From Utility Tool to Change Agent (some thoughts on DSM)

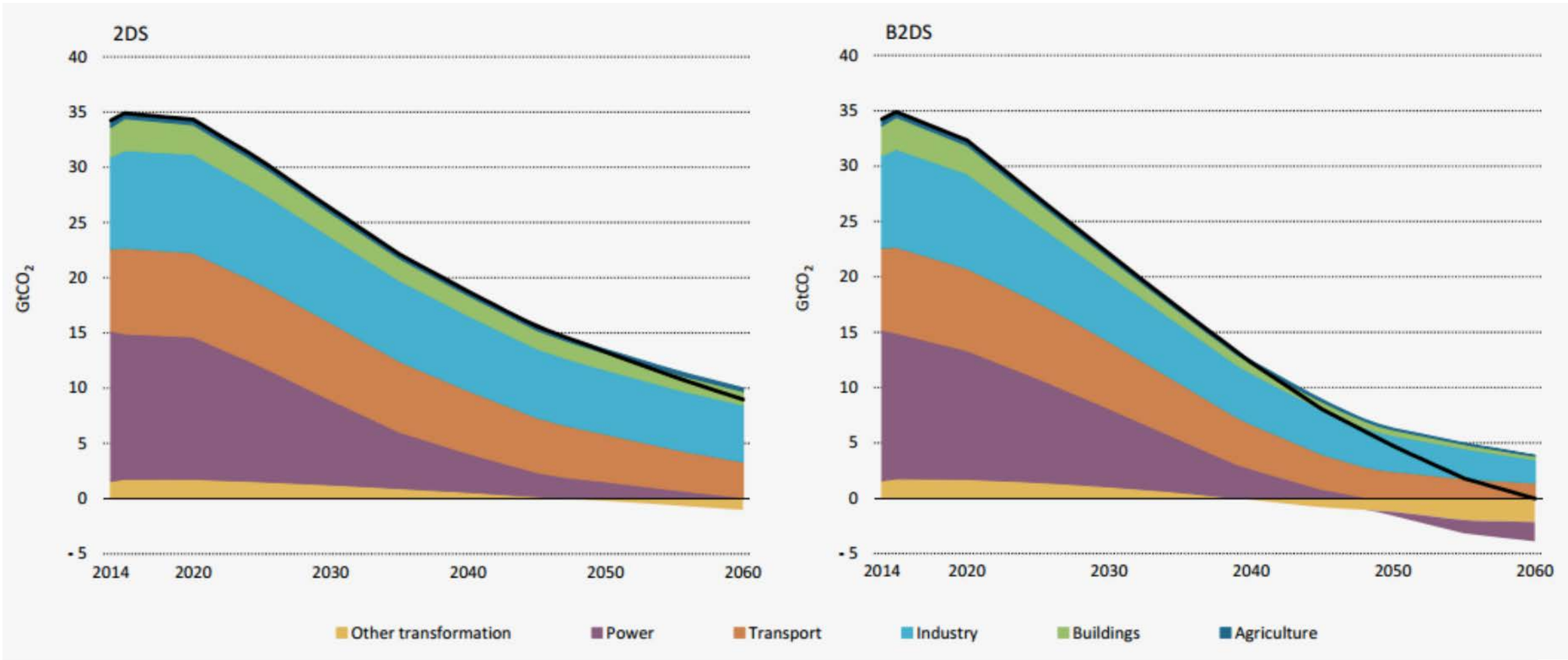
Rob Kool
Former Chair IEA DSM/EGRD
Interimmanager RVO.NL

