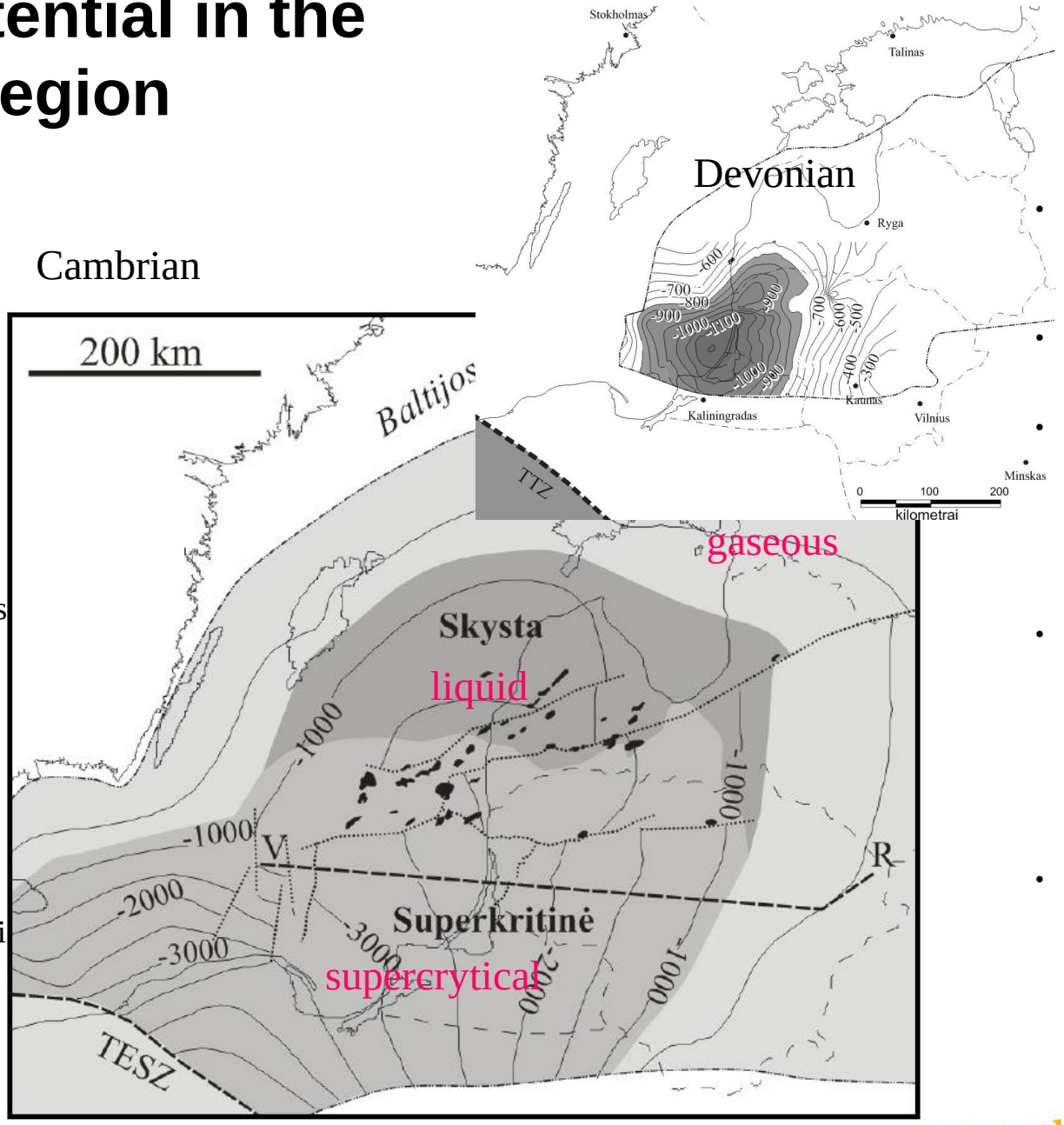
D3 - Baltic region storage – project design

BASRECCS - Storage Task Force

CGS Baltic – Seed project proposal

Storage potential in the Baltic Sea region

- **Sweden:** Large regional theoretical capacity but limited in structures.
- **Germany:** situated outside of the Baltic Basin. Small structures identified in Baltic Sea. Several Gt capacity onshore in younger rocks
- **Poland:** Several Gt capacity onshore in younger formations. Current assessments show 861 Mt regional capacity and 7 Mt capacity for a depleted oi field in the Polish Baltic Sea sector.

