



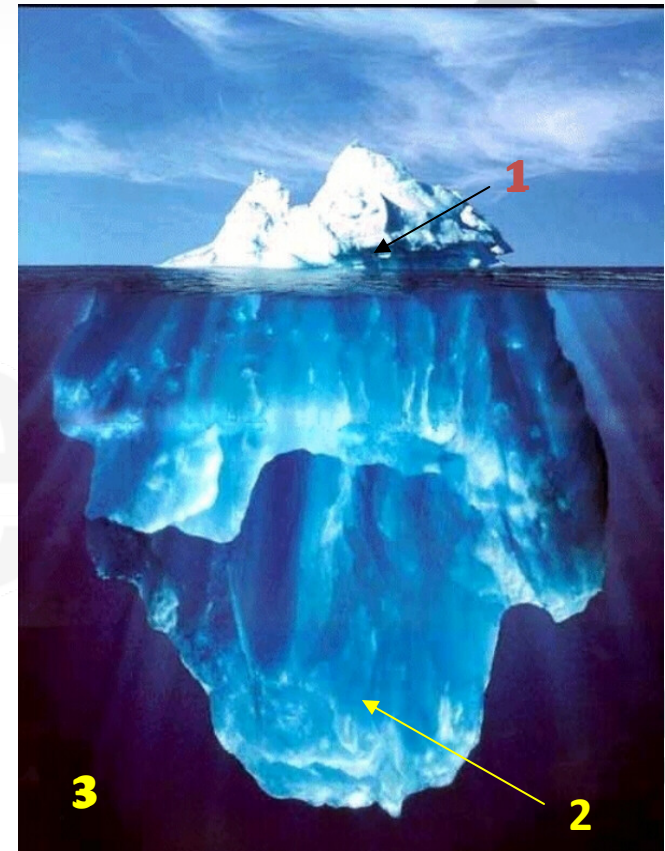
An invitation to share

@ E-Harbours



Green IT Consortium Amsterdam

- **Public-private network organisation**
 - founded June 2010
- **Contribute to reducing 40% CO2 in 2025 in Amsterdam by:**
 1. Greening of IT
 2. Greening by IT
 3. Green Economy



This project is co-financed by the European Regional Development Fund and made possible by the INTERREG IVC programme



Participants

- | | | |
|--------------------------------|--|----------------------------|
| Active Power | EnergyGO | Microsoft |
| APC (Schneider) | Equinix/IX-Europe | Parthenondatacentres |
| ASP4all | EvoSwitch | Raritan |
| Atos | Haskoning Nederland | Software Improvement Group |
| Boersema Installatie Adviseurs | Amsterdam University of Applied Sciences | TEDD Search (Symantec) |
| Bricks&Bits | HP | Telecity Group |
| Capgemini | IBM | Terremark |
| Cisco Systems | ICT room | The Datacenter Group |
| Colt | IF Technology | The Network Institute |
| De Stroomplantage | Imtech | TNO |
| DELL | Interxion | Universiteit van Amsterdam |
| Eaton | KPN | Vancis |
| Ebatech | M+W Group | |
| Ecofys | Mansystems | |
| EMC | MDES | |

