

Technology Collaboration Platform
**Research and Development on
Energy Conservation through
Energy Storage (ECES TCP)**

Workshop: Munich March 1st 2016

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Chair, ECES**

Content

- Introduction ECES
- Energy storage in evolving energy system
- Recent and current Annexes in ECES
- Conclusions

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Introduction:

Participating Countries in 2015

- **Belgium**, VITO
- **Canada**, Public Works and Government Services Canada
- **China**, China Academy of Building Research (CABR)
- **Denmark**, Danish Energy Agency
- **Finland**, Pirkanmaa ELY-Centre
- **France**, ADEME
- **Germany**, Forschungszentrum Jülich GmbH
- **Italy**, ENEA
- **Japan**, Heat Pump & Thermal Storage Technology Center of Japan
- **Korea**, KETEP
- **The Netherlands**, Netherlands Enterprise Agency (RVO)
- **Norway**, Geological Survey of Norway
- **Slovenia**, University of Ljubljana
- **Sweden**, FORMAS
- **Turkey**, Çukurova University
- **United States of America**, Department of Energy

- **University of Lleida**, (Spain) as a sponsor
- **Dublin Institute of Technology** (Ireland), as a sponsor

→ 16 participating countries and 2 sponsors

Our scope

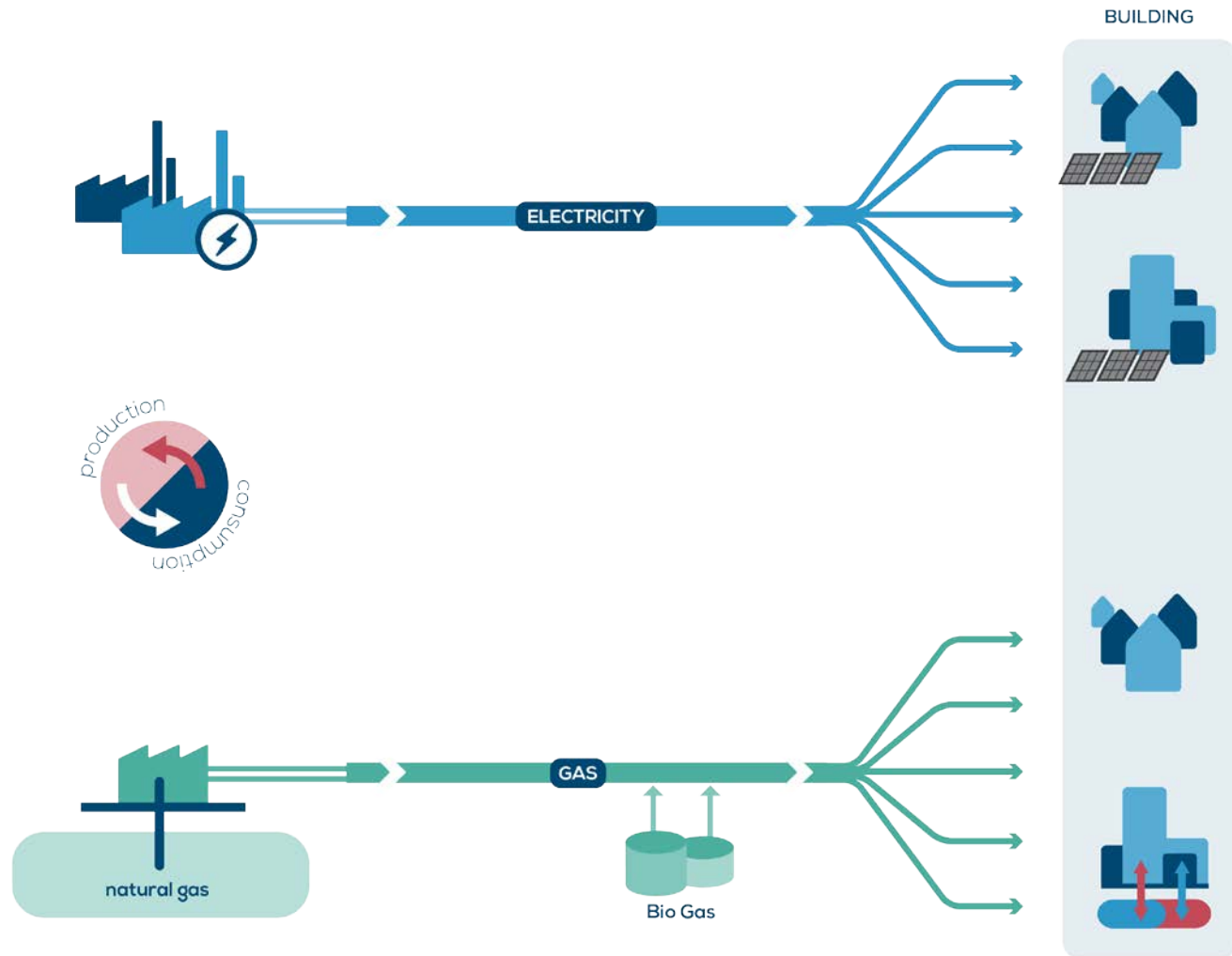
- Research and dissemination activities in both **thermal** as well as **electrical** storage technologies
- Storage technologies as a main driver for the transformation of the energy system towards a **low-carbon renewable** based supply
- The international collaboration within a framework of **IEA countries** in combination with **developing** and **transition** countries
- **Scientific** community and **industry** working together for best deployment of results



