
Estonia Site Survey and Site Screening Study for SMR

Tallinn, 09 Feb 2021

TRACTEBEL

ENGIE



☒ PUBLIC

☐ INTERNAL

☐ RESTRICTED

☐ CONFIDENTIAL

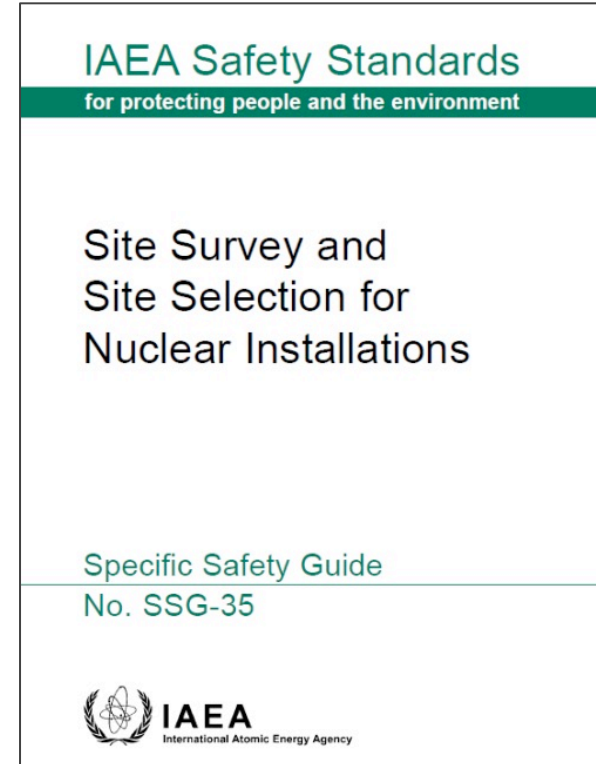
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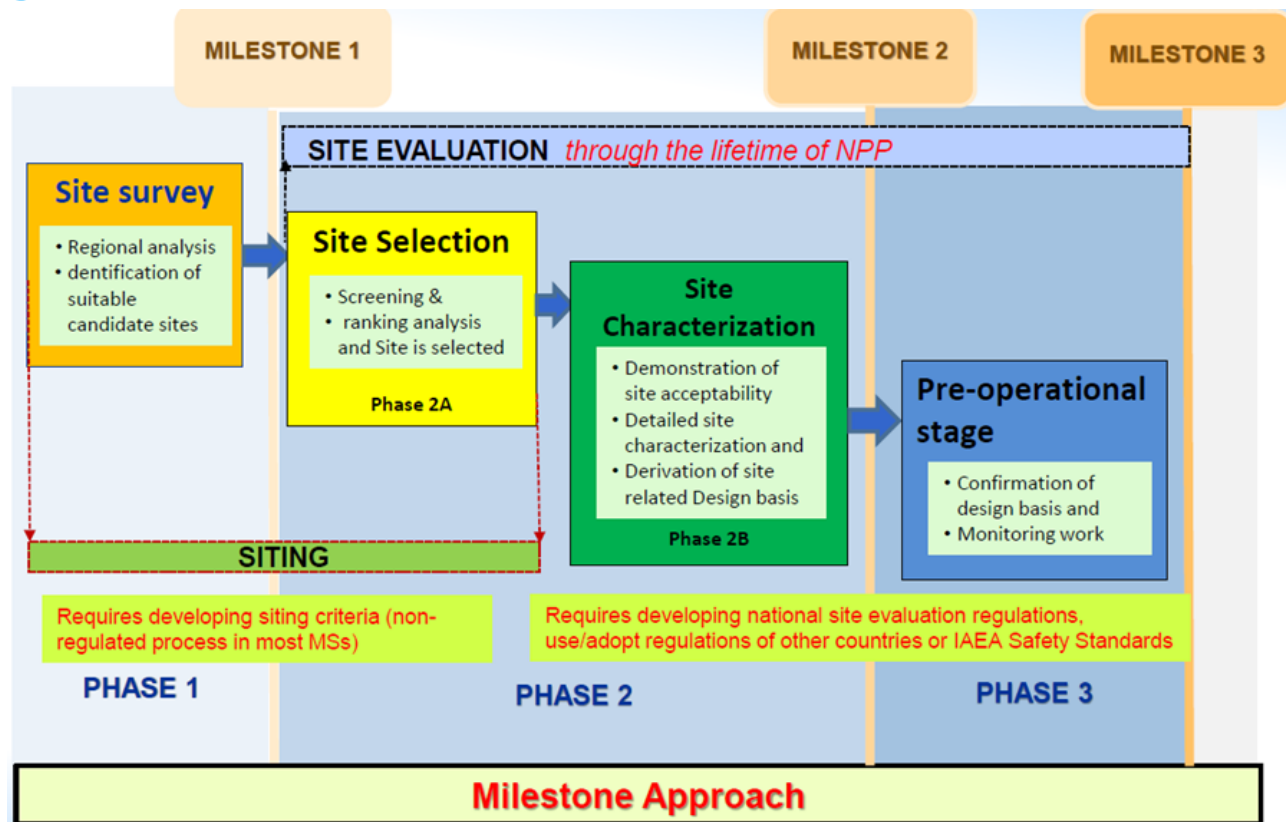


Scope and Objectives

- Identification of most suitable site locations (4 to 5 candidate sites)
- Full compliance with IAEA guidance and best practice
- Preparatory step prior to formal application under National Spatial Planning procedure
- Site(s) intended for multi-unit SMR plant of at least 600 MWe (up to 1.2 GWe) capacity
- Envelope parameters for preselected technologies



