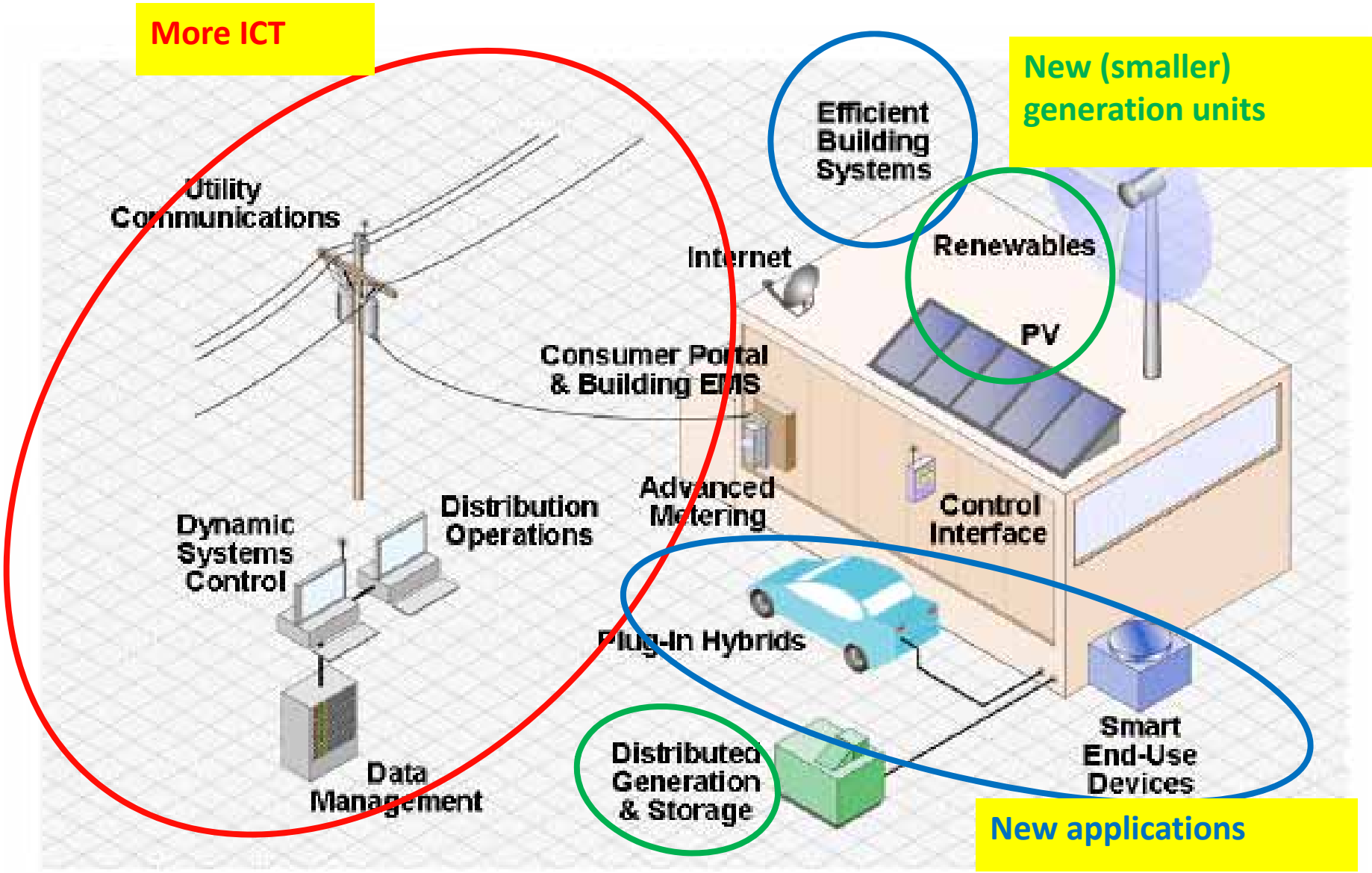
The DSM University - A tool for capacity building

Hans Nilsson

We live in a period of profound changes

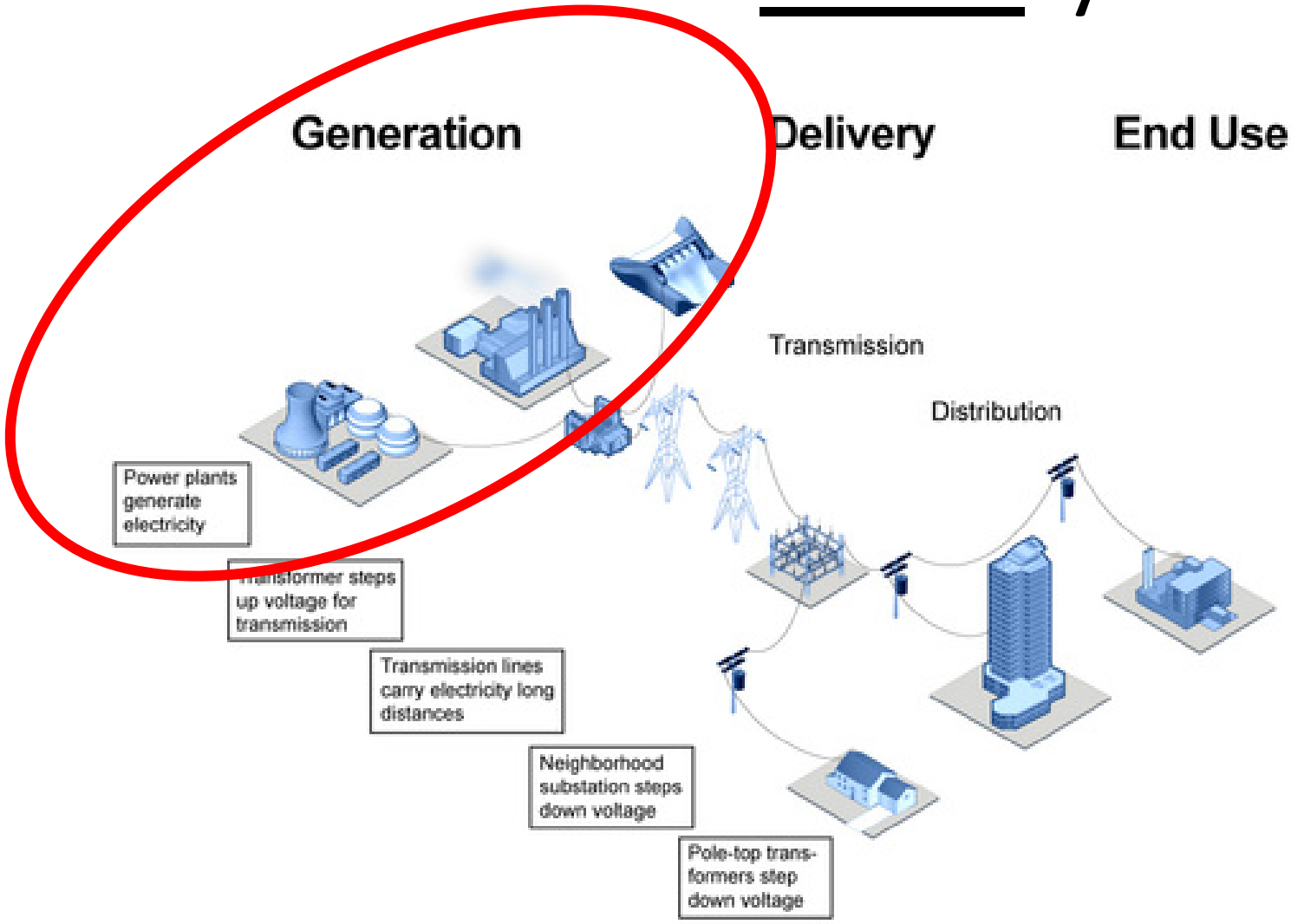
- 1. Technologies will allow greater participation and more choices.
- 2. The energy system will change from being composed from single supply units to a multitude connected in a mesh