* This presentation uses slides from IEA EGRD and DSM workshops

Less then 200 years ago…

Zaanse Schans, the Netherlands

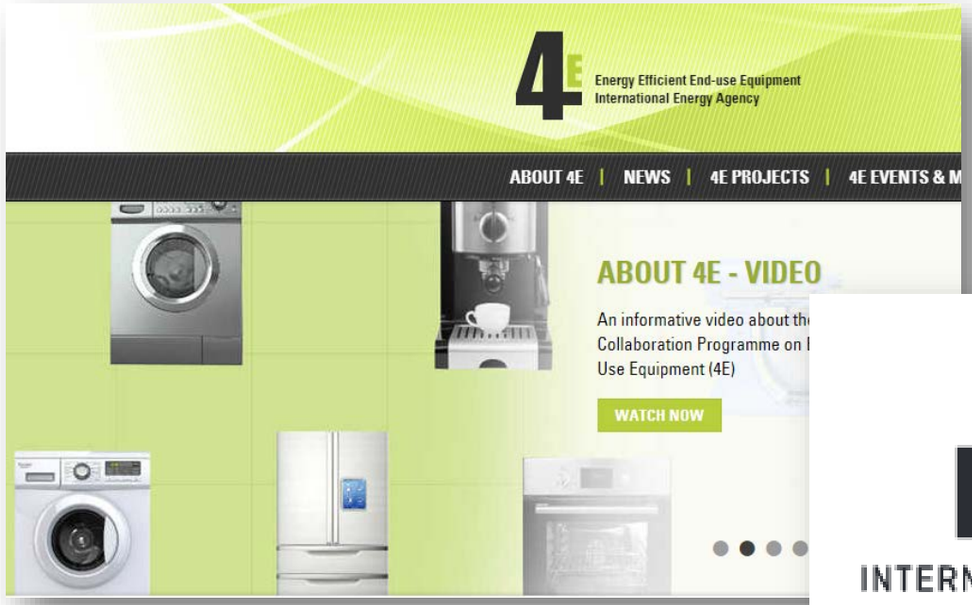
The overall goal

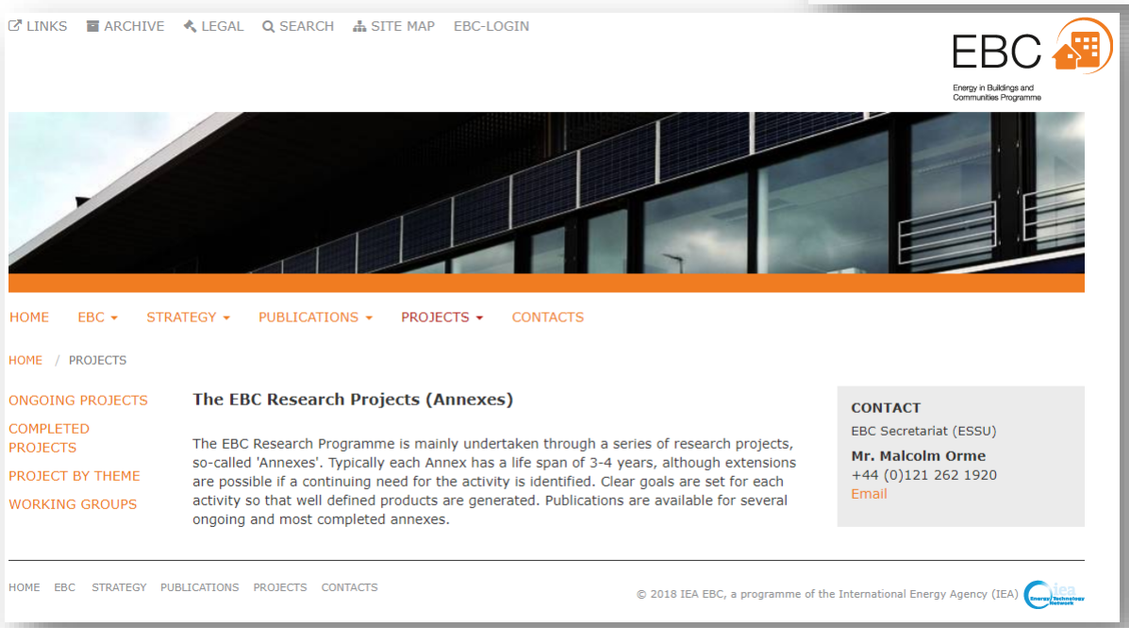


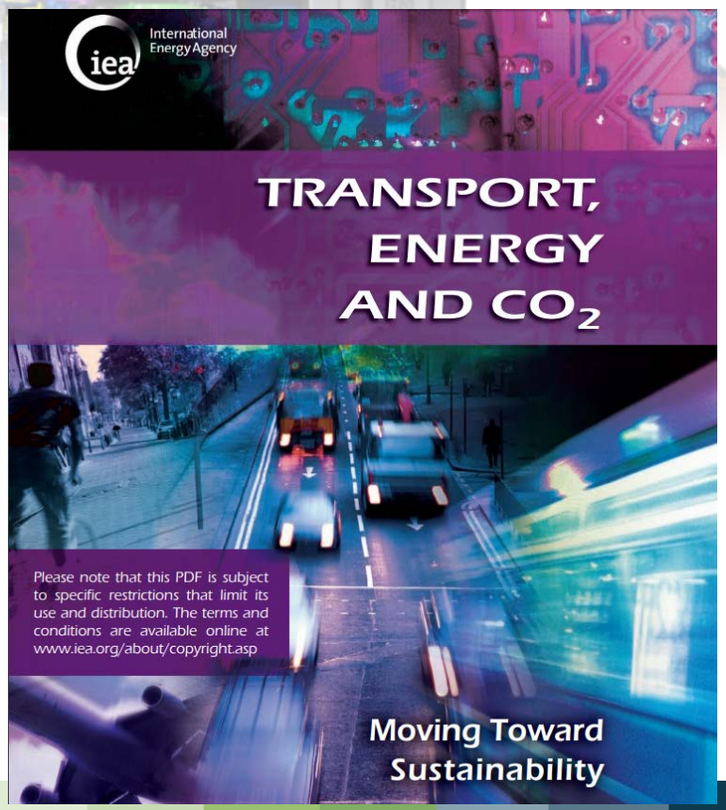
www.carbonbrief.org/iea-world-can-reach-net-zero-emissions-by-2060-meet-paris-climate-goals

ieadsm energy efficiency

IEA TECHNOLOGY COLLABORATION PROGRAMMES





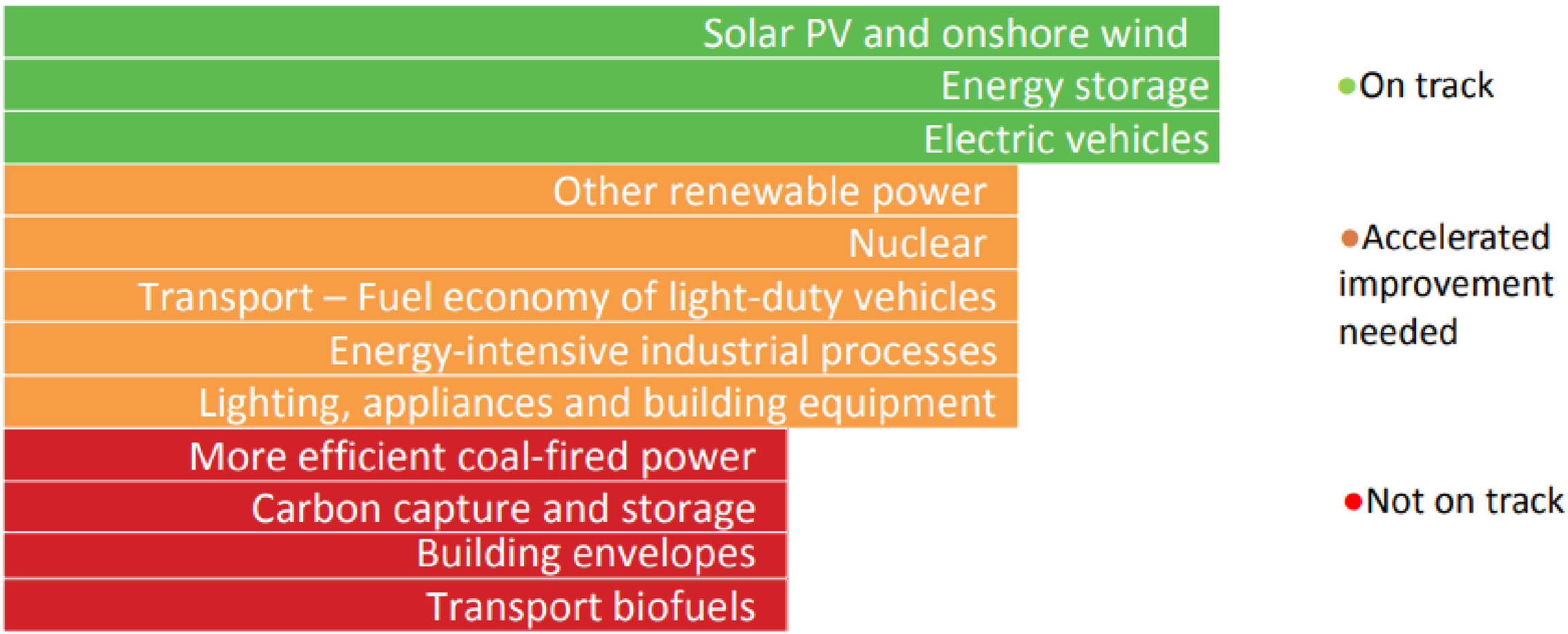


International Energy Agency
Secure Sustainable Together

www.iea.org

Tracking clean energy technology progress

Progress on energy technologies compared with rate needed to meet ambitious climate targets



Recent progress in some clean energy areas is promising, but many technologies still need a strong push to achieve their full potential.