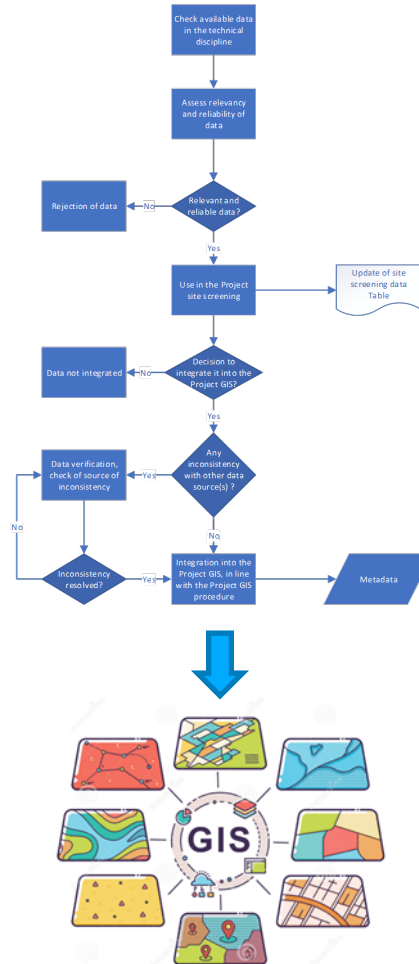
IAEA Siting Process



Data Management

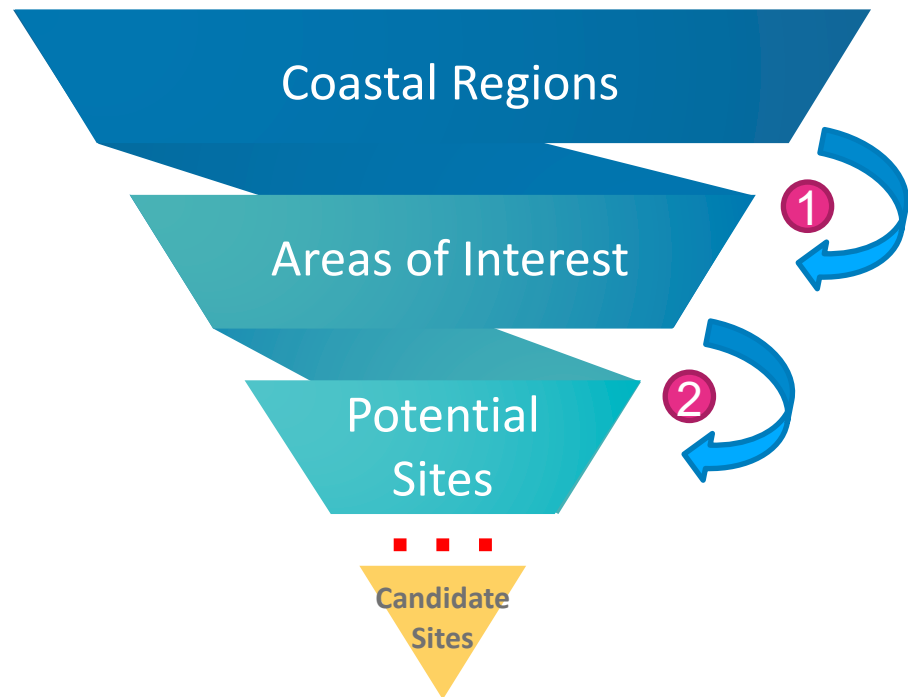
- Disciplines covered:

- Environment
- Cultural heritage
- Demography
- Topography & Bathymetry
- Geology & Seismology
- Geotechnical
- Flooding
- Human-induced hazards
- Land use
- Infrastructure



Screening Criteria and Process

- Exclusionary criteria:
 - Externally imposed restrictions (e.g. Natura2000)
 - Self-imposed restrictions due to prohibitive cost or unsurmountable issues
- Discretionary criteria:
 - Other conditions that can cause significant risk to the project in terms of cost, licensing & permitting, public acceptance, construction risk, etc.
- Two-step approach 1 2



Screening Criteria

STEP 1

Distance to borders

Availability of cooling water

Environmental protection (restrictive)

High population density

Human-induced hazards (airports and military)

Distance to capable faults

STEP 2

Environmental protection (sensitive)

Cultural heritage

Human-induced hazards (hazardous facilities and transport routes/network)