New Technologies will change business



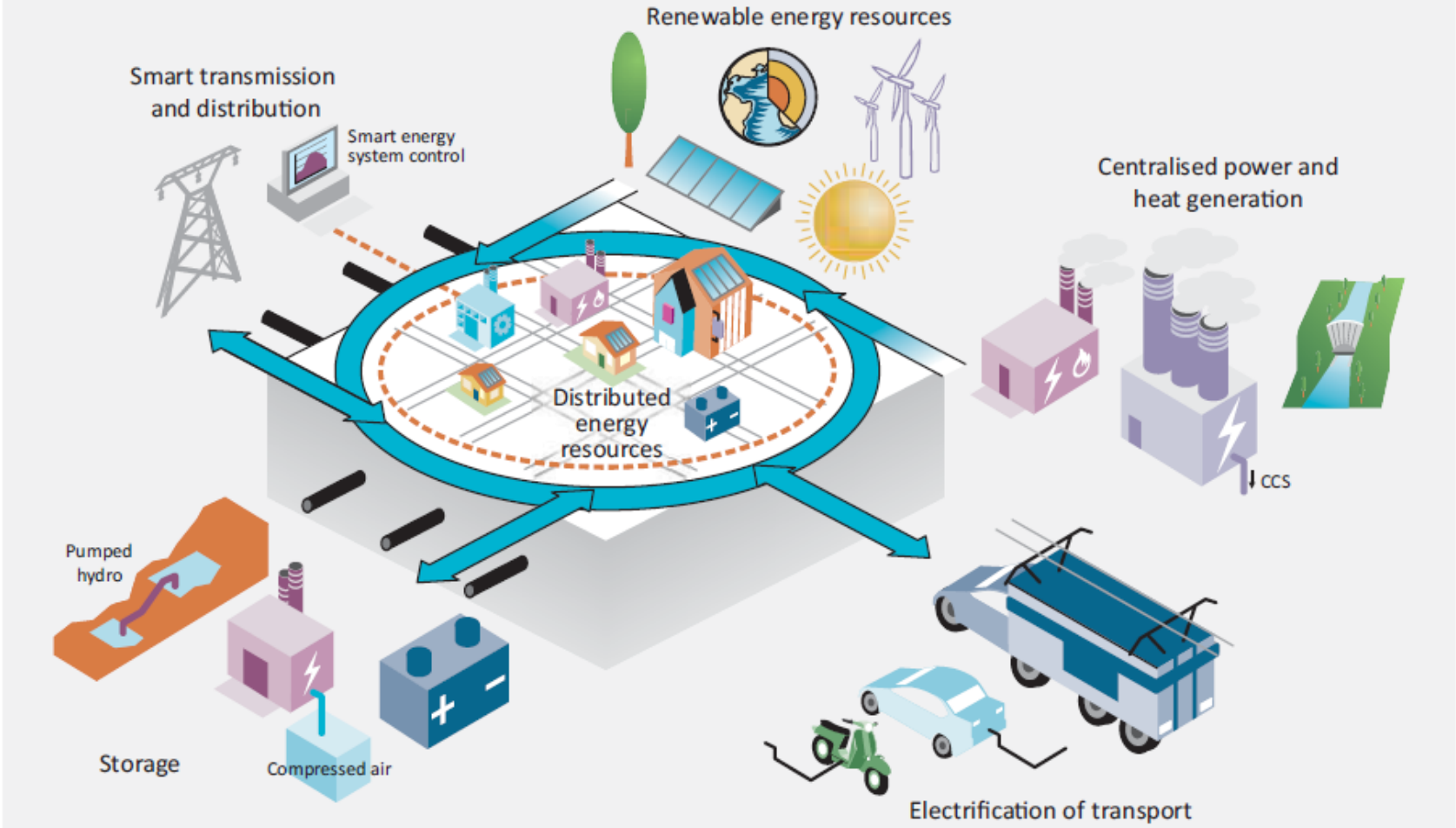
Source: An EPRI Initiative to Advance the Efficient and Effective Use of Energy

