Towards new development of local / regional models in Energy

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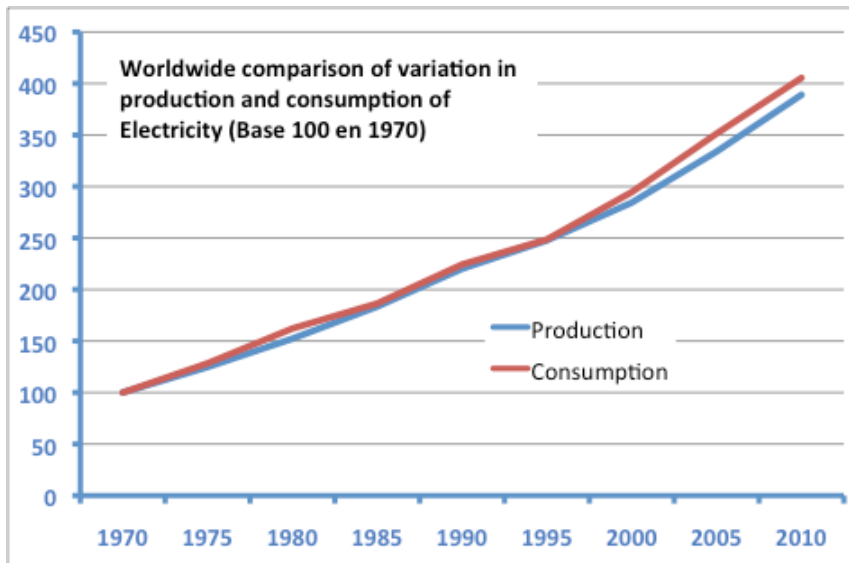Strategic Consulting In a Digital World

Towards new development of local / regional models in Energy

Tensions between production and consumption

Energy grids have to face to critical trends between production and consumption

Pressure on production

Decreasing in some countries (-5,5% in France in 2009)

Consumption increasing

?

Worldwide comparison of variation in production and consumption of Electricity (Base 100 en 1970)

— Production
— Consumption

*ITEMS - Sources RTE and IEA*

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Governmental support for REN

- National governments supports REN:
  - According the French government, PV capacity was 81 MW at the end 2008 and should be 850 MW at the end 2010, ie 10 times increasing in 2 years

- A lot of initiatives :
  - Projet offshore France: 3.000MW
  - England: new plan opened in 2010 / 300MW
  - Netherland: Project Zeekracht 13.400TW (2050)

- Objectives for 2020 of White Paper published by Europe in 2007:
  - 21% ReE (Revised in 2010 19%)
  - 5,5% ReE in transports (revised to

- Germany: 2020 REN target
  - 30% energy consumption
  - 14% heating
  - 12% gas

Divresify production Increasing of REN

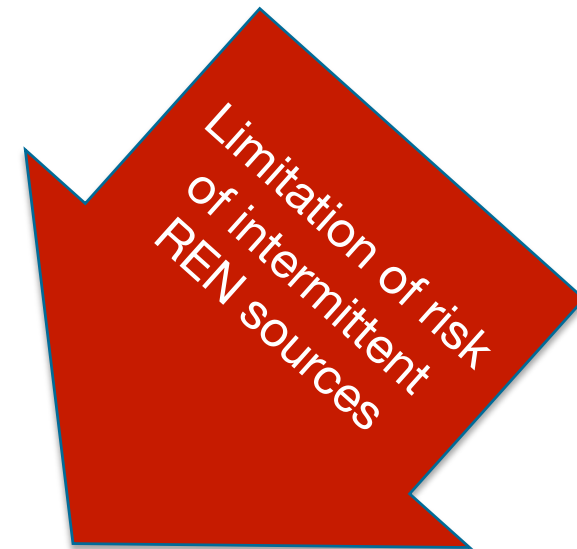**Renewable Power Capacities, Developing World, EU and Top Six Countries, 2008**
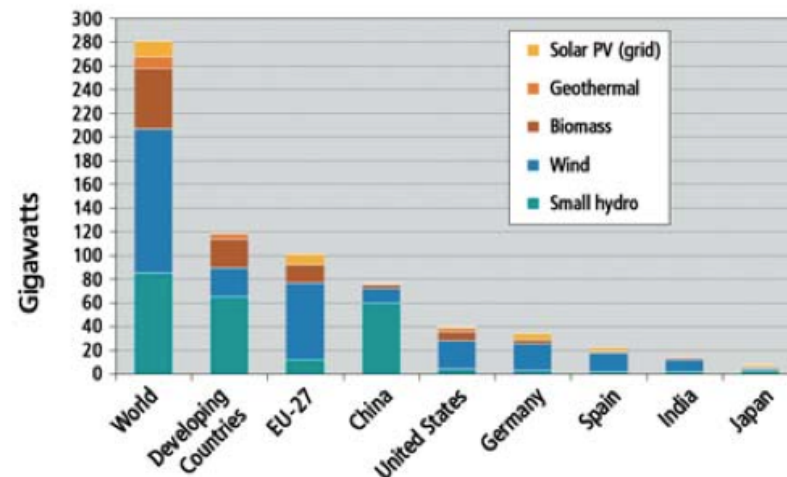
Source: www.ren21.net