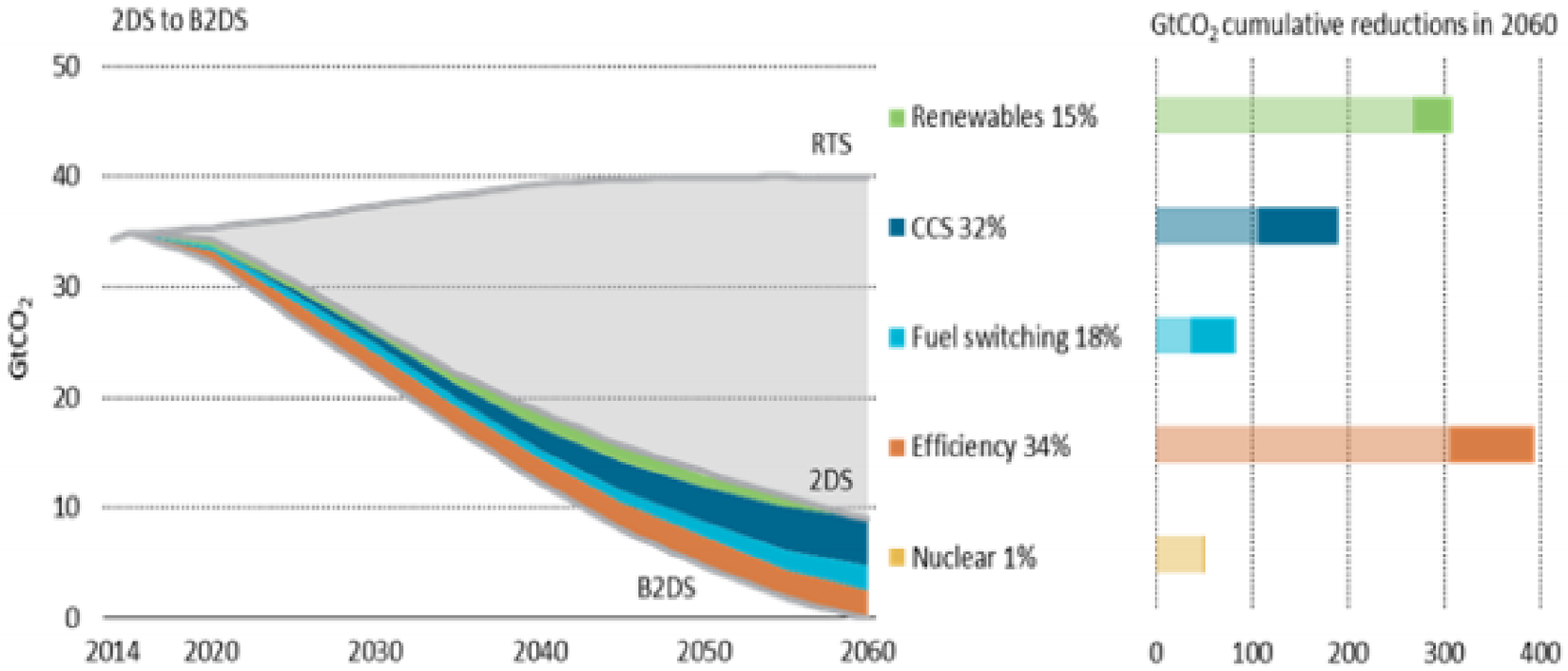
International Energy Agency
Secure Sustainable Together

www.iea.org

Tracking energy technology progress and future scenarios

- ***Energy Technology Perspectives 2017***
  - Scenarios to 2060

Global CO2 emissions reductions by technology area and scenario



RTS (Reference Technology Scenario); 2DS (- 2°C Scenario); B2DS (Beyond 2°C Scenario.

Source: IEA (2017), *Energy Technology Perspectives*. Paris.

Energy innovation has already started delivering, but more efforts are needed.

Where does DSM come from

Task 5 – Investigation of Techniques for Implementation of Demand-Side Management Technology in the Market Place

Synopsis

Participants developed a common methodology for implementing DSM technology with residential small commercial and small industrial customers. This methodology modelled small customer markets in basic units with objective characteristics such as kinds of end-use equipment, cost of network equipment, family or business types, socio-cultural values.Participants also conducted a survey in their countries of the methods that utilities and governments have successfully used to market DSM technologies in residential, small commercial and small industrial markets.

Based upon the methodology developed above, each participant carried out a pilot project for a particular small customer market. The results of the pilot programmes were measured and their success evaluated. Results in different countries were compared and their similarities and differences were explained. Within each country results of the pilot programme were compared with results of previous programmes in order to document improvements realised in programme effectiveness.

Task 4 – Development of Improved Methods for Integrating Demand-Side Options into Resource Planning

Synopsis

This Task reviewed and documented utility structures and integrated planning approaches in IEA-member countries. Participants performed a review and comparative assessment of government and utility power sector planning priorities in IEA-member and non-member countries with a view to their implications for the integration of DSM options into resource planning. They also compiled information on the methods, techniques and models for demand forecasting and integrated planning being used in their respective countries by utilities and government.

Based on this review, a guidebook was developed describing alternative approaches and summarising examples of how these methodologies have been incorporated. Case studies documenting successful applications from several countries were included. Taking into consideration the factors influencing DSM in participating countries, guidelines were developed on how to transfer processes, methods, techniques and models for incorporating DSM in resource planning from one country to another. Included in this book were issues related to differences in market conditions, supply characteristics, utility structure, regulatory environments, pricing and tariff structures and government policies.