The traditional **linear** system



The new **mesh** system

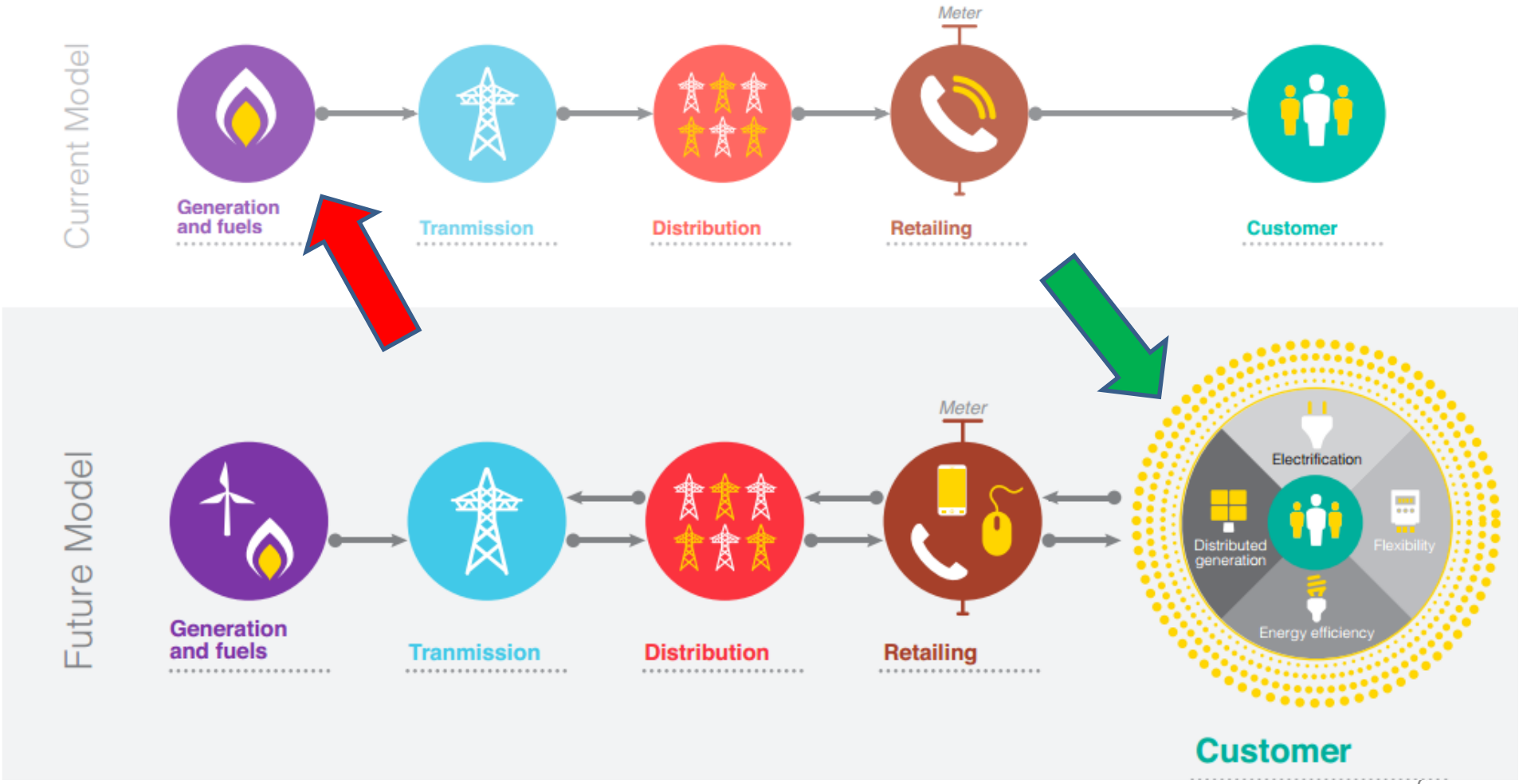
Figure I.2 The integrated and intelligent electricity system of the future



Source: Energy Technology Perspectives 2014
http://www.iea.org/w/bookshop/472-Energy_Technology_Perspectives_2014

Business is changing focus

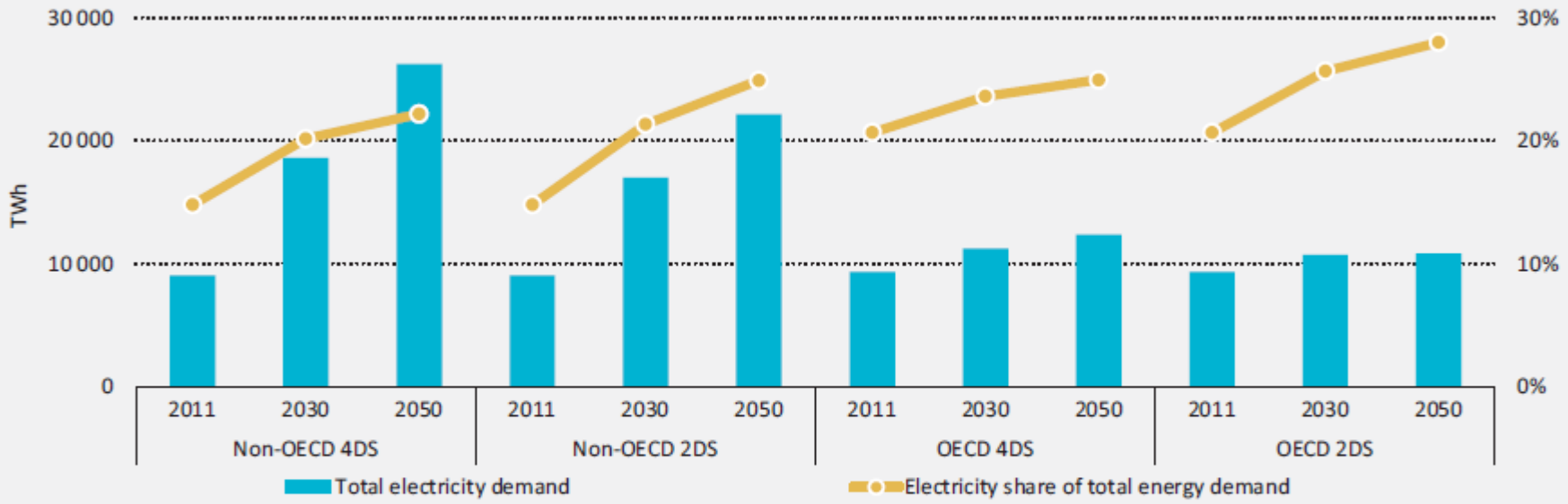
Figure 9: New business and investment opportunities are emerging close to the customer



Source: The Future of Electricity http://www3.weforum.org/docs/WEFUSA_FutureOfElectricity_Report2015.pdf

