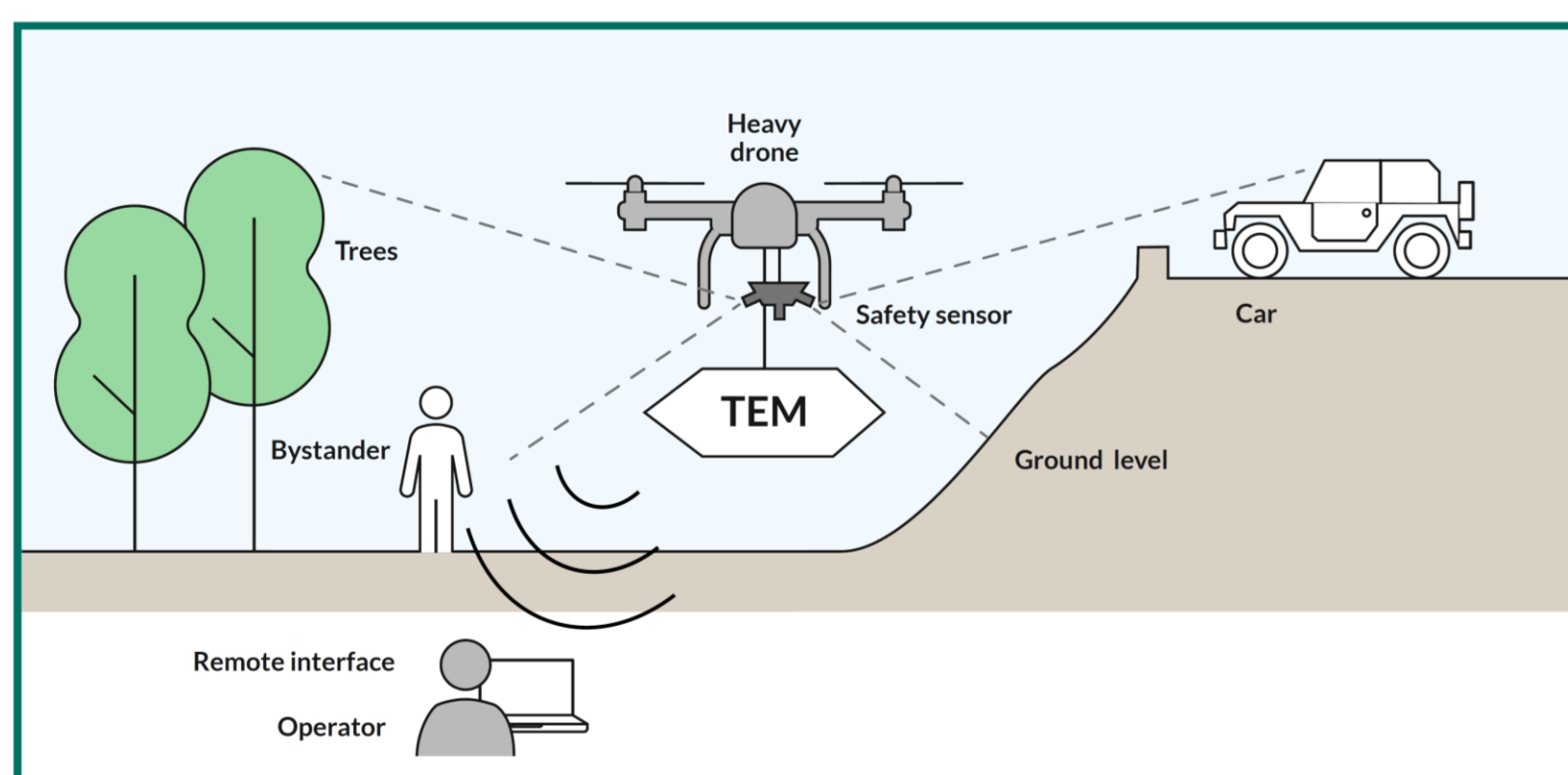
Denmark is facing a large-scale land conversion, with almost 400,000 hectares of agricultural area being transformed to nature and forest for environmental protection. It is crucial to integrate protection of our groundwater resources in this coming land use planning.