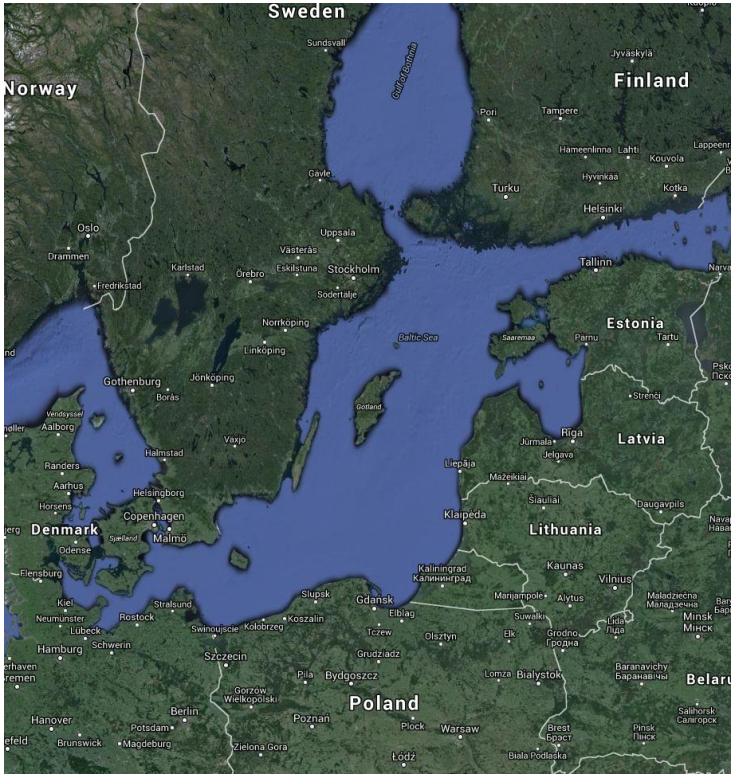


- **Finland:** no suitable reservoir rocks
- **Estonia:** basin too shallow
- **Latvia:** large suitable Cambrian structures with total capacity of at least 400 Mt
- **Lithuania:** small structures but large theoretical potential in regional Cambrian and Devonian aquifers
- **Russia (Kaliningrad):** small structures but large theoretical potential in regional Cambrian and Devonian aquifers

Storage Task Force

- Storage Task force was composed at the beginning of 2015
- Mainly universities and/or research institutes from all countries surrounding the Cambrian sandstones of southern Baltic Sea

Finland	Geological Survey of Finland, Technical Research Centre of Finland
Sweden	Geological Survey of Sweden, Uppsala University
Estonia	Tallinn University of Technology
Lithuania	The Nature Research Centre
Latvia	Riga Technical University
Russia	All-Russia Petroleum Research Exploration Institute
Poland	Polish Geological Institute, AGH University of Science and Technology, Oil & Gas Institute-National Research Institute
Germany	Bundesanstalt für Geowissenschaften und Rohstoffe
UK	SLR
Norway	Bellona



Google Maps, 13.4.2015

- Broad expertise from different fields of geosciences and geological CO_2 storage research

Summary of Storage Task Force (STF) activities

- Strategy for CO_2 storage in the Baltic Sea Region (BSR) was discussed at the STF meeting in Tallinn 22.4.15
  - Based on the discussions in Tallinn the next CO_2 storage project should aim for basin scale view of storage potential. Expansion of Bastor.
    - Most urgent need is to collect all publically available data and discuss with e.g. oil companies on the possibilities of cooperating.
    - We need a better characterisation of cap rock and reservoir properties and start preparations for pilot testing
  - Discussions resulted in the drafting of a roadmap for storage research, with goal of enabling commercial CO_2 storage in the BSR before 2030.