And a new focus on electricity

Figure I.1 Electricity demand and share of electricity

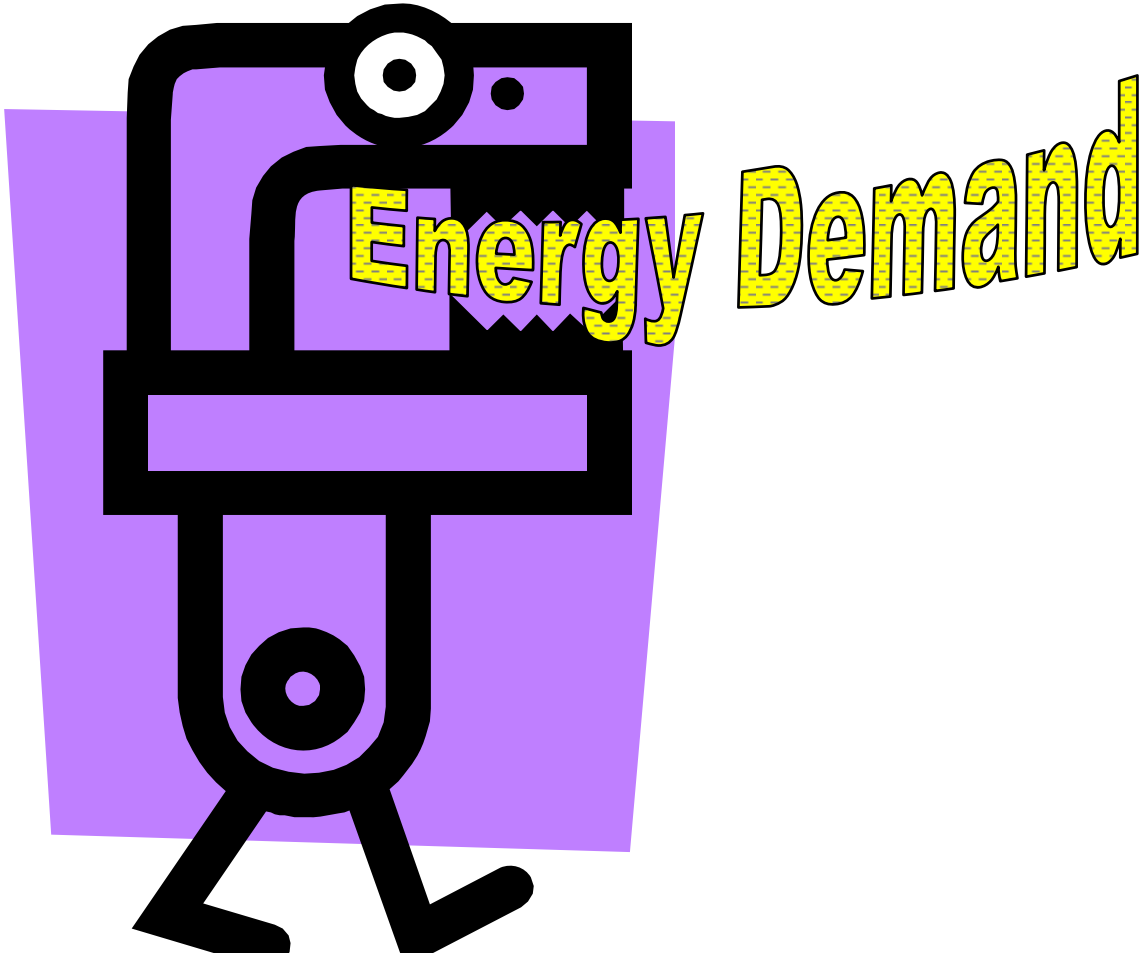


Notes: TWh = terawatt hours. Unless otherwise indicated, all tables and figures in this report derive from IEA data and analysis.

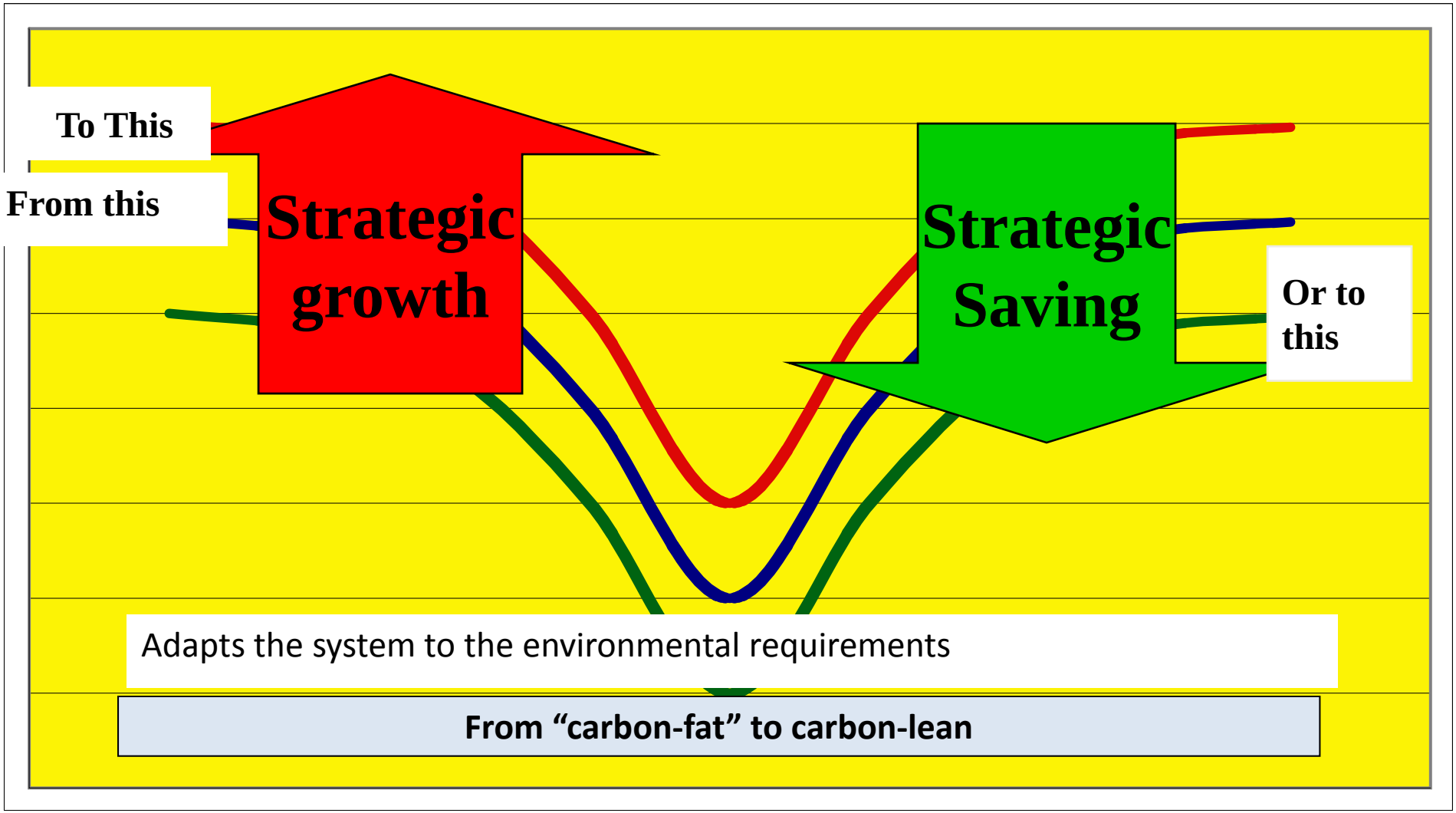
Key point *Electricity demand growth differs between OECD and non-OECD countries, but the dominant trend is towards an increasing share of electricity in the overall energy mix.*