The vision

The vision of PROTECT is to develop and integrate various technical and research methods and create a new knowledge base to integrate groundwater protection with the protection of the rest of the aquatic environment, biodiversity, human health and the climate from an environmental and economic perspective.

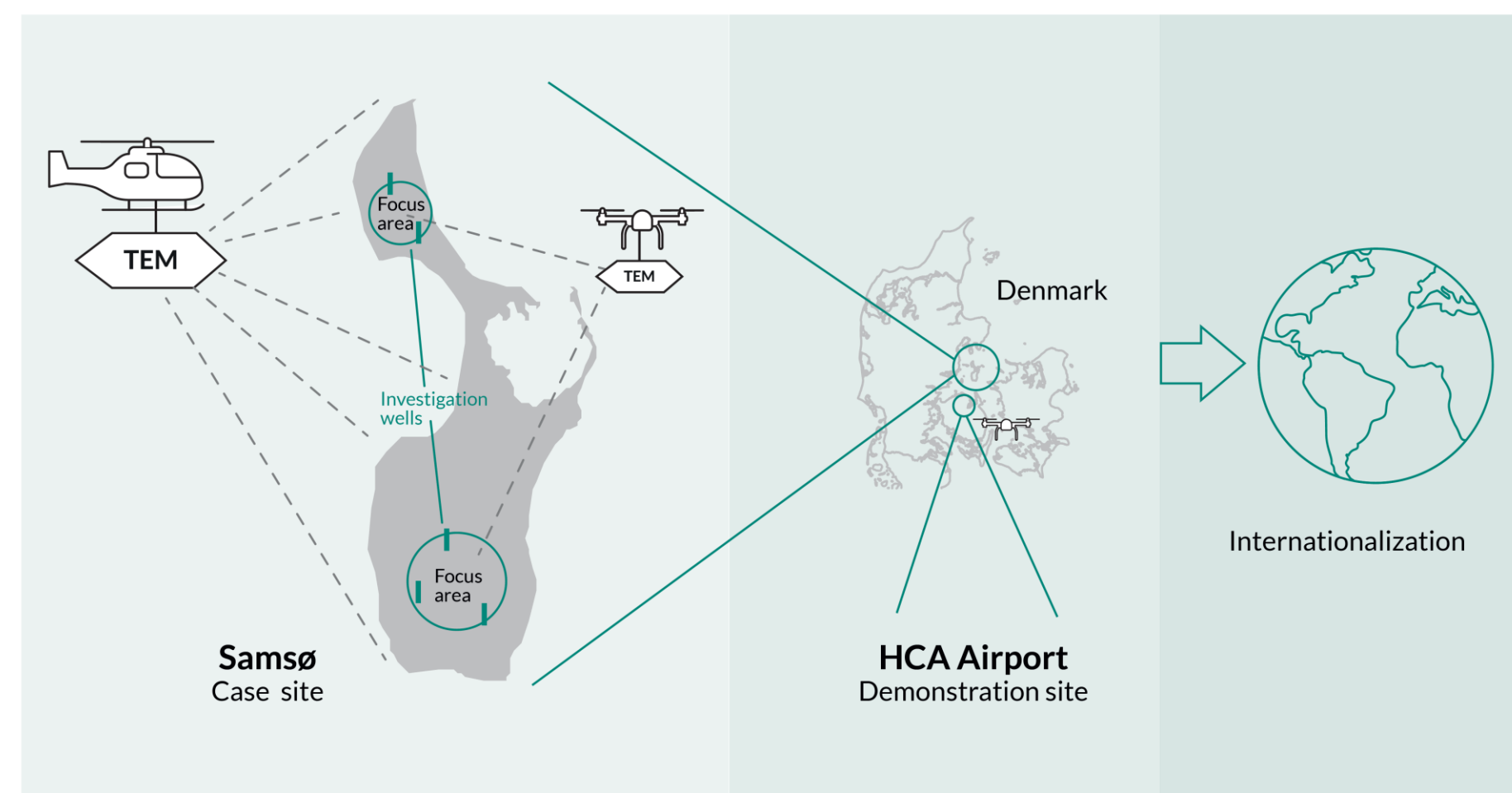
Heavy-lift DroneTEM development

A Transient ElectroMagnetics (TEM) drone technology will be developed from a minimum viable prototype to a proven mature prototype for large-scale subsurface geophysical data acquisition. A sensor and awareness system will be built to make the heavy-lift DroneTEM capable of safety flying Beyond Visual Line Of Sight (BVLOS).