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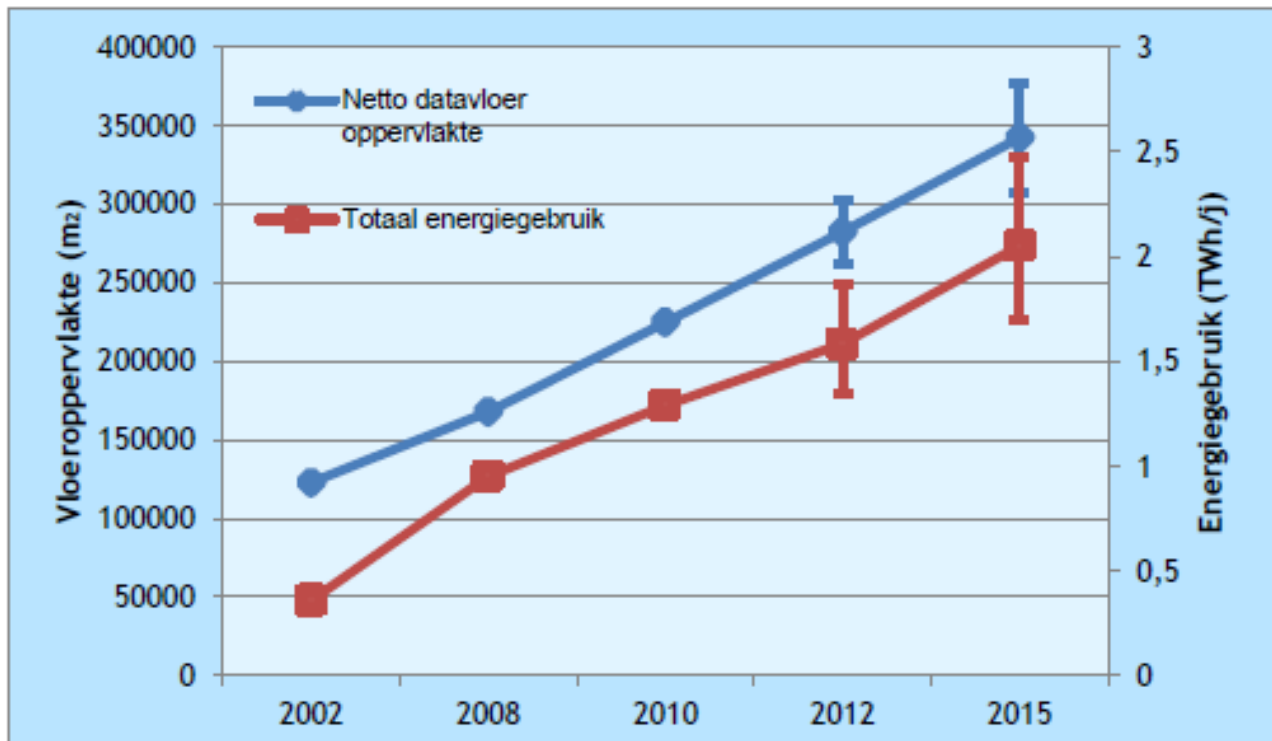
Green IT Network Europe

- **Kick-off April 11, 2012**
- **Exchange of experience and good practices**
 - concerning Green IT Policy
- **Between 10 European cities:**
 - Amsterdam, Riga, Manchester, Rome, Lund, Barcelona, Catania, Malta, Czestochowa, Kranj
- **Focus on greening of:**
 - ICT
 - Utilities
 - Mobility
 - Factories
 - Built environment
- **Increase innovative capacity by: building a database with good practices, organizing seminars, staff exchanges**

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Datacenters in the Netherlands

Ontwikkeling energiegebruik en vloeroppervlakte Nederlandse datacenters



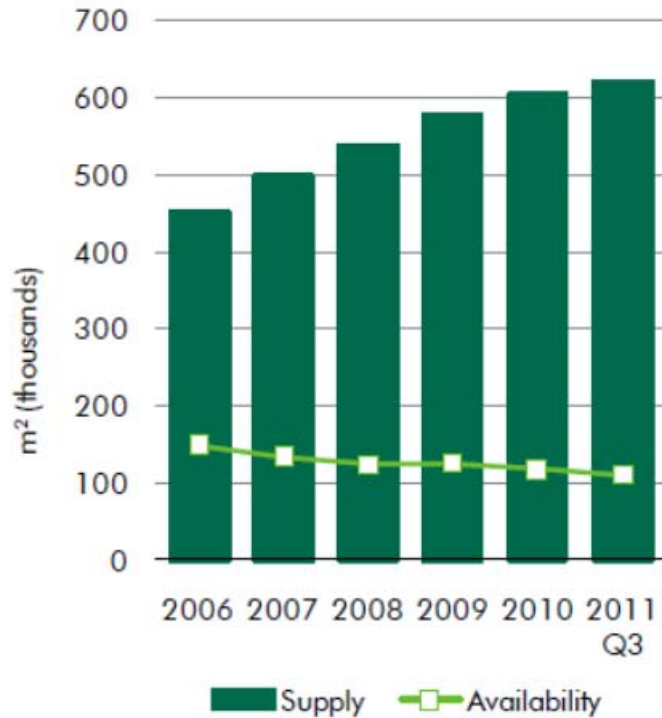
Bron: Tebodin (2009); CE (2012).

