



How can exploitation of mineral resources in South Greenland be achieved in a sustainable way?



*Architect, Birger Lilja Kristoffersen,
Chief Planner, Kujalleq Municipality*



Agenda



- A brief introduction to South Greenland
- The opportunities in mining
- Sustainable development in general
- **The Case: Kvanefjeld Multi-Element Project in South Greenland**
- Summary of sustainability



Greenland

2.175.600 km² area
1.833.900 km² ice
...341.700 km² land

56.000 inhabitants

18 towns

4 municipalities

Nuuk the Capitol (15.000)



Municipality of Kujalleq

53.000 Km2 area

7.000 inhabitants

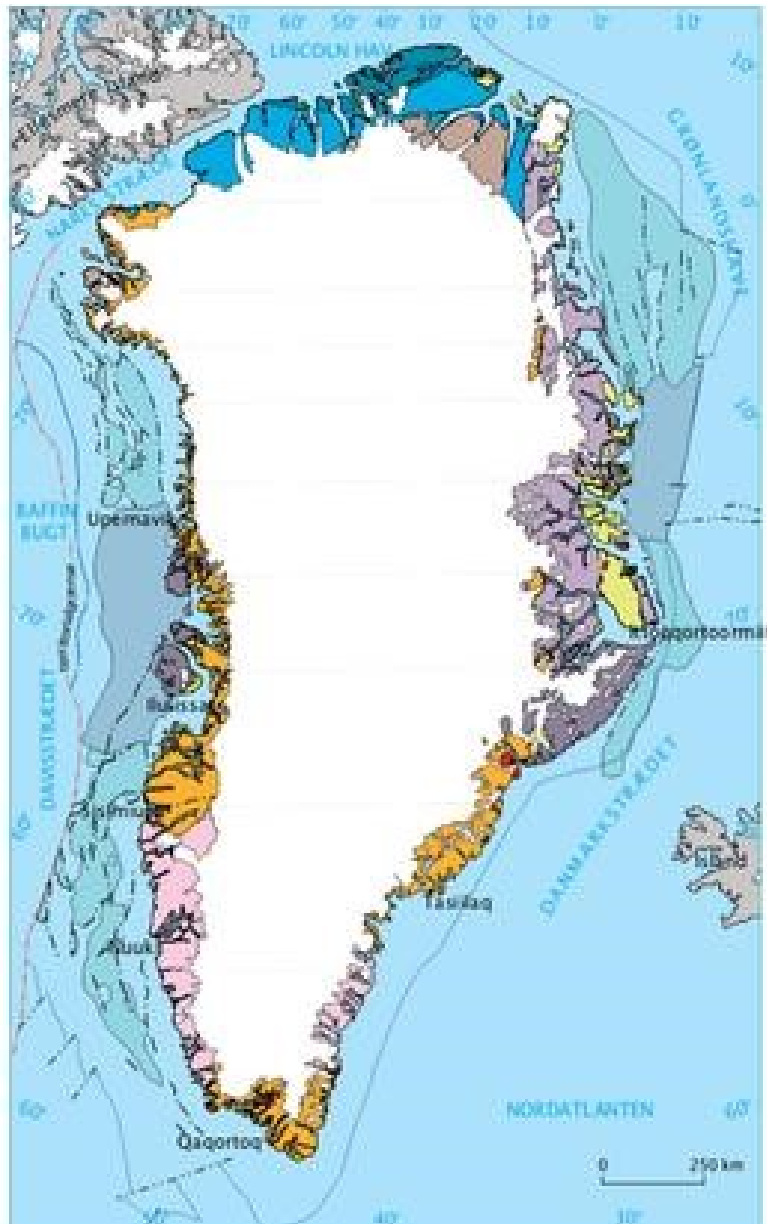
3 towns

11 villages



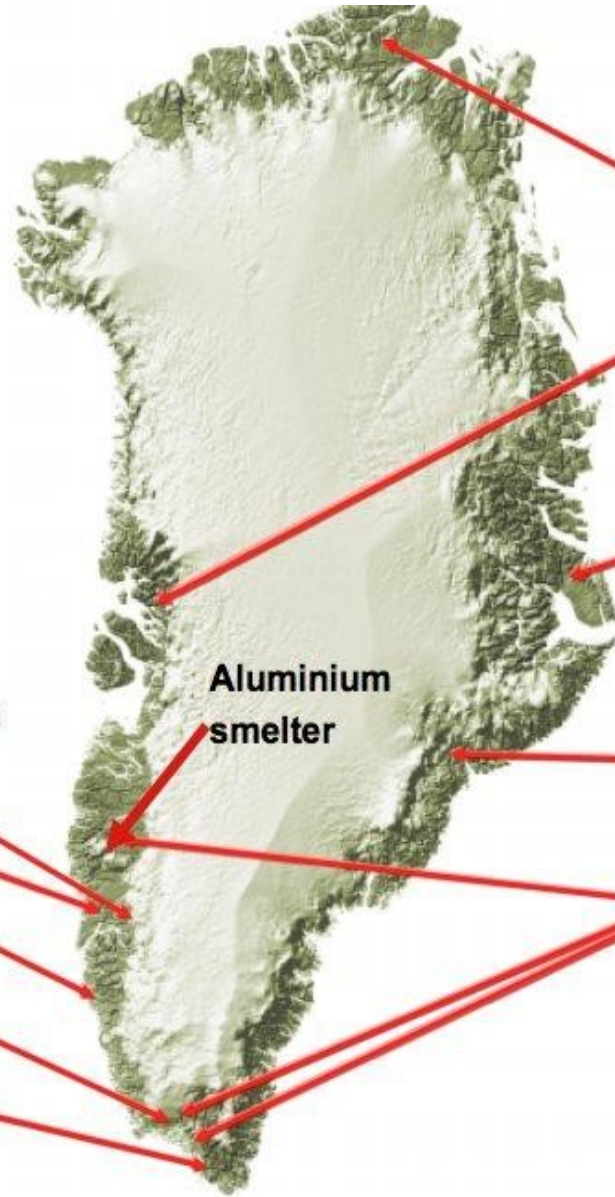


landområder	havområder
isdekke	sedimentære bassiner (>3 km mægtige)
tertiære basalter	sedimentære bassiner dækket af terciære basalter
devone-tertiære sedimenter	specifiserede havdækkede aflæjninger
ellesmeriske foldebælte	grænse mellem kontinentalskorpe og oceanbunds skorpe
kaledoniske foldebælte	forkastning
kambriske-silure sedimenter	transform forkastning
proterozoiske sedimenter og basalter	
proterozoisk grundfjeld	
arkaisk grundfjeld	
intrusive komplekser	



