

Challenges for paludiculture development in Estonia

Jüri-Ott Salm
Estonian Fund for Nature
jott@elfond.ee

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On behalf of:



Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

of the Federal Republic of Germany



European
Climate Initiative
EUKI



The area of mires in Estonia has decreased more than 2-fold within a century



Sirtsu Nature Conservation Area



E L F

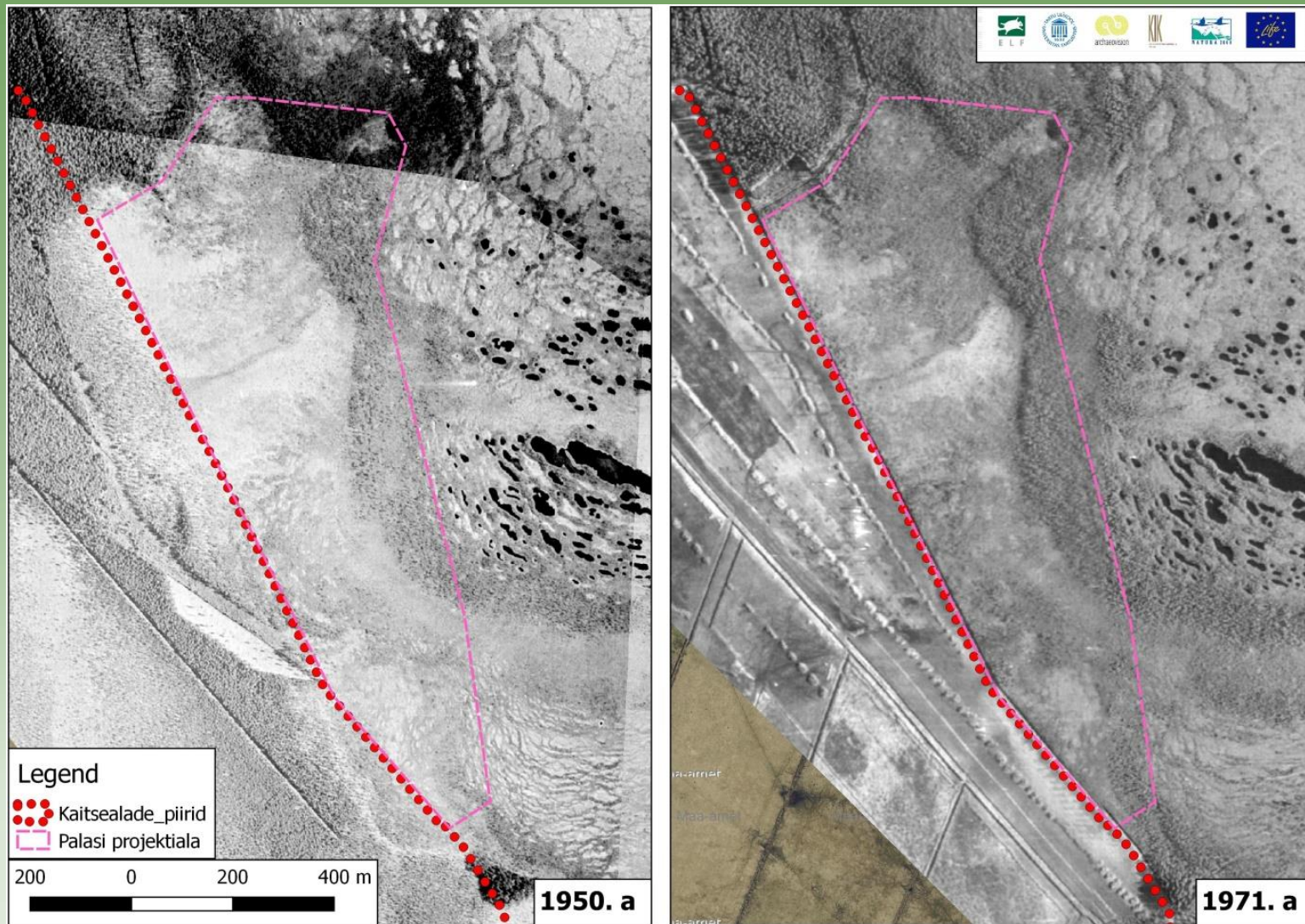


archaeovision



NATURA 2000





Sirts area in 1950 and 1971, red dots represent border on NCA