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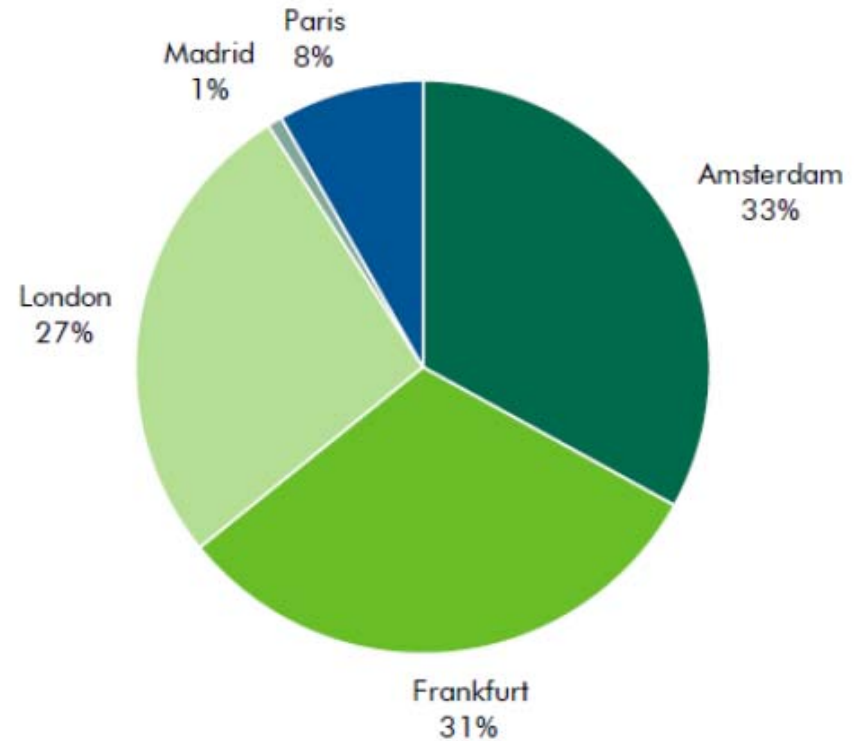


Growing Market

SUPPLY & AVAILABILITY



TOTAL MARKET TAKE-UP



EU Top-5 cities total customer space and percentage new space 2011 t/m 3rd quarter. - CB Ellis.

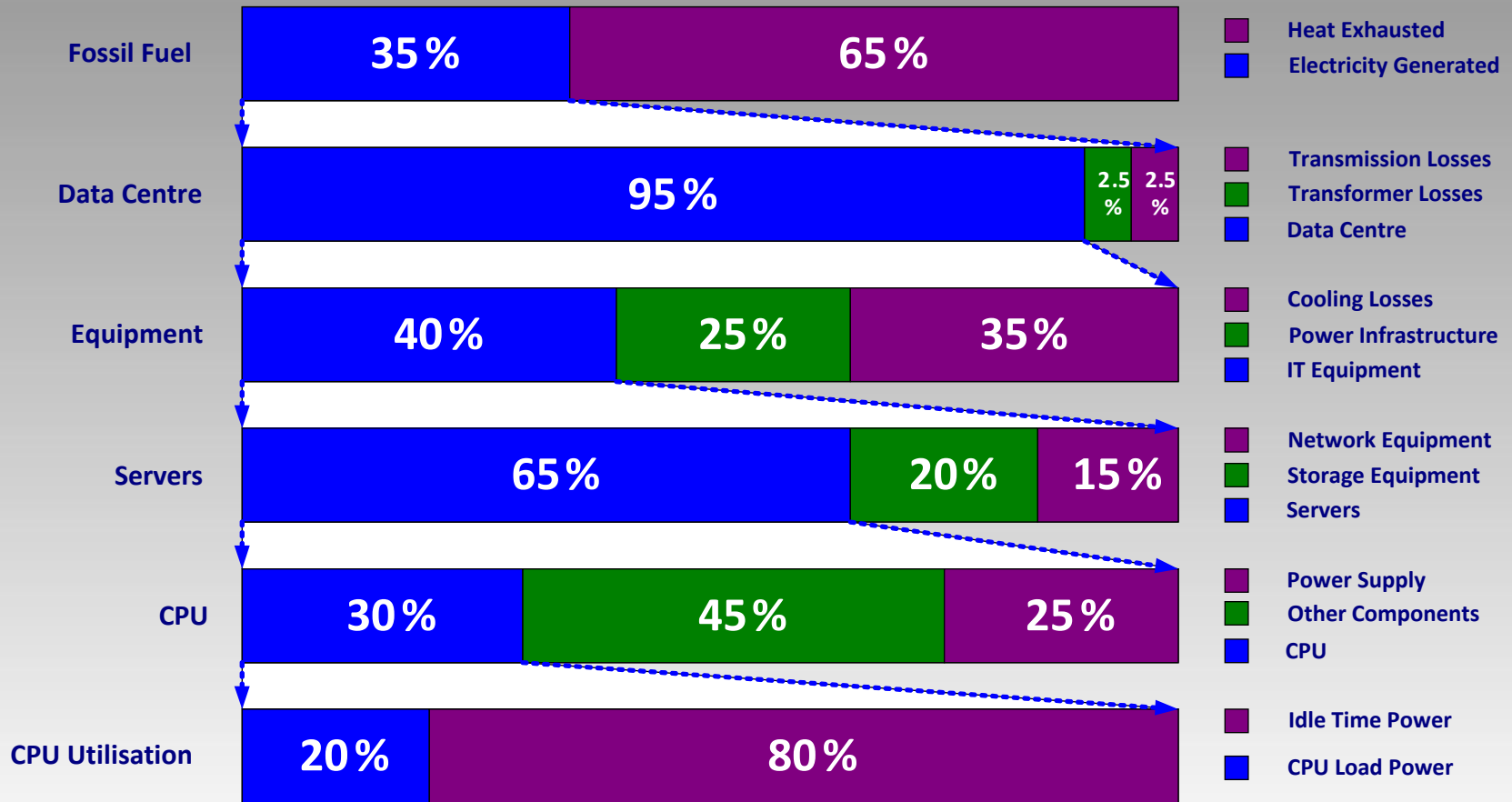
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The Power Loss Chain