Preliminary roadmap for CO2 storage (optimistic)

Storage task force

2015 Mission statement

2015 Establish contacts, collection of stakeholder opinions. Project preparations.

- Map possibilities for funding. Seed money etc.

2016-2017 Basin scale view of storage potential, expansion of Bastor

- Collection of all publically available data
- Collection of confidential oil company data
  - Potential for additional data from current and future activities.
- Basin scale model.
- Storage recommendations

2016-2022 Better characterisation and modelling of reservoir, cap rock, fault zones

2017-2022 (Onshore) pilot

- Baseline studies
- Test drilling
- Characterisation
- Injection
- Monitoring

2020-2030 Characterisation of commercial storage site(s)

- Site selection
- Baseline studies
- Test well
- Characterisation, risk assessment and monitoring plan

2030 Commercial storage 30 Mt/a

Summary of STF activities

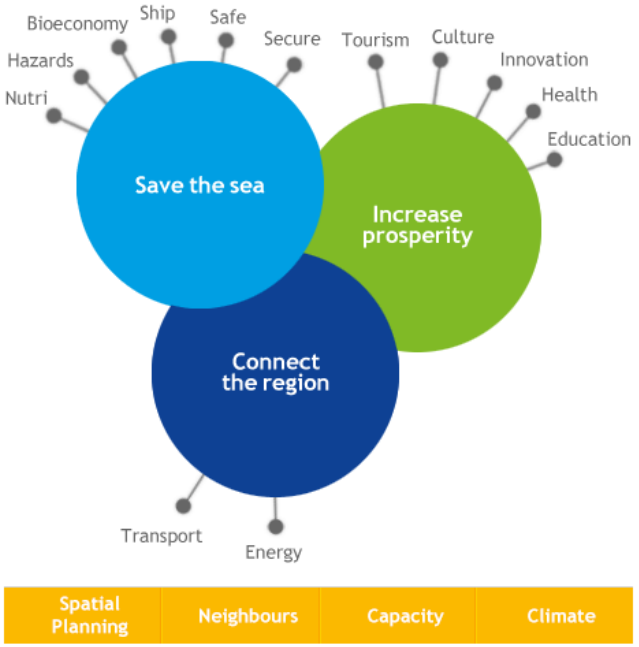
- During this summer a Project Proposal Committee was established.
  - Plan was to prepare a preliminary outline of a project proposal, which is presented and discussed within the task force in connection to the next CCS network meeting in Warsaw.
  - EUSBSR seed money facility was later identified as a potential source of seed funding.

EUSBSR
EU STRATEGY
FOR THE BALTIC
SEA REGION

- Macro-regional strategy aiming at reinforcing cooperation within the BSR. The Strategy contributes to major EU policies and reinforces the integration within the area.