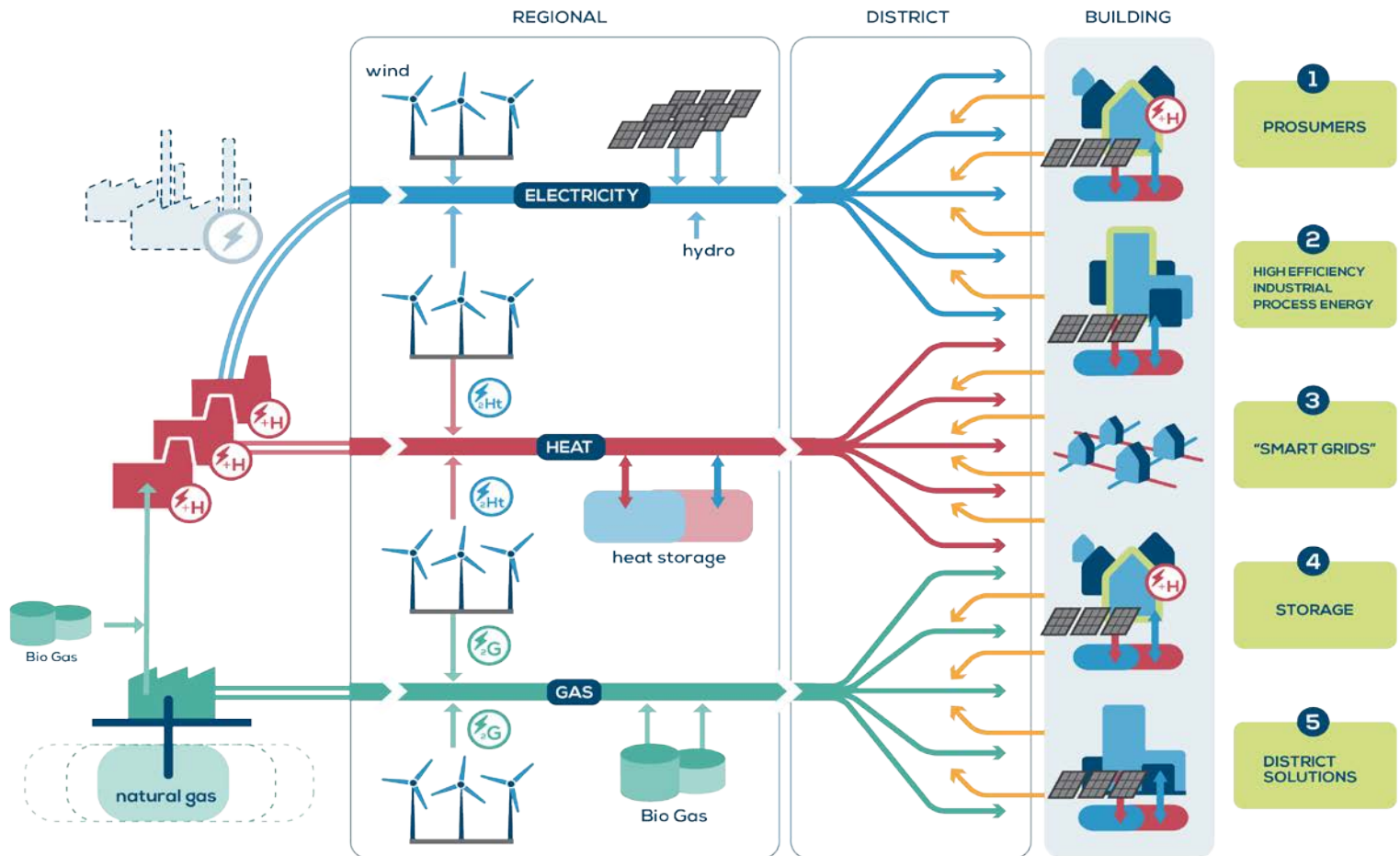
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Our energy system is rapidly changing, from a centralised approach to.....