Topography and bathymetry

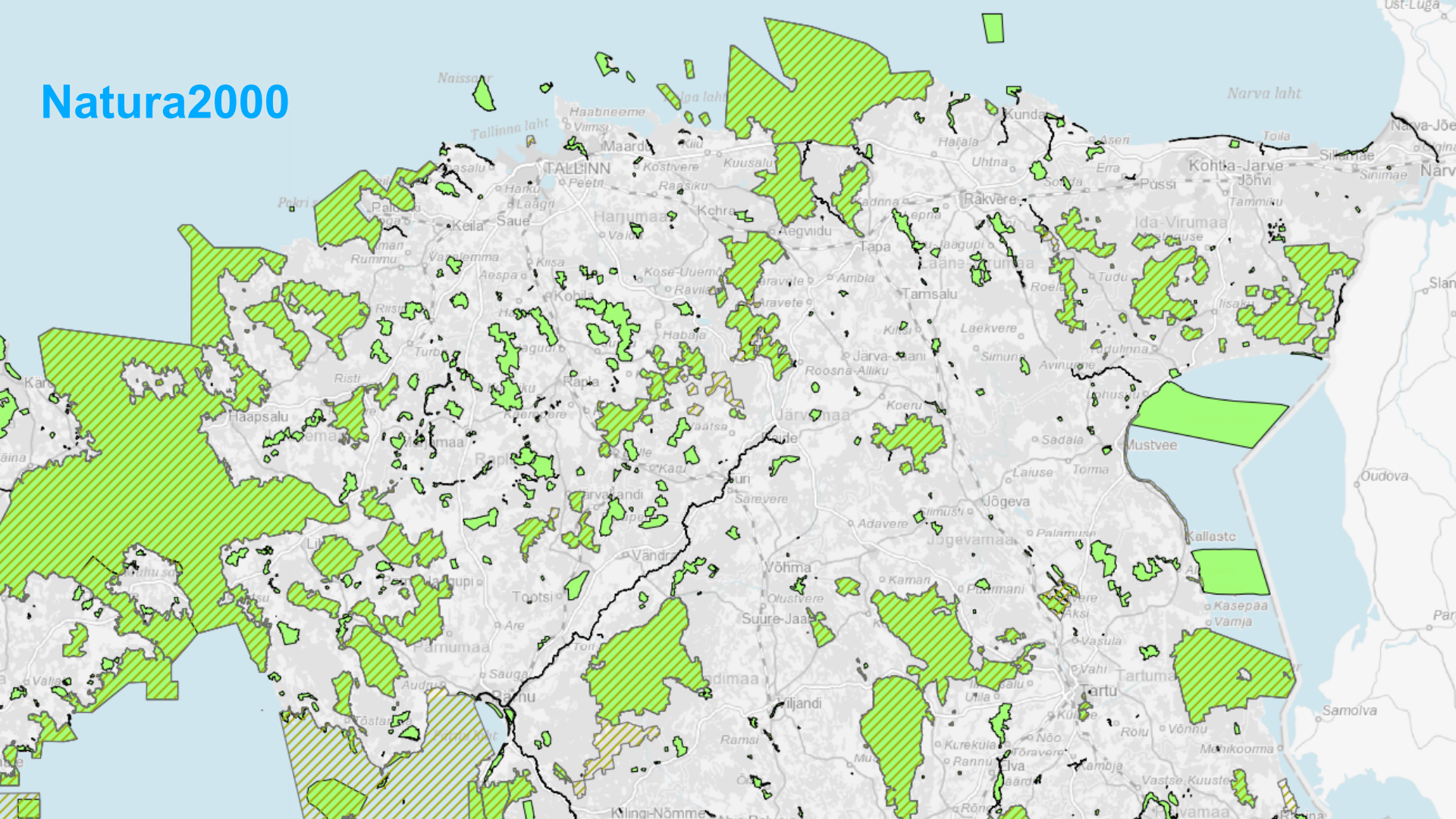
Flood plains

Geological hazards

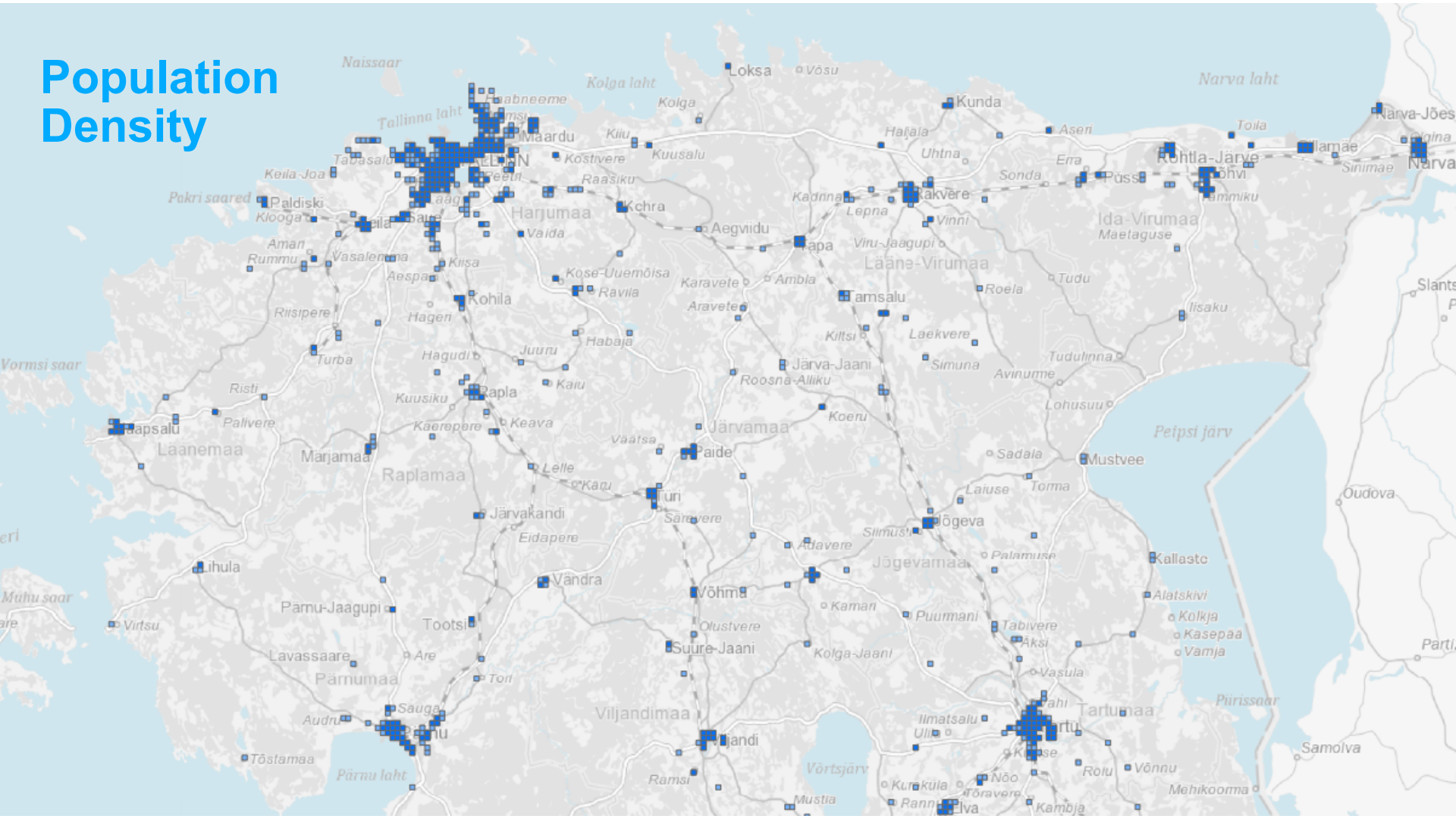
Land use

Grid and infrastructure

Natura2000



Population Density

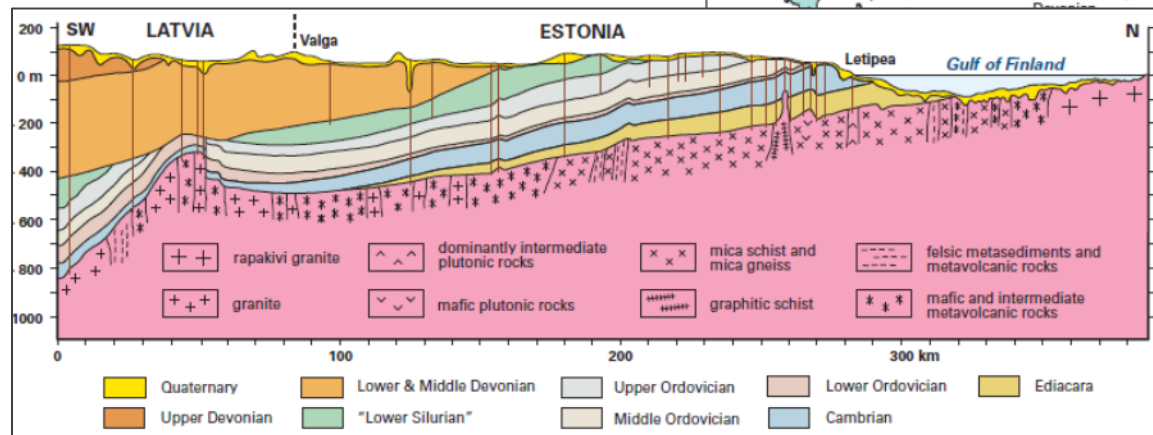
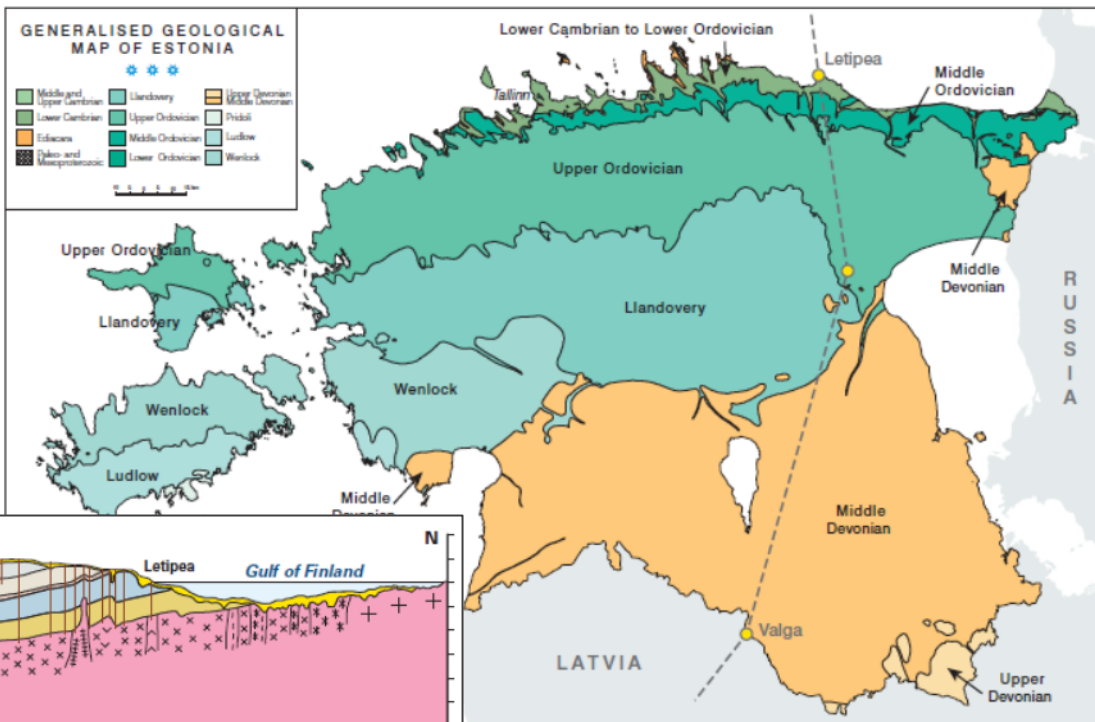


Faults in Bedrock

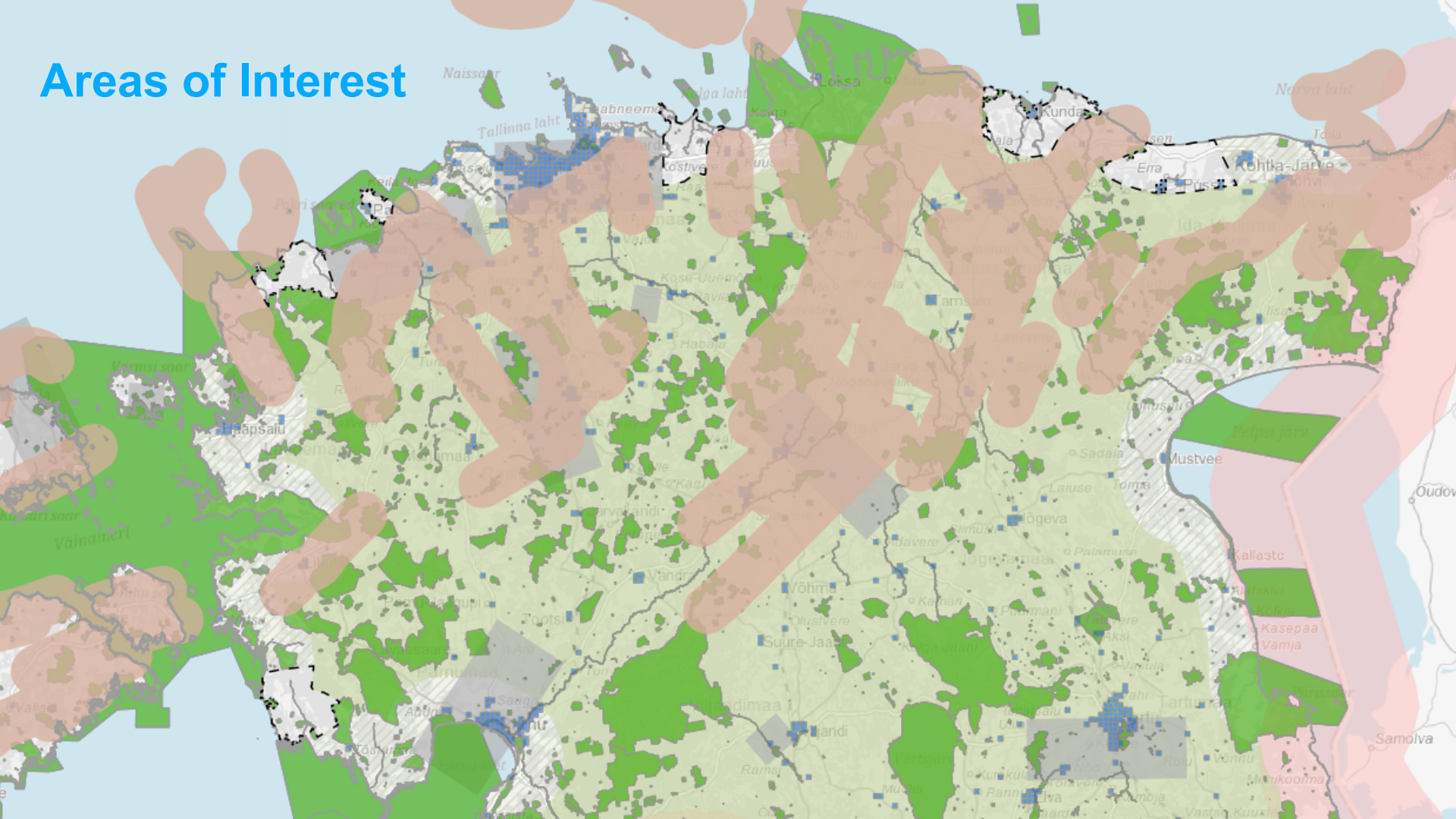
The map illustrates the distribution of major faults in the bedrock of Estonia. The faults are represented by brown, semi-transparent, irregular shapes. Key features include:

- Central Region:** A large, complex fault system runs through the center, including areas around Tallinn, Harjumaa, and Rapla.
- Eastern Region:** Several major faults are shown extending from the center towards the east, particularly in the areas of Ida-Virumaa and Lääne-Virumaa.
- Coastal and Island Areas:** Faults are also present in the coastal regions and around islands like Saaremaa and Hiiumaa.
- Geographical Context:** The map shows major cities (Tallinn, Tartu, Pärnu, Võhma), lakes (Peipsi järv, Võrtsjärv, Pärnu laht), and islands (Saaremaa, Hiiumaa).