Country participation

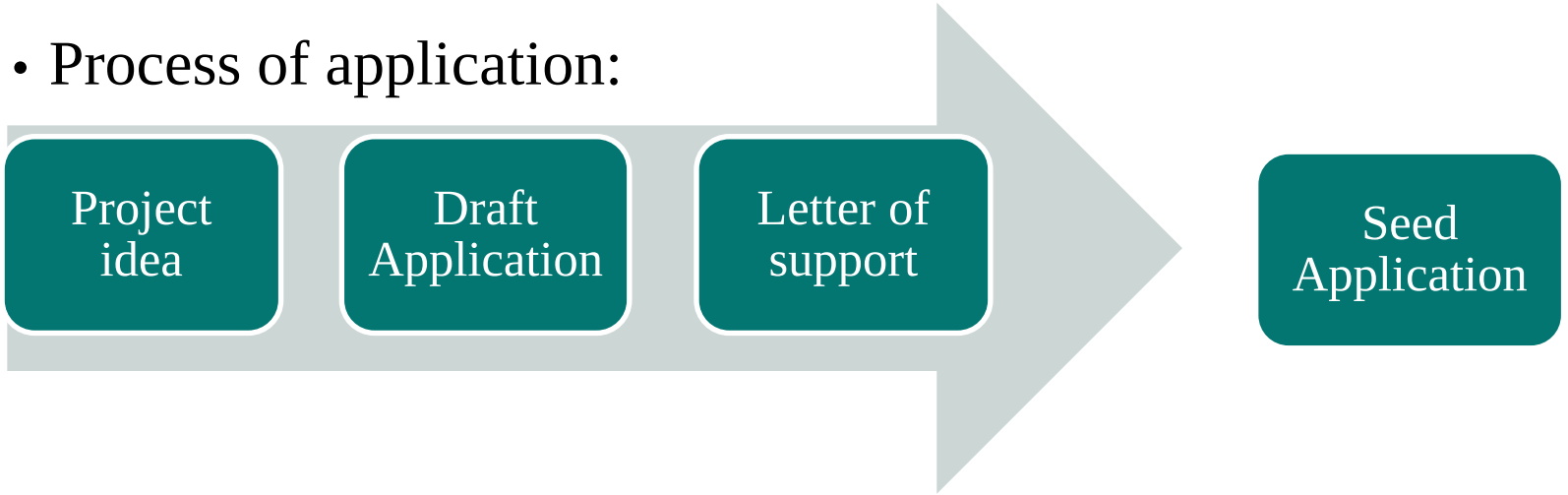
Objectives



Seed project proposal - CGS Baltic

- Preliminary project idea “CGS Baltic” was presented to EUSBSR Horizontal Action (HA) leader Climate in July.

- Process of application:

