QUANTIFYING REALISTIC NEGATIVE EMISSIONS

NEGEM

Kati Koponen,
VTT Technical Research Center of Finland

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TOWARDS 2030: RESHAPING THE EUROPEAN ENERGY SYSTEM
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NEED FOR NEGATIVE EMISSIONS

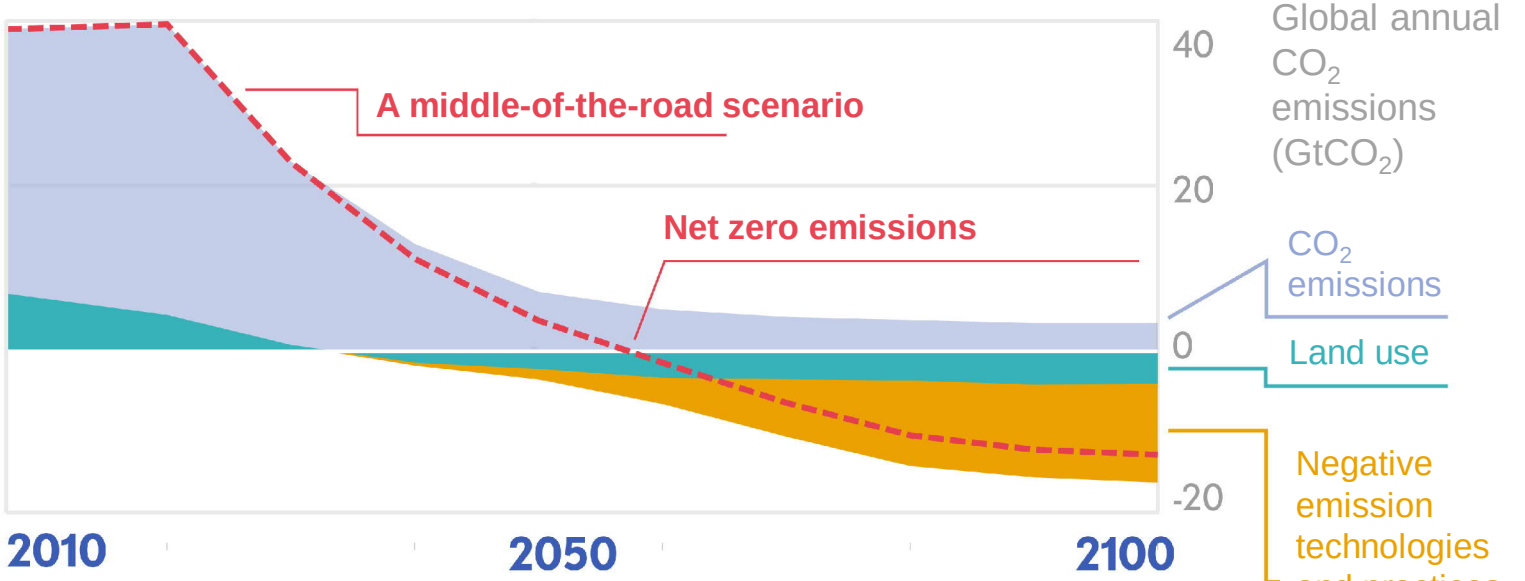
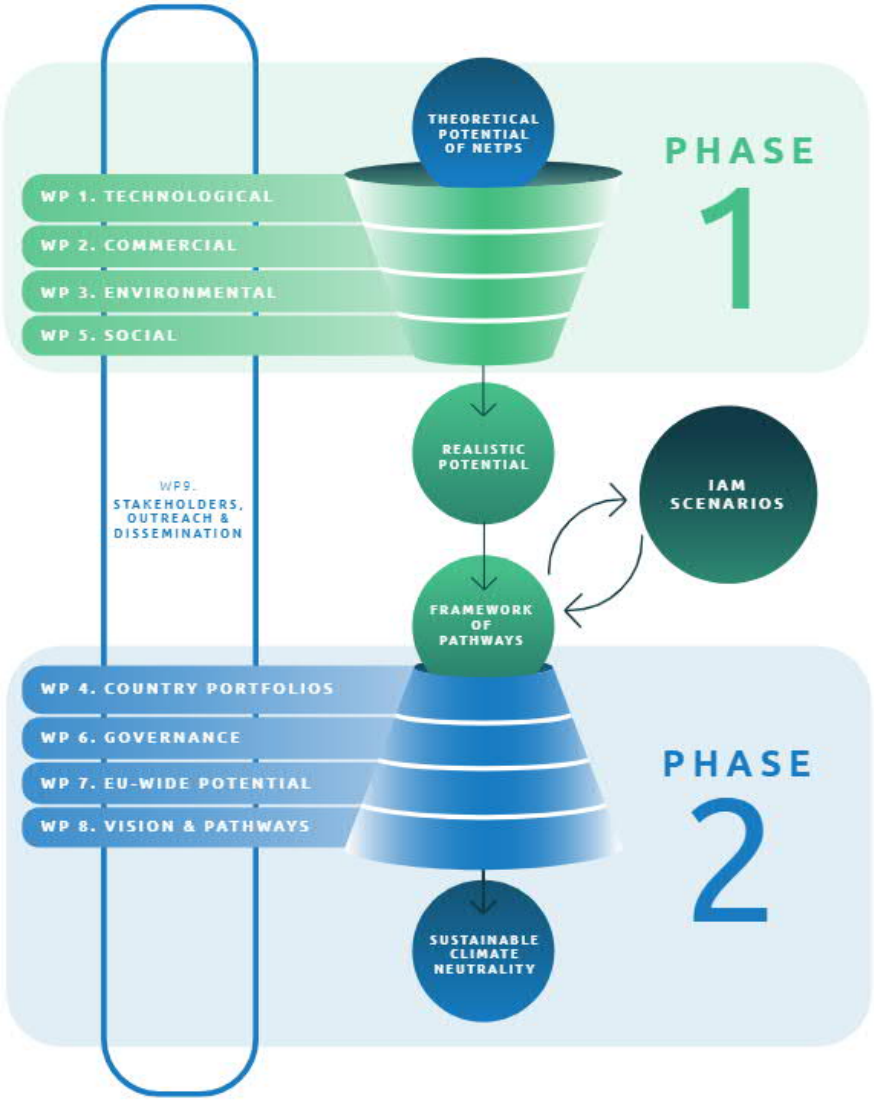