Task 4 also investigated mechanisms to promote DSM and energy efficiency in new business environments. This included a critical review of mechanisms which have been used or proposed for use, to incorporate DSM and energy efficiency into restructured electricity industries. The results were presented in three workshops.

Task 3 – Co-operative Procurement of Innovative Technologies for Demand-Side Management

The start of DSM: Utility Tool

Figure 1: Load Shape changes. (Adapted from Clark Gellings, speech made 1982)[5]

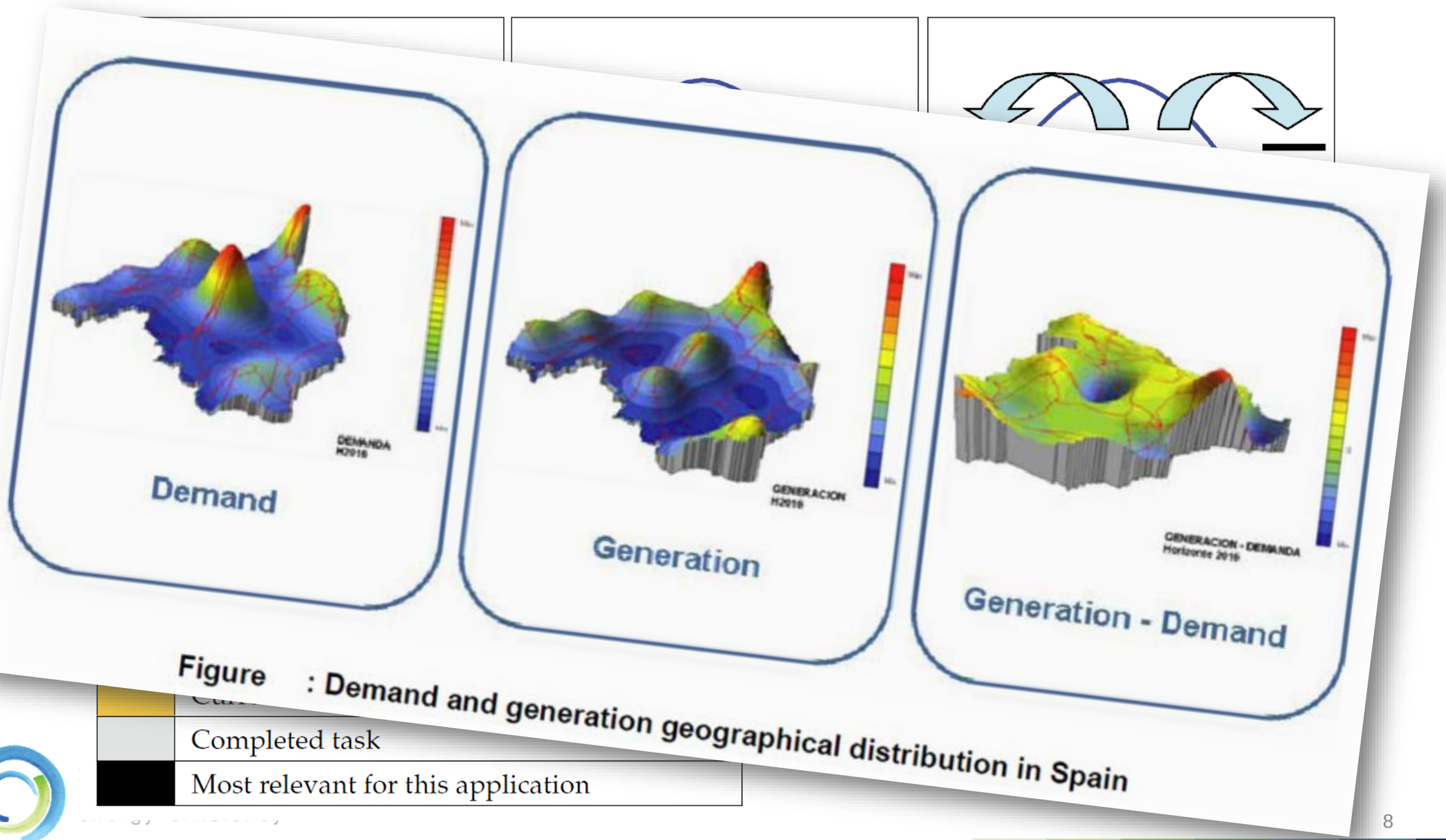
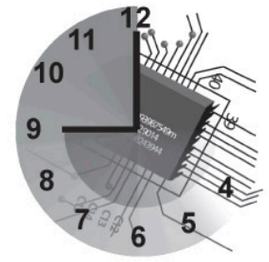
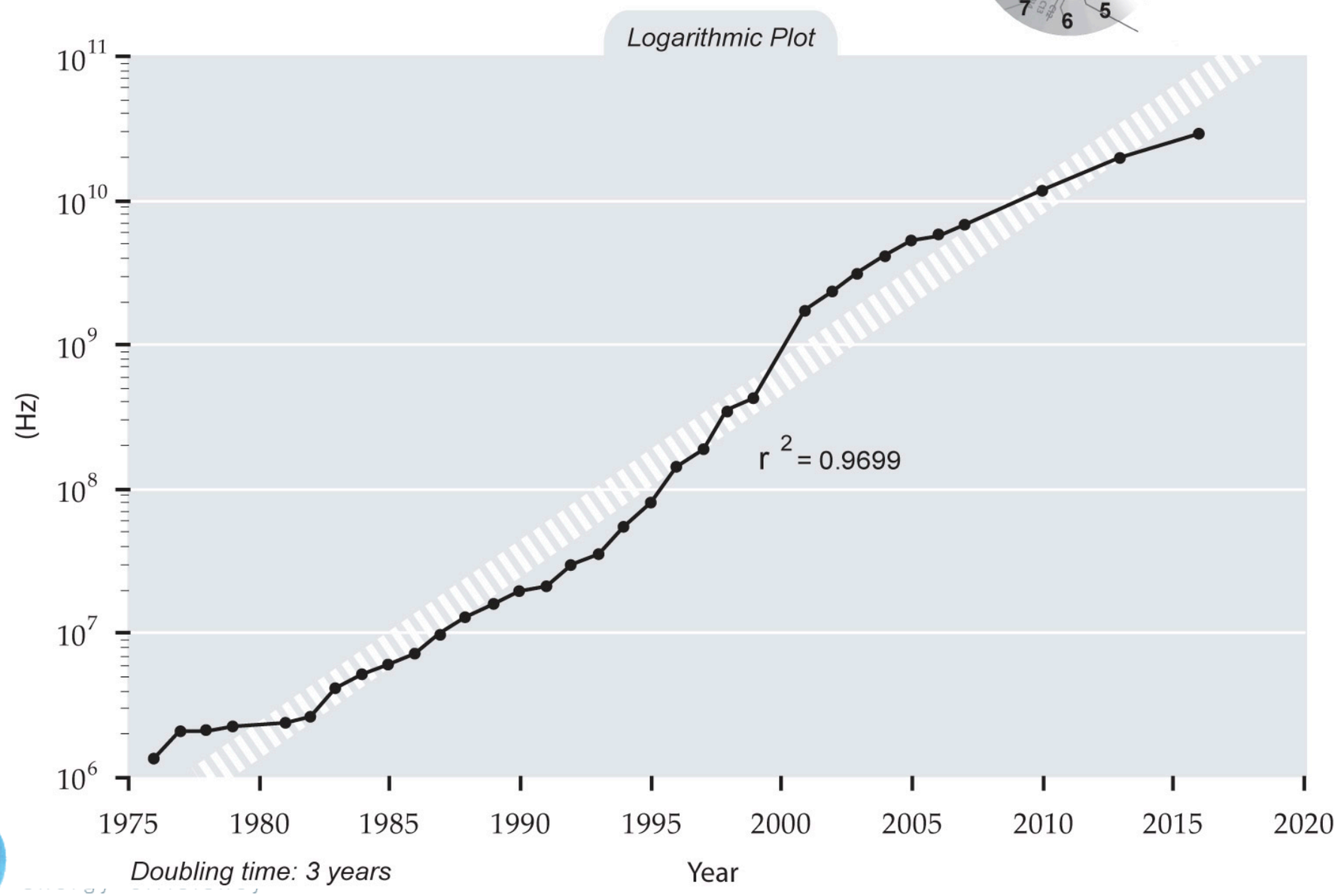


