

# Future Internet and Smart Energy: the Socio-Economic Dimensions

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# Overview of the Presentation



- Introduction: the FI3P study
- Looking ahead: Main Socio-Economic Drivers of the Future Internet
- ICT, the Future Internet and the Low Carbon Economy
- Positive Perspectives for Smart Energy in Europe
- Concluding Remarks

# FI3P (Future Internet Public-Private Partnership): a Study for the EC



- FI3P (Future Internet Public-Private Partnership) is a study funded by the European Commission, DG Information Society and Media.
- The objective of this study is to identify the potential economic and societal longer-term impacts of the public-private partnership proposed in the Commission communication "A public-private partnership on Future Internet."

The study goals are to:

- Analyse the current contribution of the Internet industry to the European economy and society
  - Analyse its likely future contribution (2015-2020) with a fully deployed public-private partnership (PPP) and in its absence
  - Identify any economic, legal and societal barriers to the competitiveness of the European Internet industry, and assess ways to mitigate them
  - Provide policy recommendations grounded in the analysis
- The FI3P consortium consists of:
- RAND Europe (coordinator), WIK Consult , IC Focus, ISMB, IDC EMEA

# FI3P Partner: IDC EMEA Consulting and Research



IDC is the premier independent global market intelligence, events, and advisory firm for information technology, telecommunications, and consumer technology markets (ICT)

IDC EMEA covers the EU, the Mediterranean and Africa with a network of offices and 400+ ICT analysts

*IDC Insights units combine in-depth knowledge of the ICT sector with sector-specific research and consulting expertise on technology-enabled business innovation*



# Looking ahead: Main Socio-Economic Drivers of the Future Internet

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# The Socio-Economic Drivers of the Future Internet