Figure: Based on IPCC 1.5°C scenarios, Finnish Meteorological Institute, Finnish Ministry of Environment. 2018

NEGEM PROJECT

Sustainable deployment of NETPs



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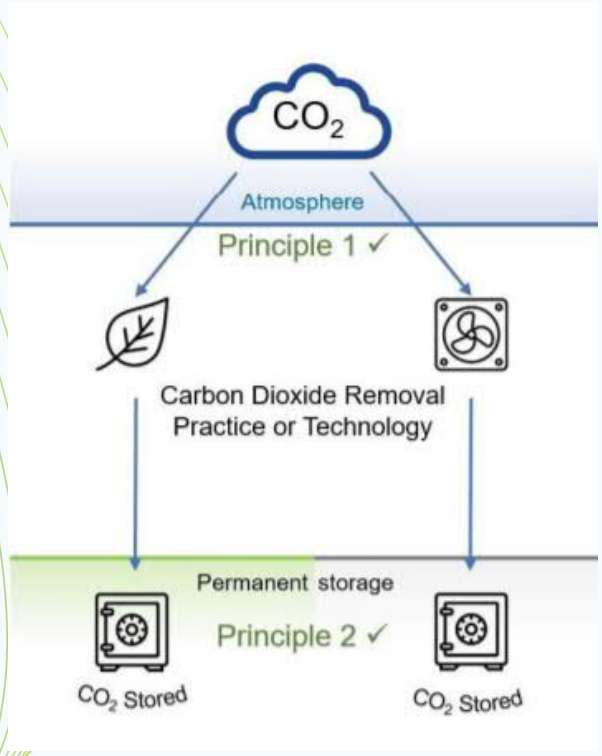
WHAT ARE NEGATIVE EMISSIONS?



