EcoSMR Business Review

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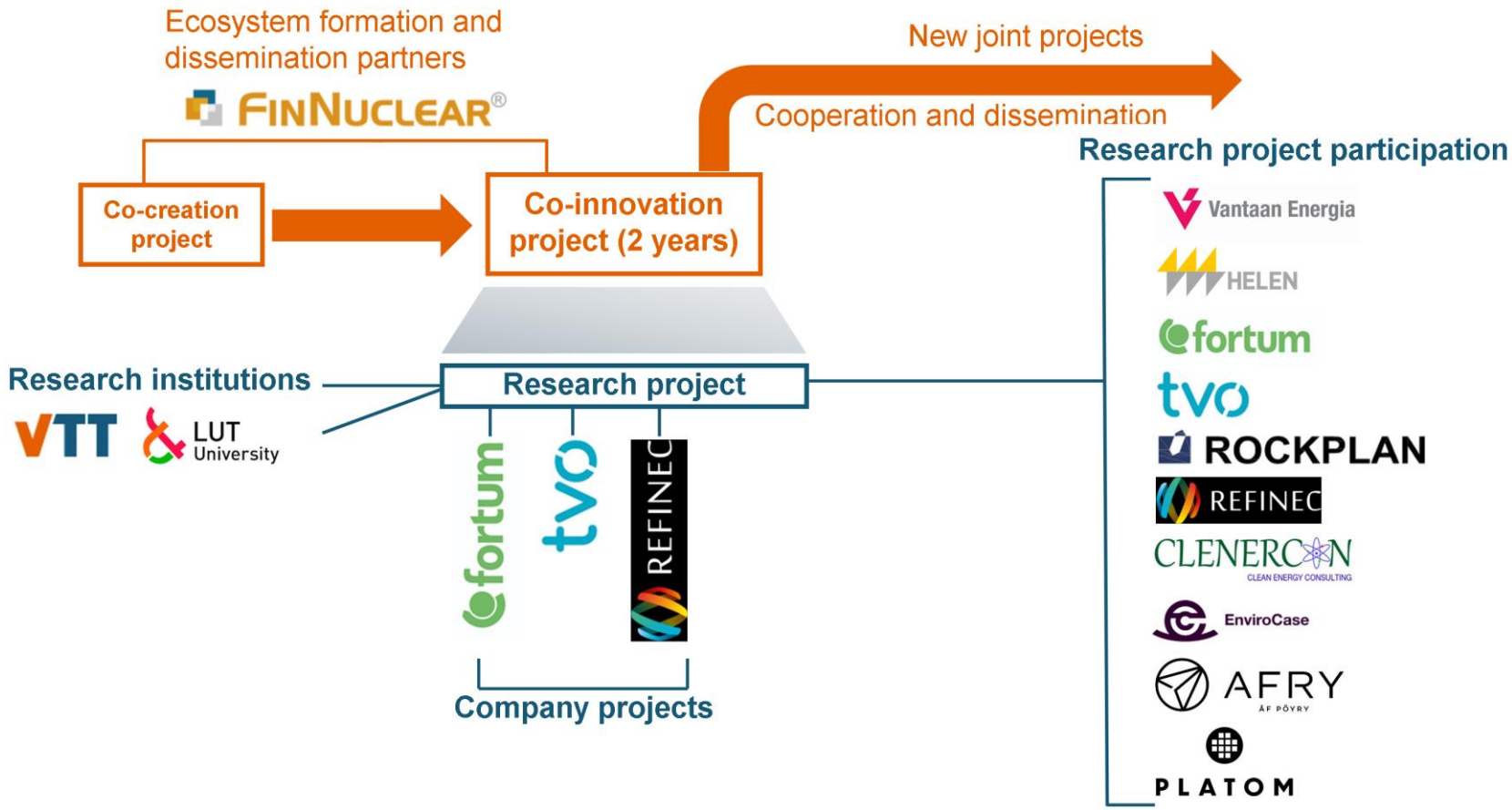
EcoSMR.fi

