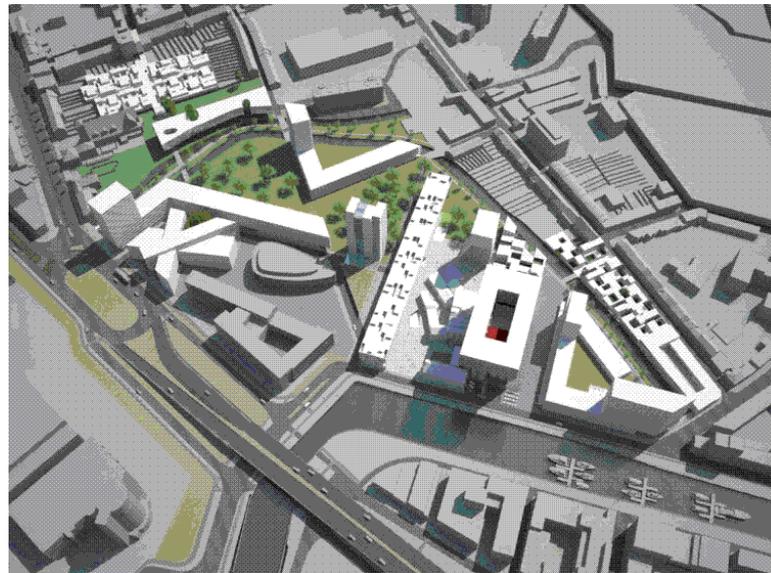


# Understanding Local Energy Initiatives

## Preconditions for Business Opportunities

Bronia Jablonska (ECN) & Mieke Oostra (TNO); the Netherlands

SB13 Oulu, Finland; 22nd - 24th May 2013



## **Energy-Hub for residential and commercial districts and transport (acronym E-hub)**

- Collaborative European project
- Part funded by the EU under the 7<sup>th</sup> FP Energy efficient Buildings (EeB)
- 2011 – 2014
- €11.66 million
- Project coördinator: TNO, the Netherlands

## E-hub partners

### Industries:

D'Appolonia (It)  
Acciona Infraestructuras (Sp)  
Solintel (Sp)  
EDF (Fr)  
Ertzberg (Be)  
Electrawinds (Be)  
Mostostal (PL)  
CESTEC (It)  
ICAX (UK)  
H.S.W. (Ge)  
ISPE (Be)

### Research Institutes:

ECN (NL)  
TNO (NL)  
VITO (Be)  
Fraunhofer-Gesellschaft (Ge)  
VTT (Fi)  
University of Genova (It)

<http://www.e-hub.org>

## E-hub: summary

The aim of the project is to:

- **To demonstrate the full potential of renewable energy by providing 100% on-site renewable energy within an "Energy Hub District"**
- Collection point of all energy and information flows
- District heating, cooling and electricity
- Generation, distribution, conversion and storage of energy
- Supply and demand matching

# Overview of the E-hub project

WP1

**Districts**

**District 2A**

Scenario	Heating	DHW	Cooling	Electricity
DAPP	200	150	500	500
SOLIN	150	150	550	450
ISE	100	250	450	500

**System definition**

WP2

**Technologies, components**

**Load profiles of a district**

WP3

**Thermal Storage**

**Models**

$P=f(p_1, p_2, \dots)$

WP6

**Innovative business strategies and service concepts**

WP4

**E-management: Supply-demand matching**

WP5

**Tweewaters (Leuven) Demonstration Scenario studies (Amsterdam, Freiburg, Dalian, Bergamo)**

WP7 - Dissemination

## **WP 6 – Innovative Business Strategies and Service Concepts**

### **Task 6.1:**

### **State-of-the-art of market needs, business models and stakeholders in energy networks**

#### Interviews and workshops

- To gain insight in barriers, drivers, roles and opportunities of various parties on demand and supply side

**Finland, Italy, Belgium and the Netherlands**



# Interviews

## Couperus (The Hague)

- Smart thermal network – 300 dwellings
- Heat pumps & ground source collectors
- Postponing demand for a fraction of time  
- flexibility