DEFINING REAL AND CREDIBLE CARBON DIOXIDE REMOVALS (CDR)

Principles to be met when removing CO2 from the atmosphere (CDR)

1. ***Carbon dioxide is physically removed from the atmosphere***
2. ***The removed carbon dioxide is stored out of the atmosphere in a manner intended to be permanent***
3. ***Upstream and downstream greenhouse gas emissions, associated with the removal and storage process, are comprehensively estimated and included in the emission balance***
4. ***The total quantity of atmospheric carbon dioxide removed and permanently stored is greater than the total quantity of carbon dioxide equivalent emitted to the atmosphere***

Reference: When are negative emissions negative emissions? (Tanzer & Ramírez, 2019)

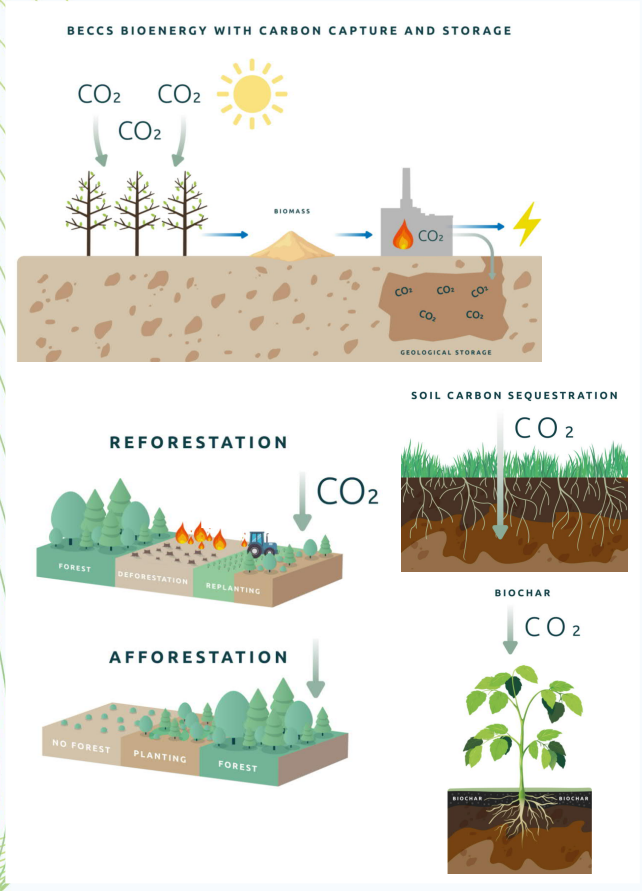
18/11/2020

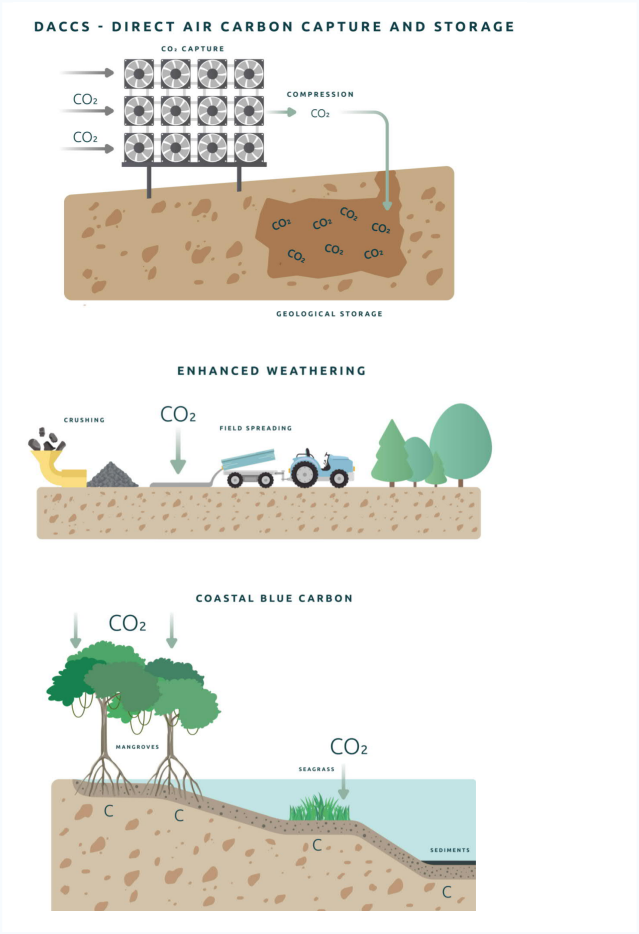
BELLONA EUROPA

SUSTAINABLE ENERGY WEEK

Figures from: https://zeroemissionsplatform.eu/wp-content/uploads/Europe-needs-a-definition-of-Carbon-Dioxide-Removal-July-2020-2.pdf

HOW CAN WE CREATE NEGATIVE EMISSIONS?