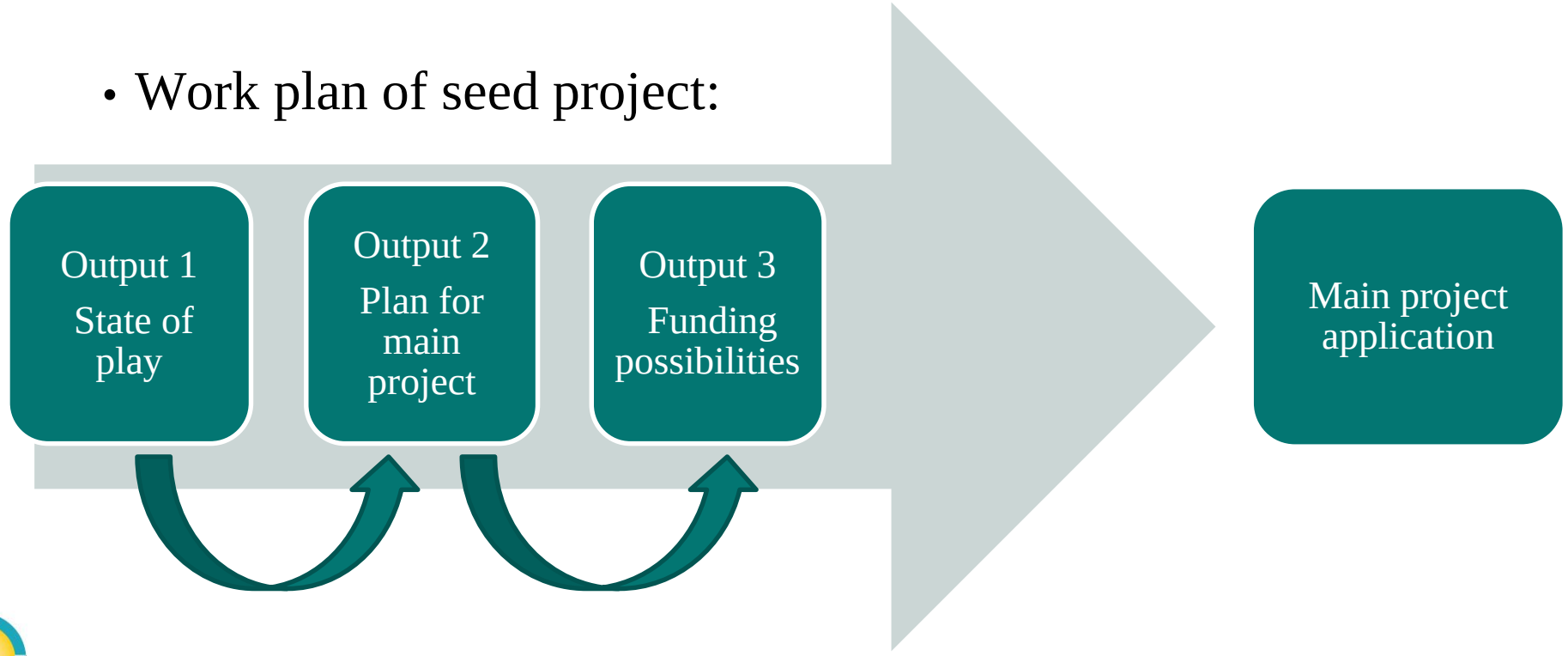


- Funding decision in January 2016

Seed project proposal - CGS Baltic

- Duration:12 months.
- Budget: 50k€

- Work plan of seed project:



Output 1 - CGS Baltic

State of play in the field addressed by the project including an overview of complementary projects

1.1 Situation and stakeholder analysis, Nicklas Nordbäck/GTK

- Establishment of contacts, opinions and background information from potential stakeholders in the Baltic Sea countries.

1.2 State of geological CO2 storage research in the Baltic Sea region, Saulius Sliauppa/NRC

- Description of completed, current and planned research projects.

1.3 Mapping of available geological data, Adam Wójcicki/PGI

- To assess the availability and ownership of all relevant seismic and deep bore hole data, a metabase will be created.

Output 2 - CGS Baltic

Plan for the main stage project containing work plan, composition of the partnership and budget plan

2.1 Planning of a pilot test CO2 injection site, Chris Juhlin/UU

1. locating optimal test sites from a geological perspective by reviewing existing data and projects
2. consideration of local acceptance of a test site and logistics
3. developing monitoring plans for a test site
4. building the consortium by identifying project partners and their roles
5. an outline of a project plan based on (1-4)
6. a preliminary budget for a test site based on 5

Output 2 - CGS Baltic

Plan for the main stage project containing work plan, composition of the partnership and budget plan

2.2 Planning of modelling and risk assessment for storage in the BSR, Auli Niemi/UU

1. Building a static model
2. Dynamic modeling
3. Risk assessment based on the modeling in 1 and 2
4. Building the consortium by identifying the project partners and their roles
5. A budget for the work in the main project. In order to reach a reasonable budget that will allow a project that addresses the questions raised in the project plan there will be several iterations between 4 and 5.