Figure : Demand and generation geographical distribution in Spain

	Completed task
	Most relevant for this application

Our DSM world changed dramaticley





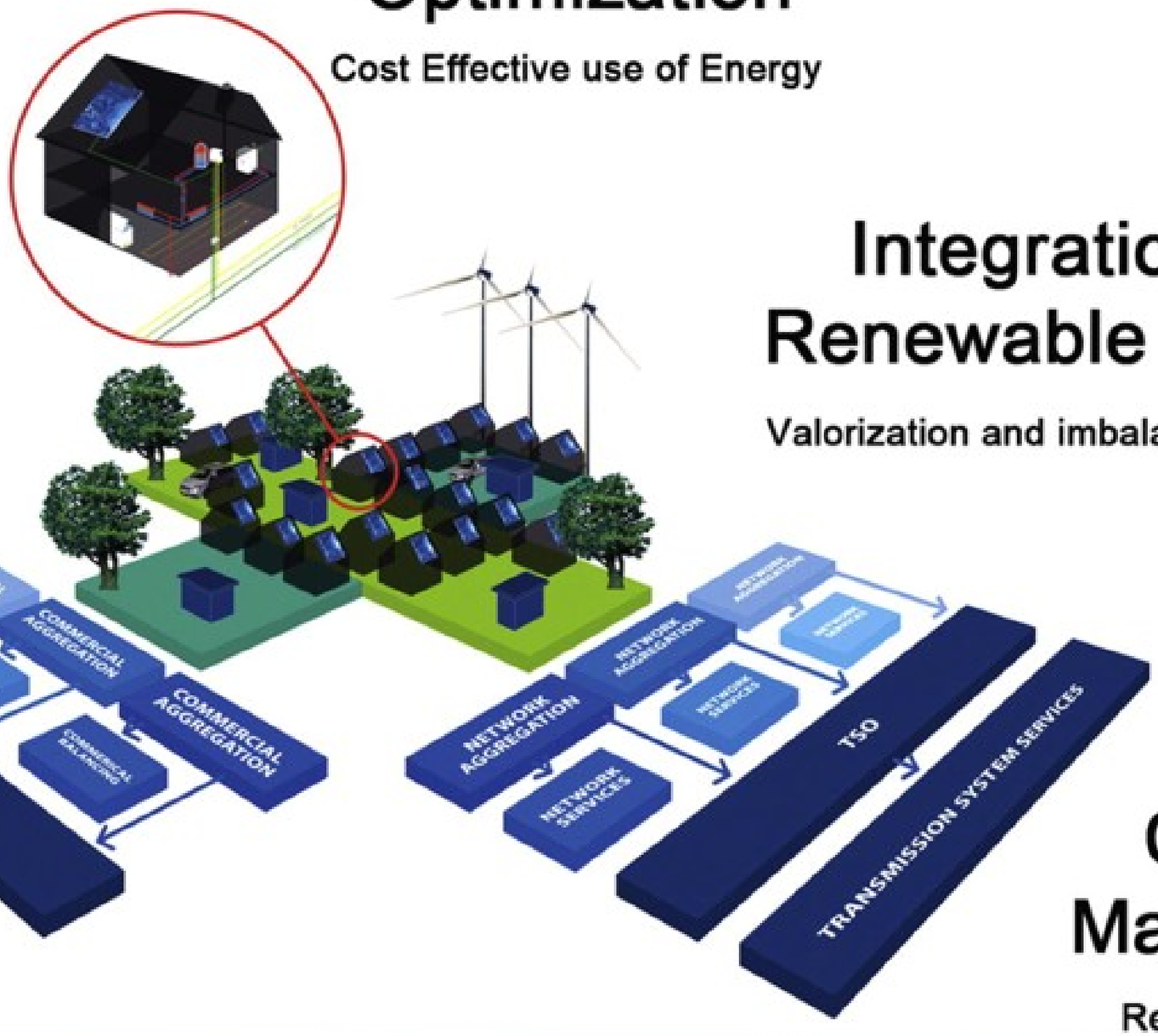
https://blog.algorithmia.com/hardware-for-machine-learning/