Limitation of REN in energy grids

- Operators have to balance production and consumption
- REN are based on intermittent sources. That could cause blackouts in the grid:
  - Comparable to a cable that is cut (exemple grid collapse in 2006)
  - In France, the law stands at 30% the maximum of REN in the grid in real time

Limitation of risk of intermittent REN sources

The gordian node?

- Conjunction of constraints that limit any evolution in energy grids

Pressure on production of Energy

Limitation intermittent REN sources in the grid

Which solutions for the future ?

Increasing of consumption

Diversification of production

The growing importance of « Smart Grids »

- "Intelligence" in the grid is due to optimize the balance from production to consumption

Communication network & IT
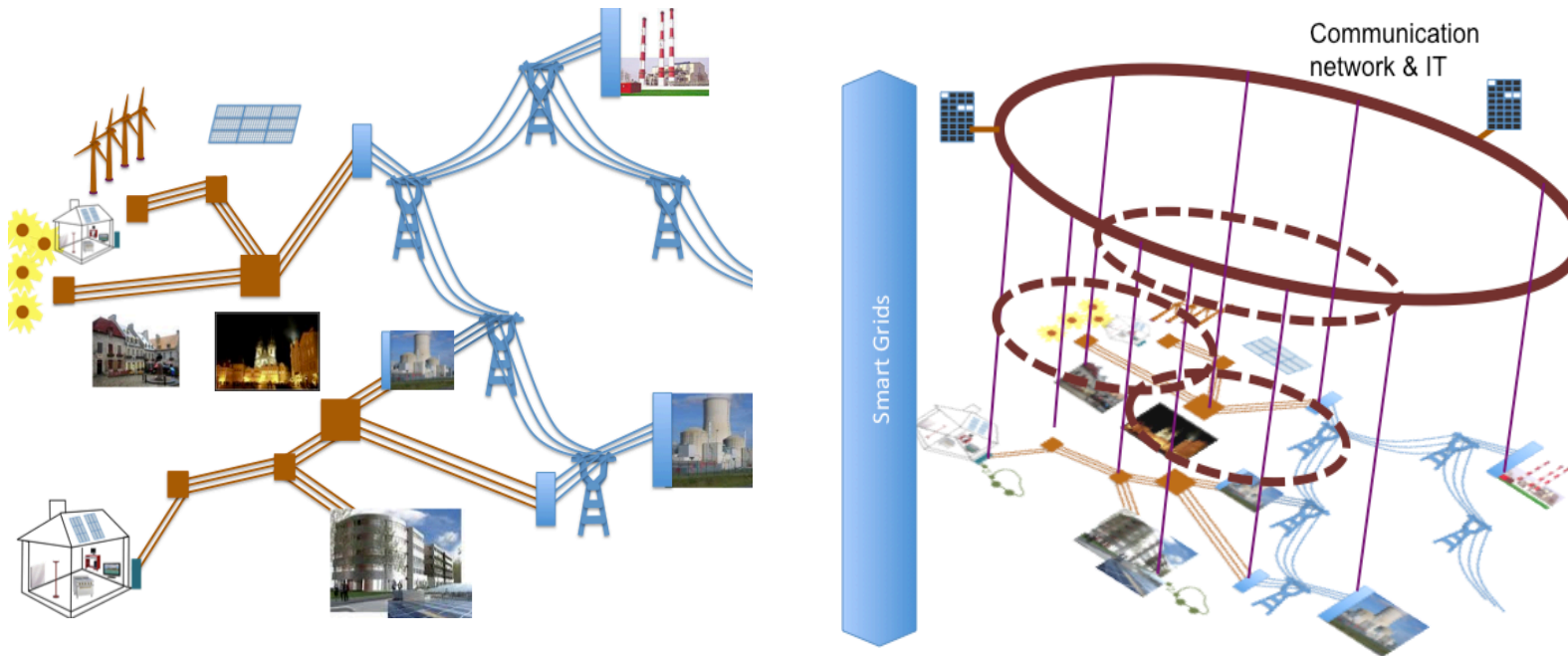
Smart Grids

Hierarchical grid   Smart Grid