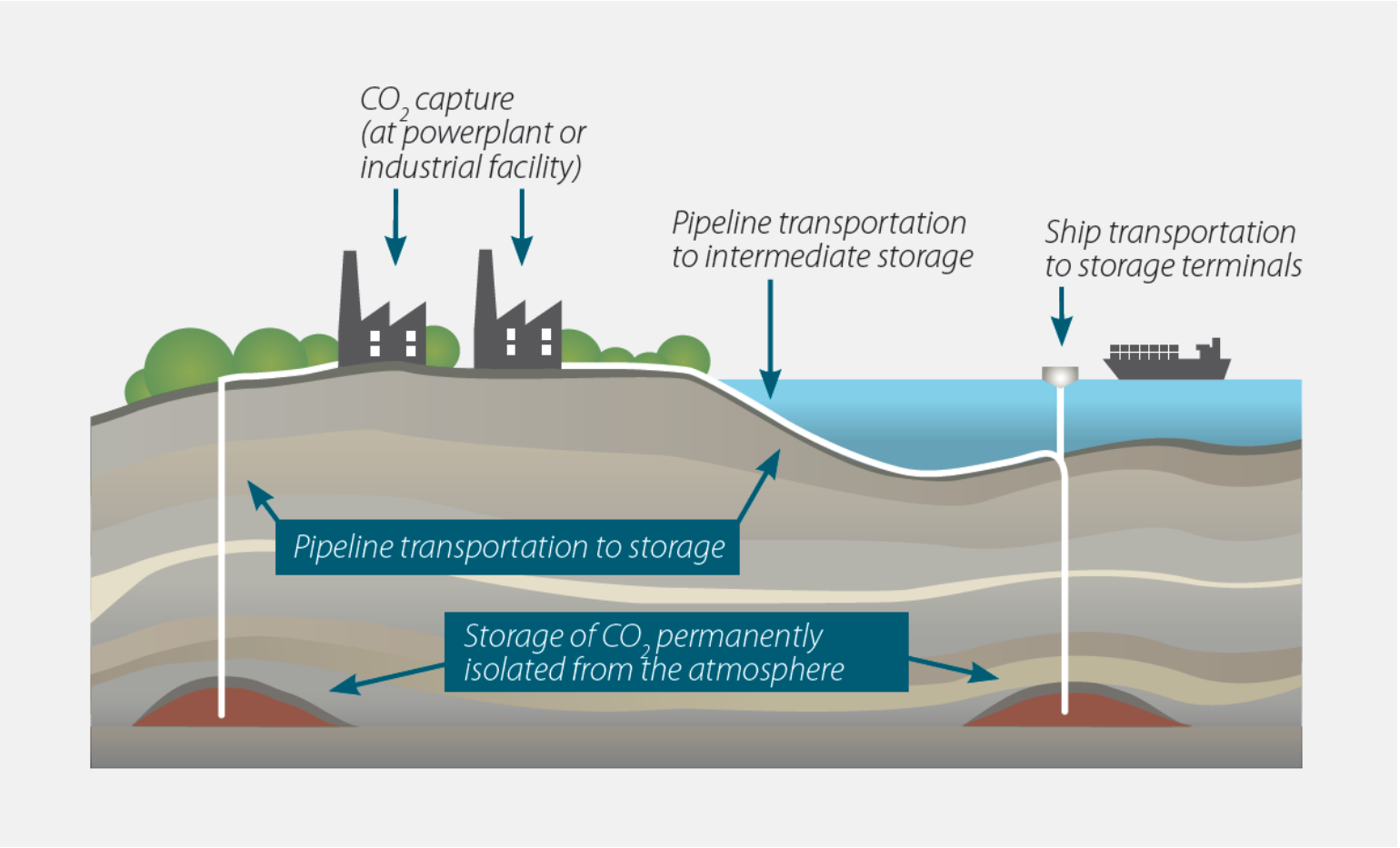
Output 3 - CGS Baltic

Report on funding possibilities and steps to be taken after the seed money project is finalised