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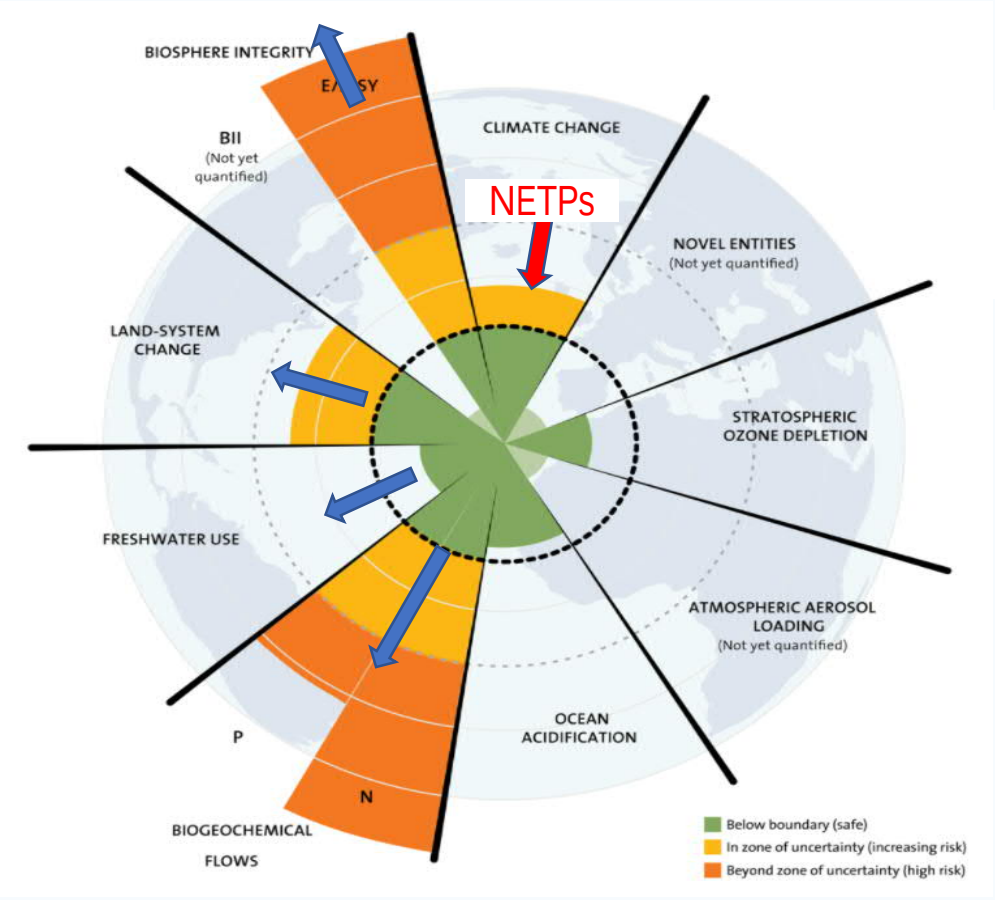
HOW TO DEFINE REALISTIC POTENTIAL?