**Different land usage on peatlands and related CO₂ emissions
(MoE 2020, ELF 2019)**

	Forest land	Cropland	Grassland	Peat mining area+ usage in energy + usage for horticulture	Total
CO₂ekv, 1000 t	367	635	92	118 + 130 + 944 Kokku: 1 192	2 286
Area, ha	561 320	28 390	48 030	18 600	656 340
Total drained (KeM 2020)	280 660	28 390	12 489	18 600	340 139
Area , ha Drained (ELF 2019)	282 557	77 000			

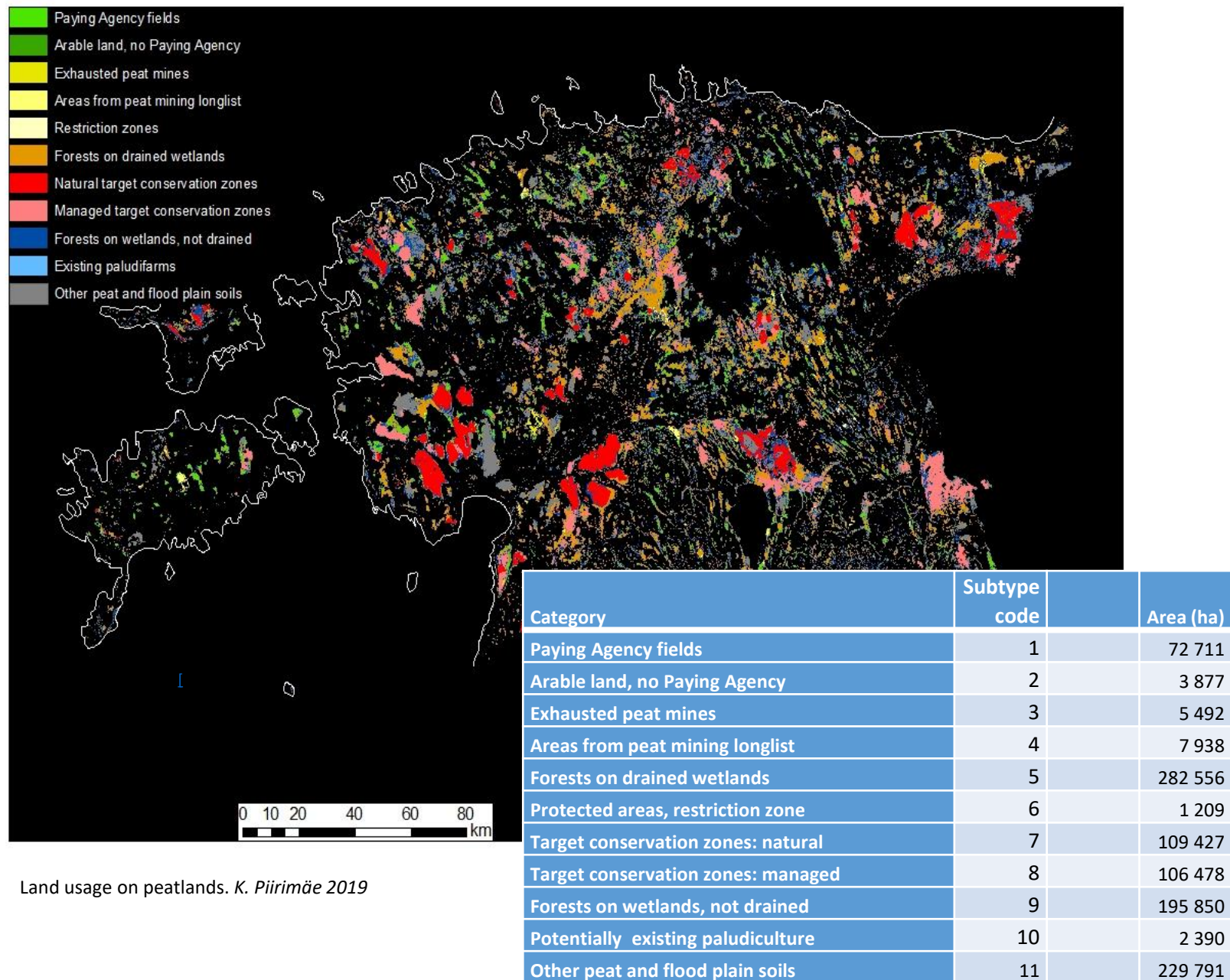
[ELF 2019](#) GIS analyses of paludiculture potential in Estonia. "[Märgalaviljelus Eestis.](#)