Source: [Energy Technology Perspectives 2014](http://www.iea.org/w/bookshop/472-Energy_Technology_Perspectives_2014)
http://www.iea.org/w/bookshop/472-Energy_Technology_Perspectives_2014

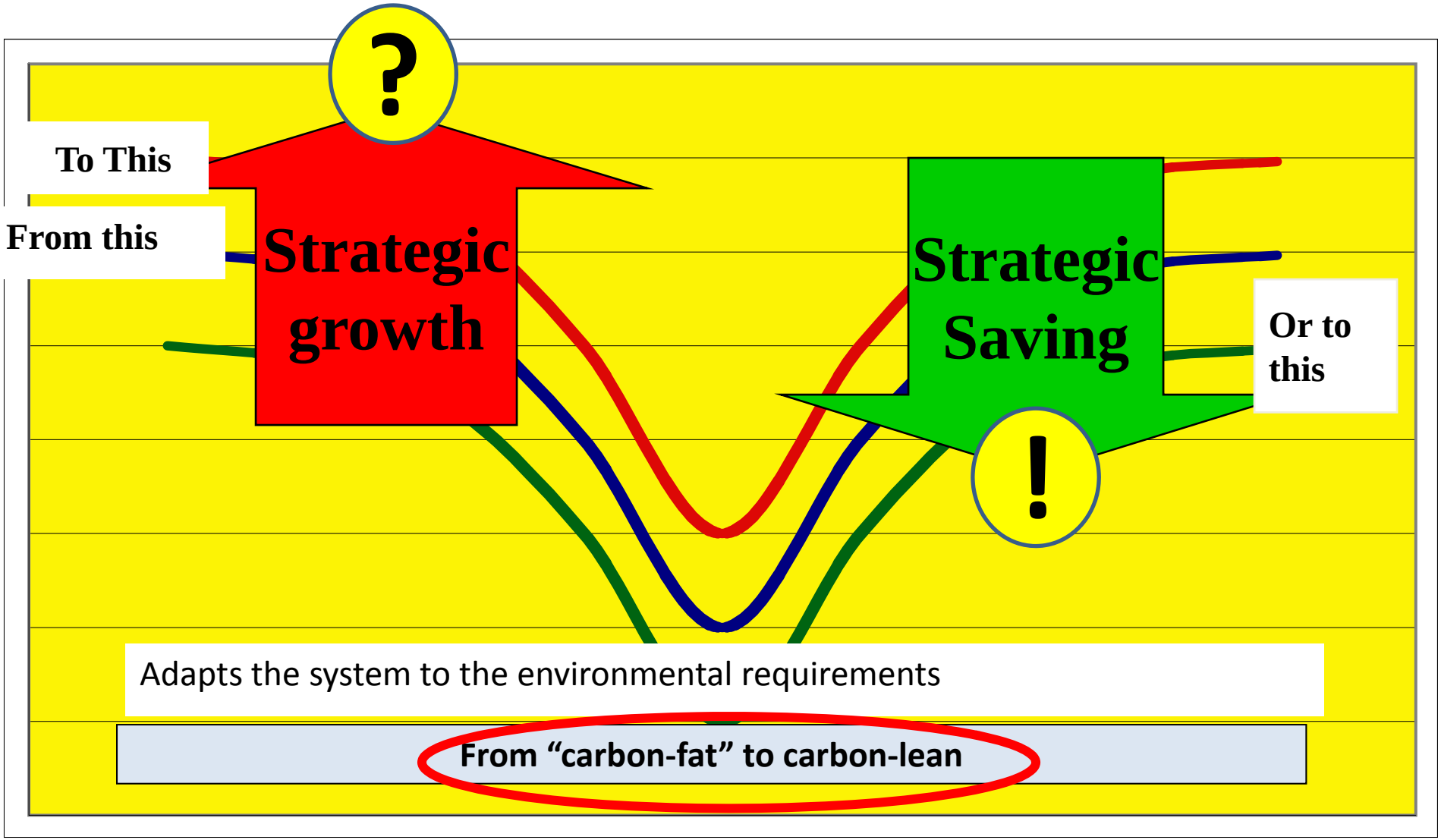
DSM is a tool to make large scale energy efficiency possible