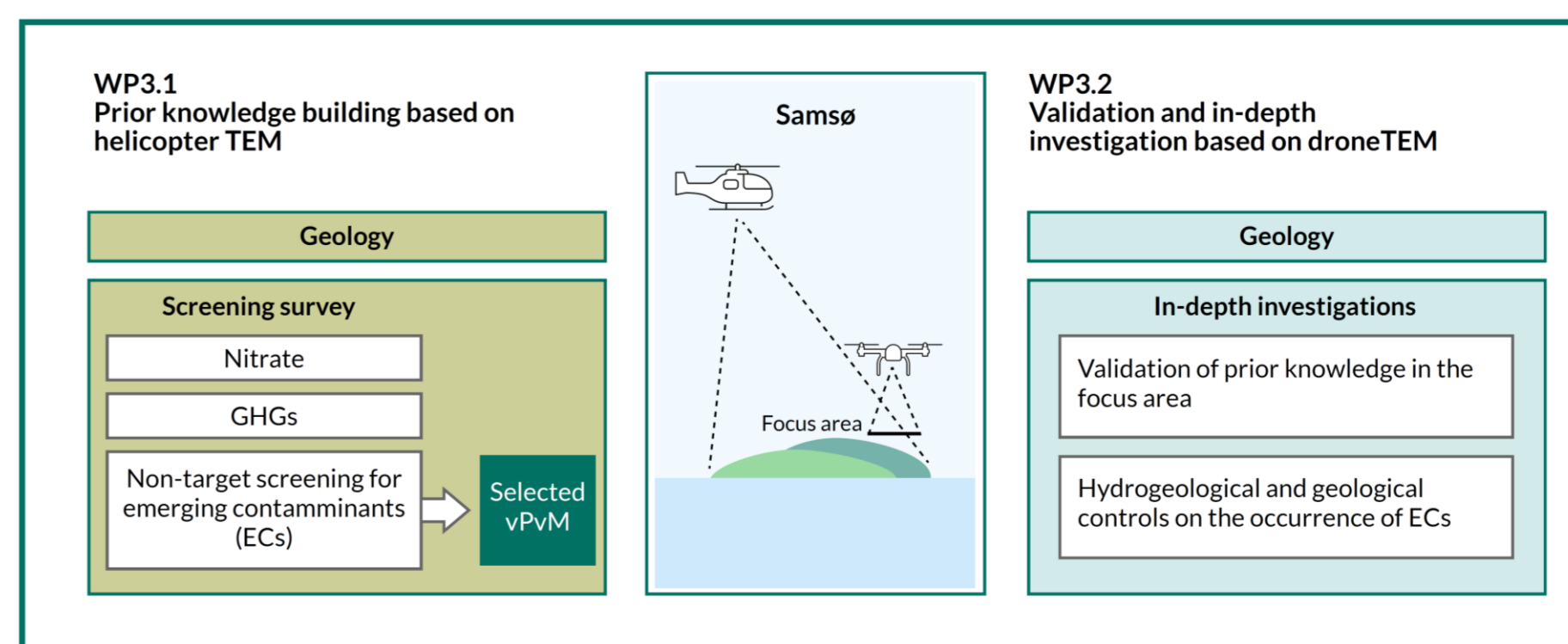
The case area

The research project will test and develop the methods on the island of Samsø in collaboration with authorities and stakeholders. Drone tests will be performed at HCA Airport at SDU UAS. There is great potentials for the application of the methods internationally especially the heavy-lift DroneTEM but also the scientifically tools being developed.