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Smart Grids makes a more decentralized grid

- **REN are coming from decentralized sources**
  - Geographically
  - Type of source

- **Smart Grids allow to**
  - Manage decentralized sources
  - Optimize balance between production and consumption at the local, regional and national level,
  - Different operators to optimize their need to common resources

- **Smart Grid architecture is going the foster the development of virtual networks based on:**
  - Common physical resources,
  - Setting up of networks dedicated to:
    - A city, a region …
    - Clients with specific needs,
    - Third parties resources management …

Réseau de communication

Réseau électrique intelligent

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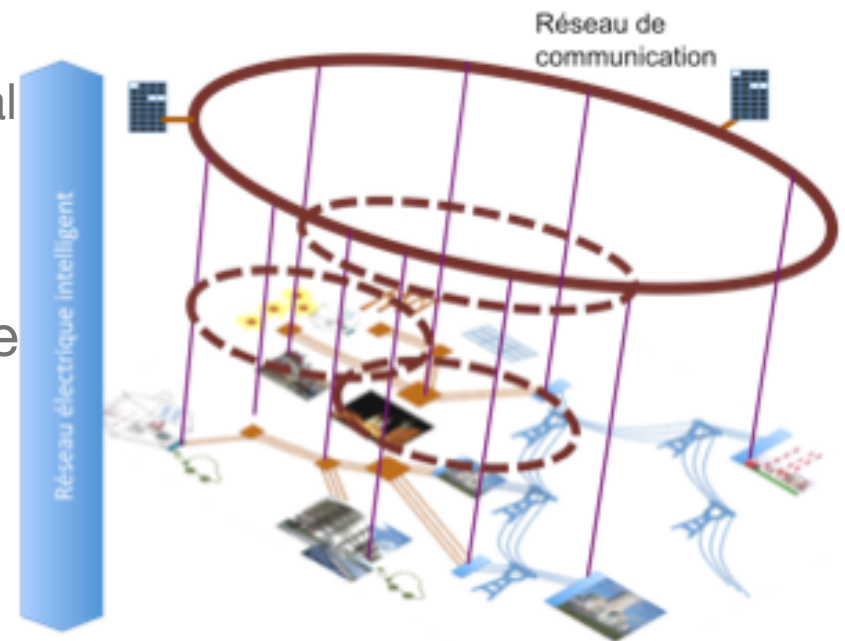
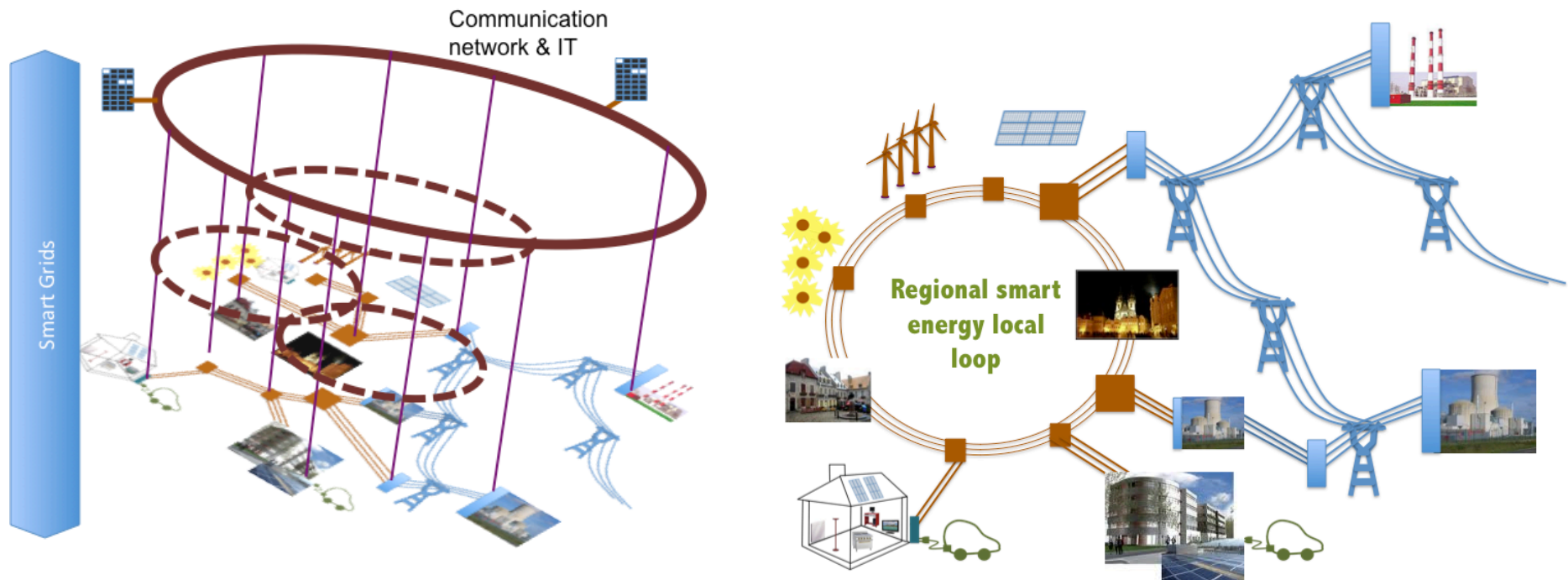# On their side, local authorities are going to take part of the game