Example PowerMatcher in living lab Hoogkerk

Stakeholder setting

In-Home Optimization

Cost Effective use of Energy



Commercial Optimization

Virtual Power Plants

Integration of Renewable Energy

Valorization and imbalance Reduction

Capacity Management

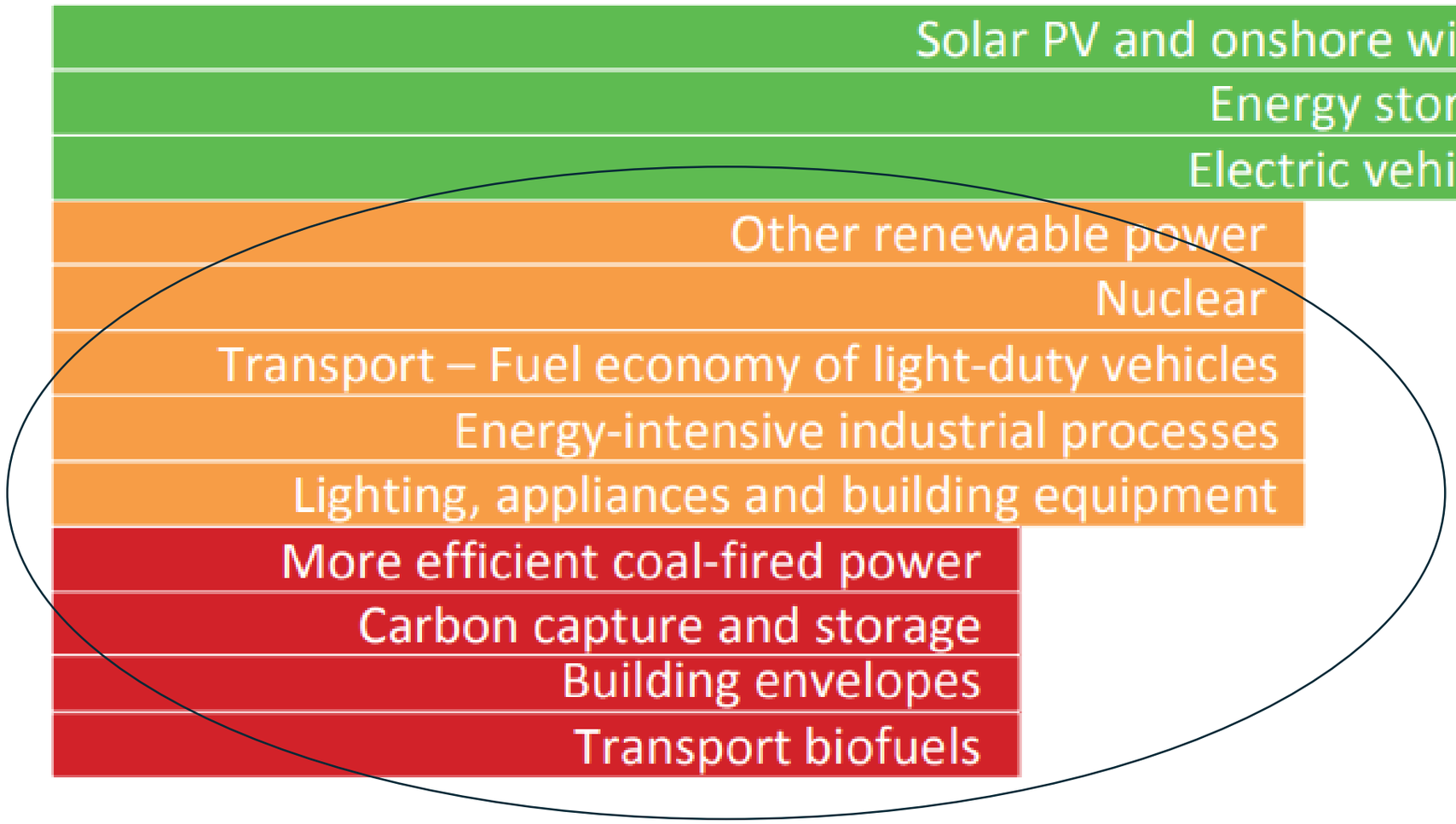
Reduce Peak Loads

International Energy Agency
Secure Sustainable Together

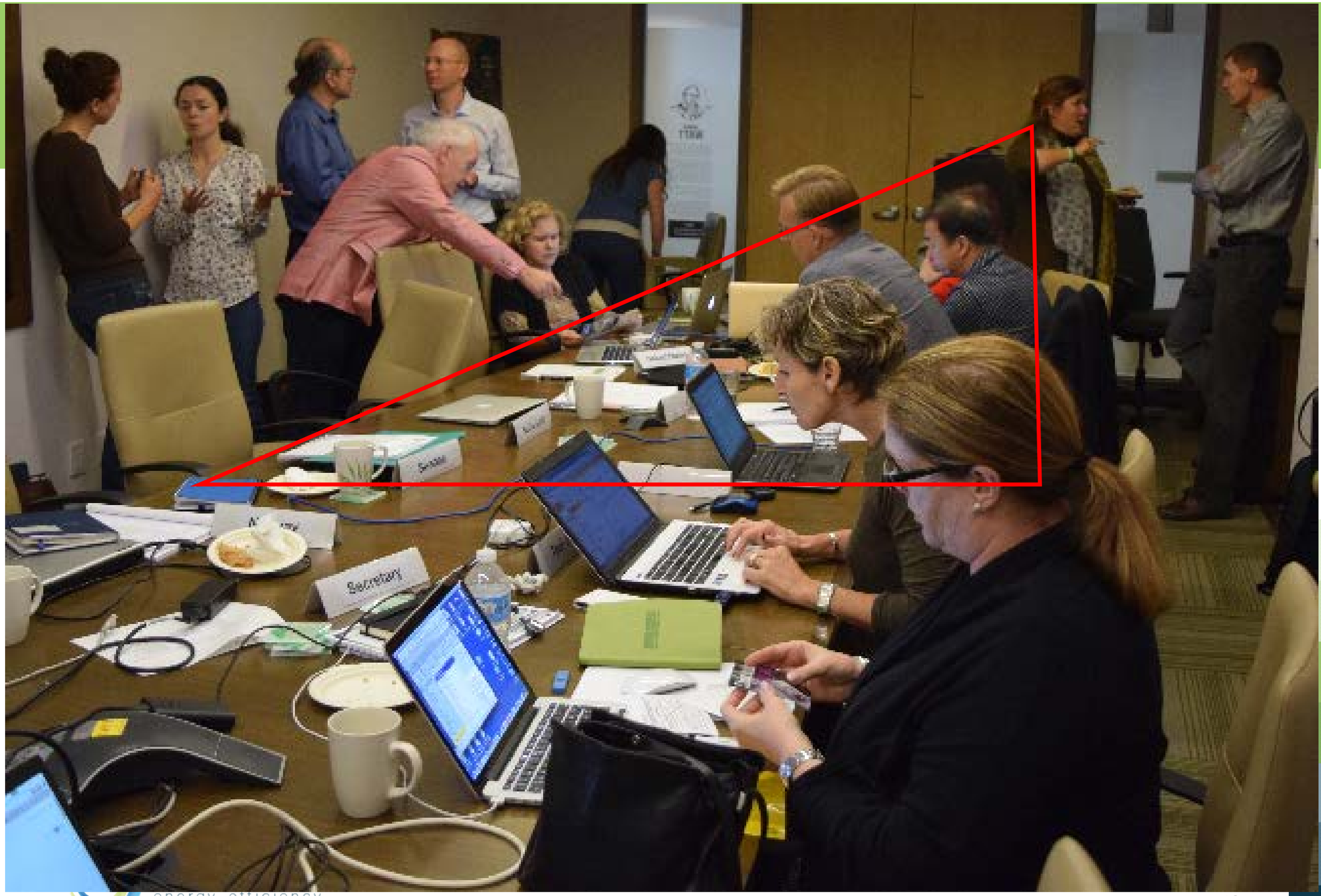
www.iea.org

Tracking clean energy technology progress

Progress on energy technologies compared with rate needed to meet ambitious climate targets



Recent progress in some clean energy areas is promising, but many technologies still need a strong push to achieve their full potential.


Secretary

1. Understanding and aligning energy actors' motivations and incentives

ieadsm
energy efficiency

2. Identifying value creation through digitalization, new technology clusters, and new service provision.

- Responsive prosumers
- Big Data: Send information on sustainability options in line with Paris agreements
- Give personal feedback
  - Already in use in (parts of) industry