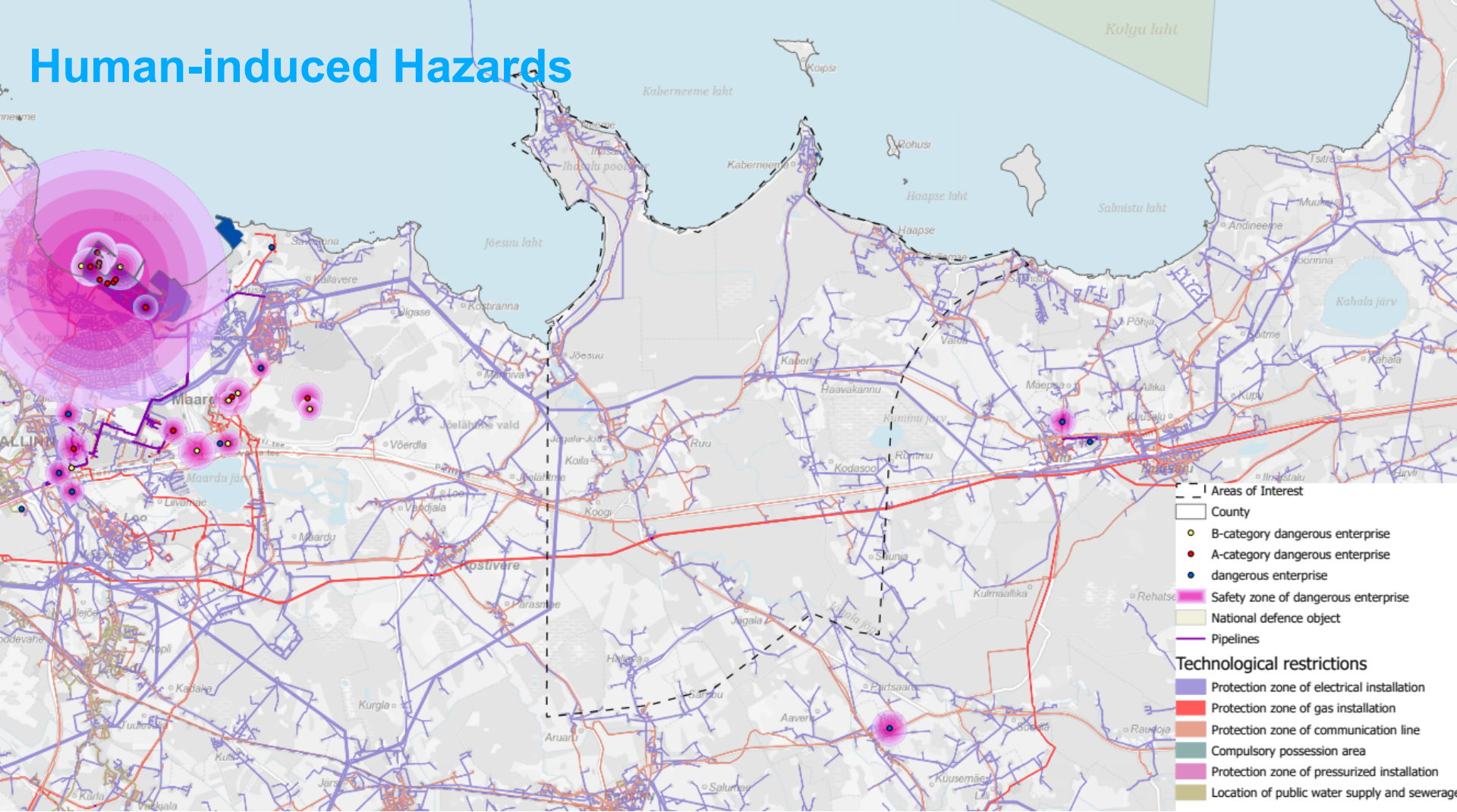
Geology



Areas of Interest



Human-induced Hazards



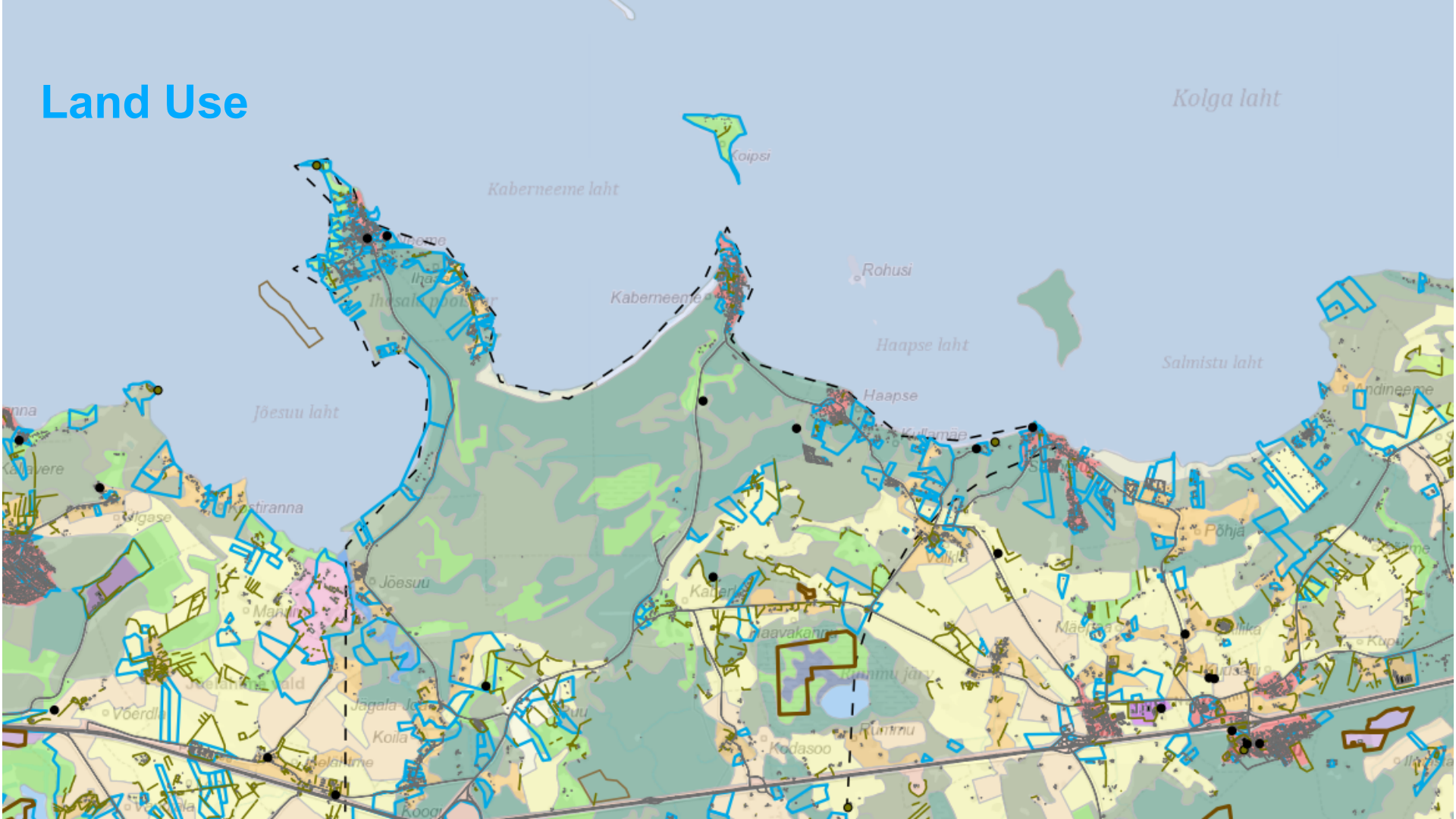
Bathymetry & Topography

The map illustrates the bathymetry and topography of the Kõrvalahti area. The bathymetric contours are shown in blue, indicating the depth of the water. The topographic contours are shown in orange, indicating the elevation of the land. The map includes a legend in the bottom right corner with symbols for area, contour lines, and elevation.

Legend:

- Area (dashed line)
- Contour lines (solid line)
- Elevation (solid line)
- 10 m
- 5 m
- 3 m
- 20 m
- 50 m