Geology

Advanced projects



Zinc-lead
Citronen Fjord
Black Angel

Molybdenum
Malmbjerg

PGE/Gold
Skaergaard

REE
Killavaat/Kringlerne
Kuannersuit/Kvanefjeld
Sarfartoq

Aluminium smelter

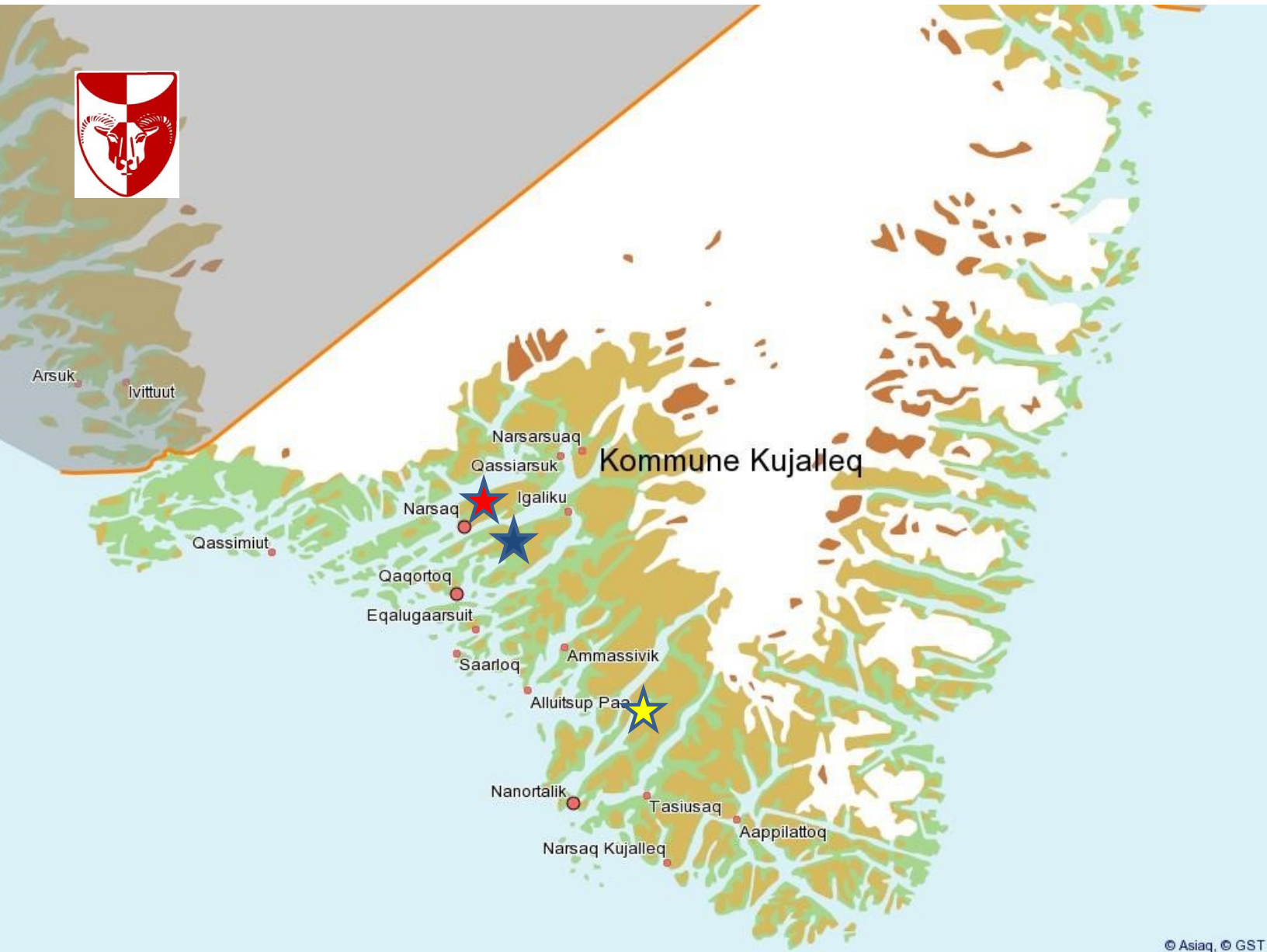
Iron
Isua

Olivine
Seqi

Rubies
Fiskenæsset

Iron, titanium, vanadium
Isortoq

Gold Nalunaq Gold Mine





Authorities



Responsibility of the Self – Government of Greenland

- **The Ministry of Industry and Mineral Resources (MIM)**
- ... is responsible for **strategy-making, policy-making, legal issues, marketing** of mineral resources in Greenland and **socioeconomic issues** related to mineral resources activities, such as Social Impact Assessments, Impact Benefit Agreements and royalty schemes. The Ministry deals with geological issues through the Department of Geology.
- **The Mineral Licence and Safety Authority (MLSA)**
- ... is the one-door authority. Licensees and other parties covered by the Mineral Resources Act communicate with the MLSA and receive all notifications, documents and decisions from the MLSA. The MLSA is the overall administrative authority for **licences** and mineral resources activities, and is the authority for **safety** matters including supervision and inspections.
- **Environment Agency for the Mineral Resources Activities (EAMRA)**
- ... is the administrative authority for environmental matters relating to mineral resources activities, including **protection of the environment and nature**, environmental liability and environmental impact assessments.