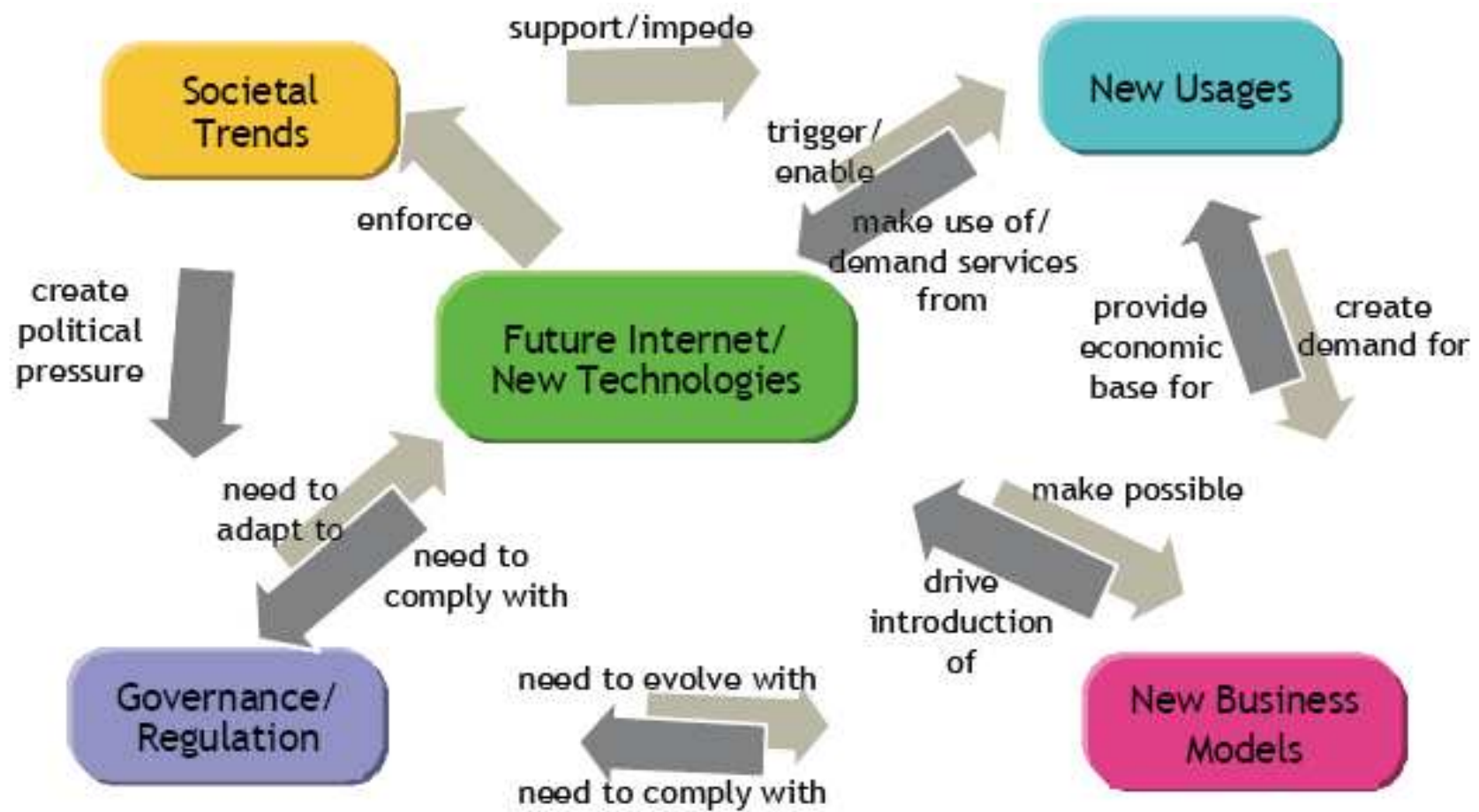
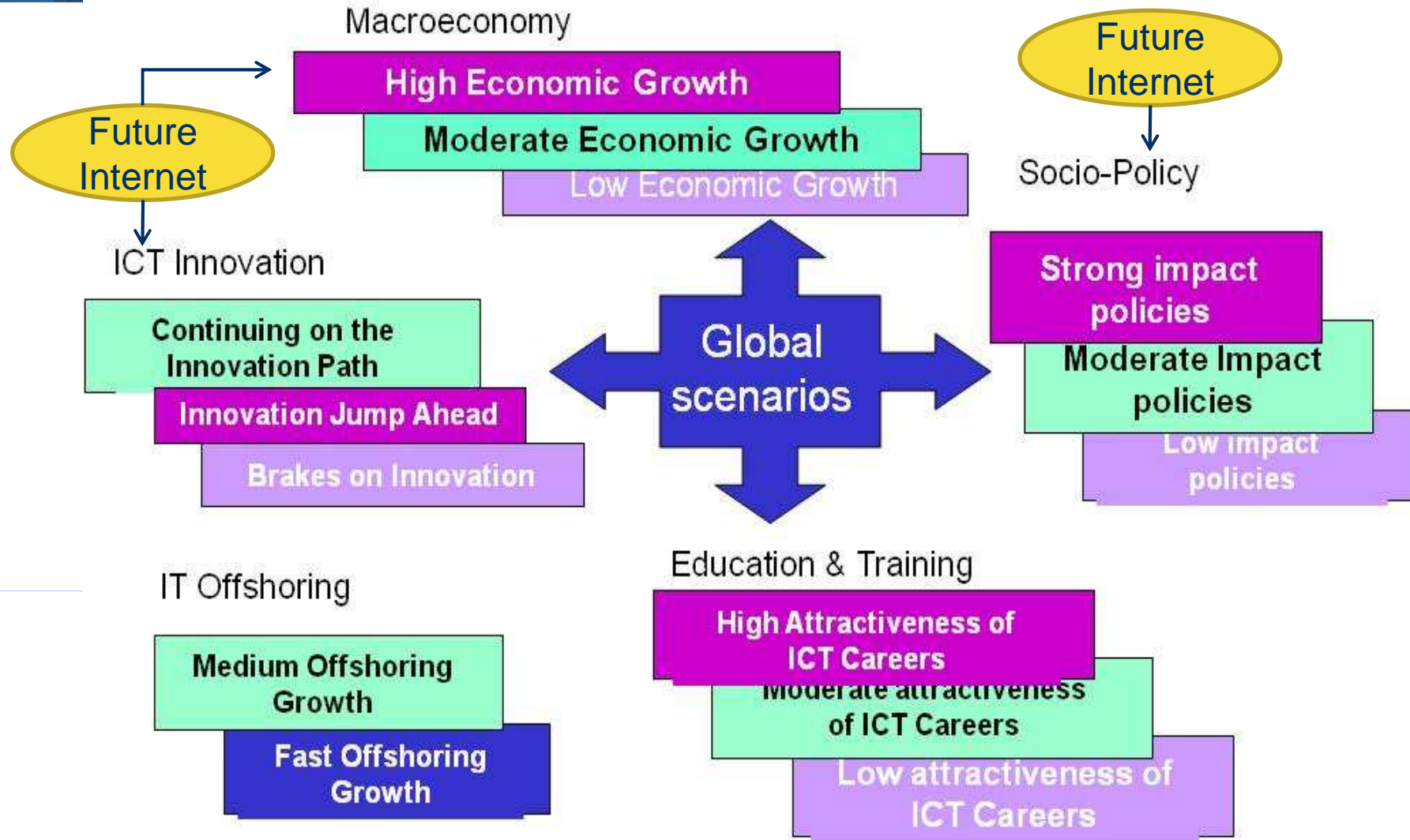