- They are more liable regarding questions of production and consumption
- They have to complain to legal obligations
- They define Strategic Visions
- They setup policies
- They want to reduce the impact of carbon
- They setup specialized departments in their administration

Local auhtorities

Increasing actions in the field of Energy

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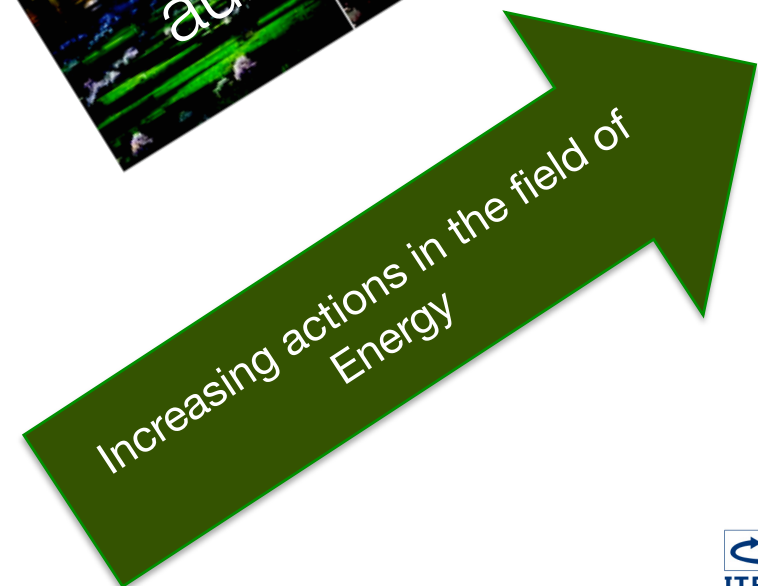
Local authorities are going to become key players