Presentation Content

- EcoSMR
- Energy Transition Market in EU
- District Heat Market Dynamics
- Company activation and networking
  - Potential Business and Collaboration Models
  - Next steps – SMR HUB, R&D&I
- Information to actors, higher level of knowledge
- New nuclear -> New business
  - National and International
  - Decorbonization of renewing energy system
  - Opportunities for industrial investments

EcoSMR Consortium



Scale of Energy Transition

Electricity

1600 TWh/y
EU Low carbon electricity production to be deployed by 2040

80 GW
European Nuclear capacity to be replaced by 2050

District heat

~500 TWh$_{th}$/y
Current district heat demand in EU26

➢ **2/3 fossil-fueled**
Assets to be retired and replaced in the coming two decades

Industrial heat

~1250 TWh$_{th}$/y
Iron – Steel, Non-metallic minerals and chemicals heat demand in EU26

> 45 % market
Heat below 400°C

Hydrogen

>20 Mt H_2/y GW
REPowerEU Market Estimate for 2030

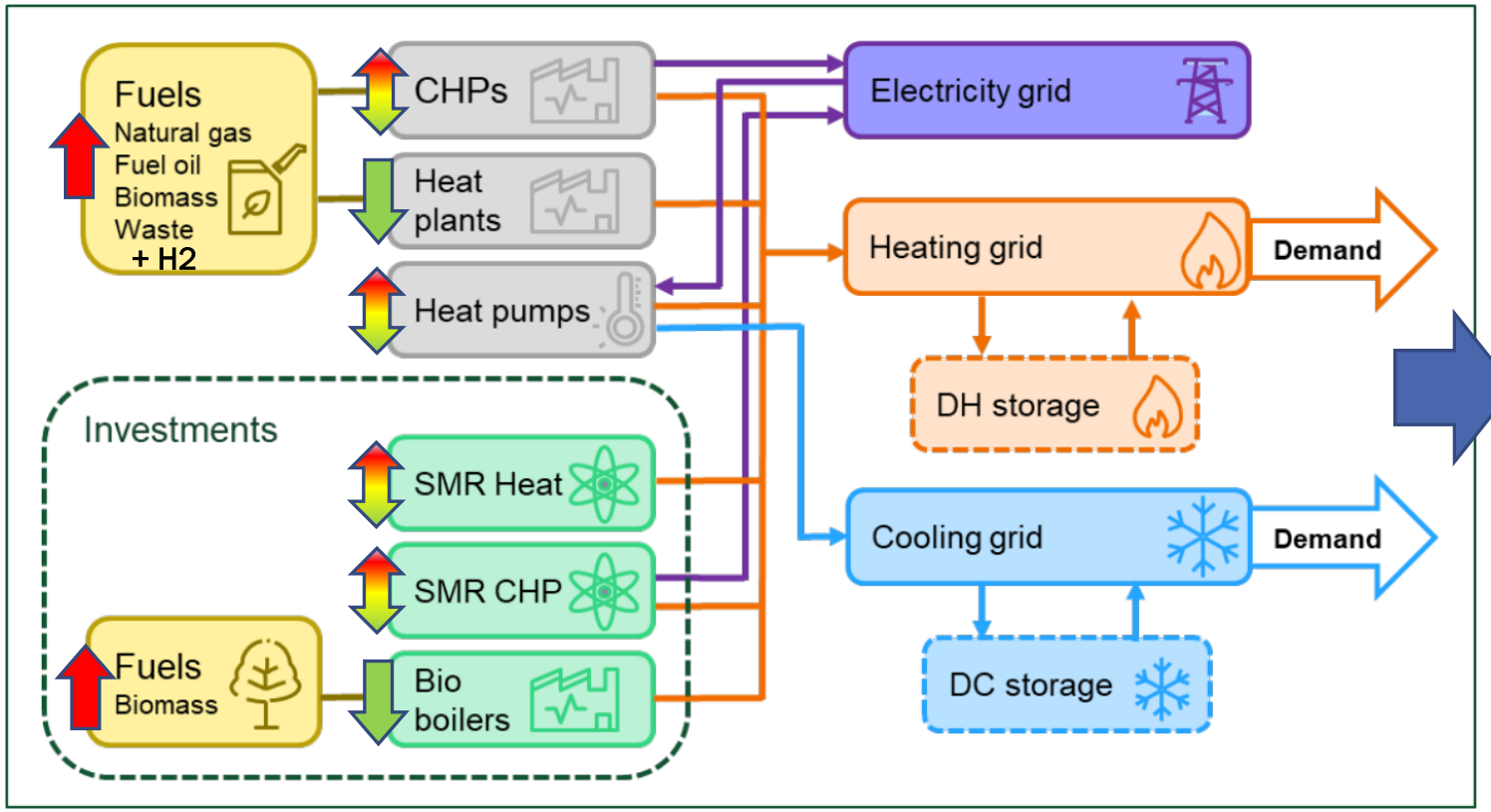
1000 TWh/y
Equivalent additional clean electricity demand