[GIS analüüs](#)" by K. Piirimägi

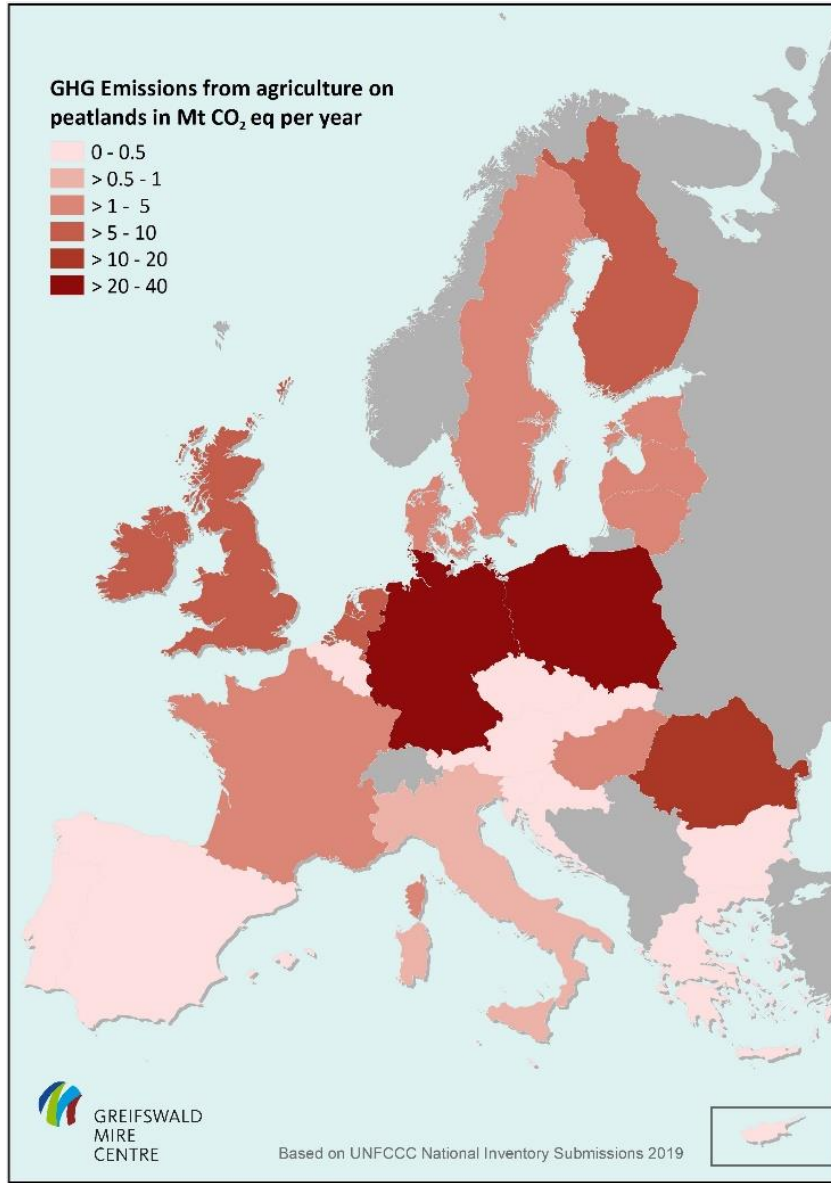
KeM 2020. GREENHOUSE GAS EMISSIONS IN ESTONIA 1990–2018

NATIONAL INVENTORY REPORT SUBMISSION TO THE EUROPEAN COMMISSION

Common Reporting Formats (CRF) 1990–2018.