Balance changes in Energy

Smart Grids

Local Authorities involved

At the end of the line are Local Energy grids

Smart grids and local concerns about energy are going to make Energy local loops to emerge

Optimization in Energy Grids and smart grids should lead to local third parties grids

- Need to answer to the constraint of on intermittent energies sources in the grid
- Smart grids allow to implement specific rules with a third party that would collect and store the REN
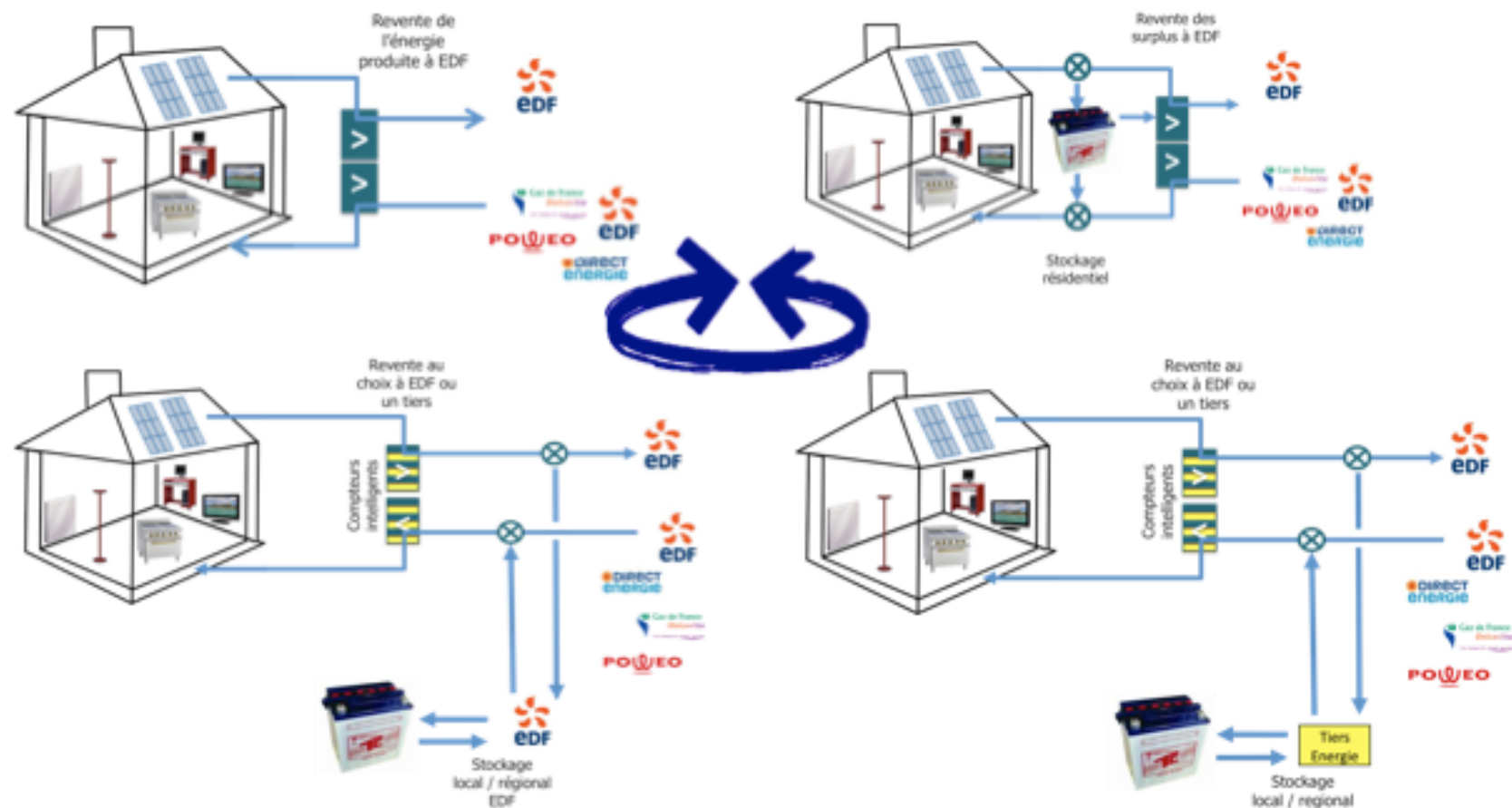
10 years ago … in the telecom sector