  - Very limited used in governamental programmes yet
  - Privacy and ethical debate in research
- Part of IEA collaboration

©PABLO MARTINEZ MONSIVAIS

4. Policy and regulation to support the energy transition.

DutchNews.nl

10° mist

Saturday 14 April 2018

Dutch central bank introduces new stress test for climate change

Business October 5, 2017

Financial institutions must increasingly factor in the consequences of a changing climate and the transition to a carbon-neutral economy, the Dutch central bank said on Thursday.

The bank now intends to make climate-related risks a bigger part of its regulatory role, with 'the ultimate aim of ensuring sustainable financial stability', the bank said in a statement.

A recent report by bank analysts on changes in the frequency of extreme weather and rising sea levels showed that the impact will be felt on the assets of financial institutions through various indirect channels.

Features

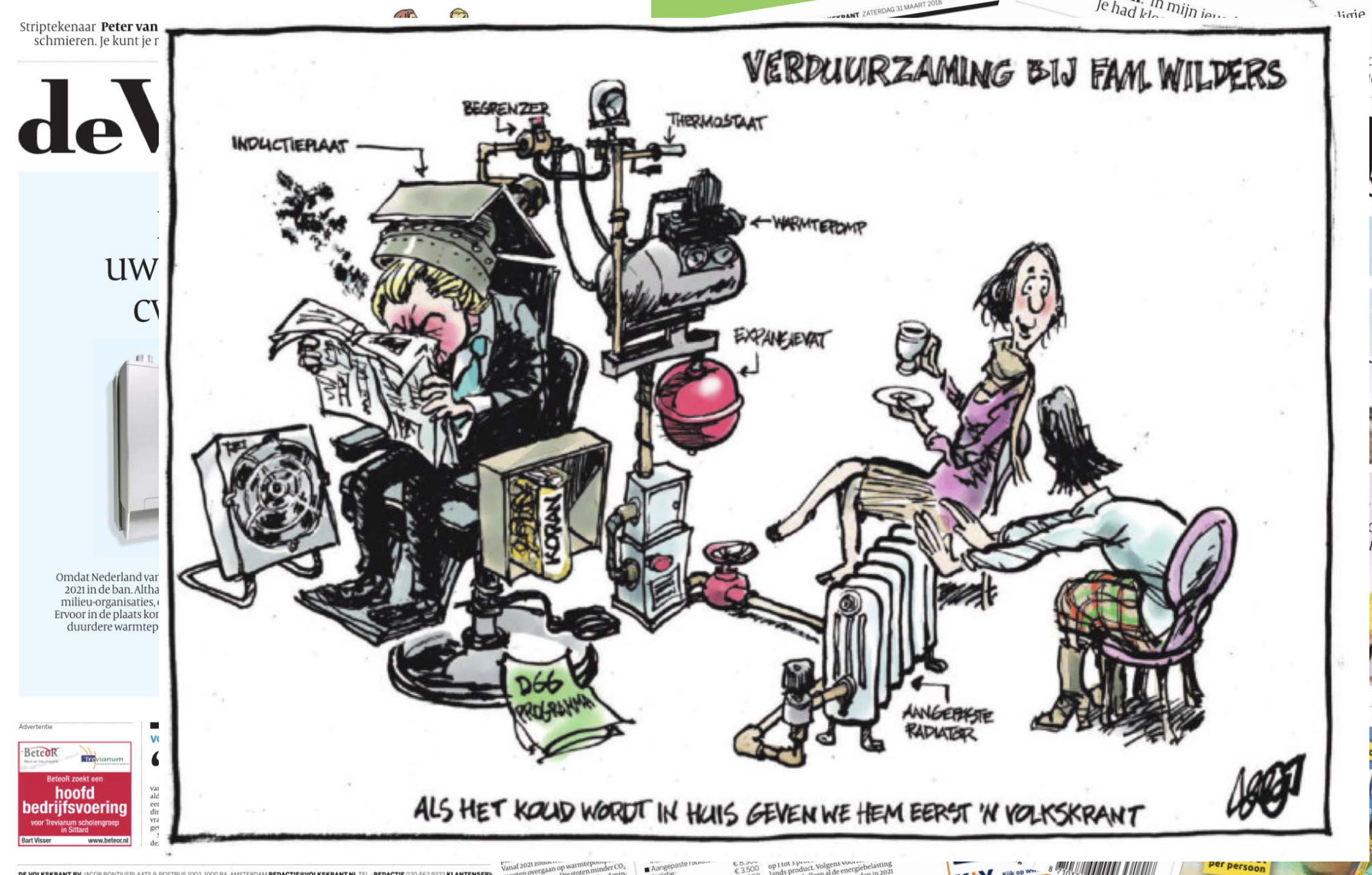
DutchNews podcast – The Breaking Brabant Edition – Week 15

Could a custom-made Tiny House be your affordable new home?