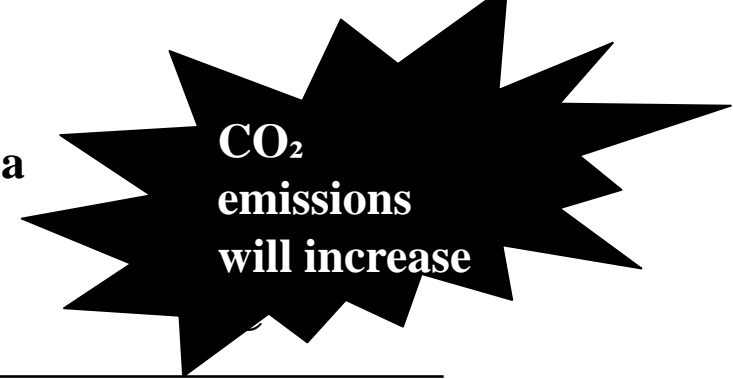
Land usage on peatlands. K. Piirimäe 2019



Rewetting just X% of agricultural land will reduce agricultural greenhouse gas emissions by Y%



**Prognosis of average air temperature in Estonia
(Luhamaa et al. 2015) and emissions of
CO₂ from peat extraction fields**



	Average air temperature, °C	kg CO₂ ha y⁻¹	Emission from peat extraction (18 600 ha), 1000 t CO₂ a
Climate 1971-2000	5.6		
NIR, 2014	6.3	6383	119
RCP4.5 2040-2070	7.6	8793	163 (36%)
RCP4.5 2070-2100	8.3	9847	183 (53%)
RCP8.5 2040-2070	8.2	9690	180 (51%)
RCP8.5 2070-2100	9.9	12850	239 (101%)



PALUDICULTURE POTENTIAL

What is going on and missing!

- **New CAP – Paludiculture included!** National measures debated
- Existing regional soil protection support
- Renewal of soil map and planning the use of peatlands
- Monitoring GHG emissions and EFs based on Estonian data
- Paludiculture pilots to estimate productivity, profitability, GHG balance....
- 2010-2020 renewal and reconstruction of drainage systems on ~42 000 ha of peatlands on state
- Mire ecosystem restoration on 20 000 ha by 2020.'