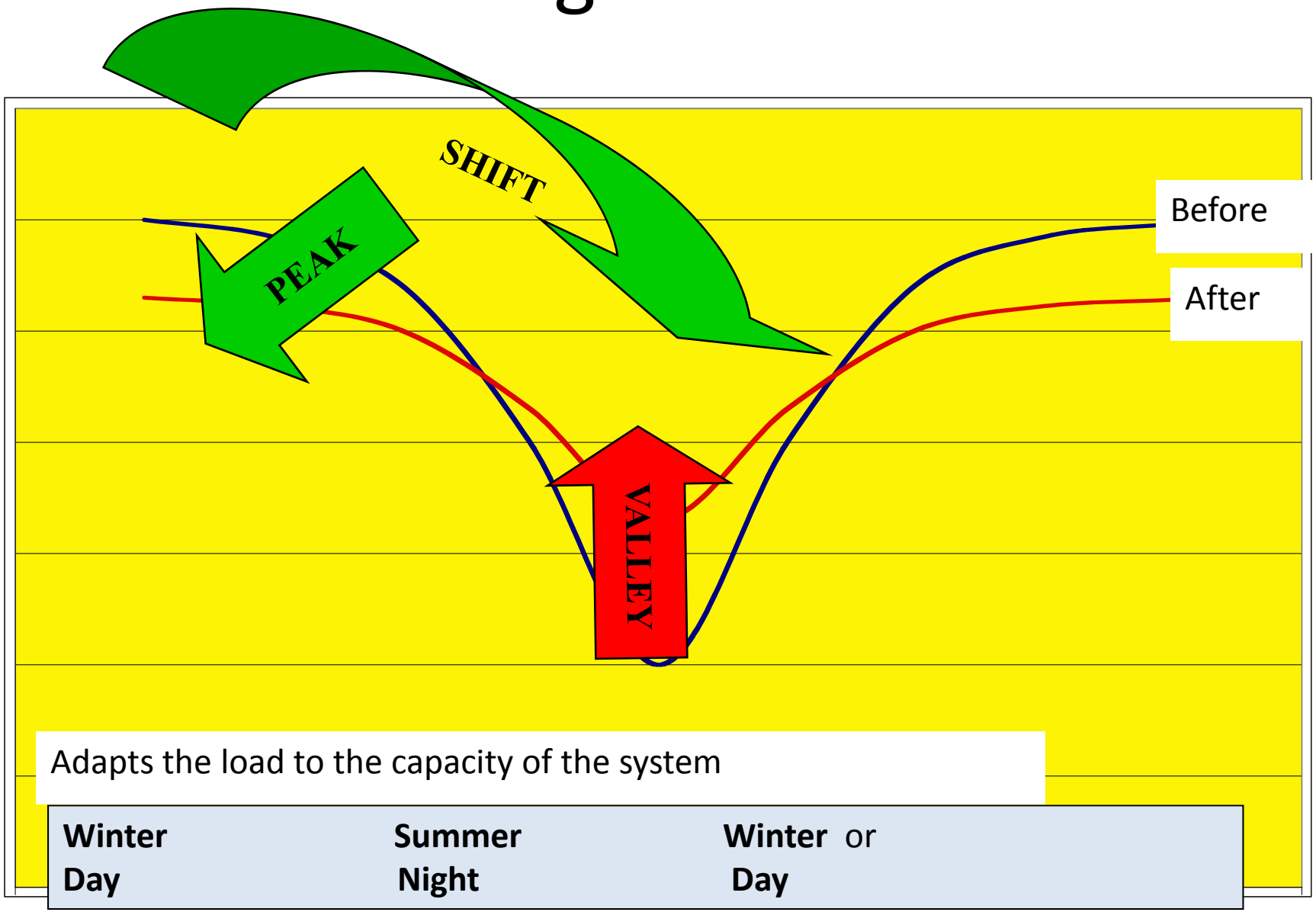
DSM can change the LOAD LEVEL



DSM can change the LOAD LEVEL



DSM can Change the LOAD SHAPE



Adapts the load to the capacity of the system

Winter Day	**Summer Night**	**Winter** or **Day**

DSM can Change the LOAD SHAPE

€ (but)

SHIFT

PEAK

Before

After

Adapts the load to the capacity of the system

Winter	**Summer**	**Winter** or
Day	**Night**	**Day**

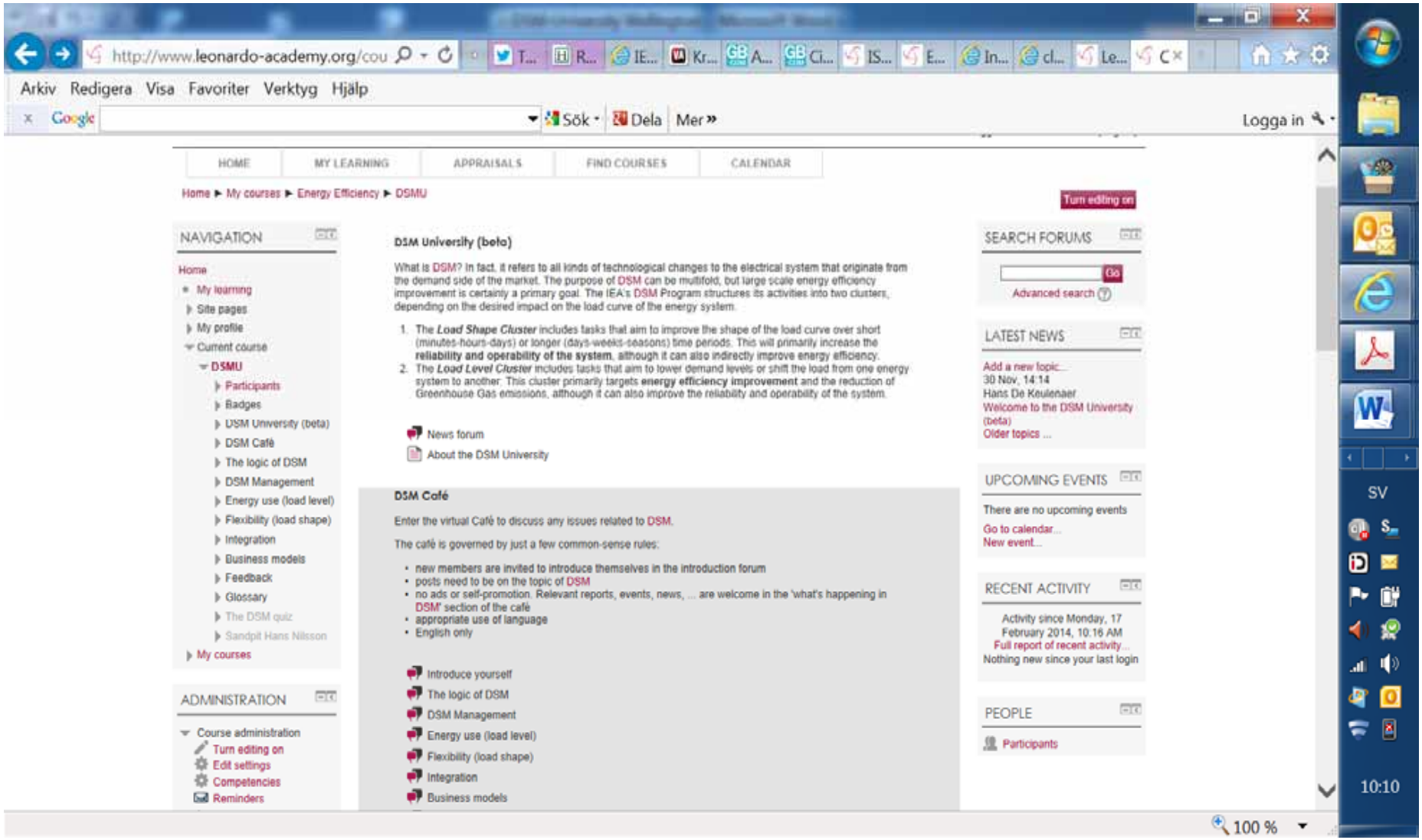
Change Agents (companies, intermediaries, catalysts)