- Radical change in telecom sector
  - Competition
  - Broadband
  - Mobile

- Local authorities considered first that it was not their business … and at the end managed local strategies to develop broadband

- Some for European Commission:
  - Totally against any commitment in broadband in 2000
  - And a strong priority for 2007-2013 plan

- The law has changed in some countries to allow to commit in broadband plans:
  - Not to become operator by themselves
  - But to invest in PPP

- France was late in broadband and internet penetration in 2000. It is now in the the 10 most advanced countries in the world (OECD)
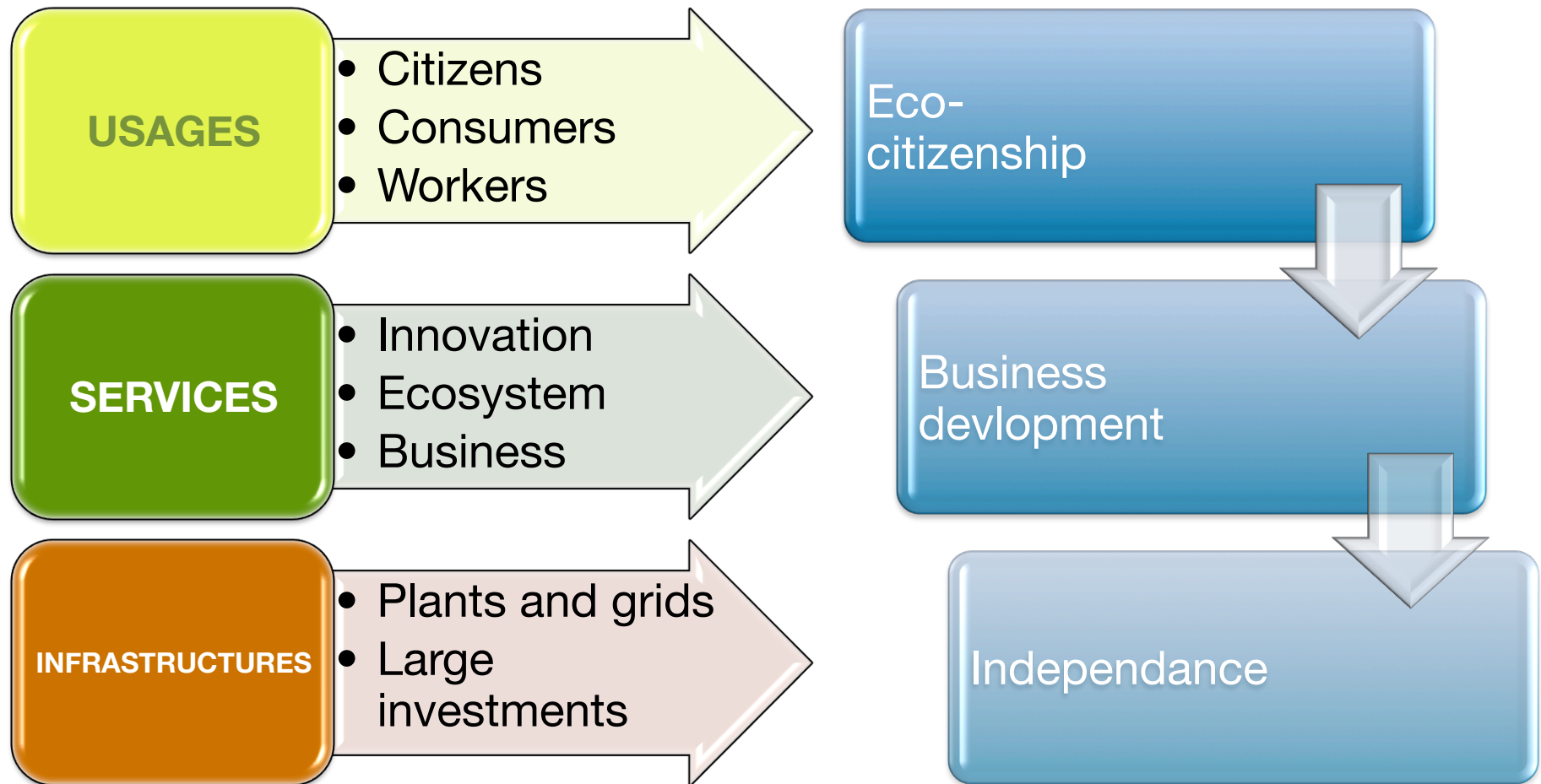
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Let's do it now!