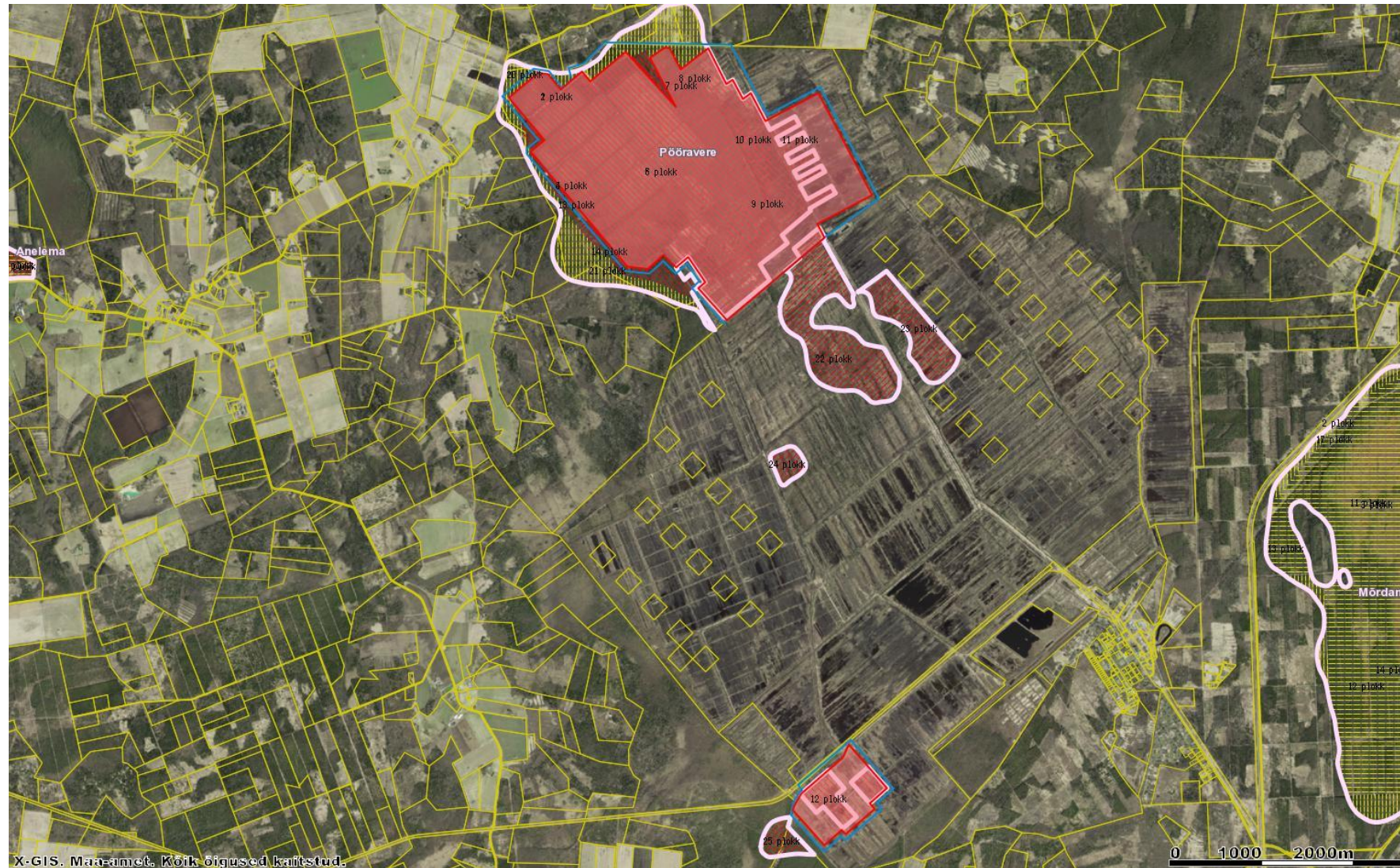
How public money and under which criteria is used in context of peatlands