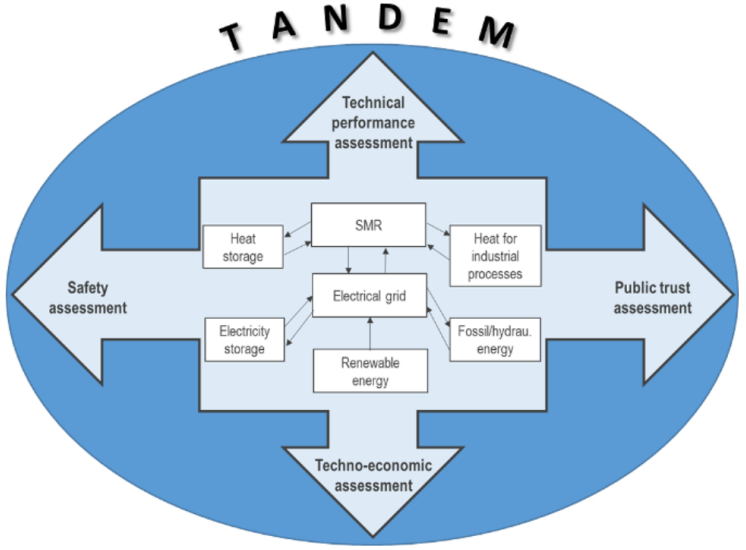
>120 GW
Equivalent nuclear capacity

= 377 TWh primary energy of which 86,8 TWh electricity

Total Additional EU Demand for clean energy by 2040: 9000 TWh/y

System Dynamics





Market for District Heating Reactor?