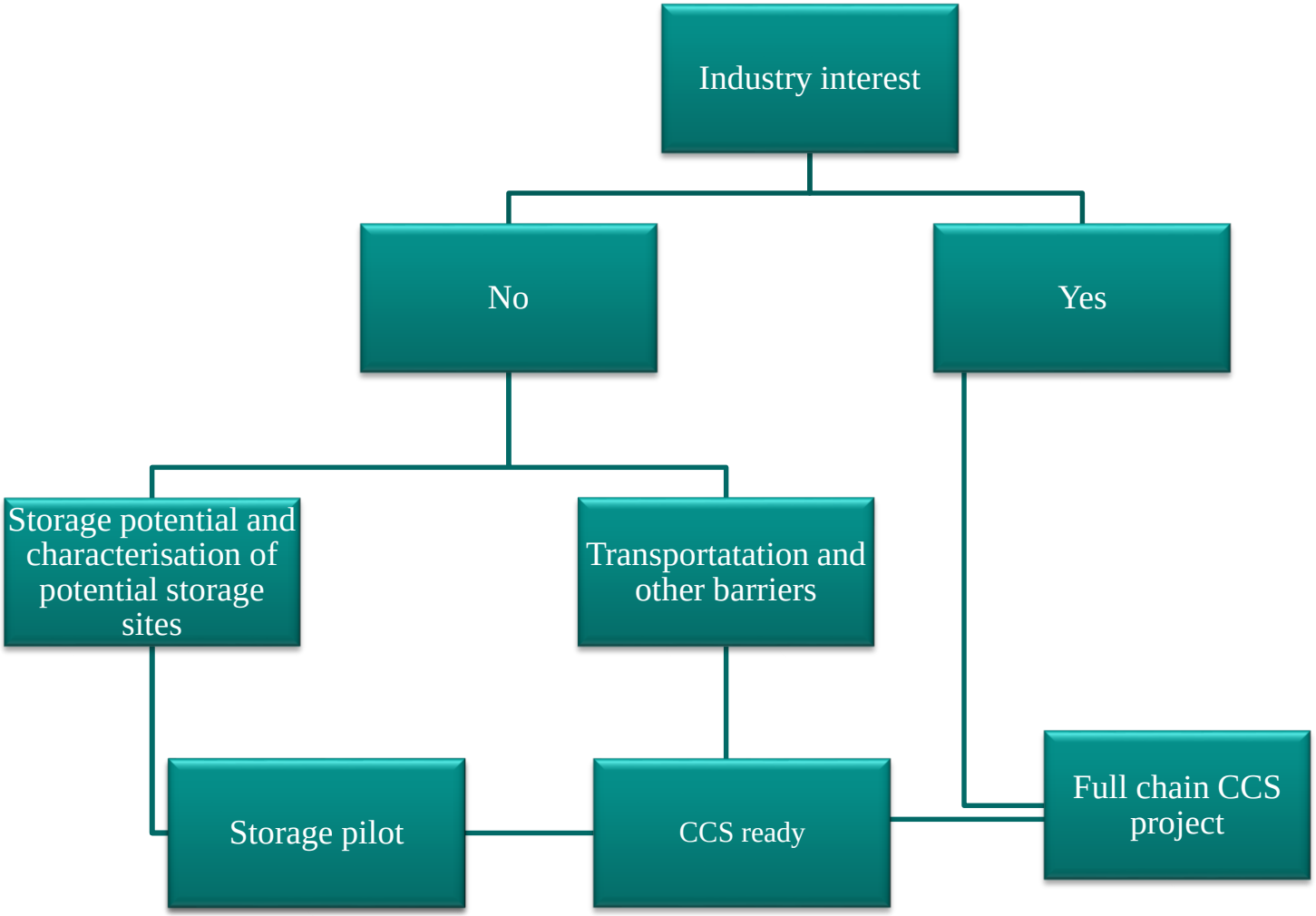
3.1 Funding possibilities & 3.2 Steps and planning after the seed money project is finalised, Alla Shogenova/TTUGI

1. Analysis of funding options for the main project
2. Funding possibilities for the pilot project
3. Funding options for the Baltic CCS Flagship Project in the EUSBSR
4. Steps and planning after the seed money project is finalised