PALUDICULTURE

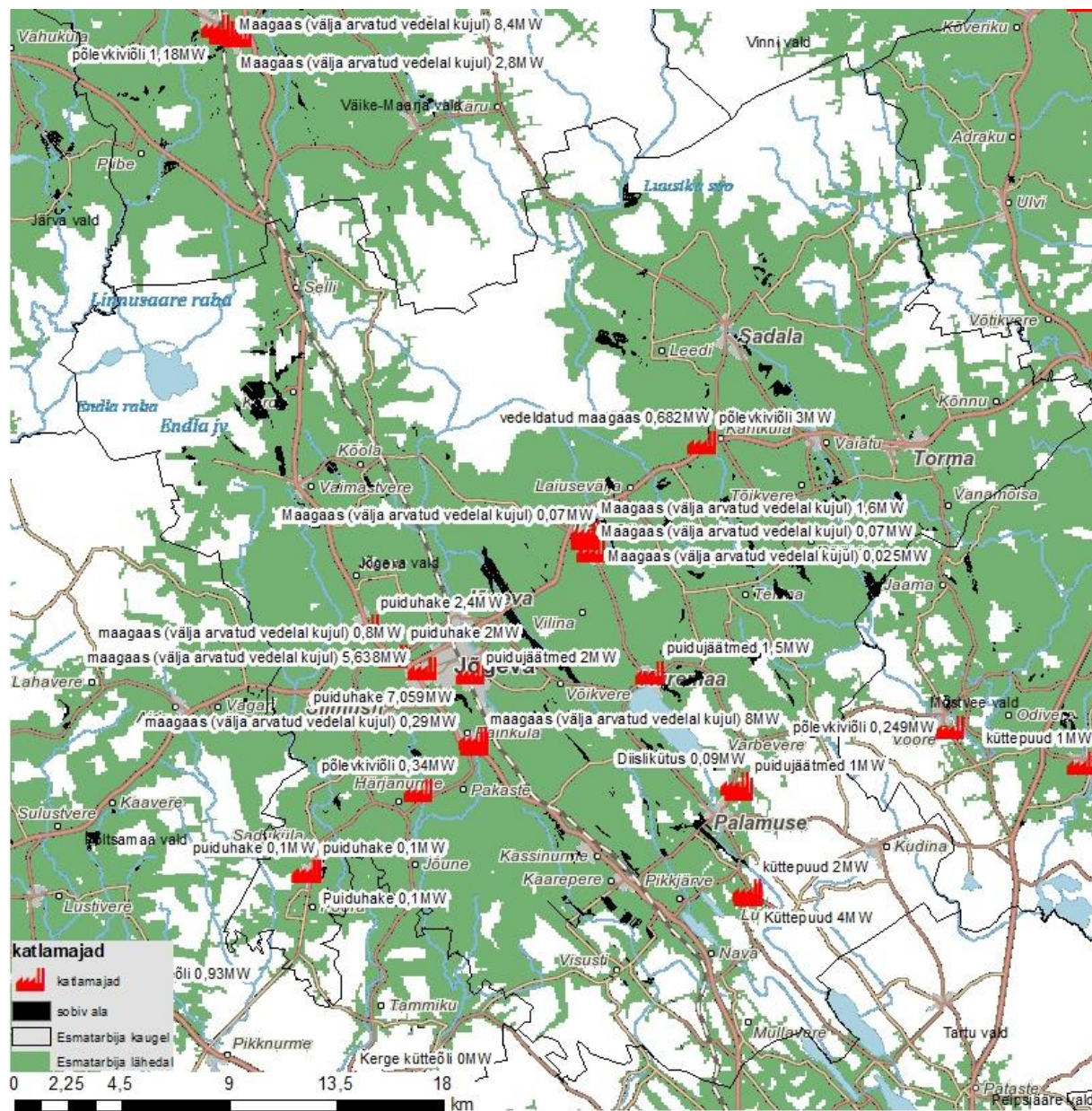
What is good!

- **EU climate targets supported by Estonia**
- Climate Policy until 2050 of Estonia
- Amelioration Act allows to close drainage systems
- Support for management of wet seminatural habitats

- We still have intact mires in Estonia!