50 MW plant
Capacity factor = 60%
→ 0,26 TWh/a

Technically **~1200 heat reactors** would decarbonize European district heat

Social Acceptability

Heat Grid Compatibility

Competing Energy Solutions

Capital Investment

Healthy contractual conditions

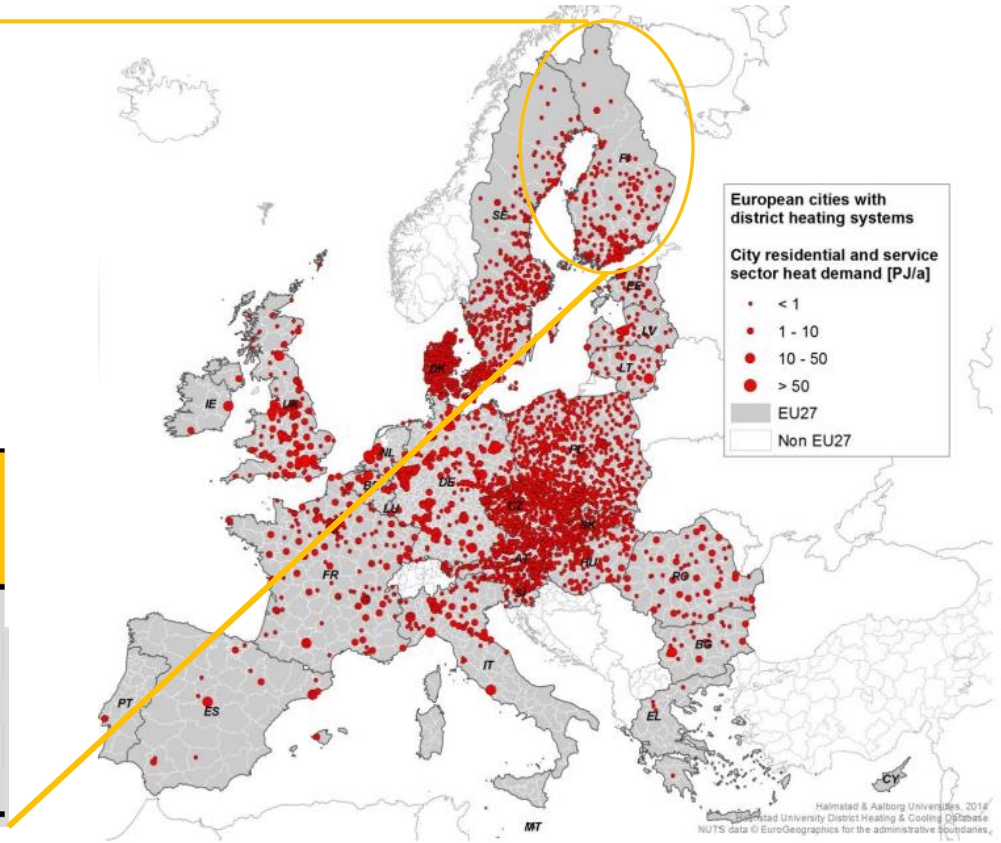
European District Heat Market

Potential number of District Heating Reactors in Finland

Käyttöaika-vaatimus / laitoskoko	4000 h	5000 h	6000 h	7000 h	8000 h
400 MW_DH	4	3	1	1	1
200 MW_DH	7	7	4	1	1
100 MW_DH	19	14	9	6	3
50 MW_DH	26	23	19	12	7
25 MW_DH	47	41	31	23	15

Short term potential considering current investments

Käyttöaika-vaatimus / laitoskoko	4000 h	5000 h	6000 h	7000 h	8000 h
400 MW_DH	1	1	1	0	0
200 MW_DH	4	3	1	1	0
100 MW_DH	8	6	2	1	1
50 MW_DH	14	11	5	2	1
25 MW_DH	21	17	8	3	1



Interview Results

2 years ago

- Opportunities identified in electricity and heat production; co-ownership; operation; service provision; emission reduction
- Identified challenges in financing models, public acceptability, international harmonization of licensing,

Now

- Economic conditions for business cases have improved
- Promising development in local & international SMR interest and collaboration
- Lack of concrete local SMR projects and heat reactor vendor

Round Table Results : Deployment

Economic rationale for a **concrete project case** on a chosen **site**

Backwards engineered timeline for FOAK with a clear **scheduled goals** set

Established or new founded, **fundable champion company** to lead the deployment

Round Table Results : Licensing

Positive signal on the will to deploy SMR in Finland and **public monetary support**

Acceleration of the **renewal of nuclear legislation** and auditory requirements

Ensure development **resources of the regulator**

Better distinction of terminology to accurately define the size and nature of discussed solutions

Way Forward

Developing the Network including vendors and end users

- Active exchange of knowledge and information in Finland
- Networking Finnish actors internationally

Support the initiation of New Programmes and Projects

- Launching the SMR HUB activities
- Advancing the Finnish Heating Reactor

Understanding Business Models

- Technoeconomical modeling and analysis
- Clarifying roles and revenue models of actors
- Multidisciplinary Advisory through Round Tables

Dissemination

- As a collaborative effort to renew and develop the nuclear energy industry

Nuclear and especially New Nuclear is moving fast –

we need to move now before decision windows are closed

beyond

the obvious

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