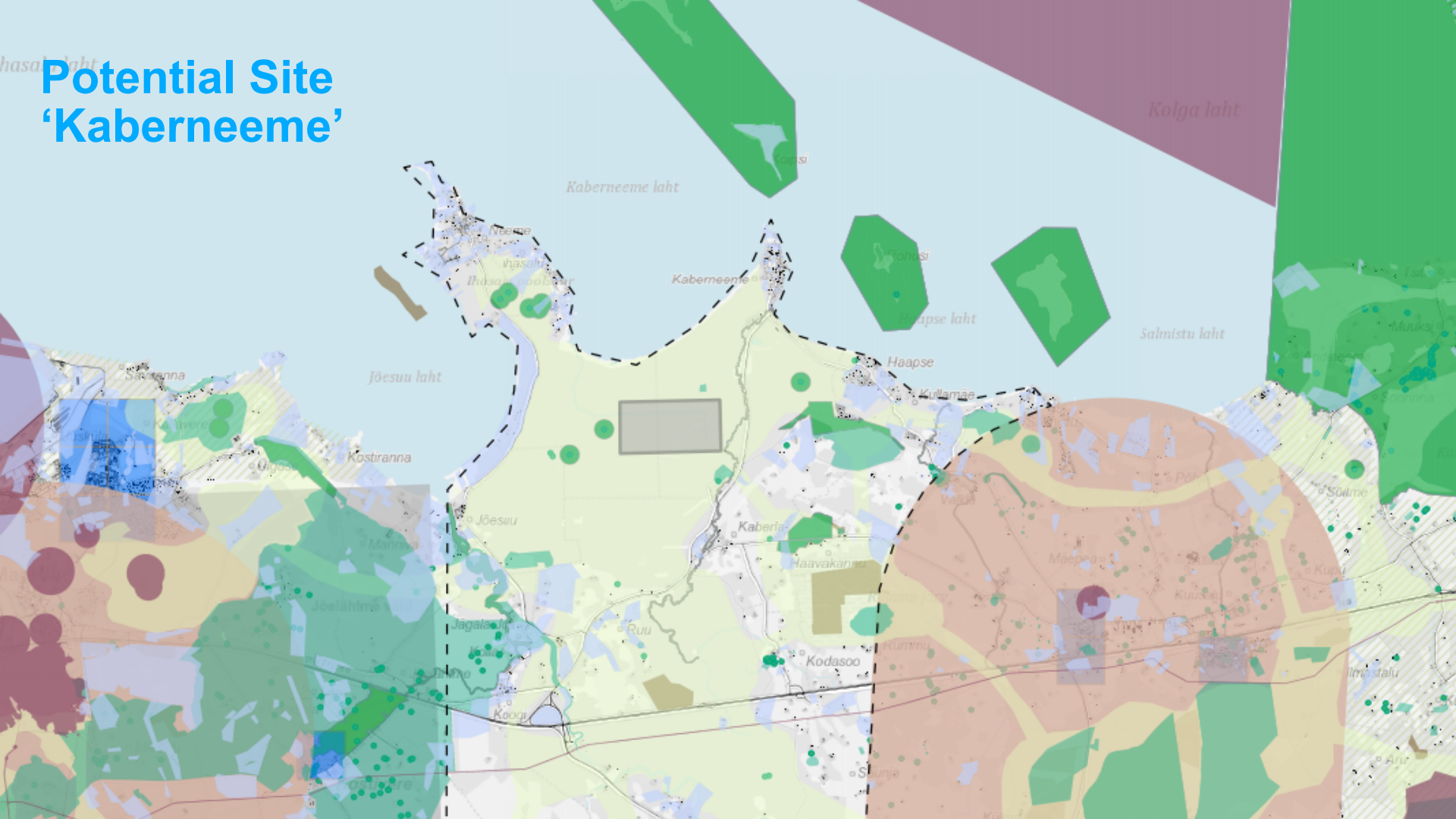
Land Use



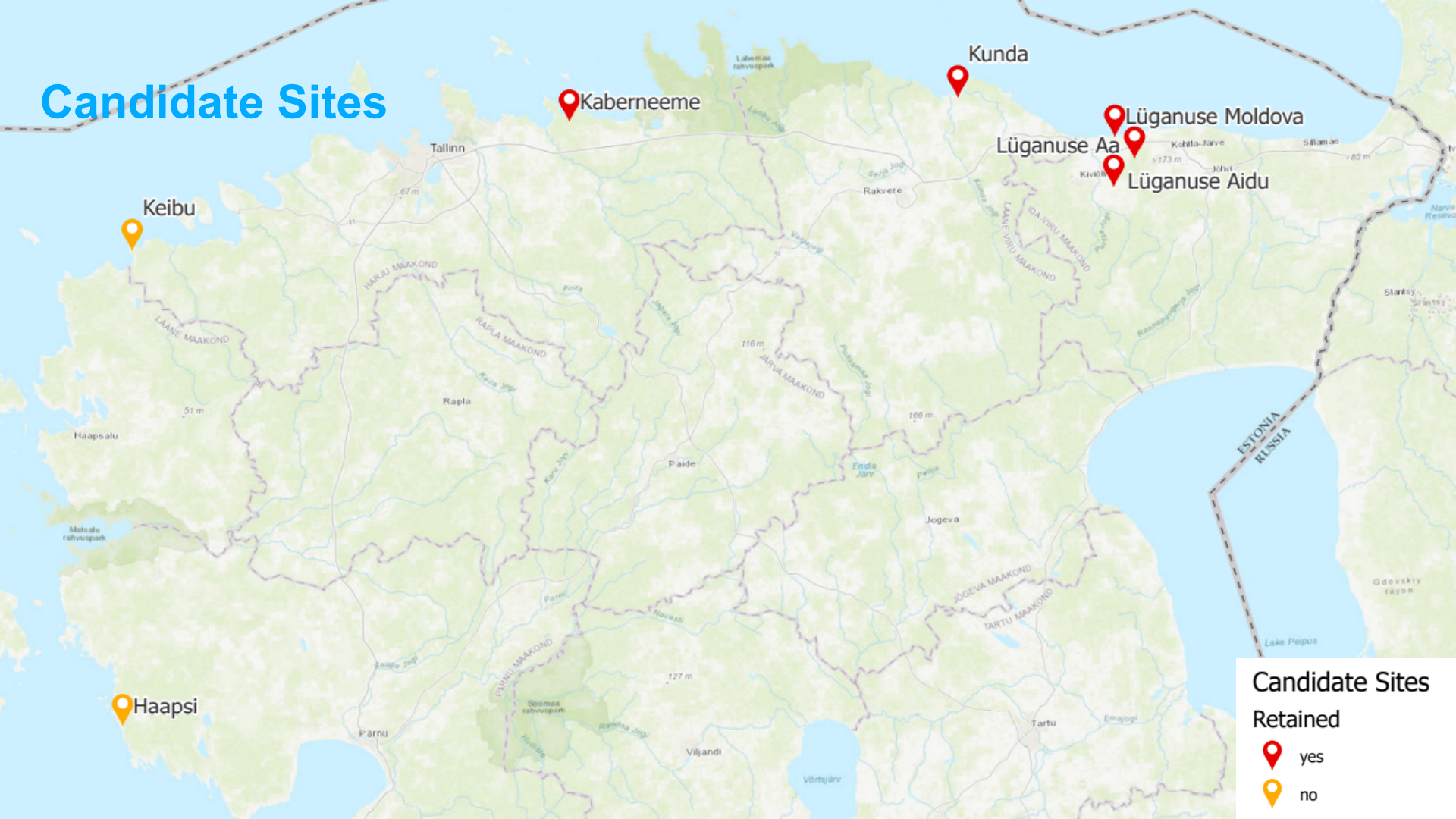
Land Ownership



Potential Site 'Kaberneeme'