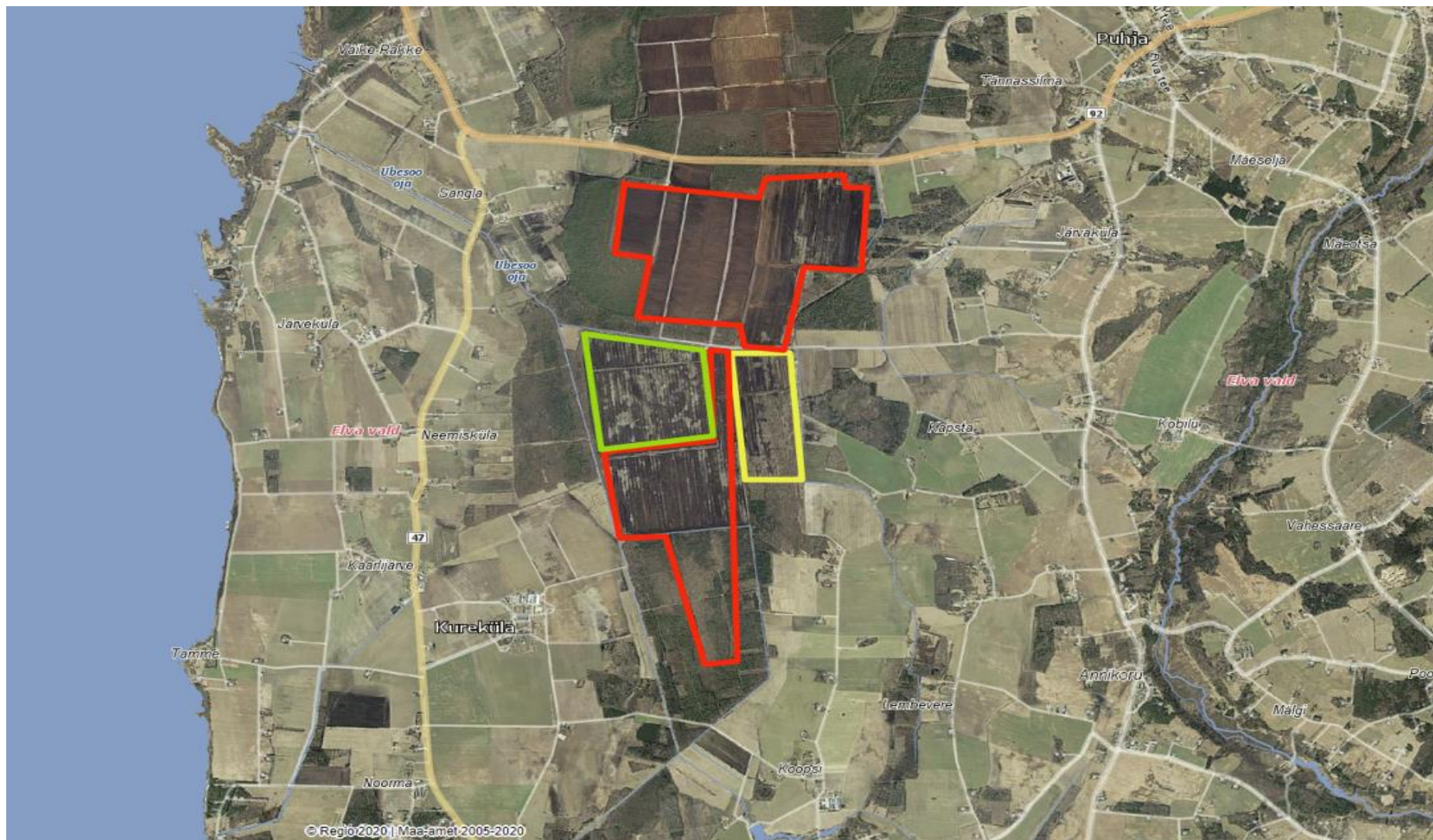


Põravere abandoned peat mining area ca 3000 ha, CO2 emissions 7500 kuni 48 000 t y-1