DSM-concept		Change agent role	Example
Classic (addressing utilities as they are)	Monopolised markets	Deliver products and services	Paradip Port (India)
	Customer aggregation	Fundraising	Public Benefit Charges (USA)
	Liberalised markets	Mandate utilities to achieve a set level of energy efficiency	White Certificates (Italy and some Australian states) and EE Commitment (UK)
Incentivising utilities to deliver energy efficiency		Decouple profit from sales volume	California Investor-owned Utilities
Energy Efficiency Power Station		Aggregate energy efficiency projects to the scale of a virtual power plant	Jiangsu, Shanghai and Guangdong (China) Efficiency Vermont
Government Deployment schemes		Aggregation of purchasing power	FEMP (USA), Technology procurement (Sweden)

The problem is not one but several!

- **Load level**
  - a wasteful demand requires too much supply for the specific needs (The customer do not need energy! He needs the service that energy, combined with an installation, provides)
- **Load shape**
  - high peaks,
  - little reserve capacity,
  - bottlenecks in transmission and distribution
- **Market responsibilities**
  - who is the owner of the problem?

The DSM University (www.dsmu.org)



The Structure

1. The Logic of DSM, in which motivations and overview is presented in particular to decision makers and people who wants to see how issues connect to each other

- **Strategies for DSM**
- **The role of Efficiency and flexibility in systems (IDSM)**
- **Actors, and their roles/relations, to make DSM a reality**
- **DSM potential and costs (including rebound)**

---

2. Governance (or DSM Management), in which incentives, cost/benefit, planning, evaluation and regulation are dealt with but also institutional behavioural issues such as barriers and biases.

- **Incentives (carrots and sticks)**
- **Evaluation**
- **The plethora of benefits (and for whom)**
- **Planning and regulation**
- **Barriers and biases**

Lecturers: 1) OAs or delegated experts, 2) Other authors, 3) Other IAs or IEA authors, 4) Persons with knowledge and perspectives

Structure continued

3. Energy use (Load Level), technologies and measures to promote load level changes including strategic shifts of energy use to reduce carbon emissions.

- **Obligations and certificates (applications and practice)**
- **Network and grid issue**
- **Equipment**
- **Calculation**
- **Business models**

---

4. Flexibility – (Load shape), technologies and applications in DR systems and as regards customer benefits and participation

- **Incentives (Pricing to reflect capacity needs)**
- **Demand response practices and market segments**
- **Technologies**
- **Market models**

Structure continued

5. Integration, putting energy efficiency, storage and RES together to systems

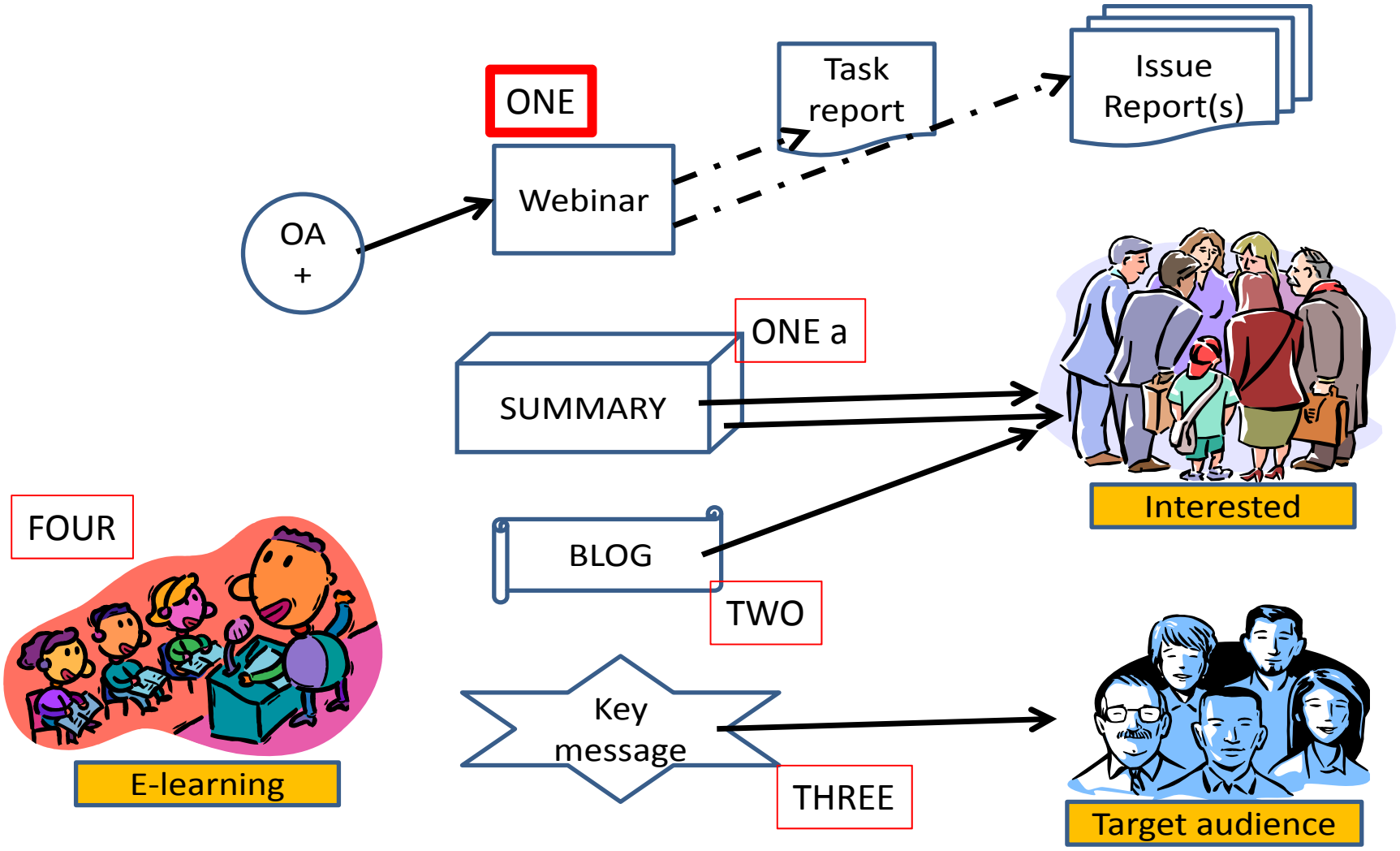
- **Preparing for integration**
- **Practical examples**
- **Incentives**