Figure 1. Relationship between technical and non-technical driving forces of the Future Internet

Source: FIA-FISE Position Paper

# Main Drivers of the European Knowledge Economy: Subscenarios, 2010-2015



# The ICT Innovation Subscenarios 2010-2015



	Sub-Scenarios		
Main trends	Continuing on the Innovation Path	Jumping ahead	Brakes on IT Innovation
Innovation in ICT Development	Widespread adoption	Widespread adoption	Adoption continues to cut costs
Innovation in ICT Delivery	Adopted by advanced companies and pioneers	Widespread adoption	Adoption only by pioneers
New ICT-based business models	Adopted by advanced companies and pioneers	Widespread adoption	Adoption only by pioneers
Future Internet 2020	Start of investments at the end of the forecast period	Investments take off from 2011	Low priority, scarce investments for all the forecast period

# ICT, the Future Internet and the Low Carbon Economy

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# The Key Questions for ICT and Sustainability

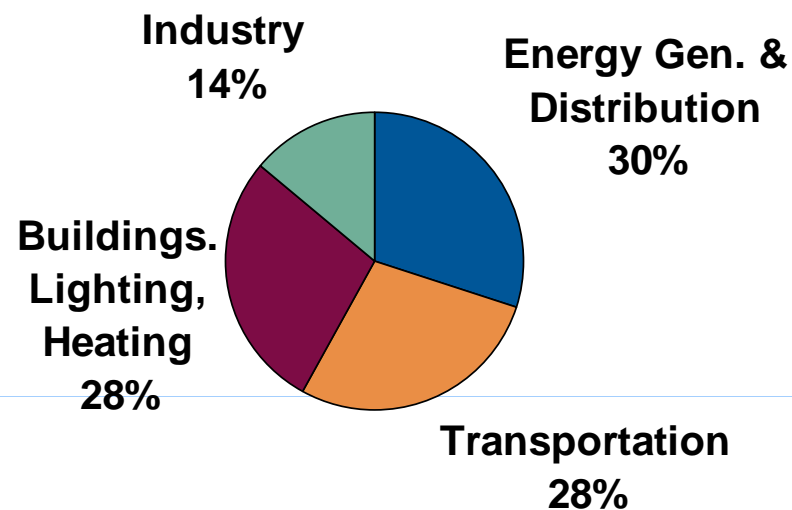
- What is the potential for ICT to reduce GHG emissions in major economies?
- Which technologies can be used to do this and what is their likely impact?
- How well placed are major economies to take advantage of ICT?
- How can those technologies be implemented?
- How does the ICT industry, policymakers and businesses work together to achieve common goals?



# ICT Contribution to the Low Carbon Economy: the relevance of Smart energy

- Intensive use of ICT technology can reduce emissions by over 25% annually by 2020 compared with 2006 levels in the G20
- All sectors can benefit from increased use of ICT.
- Energy creation and distribution has the greatest possibility of carbon reduction, particularly through integrating renewable energy into energy distribution using smart grids.