.....a complex system in which energy storage is a key factor.....



Strategic Direction

ECES Vision towards 2021

- The main position of energy storage within a “smart”, reliable and renewable energy system is to:
 - Facilitate energy grid stability
 - Optimize renewable energy production to match specific demand
 - Create flexibility in energy form (i.e. electricity vs gas or heat and cold)



Strategic Direction

ECES Vision towards 2021

■ Innovation focus on:

- Techno- / Economic improvements:
compact, cost ▼, lifetime ▲, efficiency ▲, safety.
- Economic-regulatory: market access, market design, security of investments, regulatory hurdles

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Recently Completed Annexes

Annex 20: Sustainable Cooling with Thermal Energy Storage

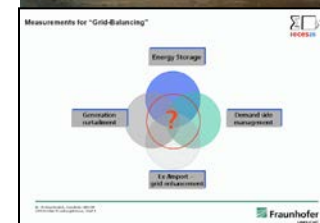
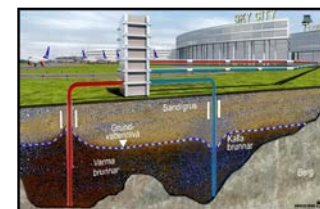
Annex 21: Thermal Response Test for Underground Thermal Energy Storage

Annex 23: Applying Energy Storage in Ultra-low Energy Buildings

Annex 24: Compact Thermal Energy Storages – Material Development and System Integration (Joint Annex with SHC IA)

Annex 25: Surplus Heat Management using Advanced Thermal Energy Storage for CO₂ mitigation

Annex 26: Electric Energy Storage: Future Energy Storage Demand



Current Annexes

Annex 27: Quality management in design, construction and operation of borehole systems

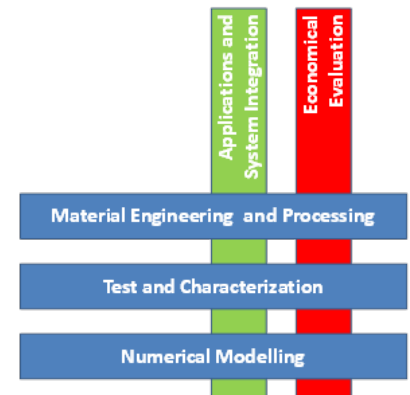
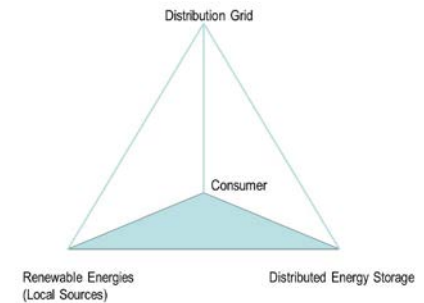
- Deals with pre-standardization aspect

Annex 28: Distributed Energy Storages for the Integration of Renewable Energies

- Identify possibilities to integrate fluctuating renewable energy sources into future energy systems, focusing on decentralized energy storage technologies

Annex 29: Material Research & Development for Improved TES Systems (Joint annex with SHC IA)

- Develop advanced materials and systems for compact storage of thermal energy



Current Annexes

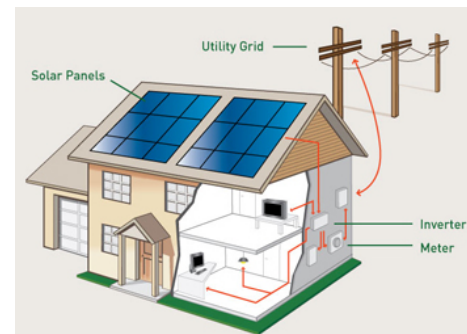
Annex 30: TES for Cost Effective Energy Management and CO₂ Mitigation

- Evaluate the potential for implementation of thermal energy storage in industrial and power plant applications, non-residential buildings and transport



Annex 31: Energy Storage with Energy Efficient Buildings and Districts: Optimization and Automation

- Address significant mismatches in time between energy demand and energy production in NZEBs.



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- ECES strategy
- Conclusions

Conclusions

- ECES TCP addresses the R&DD needs for energy storage as an increasingly important element in the transformation to a renewables based energy systems.
- ECES TCP focus is on international collaboration by research centers, universities, industry and energy sector.
- ECES TCP is to increase visibility of energy storage and their importance for our future energy systems



Thank you

For more information

www.iea-ecses.org