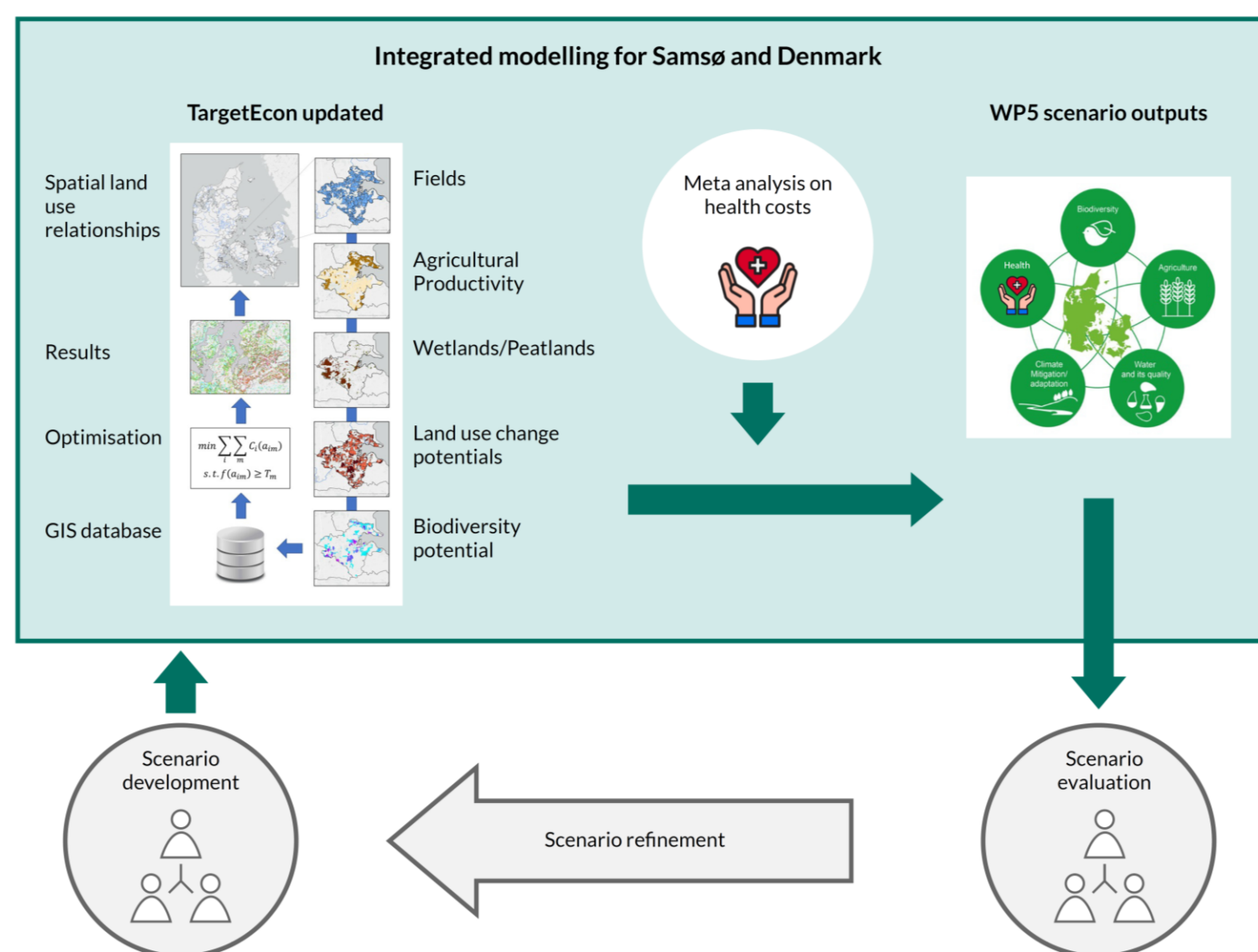
Groundwater knowledge building

Helicopter geophysical surveys will be performed on the entire island of Samsø with the TEM system intended for drones. Geological data interpretations will provide detailed knowledge for selection of focus areas for heavy-lift DroneTEM and geochemical borehole investigations.