Sustainability in general



- Economy
- Social
- Environmental



Tools

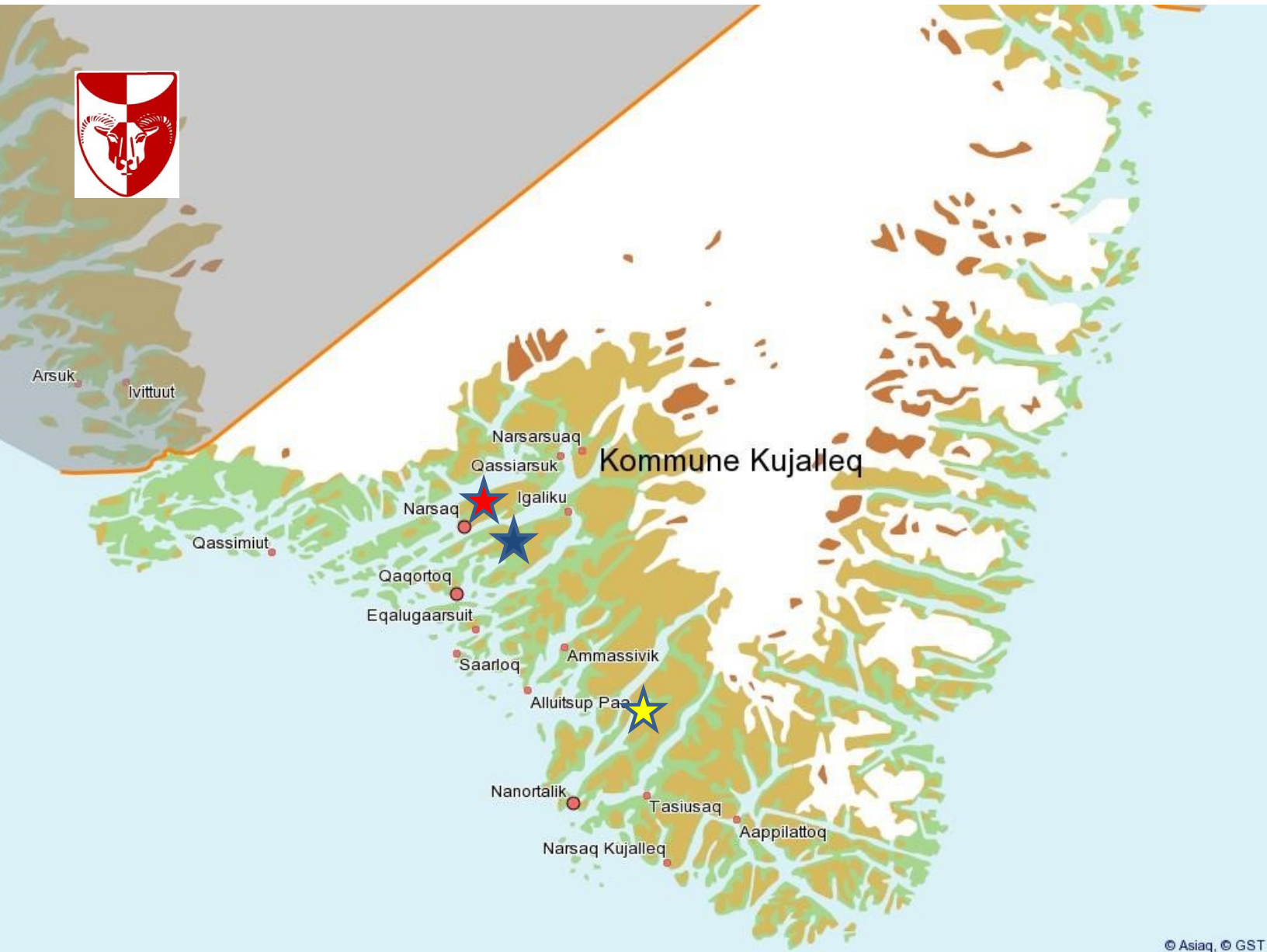


- **EIA – Environmental Impact Assessment**
- **SIA – Social Impact Assessment**
- **IBA – IBA – Impact Benefit Agreement**