Contribution By Sector To Saving 5.8 GtCO<sub>2</sub>e Through Intensive ICT Use By 2020



Source: IDC estimates, 2009

# The main energy-saving ICT solutions by sector



## 1. Energy Generation & Distribution

- T&D Network Management( Smart Grid)
- Smart Metering
- Intelligent Power Generation
- Renewable Energy Management

## 2. Buildings

- Energy Management Systems For Buildings
- Smart Lighting ( Automation)
- Intelligent Building Design
- Teleworking
- Demand Management & Energy Box (Smart Grid)

## 3. Transport

- Supply Chain & Logistics Optimization
- Private Transport Optimization
- Virtual Conferencing & Telecommuting
- Efficient Vehicles ( PHEV, EV)
- Traffic Flow & Optimization

## 4. Industry

- Intelligent Motor Controllers
- Industrial Process Automation
- Digital Commercial Paper ( ePaper, eMedia)

Source: IDC estimates, 2009

# Positive Perspectives for Smart Energy in Europe

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# EMEA Utility Industry 2010 Predictions by IDC Energy Insights



1. ICT and energy technologies will drive **energy efficiency and emissions reduction**
2. **Renewables, Distributed Generation and Clean Tech** will continue to grow in 2010
3. 2010 will be a turning point for **Electric Vehicles**
4. **Intelligent grid** ICT spending in EMEA will reach \$8 billion in 2010
5. **Smart cities** are emerging as holistic playgrounds for low-carbon economies
6. Operational efficiency will be a “must” for **Retail Suppliers**
7. Smart **gas** metering will be more than just a theory
8. The **water market** will continue to snooze in 2010
9. **CIOs** will focus on applications improving company’s competitiveness
10. EMEA utility industry **IT spending** will continue to grow in 2010

# IDC Prediction #1 – ICT and energy technologies will drive energy efficiency

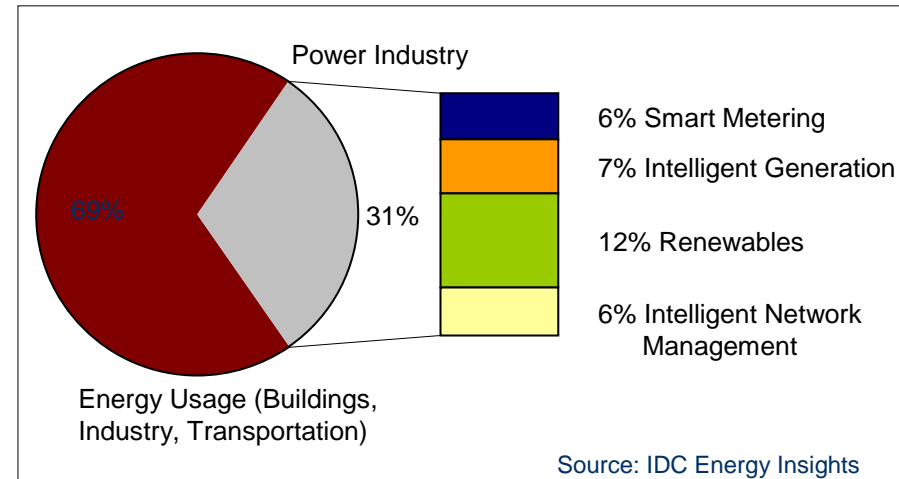


## Drivers

- Climate Energy Package
- EU Energy Efficiency Action Plan and National Energy Efficiency Action Plans
- Energy Services Directive, Buildings, ....
- March 09 EURELECTRIC declaration (carbon-neutral supply by 2050)
- Security of supply
- Technology Deployment
- Copenhagen Accord

Emissions savings in 2020

% on G20 countries total annual savings of 5.8 Gt CO<sub>2</sub>e



## Predictions

- Utilities will ramp up energy efficiency and demand response pilot programs and will increase investments in technologies that enable these programs including home/building energy management solutions
- The number of 3<sup>rd</sup>-party energy management solutions, ranging from consumer products available at retail stores to offerings from broadband service providers and Internet giants like Google and Microsoft, will increase, but expect a shakeout
- Gencos will use predictive analytics to increase assets availability and performances in an effort to reduce costs, but also to grab some emissions reductions optimization
- Pilots on Virtual Power Plants are ongoing across Europe