NETPs needed to ensure the planetary boundary for climate



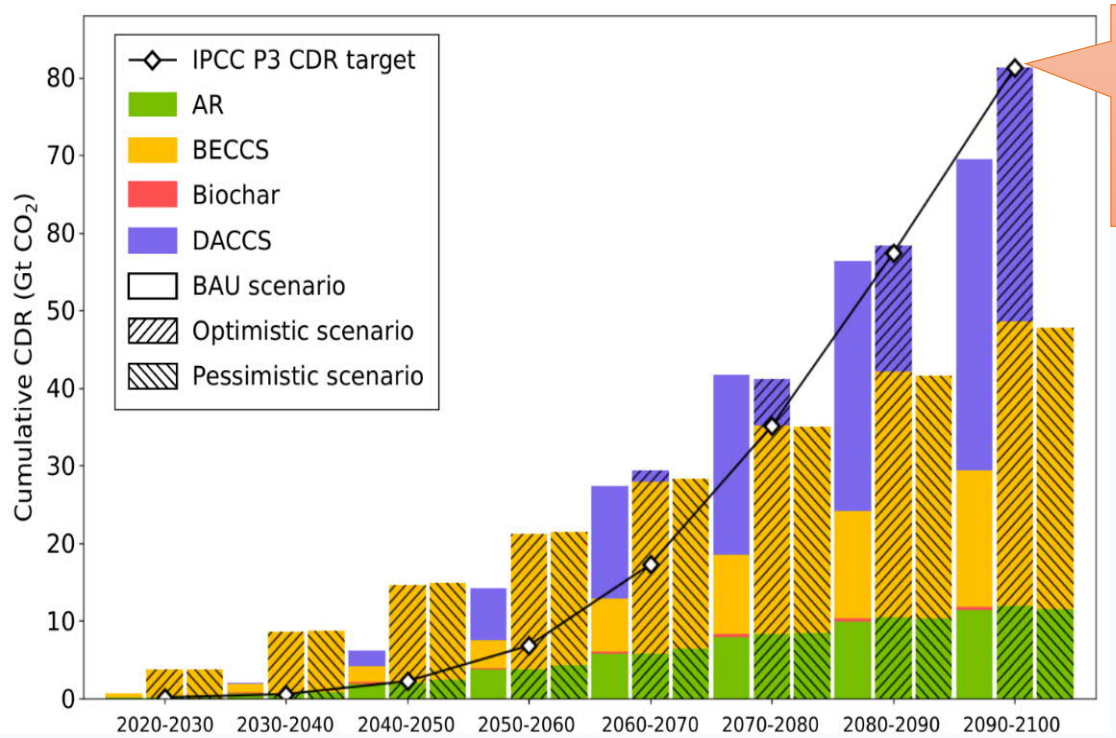
NETPs may put pressure on other planetary / regional boundaries

Figure from: https://stockholmuniversity.app.box.com/s/avnyhh4xzshxb19j82hn5mf3hxyuvqj0

WHAT COULD THIS MEAN IN EUROPE?

First NEGEM modelling results:

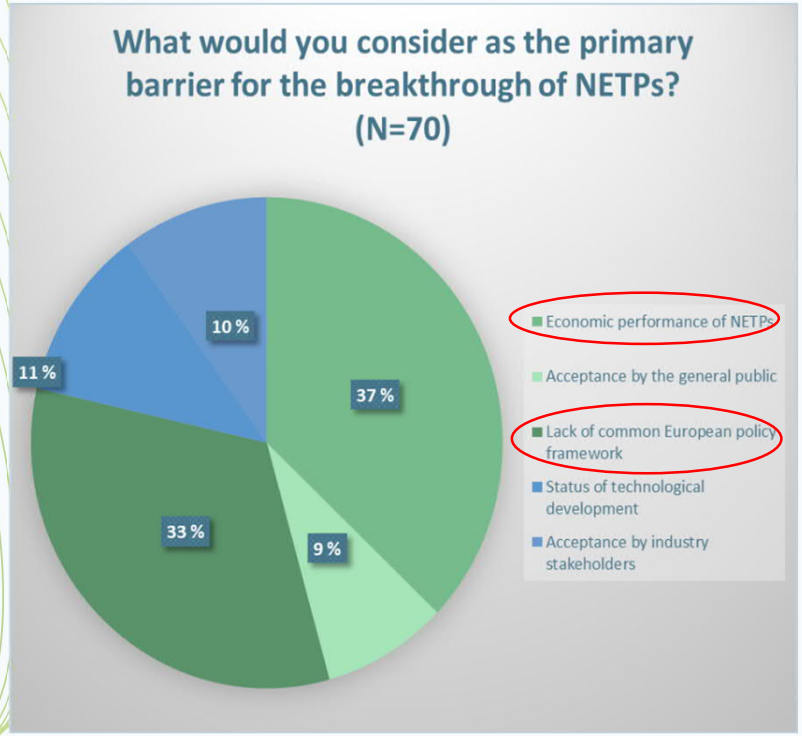
- The cost-optimal way strongly relies on cooperation → the countries meet the cumulative CDR pledge together (optimistic scenario).
- When nations act in isolation (BAU & pessimistic scenario), the deployment of NETPs at scale is more costly & some EU countries are not able to meet their targets, e.g. due to lack of access to CO_2 storage or limited biomass and land availability.