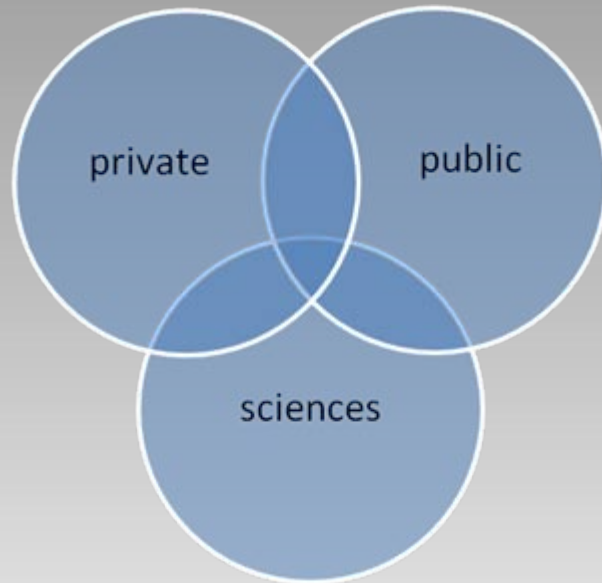


CPU energy yield: 0.5% of fossil fuel used!

Source: British Computer Society



We're challenged to find new ways of innovating



The ***Third Industrial Revolution.***

"We have the science and technology to do it,
but it will mean nothing unless there is a
change in will."

Jeremy ***Rifkin***

ICT is an enabler of the energy transition
It's a running train

Roadmap for Green IT: a structural approach

- Regulations
- Organize and mobilize the network
- **Investigate best practices**
- Integrate ICT in other carbon reduction strategies



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Example: Datacenter regulation



- **Voluntary agreements: LTA**
 - Datacenter energy efficiency plans
 - Annual reduction of 2% per year
 - Roadmap ICT
- **Government regulation of datacenter performance**
 - Faster efficiency gains than within the LTA
 - Level playing field
 - Limit on inefficiency

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What would be a supporting best practice?