## Hoogkerk (PowerMatching City – Groningen)

- Smart grid – 25 households
- microCHP, HP, PV, smart grid appliances, electric vehicles
- PowerMatcher – supply & demand matching

## EVA – Lanxmeer (Culemborg)

- Sustainable neighbourhood
- Thermal network bought from the water company by residents
- 170 dwellings and several non-residential buildings



# Workshops

## Supply-side workshop

- Energy companies, energy service providers, TSO (transmission system operator), DSO (distribution system operator),
- Possible scenarios for a network enabling bottom-up initiatives

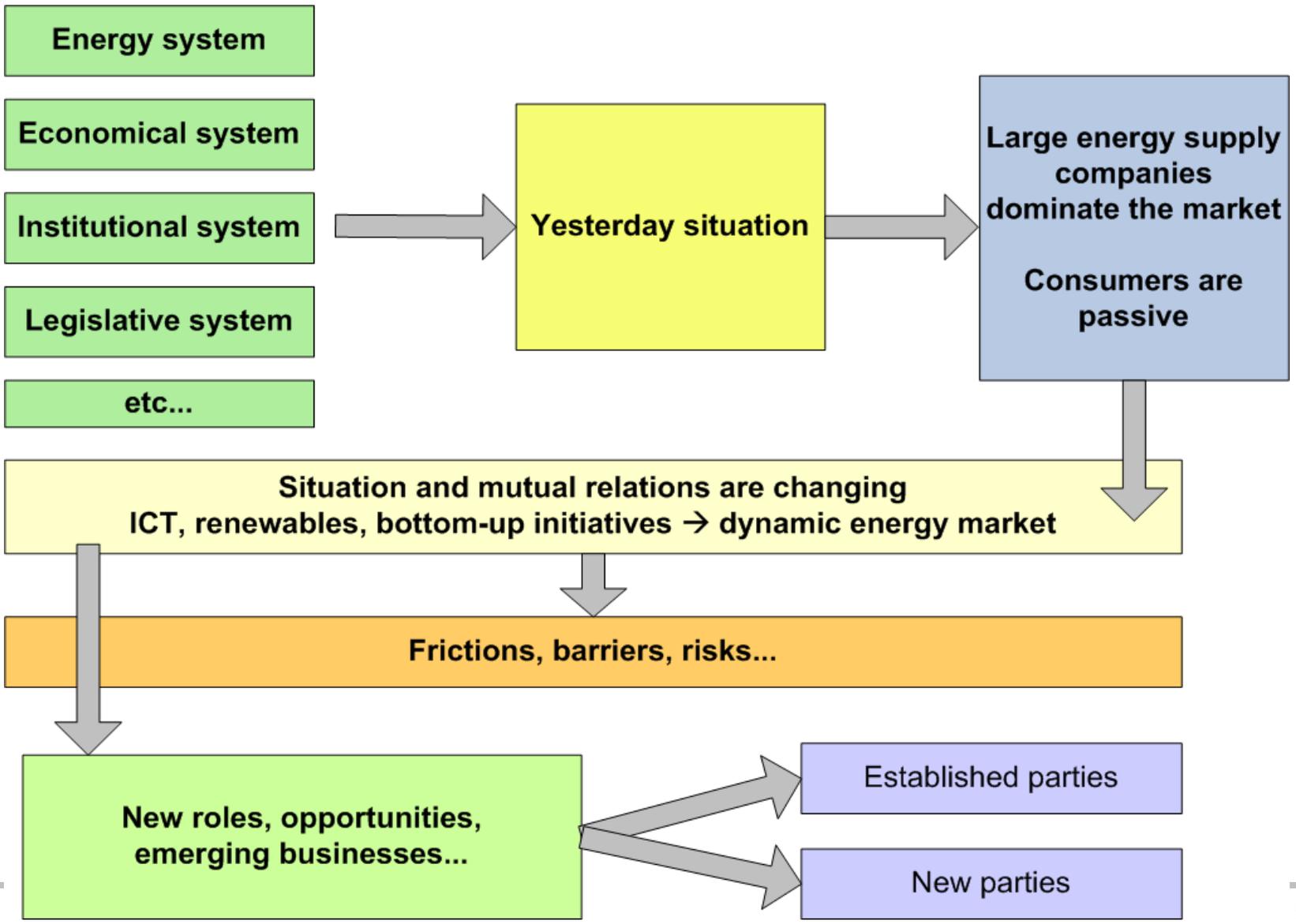
## Demand-side workshop

- Housing associations, local energy companies (Texel Energy), initiatives of citizens (Hoonhorst), lawyers, residents, research institutes and universities
- To explore desirable scenarios, barriers, wishes and possible solutions