Candidate Sites



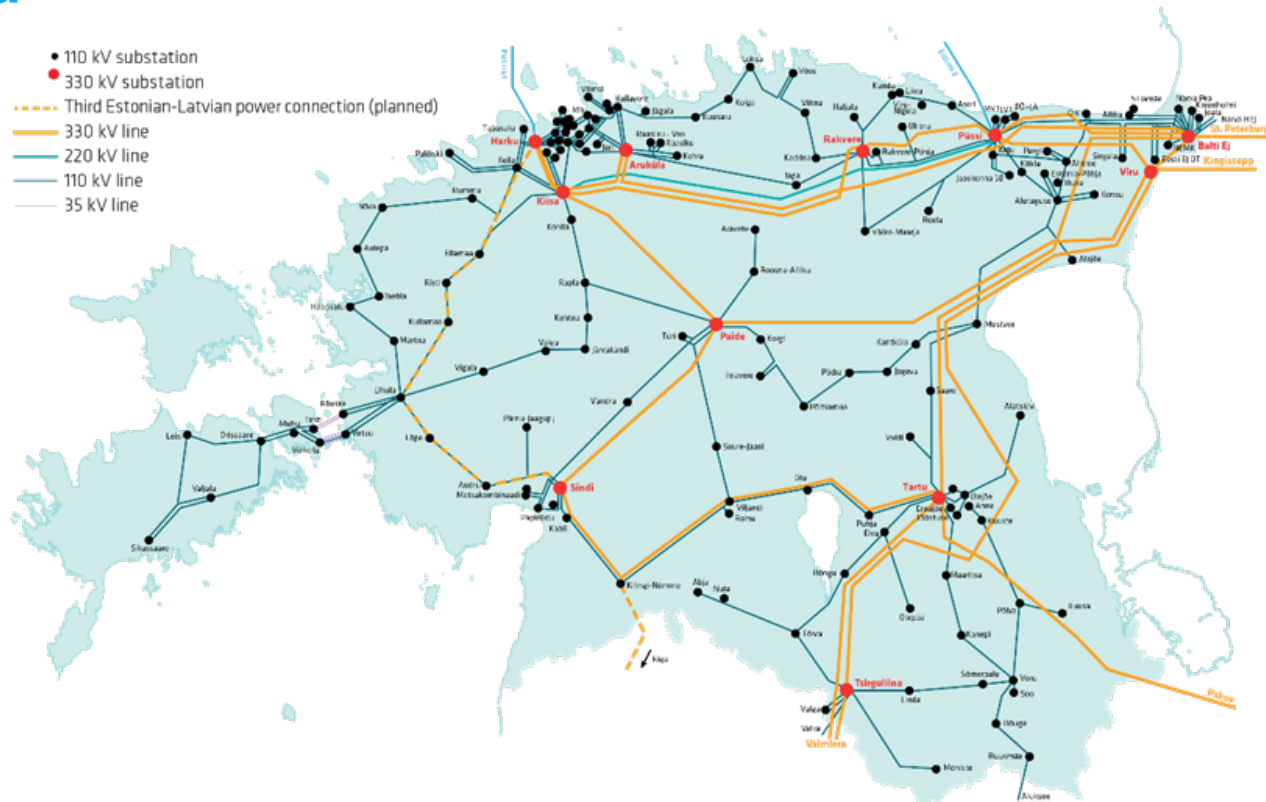
Candidate Sites

Retained

yes

no

Electrical Grid



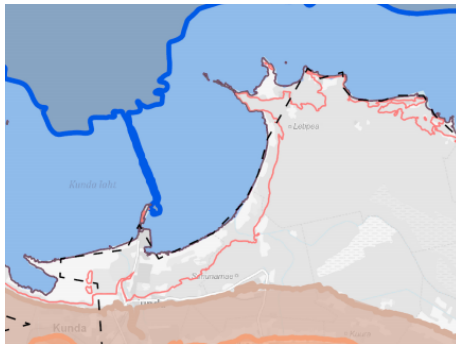
Kunda Site

Advantages:

- Infrastructure
- Municipality-owned land

Challenges:

- Flooding risk to be assessed/mitigated
- One protected spot (cat.I species) to be avoided



Moldova Site

Advantages:

- Sea shore, direct cooling

Challenges:

- Privately-owned land
- Natural beach landscape



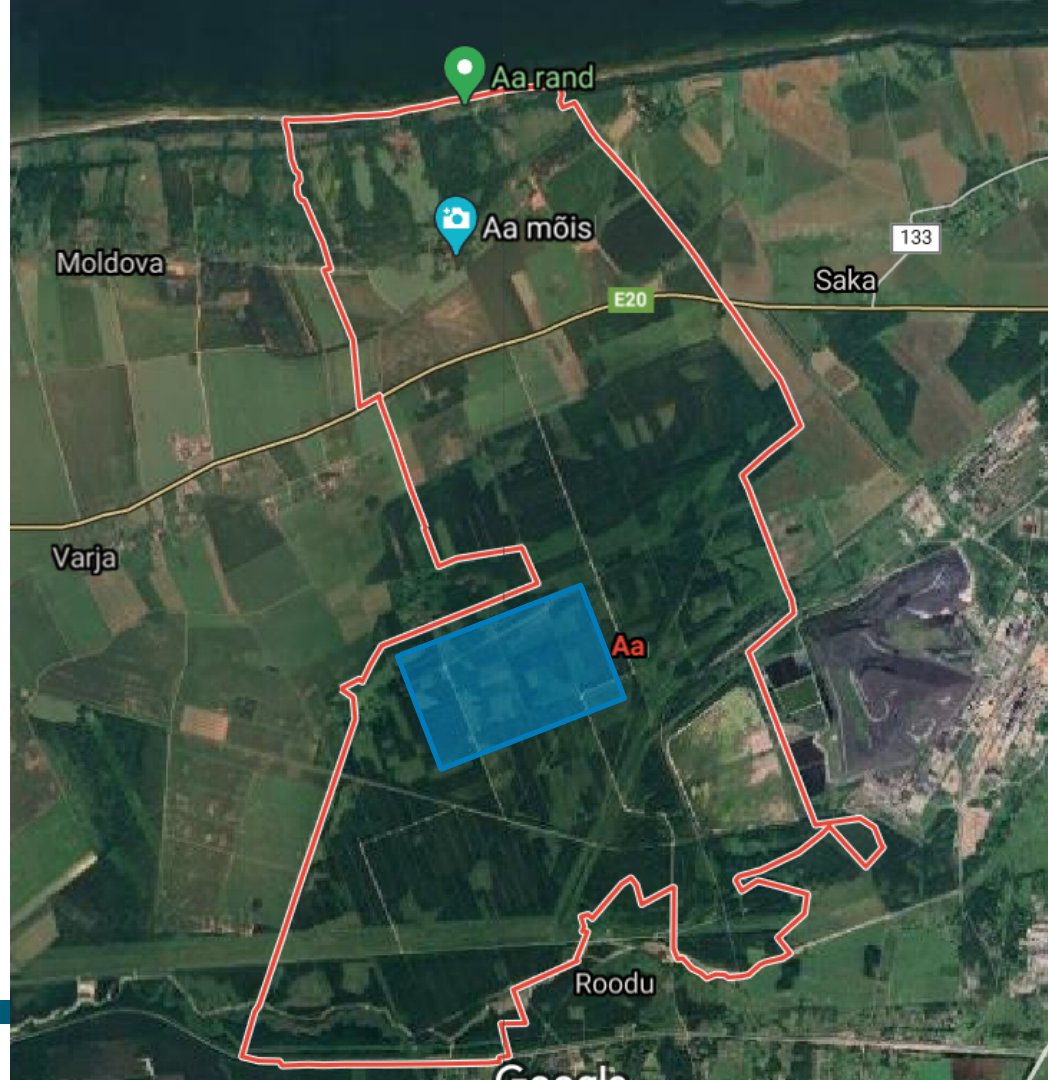
Aa Site

Advantages:

- Large state-owned land
- No interference with human activity
- Good infrastructure and grid connectivity

Disadvantages:

- Distance to cooling water (4.5 km);
Elevation: +47m ASL



Aidu Site

Advantages:

- Brown field site, owned by the state
- Excellent infrastructure and grid connectivity

Challenges:

- Risk of long-term depletion of the cooling water source to be assessed (capacity of sedimentation basins)



Kaberneeme Site

Advantages:

- State-owned land
- Large managed forestry

Challenges:

- Potential public acceptance issues (high-profile neighbourhood, proximity to Tallinn)




Conclusion and Next Steps

- Several valuable sites identified in Northern Estonia
- Focused studies recommended to provide increased confidence of site suitability for retained candidate sites
- Finalize summary file for each site as input to scoring & ranking per IAEA site selection guidance
- Prepare application under the National Spatial Planning procedure



QUESTIONS ?





Engineering a carbon-neutral future



Back-up Slides



Site Selection Stage (IAEA)