# IDC Energy Insights Prediction #3 – 2010 will be a turning point for EV

## Drivers

- Governments' initiatives and EU Green car initiative: € 5 billion (€ 4 B EIB loans + € 1 B research)
- CO<sub>2</sub> and cars regulation
- DSOs commitments for Grid4Vehicles
- Li-ion battery technology developments
- Commitment of major auto manufacturers (Nissan, Daimler, ...)
- New infrastructure players entering the market (Better Place, Coulomb Technologies, ECOtality, Elektromotive, Infracharge ...)



## Predictions

- The ~16 fleet trials in EU will gather real world use based information (e.g. EVs efficiencies, charging profiles). New business models will be tested
- 2010 will be key to set preconditions for mass market EV development:
  - Innovative interactions between customer and several stakeholders
  - A common hardware solution for maximum customer convenience (socket, connector, charging point)
  - Innovative communication and data handling based on standardized metering protocols
- Few elements of the charging will be standardized 2010
- 2010 will define future market penetration rate estimated in the range of 5% to 10% in 2020
- Vehicles2Grid is still far away from being normal practice

# IDC Prediction #4 – Intelligent grid ICT spending in EMEA will reach \$8 billion in 2010



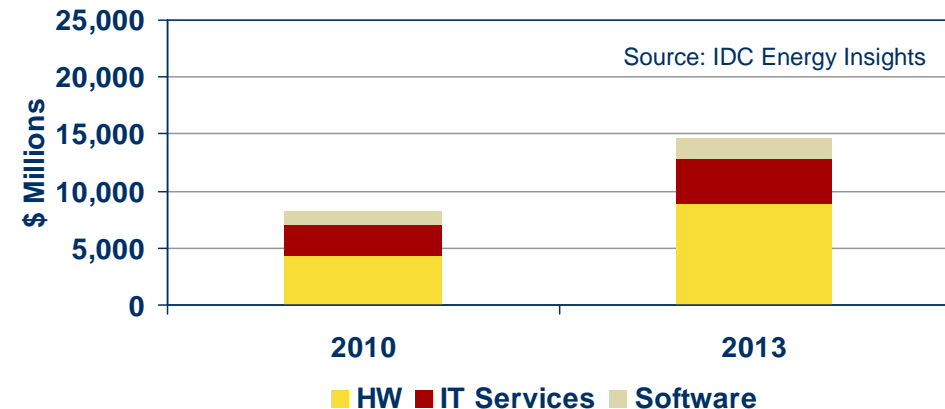
## Drivers

- Increasing of large-scale renewable and distributed energy resources
- Improved operational security
- Market integration and market access
- Active customer participation
- Third Energy Liberalization Package and National Smart Metering Mandates

## Predictions

- DSOs leading initiatives will have a central role in both facilitating the transition to a low-carbon economy in Europe and in improving the way retail electricity markets function
- Smart grids will facilitate the inclusion of renewable energy sources into the system and also provide a platform for G4V
- Intelligent grid IT spending will increase 27% over the next 3 years (CAGR)
- Automation of MV network will be ongoing until after 2012
- Smart metering deployments will continue to be the major focus of IG initiatives in 2010. Electricity total installed base in Europe will exceed 53 million meters by the end of the year
- Super grid will be part of Intelligent grid initiatives launched or revamped in 2010
- The full-scale deployment of the vision of the intelligent grid is far away but projects, key pilots and implementation are on-going, especially in the area of grid operation and usage optimization.

EMEA 2010 Intelligent Grid IT Spending



# Concluding Remarks



- The development of the Future Internet depends on the socio-economic scenario
- There are many interrelated drivers, but two issues appear more critical than others: proactive policies enabling investments and business ICT-based innovation driving demand
- The Future Internet plays an important role for many of the ICT technologies and solutions identified as important for the transition towards the Low Carbon Economy
- Perspectives for Smart Energy are already looking positive

# Contacts



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