## Municipality workshop

- Different departments in a local municipality
- Ambitious environmental goals for 2025
- Role of municipality and new opportunities

# Transition period



# Reasons and Drivers

## There is an emerging tendency among consumers to invest in private energy generation

- Concern about future energy prices and environment
- To improve the quality of the community and social cohesion
- To save energy together
- To have control over own energy supply
- Dissatisfaction of consumers: large energy companies -anonymous entities driven to maximize profit - consumers wish to be involved themselves
- A group has more power than an individual and energy supply for a group can be more efficient

## Municipalities

- Goals regarding sustainability and climate

## Housing associations

- Image – other than the competitors
- Addressing the drivers of tenants – affordable living expenses

# Roles and Responsibilities

## Existing parties in the supply chain and New parties

- Parties supporting local initiatives and new businesses will emerge
- New players are often small businesses that operate locally (decentralised) and on a small scale
- Grid operators can hire another party for grid management – e.g. exploitation of a small line
- Municipalities – facilitator, initiator, creating incentives, setting an example
- Housing cooperations – facilitating, creating choice for tenants...



**Decentralised energy generation requires a much more active role of different parties who have remained passive up to now.**

**New parties are also joining in.**

## Risks, Barriers and Solutions (1)

- Insufficient support from residents
- Participants can feel unheard
- Teething troubles of a new technology (PowerMatcher City – Hoogkerk)
- Legislation does not follow the innovative solutions development – changes needed
- Socializing of costs and obligation for gas and electricity connection
- Legal requirement for HA: 70% of tenants to agree with measures
- A few instruments and tools to assist in the process
- Expertise missing at municipalities and HA (granting permits...)
- Split incentive

## Risks, Barriers and Solutions (2)

- Need for new financial constructions
- Banks hesitate about investments in LEI – clustering the amounts?
- Policies and measures to be continued for several cabinet periods

### Examples specific for local initiatives:

- Competence of people can be a problem
- Protection of the companies founded by local initiatives from hostile take-overs
- Experiencing that the energy market is very complicated and it is not easy to earn money in this sector
- The current economical and social system is not tailored for local initiatives. The process needs to be facilitated and people guided.
- The success factor - the influence of enthusiast individuals → a big risk  
→ the continuation of the initiative can be in danger → Sharing responsibilities

# Opportunities for new products and services

## Products and services to consumer or prosumer

- Energy generation and supply – new service oriented: charge-my-car, ESCO-services...
- Minimum energy package – flexibility (no supply option included)
- Additional energy services – additional fees
- Buying shares in production – lower energy bill
- → large capital available for investments in RE
- LEI – need for a case manager
- TSO (transmission system operators) – small units to balance supply and demand
- Smart grids – users should be able to access the market

## Conclusions

- Energy hub – maximum of RE → Decentralised energy generation
- Opportunities for local energy initiatives – growing in number
- Various reasons and drivers: concern about energy prices, social cohesion, municipality sustainability goals, housing associations offering affordable living expenses for tenants...
- New parties emerging (small businesses)
- New roles and responsibilities
- Many risks and barriers being encountered
- Emerging opportunities for new products and businesses



**This transition period includes a broad palette of aspects – institutional, of governance, technical, economical, legal, societal as well as behavioural.**

**The whole supply chain, demand side and mutual relations within are to be REVISED and RE-DESIGNED, should a district energy system like an e-hub be successful.**

More information can be found at:

[www.e-hub.org](http://www.e-hub.org)

Market Needs and Business Models in Area of District Level  
Energy Services  
(Finland, Italy, Belgium, Netherlands)

[jablonska@ecn.nl](mailto:jablonska@ecn.nl)

**Thank you for your attention**