Kvanefjeld Multi-Element Project Narsaq - South Greenland

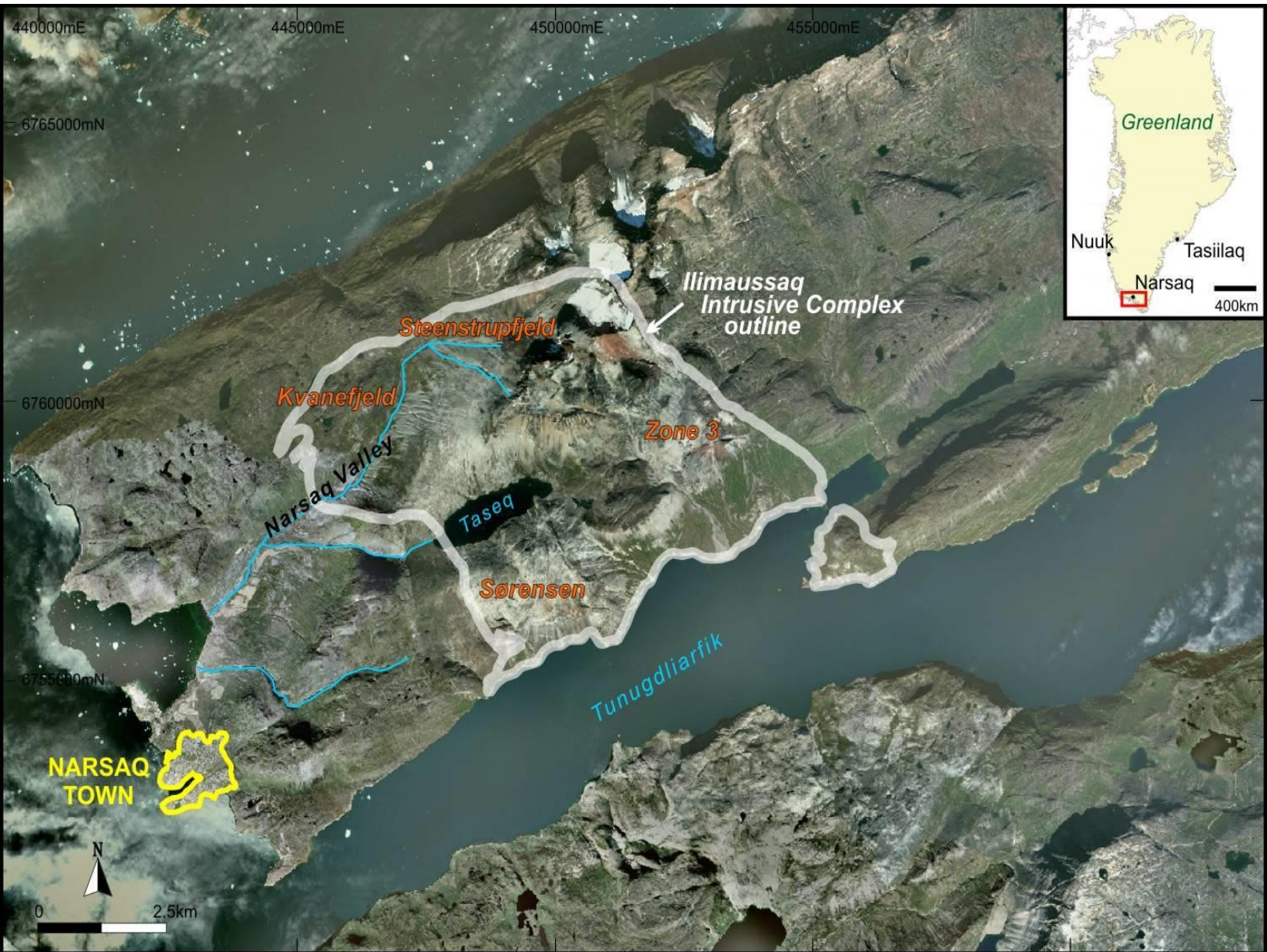




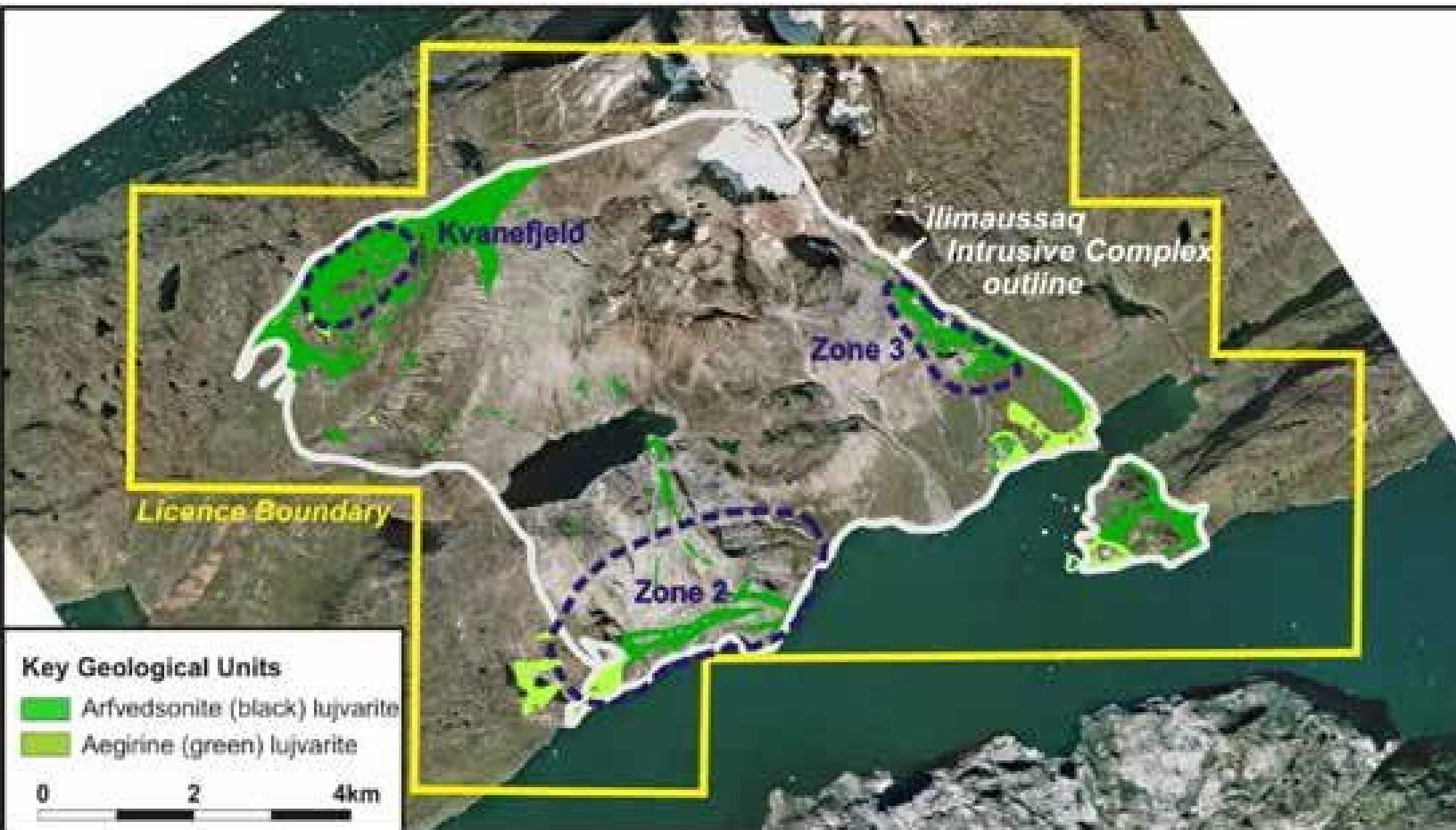








Lujvarite





Lujvarite



- Rear Earth Elements (REE)
 - lanthanum, cerium, praseodymium, neodymium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium og lutetium
- Uranium
- Thorium
- Granite, quartz, etc