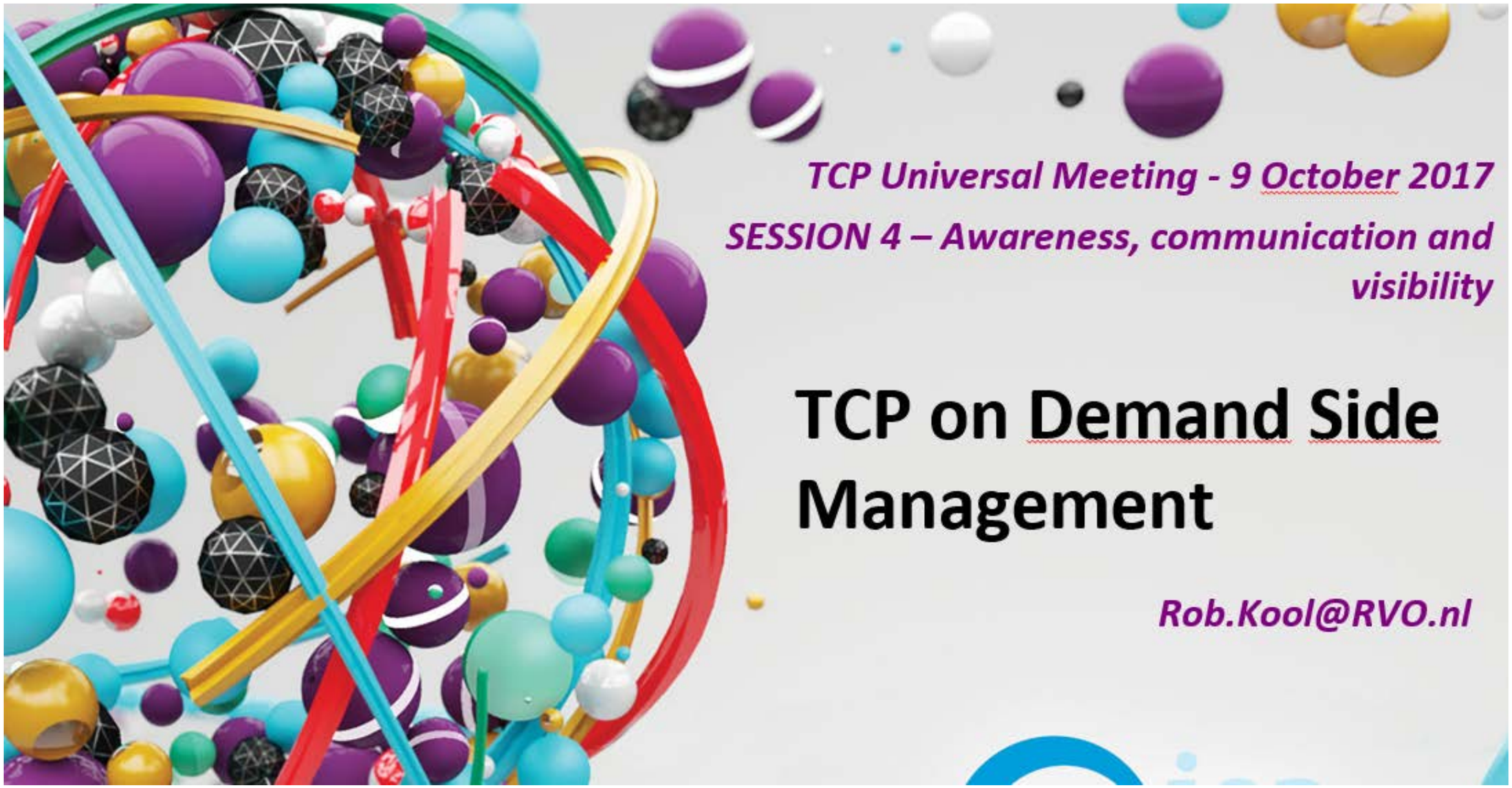
Learn to cycle in Amsterdam

Ingeburgered? Then here are a few of the best and most bizarre burgers in NL

3. Building business models from these data and technologies



A change agent, also within IEA.



ieadsm energy efficiency

DHC, DSM, EBC, ECES, HPT, 4E, ISGAN and SHC.

To summarize

- A systemic transformation issue:
  - Societal
  - Financial/economic/market
  - Behavioural and or practice
  - Technological
  - Policy and institutions
  - Services and Value/Benefits
  - Distributional issues, including energy poverty

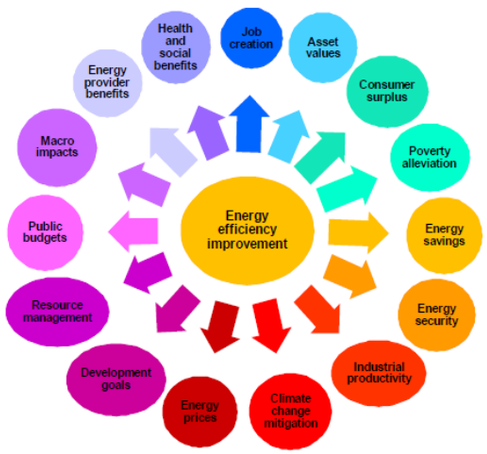
- Beyond energy (efficiency) to sufficiency
- Beyond demand side to interface
- Including not only consumers, SMEs, industry but also intermediaries!

DSM has evolved to a change agent, and can still do more

Kinderdijk, the Netherlands

What will be the future of DSM?

- Flexibility and new governance structures
- Big Data and ICT
- New business models, New financing schemes, e.g blockchain, new tech procurement
- Behaviour of organisations
- Focus beyond energy efficiency and demand to interface between supply and demand
- Integration with renewables
- Distributional issues such as e.g. poverty, security, robustness, welfare
- Smart growth/sufficiency



ieadsm energy efficiency