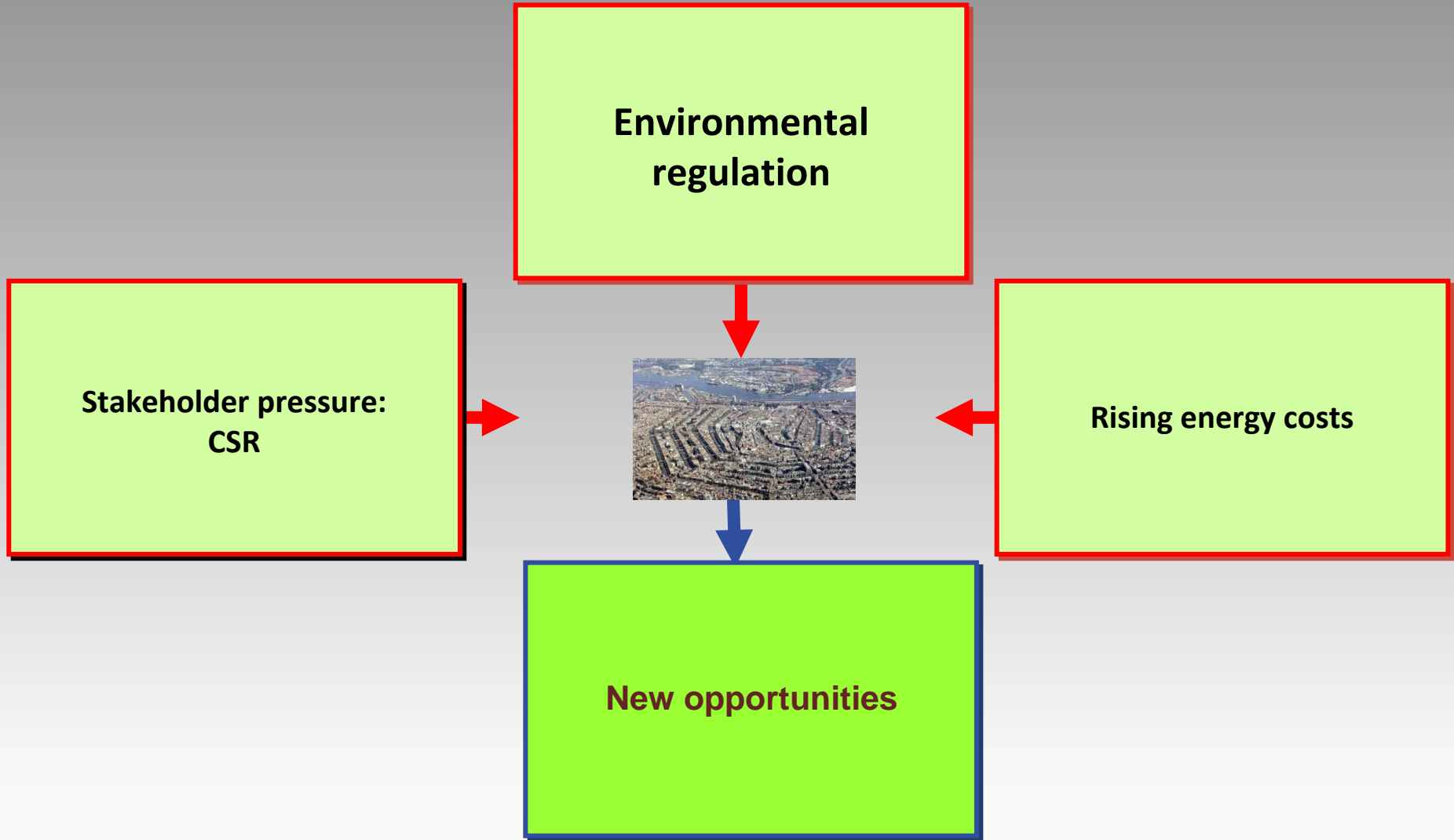


- **Use of residual heat and excess cold**
 - Large-scale need for thermal storage
 - Involve consumers of heat and cold (buildings, drink water network, greenhouses, pools, etc)
- **Economies of scale: larger locations embedded in metropolitan infrastructure**
- **Related to urban planning of:**
 - Sustainable energy, smart grids, emergency power supply
 - Connectivity
 - etc

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Mobilize the network



Exchange objectives

- **All activities are input for policy implementation plans for each city.**
- **We want the knowledge base to:**
 - Offer sustainable methodologies
 - For regions
 - To develop Green IT Policies
 - That are (best) suited to their situation

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Recurring building blocks

- **ICT itself**
 - Big Data
 - Deployed ICT solutions: work stations and back-ends
- **Energy infrastructure**
 - Generic power supply
 - Smart grids
 - Water grids, heat grids, ...
- **ICT facilitated services**
 - For example: smart mobility
- **Specific large impact applications**
 - For example: reverse logistics
- **Regional challenge:**
 - Find the high impact local interventions

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Liaise with Umwelt

- **Other projects**
 - E-Harbours
 - Smart Cities
 - Covenant of Mayors
 - European Network of Living Labs
 - Green Digital Charter
- **Organizations met during project preparation**
 - At least 30 organizations
- **With whom would you like to cooperate?**
 - Why?
 - What would they like to learn from us?

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What will we focus on?

- **What are we working on?**
 - What have we achieved?
 - Which are the elements that could be helpful?
- **During 2012: what should we pay attention to?**
- **Early 2013: how *could* we benefit from green IT?**
 - Which partner(s) have what relevant expertise or activities?
- **Late 2013: how *will* we benefit from green IT?**
 - If applicable, initiate implementation procedures
- **2014: consolidate knowledge base**
 - So we have learned; what can be generalized?