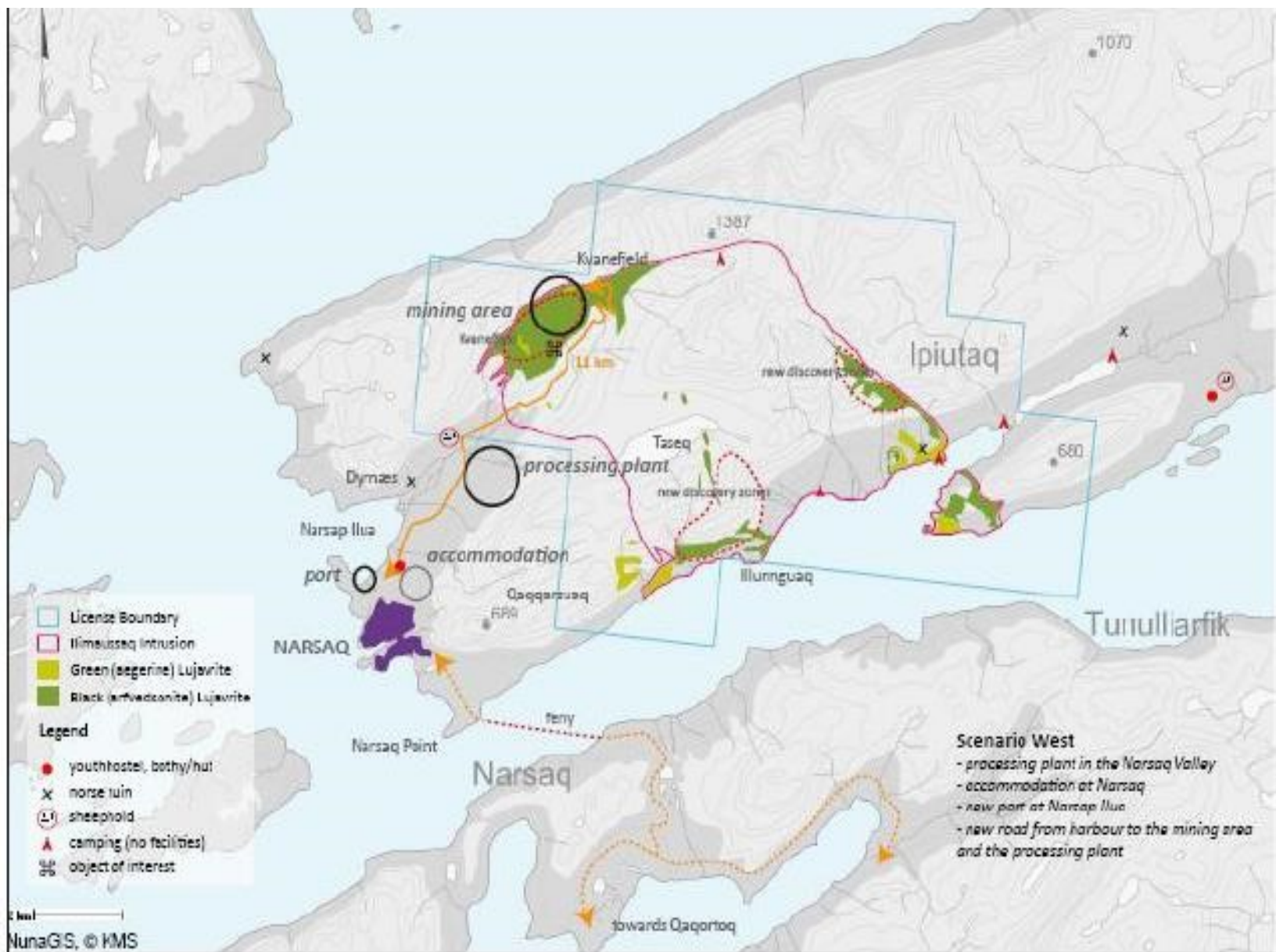
Baseline study

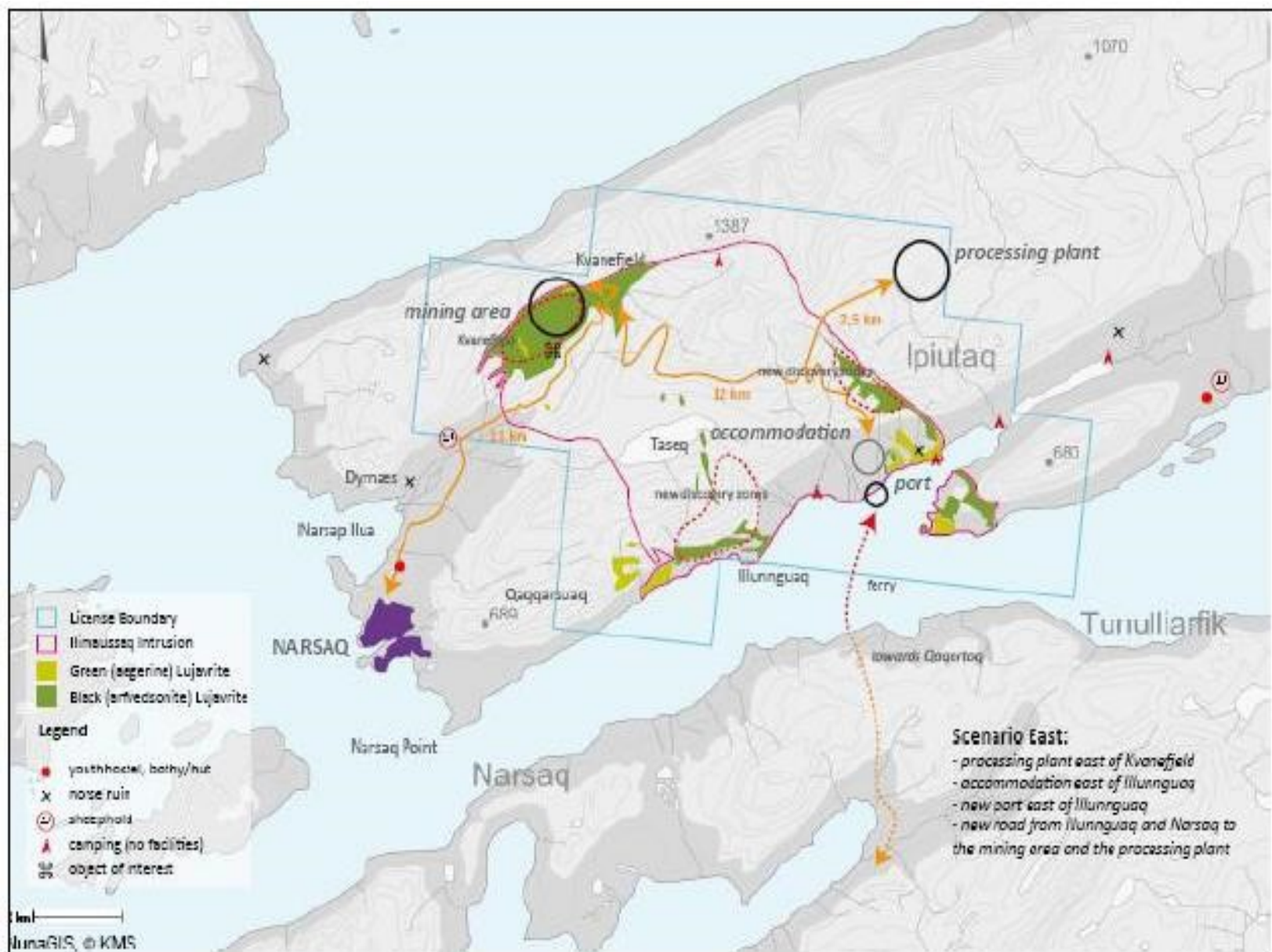


Tasiusaq



















Summery of sustainability



- **The total impact – on the globe!**
 - Climate change
 - Enegi Sink
 - Security
- **The national interests**
 - Economy
 - Independence
 - Development
- **The local interests**
 - Health
 - Environment
 - Economy (local employment)



Qujanaq – Tak – Thank's

Kujalleq Municipality

Biks@kujalleq.gl

Birger Lilja Kristoffersen