

Green cities: Matching demand with supply

Environmental Day FIESP

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What's the happening ?



World oil production by type in the New Policies Scenario p/qm 100 Unconventional oil Natural gas liquids 80 Crude oil: fields yet to be found 60 Crude oil: fields yet to be developed 40 Crude oil: currently producing fields 20 0 -1990 2000 2005 2010 2015 2020 2025 2030 2035 1995

Source: The Energy Report, WWF & Ecofys, 2011

The Energy Report - Transition o a fully sustainable global energy system by 2050

- a. growing demand for energy
- b. fossil fuel supplies tight
- c. CO₂-emissions rampant



strong energy efficiency to reduce energy use....

....plus strong ramp-up of renewable energy sources



WWF/Ecofys – The Energy Report (world 2011) WWF/Ecofys - 2030 RE targets (EU 2013)

Mission

sustainable energy for everyone

Vision

Based on our deep expertise in energy & carbon-efficiency, renewable energy, energy systems & markets, and energy & climate policy, we develop smart policies and solutions and bring them to life.

We know that, if we act now, by 2050 our global energy system can be sustainable, secure, affordable and fully based on renewable sources.

We aim to create a sustainable energy system for everyone.

Values Dedication Originality Impact Trust

Facts & Figures

- Founded in 1984
- Over 250 professionals, 7 offices in 6 countries
- Over 500 clients served across 50 countries
- Leading experts: the Nobel Peace Prize 2007, awarded to Al Gore and the IPCC, was supported by 10 Ecofys experts
- Eneco Shareholder since 2009





Traditionally: supply oriented approach



Ecofys thinking: start with (people) needs

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The energy (electricity) system (value chain)



- Flexibility is the ability of a power system to maintain continuous service in the face of rapid and large swings in supply or demand.
 - Influence Demand Patterns
 - Supply following Demand
- Increasing the flexibility of power systems is key for the reliable operation of future power systems with very high penetration levels of variable renewable energy sources (VRES).

The Energy Dimension

> Transformation to more Renewable Energy in system

- > Demand and supply smart matching
 - Influence Demand
 - Less Base Load
 - More non-dispatchable sources; Wind, Solar
 - More de-central supply; Solar, Biomass
 - Switching between Heat, Gas and Electricity
 - Storage options; Hydro, Battery, Electricity, ATES thermal energy
- > Large Scale & Small Scale
- > Top-down and bottom up

Real estate: Sustainable Football Stadiums









Utilities: Smart End-Use Energy Storage in the US

- •Peak Reduction, Load Shifting, Infrastructure Deferral
- •Balancing, Wind Integration
- •Capable of providing balancing service for BPA 100% of the time and maintain customer functionality



- > Services based on business case analyses and future market models
- > Pilots in cooperation with local entrepreneurs and residents

Amersfoort:

- 1. Insight into consumption
- 2. Demand management using smart software
- 3. PV-Box: sunlight prediction

Utrecht:

- 1. Smart charging of electric shared vehicles
- 2. Sharing solar energy
- 3. Storing electricity

Consortium: TFI, Kema, Stedin, Ecofys, Cap Gemini, Eemflow, Lomboxnet, Icaris, UU Running: 2012-2014





Sustainable transport – Development Bicycle Policy Beijing

- Client: Asian Development Bank
- Objective: back to bicycle era
- Team on the project
 - Royal Haskoning
 - DHV
 - Ecofys
 - China Urban Sustainable
 Transport Research Center (CUSTR)
- Duration
 - Duration: 9 months





Legislation/governmental action takes away some barriers for integration of RE

- > Some barriers:
 - Permitting procedures: duration / one stop shop
 - No cap on amount of electricity you feed-in
 - Financial: guarantee for loans (with large investments)
- > Dutch examples:
 - Masterplan of heat and cold storage
 - Net metering
 - Geothermal energy loans
- > EU examples:
 - Smart meters
 - Eco design





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Energy not biggest issue:

- > Social environment
- > Urban planning
- > Needs of a population growing older

Multi-stakeholder process:

- > Owners: housing corporations, private owners
- > Tenants (example: 70% needs to approve renovation)
- > Split incentive: Limited possibilities to charge inhabitants for the renovation cost with a higher lease fee
- > Municipality, energy companies, installation companies, builders you need to create win-win for everybody

Bottom-up approach can help : community working with local energy company

Offering

- > Smart buildings/cities will:
 - be necessary in transformation of energy system
 - Peak reduction
 - Balancing
 - Help in energy saving with consumers
- > Ecofys strong in multi-stakeholder trajectories;
 - > Connecting parties

- > Strong project management
- > Designing, monitoring and evaluating policies
- > Stimulate local involvement, defining bottom up actions

Clients

> Utilities, Energy Companies

> Real estate

> Investors

> Local and central governments

> Municipalities

Questions?



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