Methodology for exchange

- **Pay attention to:**

- Preparing
- Hosting
- Coordinating

- **Funnel:**

- Possible aspects to capture
- Long-list of practices of policy development
- Investigating their effectiveness
- Assessing policy implementation options
- SWOT analysis of practices given implementation conditions
- Optionally relevant practices for you
- Long-list of 25 best practices

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Examples

- **Rome: ICT for pedestrianization**
 - Need for ideas to stimulate local authorities
 - Such as public procurement examples
- **Barcelona**
 - Many charging points for electrical vehicles
 - Cooperation between:
 - City council
 - ICT Cluster
 - Chamber of Commerce
 - Promise to categorize and describe methodologies used

Examples

- **Malta**

- Smart meters installed in 160.000 households
- Too early to communicate results
- Currently no drive for changing consumer behavior
 - Would campaigning be the right methodology?
- Initiated through:
 - Replacing old meters by electricity companies
 - MIEMA and other ministries
 - IBM

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Examples: E-Harbours?

- **Cold storage in harbours**
 - Parallels to cold storage for datacenter cooling?
 - Buffering and forecasting
 - Using excess cold when needed
- **Relevance and impact of communication strategies?**
- **What works for raising awareness?**



How will we proceed

- **Enable exchange of information**
 - Good practices
 - On how to create effective policies
 - Store in a database
- **Offline investigations**
- **Capturing information**
 - Allow others to learn from it
 - Input for policy implementation plans
 - Based on proved and tested conditions for success
- **Two-dimensional matrix**
 - Structure based on vision
 - But needs to be made tangible: what does it mean in practice?

Dimension 1: Sectors and sub areas of policy development (part 1 of 2)



- **Urban infrastructures, e.g.:**
 - applications in buildings
 - domotica
 - urban environments
 - Construction
- **Greening industry, e.g.:**
 - energy management
 - e-services
 - specific industry processes

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Dimension 1: Sectors and sub areas of policy development (part 2 of 2)



- **Greening mobility, e.g.:**

- Logistics
- traffic management
- street lighting
- ports

- **Smart infrastructures for electricity, water & data, e.g.:**

- Virtualisation
- power management
- smart grids
- greening of IT

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Conditions any policy should satisfy

- **Technology and technology transfer**
 - including metrics
- **Institutional conditions and organisational conditions**
 - including legal and regulatory frameworks
- **Social conditions, such as:**
 - stakeholder involvement,
 - behavioural change needed,
 - “comfort factors”,
- **Economical conditions, such as:**
 - new value networks,
 - business/service models,
 - risk/profit differentiation of investment and investment horizons.

Enhancement and dissemination mechanisms



- **Staff exchange enable partners to acquaint themselves with**
 - local conditions of a different city,
 - interpreting transferability and
 - validating information.
- **Executing expert investigations:**
 - How to apply the conditions for implementation in your situation
 - Optionally with external experts
 - Optionally in cooperation with a partner city within the consortium
- **Organize and participate in networking events**

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Integrating in other sectors



- **Initial study ‘leverage effects’ in the Netherlands**
- **The energy sector itself is responsible for 13% of our energy consumption**
 - Utilization can improve by factor 4 (52PJ)
- **The built environment: 12% of total consumption**
 - Behavioral change through energy displays: factor 5 (6.5% reduction per house)
- **Transport: 15% of total consumption**
 - Through electrification of cars, carbon emissions leverage factor is 8 and energy usage leverage factor is 4

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Extra sheet: Current developments @ Green IT Amsterdam Region



- **Green Data Port**
 - Regulation and support package Amsterdam
 - Thermal storage: heat maps, and other opportunities
- **Green Ocean**
 - Exploring how to determine leverage results in practice
 - Identifying quick wins and large impact scenario's
- **Green Clouds**
 - Report TNO on what makes clouds green
 - Cooperation with Hivos and City of Amsterdam on Green Clouds with Green Energy
- **Green Collar**
 - Cooperation regulation Amsterdam
 - GreenITNet: exchange good practices policy
 - Green Metropole: stimulate sustainable business
 - Green Datacenter proposition
- **Green Software**
 - Software Energy Efficiency Lab (SIG+HvA)
 - research proposal submitted: "GREAT"
 - Software scans "archiving application Big Data" (KPN, EMC, VUa)

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