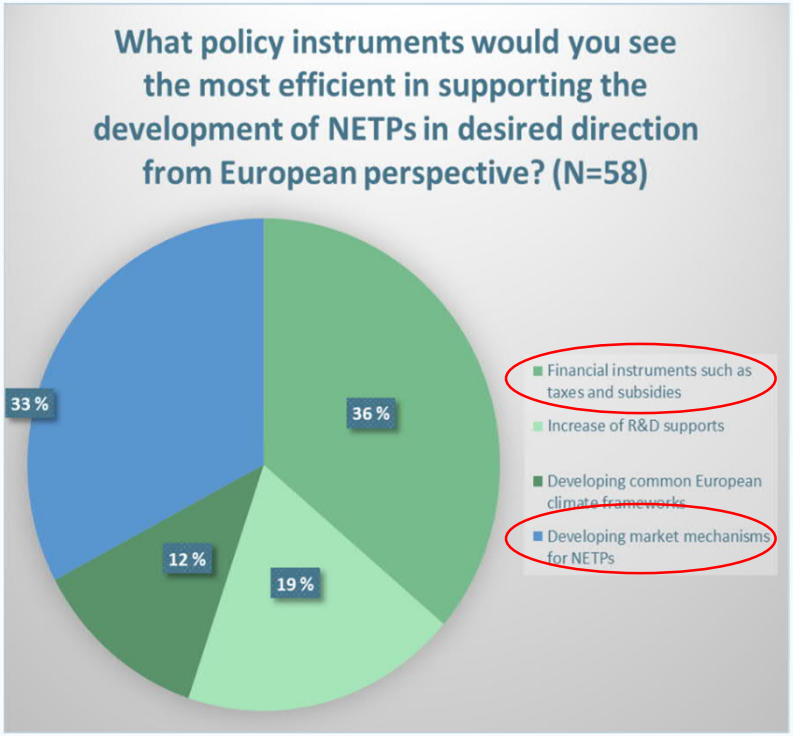
- EU+UK cumulative CDR target: 83 $GtCO_2$
- Based on IPCC P3 middle of the road scenario & each nation's cumulative historic GHG emissions

Source: NEGEM Deliverable 7.2 by ICL "Extended MONET -EU"

BARRIERS



NEEDED INSTRUMENTS



Source: NEGEM deliverable 8.1.

TO CONCLUDE...

- We need drastic emission cuts, and it is likely that in addition NETPs are needed

  → We need to understand their realistic potential

- Cooperation between countries will be needed

- Clear definitions and policy instruments are needed

FOLLOW NEGEM RESULTS:

Deliverables

Stocktaking of scenarios with negative emission technologies and practices

Documentation of the vision making process and initial NEGEM vision
09/11/2020

D1.2 Comprehensive sustainability assessment of terrestrial biodiversity NETPs

D1.3 Comprehensive sustainability assessment of marine NETPs

D1.4 Comprehensive sustainability assessment of Bio-CCS NETPs

D3.1 Upgraded LPJmL5 version

D4.1 NETP database

D4.2 Bio-geophysics database

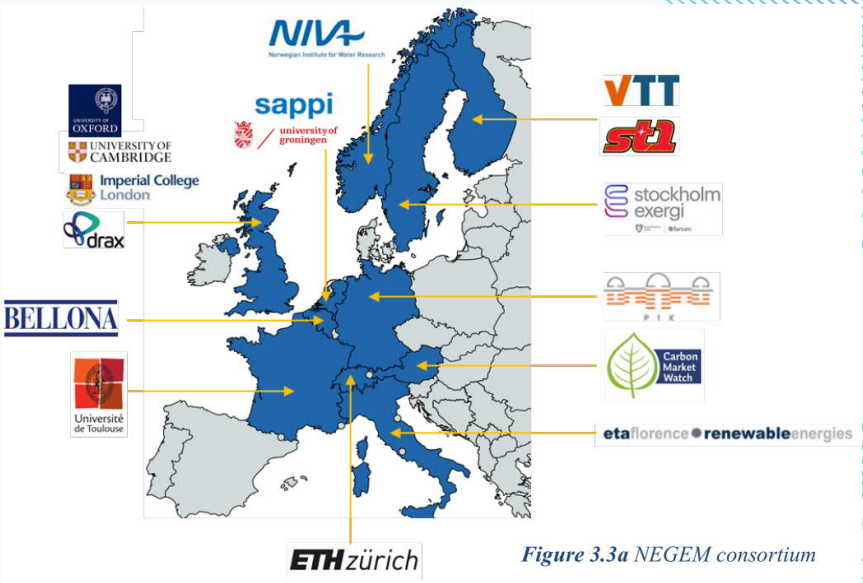


Figure 3.3a NEGEM consortium

https://www.negemproject.eu/

Contact: kati.koponen@vtt.fi

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