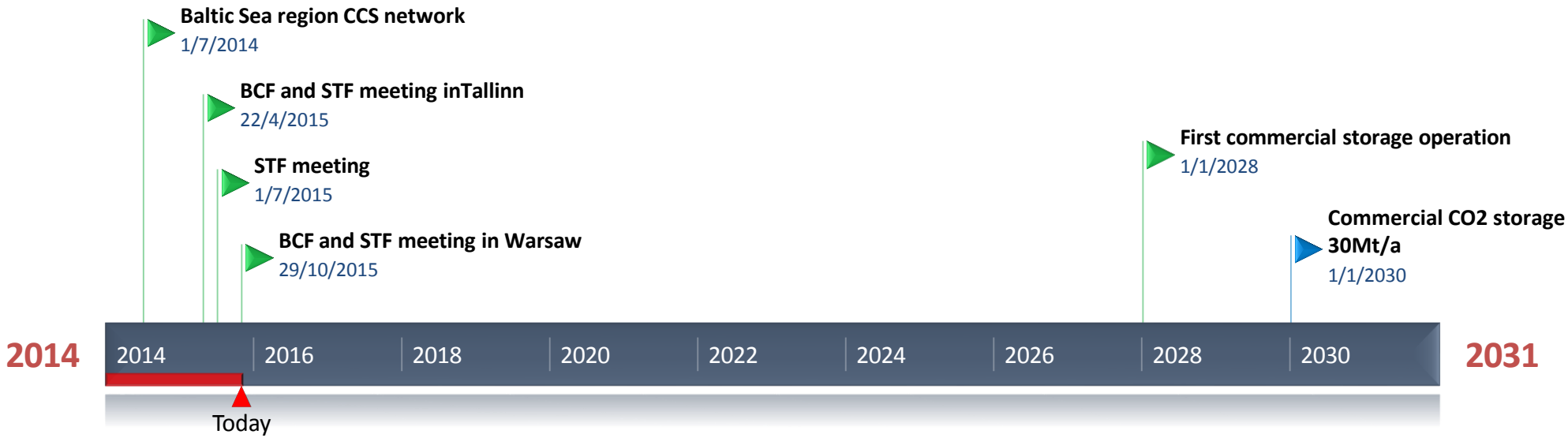
Design of main project?

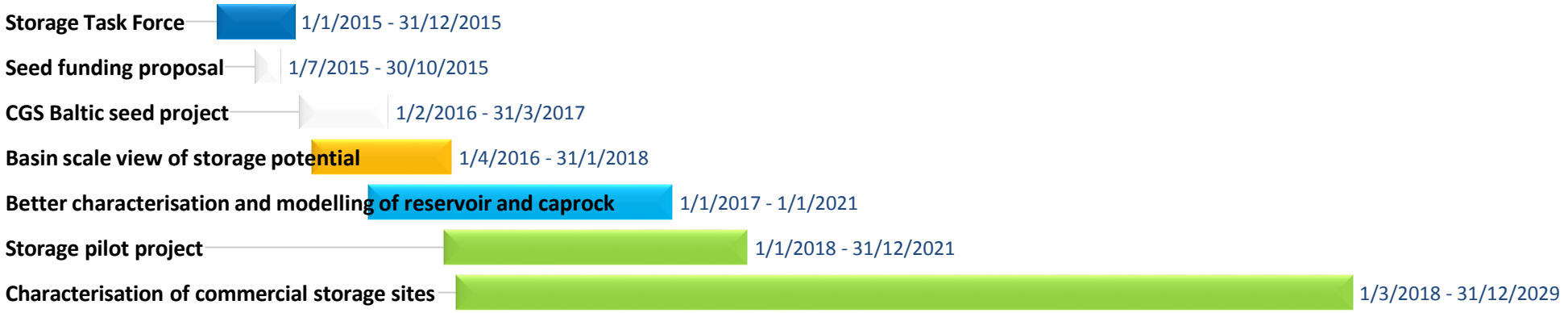


CCS project design



Optimistic roadmap for CO2 storage in the Baltic Sea region





Thank you for your attention!

- For further information: nicklas.nordback@gtk.fi