Environmental economic modelling

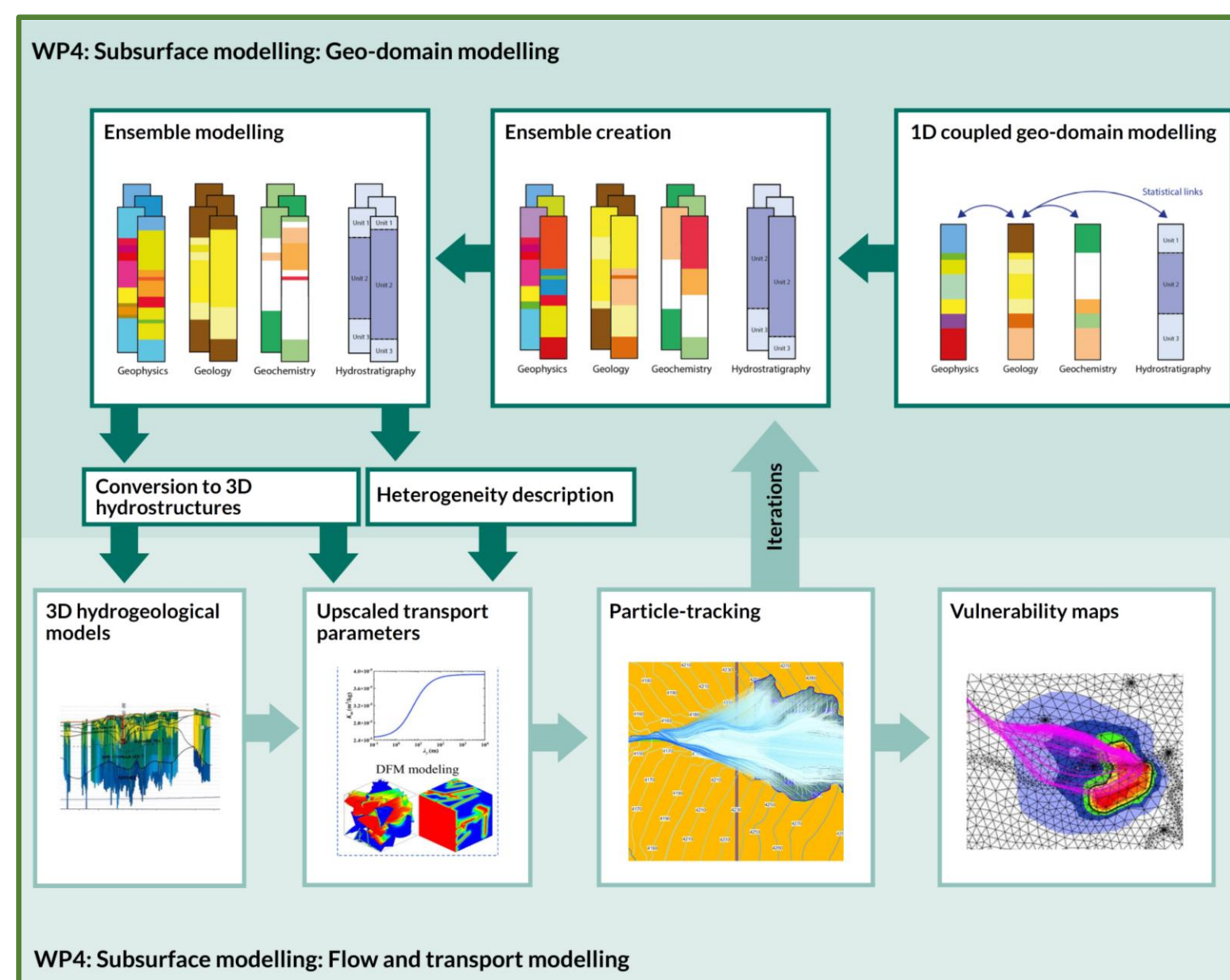
An environmental economic model will include groundwater protection areas, health costs of drinking water pollutants and engage stakeholders and experts in creating needed knowledge for the protection of water quality, biodiversity and human health, and mitigation of climate change.



PROTECT - an Innovation Fund Denmark project
 PROTECT is a Grand Solution Innovation Fund Denmark project led by GEUS in a collaboration with a highly interdisciplinary consortium of nine partners. The total budget is approximately DKK 35 million (~4.7 million EUR), of which approximately DKK 26 million (~ 3.5 million EUR) come from Innovation Fund Denmark. The new research project will develop methods over the next four years (2025-2029) that better and more cost-effectively secure the necessary knowledge for groundwater protection in future land use planning. This is paramount for the Danish green transition.

Groundwater modelling

Models will be developed integrating detailed geophysical, geological, hydrological and geochemical knowledge about the groundwater aquifers using a probabilistic geostatistical approach. In that way we gain a better insight into the distribution and duration of unwanted chemical substances in the groundwater with a focus on very persistent very mobile contaminants (vPvM)



If you want to know more

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