---

6. Business models, to deliver energy services

- **Empowering users**
- **ESCOs and EPCs**
- **Municipalities**
- **Market Transformation**

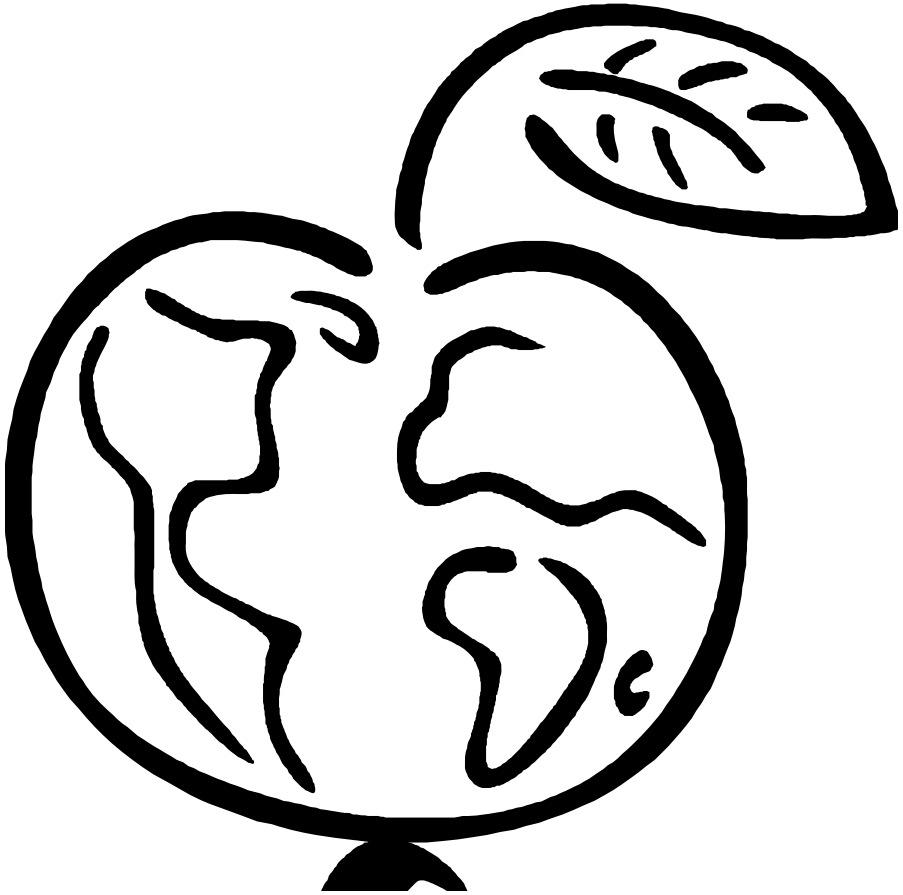
PRODUCTS


ONE
Task report
Issue Report(s)
Webinar
OA +
ONE a
SUMMARY
Interested
FOUR
BLOG
TWO
Key message
THREE
E-learning
Target audience

1	ESCo market development: A role for Facilitators to play	16	Jan Bleyl
2	ISGAN Annex 2 Spotlight on Demand Management	ISGAN	Laura Marretta
3	Using Demand-Side Management to Support Electricity Grids	15	David Crossley (RAP)
4	Best Practices in Designing and Implementing Energy Efficiency Obligation Schemes	22	David Crossley (RAP)
5	Impact evaluation of Energy Efficiency and DSM programmes	1/9	Harry Vreuls
6	Managing Variability, Uncertainty and Flexibility in Power Grids with High Penetration of Renewables	-	Lawrence Jones, Alstom
7	Customized, Systemic, Strategic – the way to succeed with energy efficiency in industry	-	Catherine Cooremans, Business School of Geneva
8	Taking Stock – 40 years of Industrial Energy Audits	(eceee)	Peter Mallaburn, UCL
9	Behavioural changes are necessary to get the full impact on energy efficiency. What works and what doesn't (part 1)	24	Ruth Mourik
10	How to make the best technology even better, BAT becomes BAT+	3	Hans Nilsson
11	Capturing the Multiple Benefits of Energy Efficiency	New	Nina Campbell
12	Consequences of learning curves for energy policy	-	Clas-Otto Wene
13	„Do not take away their steering wheel!" How to achieve effective behavioural change in the transport and SME domain	24-2	Ruth Mourik
14	Improving energy efficiency in SMEs – an interdisciplinary perspective	-	Patrik Thollander

THE WEBINARS IS THE HEARTBEAT OF THE DSM UNIVERSITY

Is sustainable growth possible…



..without DSM and without global co-operation?