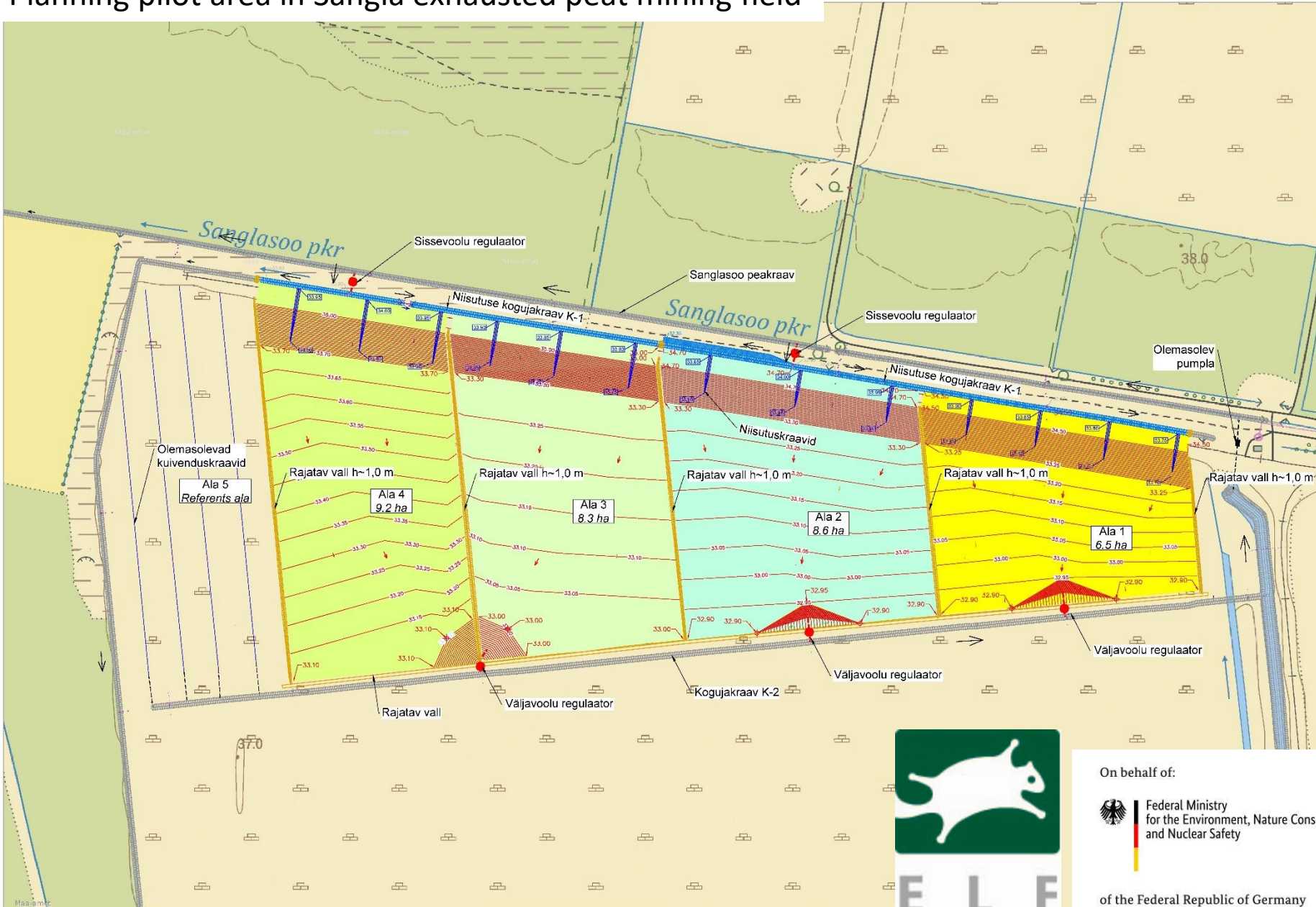
Potential usage of biomass for heating from wet meadows. K. Piirimäe 2019

Planning pilot area in Sangla exhausted peat mining field



Sangla peat mining area at the Eastern shoreline of Lake Võrtsjärv, green line surrounds potential paludiculture pilot area, yellow line – forested area, red line – mining area (existing and future sites).


Planning pilot area in Sangla exhausted peat mining field



Potential trials at Sangla:

- Grassland
- Salix sp.
- Typha, Phragmites
- Betula sp.
- Different grasses



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Monitoring

Costs, €

Equipment	1 area	5 areas
Weather station	5000	5000
Water level	1000	5000
Water characteristics	5000	17000
Total:	11000	27000
Laboratory analyses 1 y		
Water chemistry	4800	24000
GHGs	9000	45000
Soil chemistry	2000	10000
Biomass	800	4000
Areal survey	2000	10000
Total:	18600	93000
Eddy tower	>100 000	>500 000
+ salaries		



Photos: K. Kasak



Wooded meadow on shallow peat area at Ehmja-Turvalepa,
Photo: J.-O. Salm

Wet meadows cover in nature conservation areas cover 2000 ha, of which 1373 ha were managed in 2019. ([Poollooduslike koosluste tegevuskava aastateks 2014–2020, Keskkonnaamet 2019](#)).