- We have to setup local strategic templates for Energy

- Behind these tempates are :
  - Abillity to develop local REN
  - New services
  - Flexibility
  - Innovation

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The tryptic Infrastructures – Services – Usages as the key to imagine new business models

- A model coming from

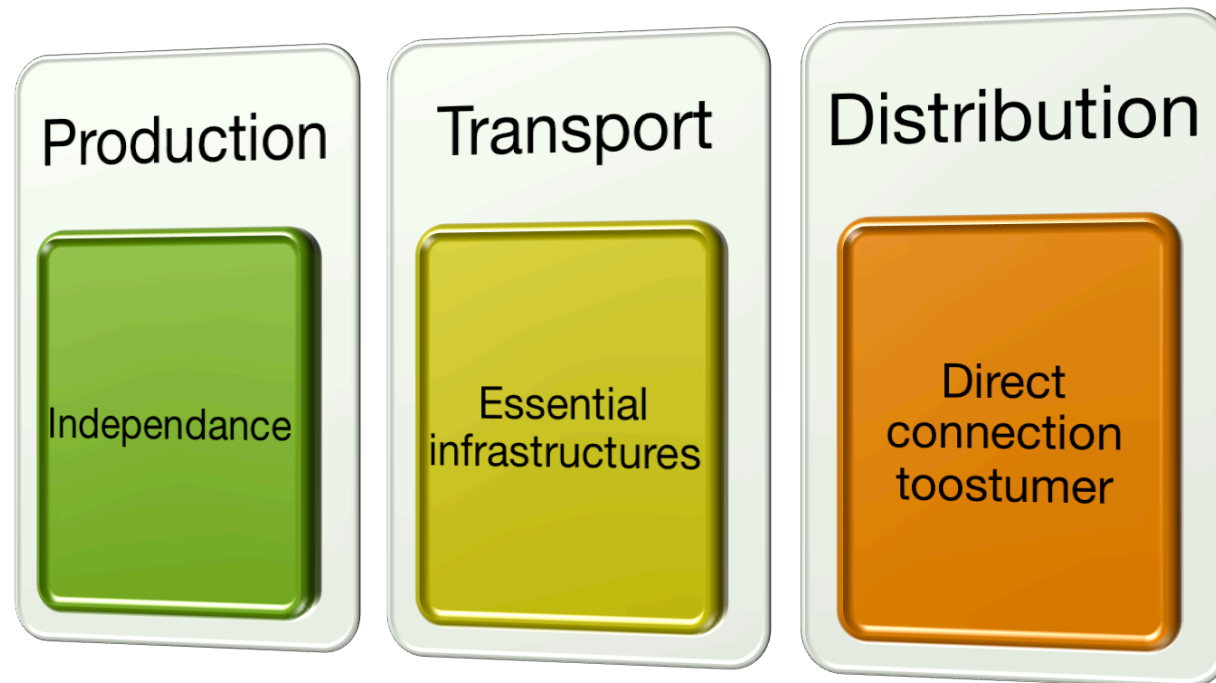|		
USAGES	• Citizens • Consumers • Workers	Eco-citizenship
SERVICES	• Innovation • Ecosystem • Business	Business devlopment
INFRASTRUCTURES	• Plants and grids • Large investments	Independance

Infrastructures are still strategic…

- **Long term strong assets**
  - Complex projects
  - Financial return guarantied
  - Not affected by market up and down

Production	Transport	Distribution
Independance	Essential infrastructures	Direct connection toostumer

… but strong potential increasing of value in services

- Innovation for usages
  - Consumption control
  - Mobility
  - Electric vehicle…

- Innovation in services **: Imagine the future with smart grids and smart meters ..**

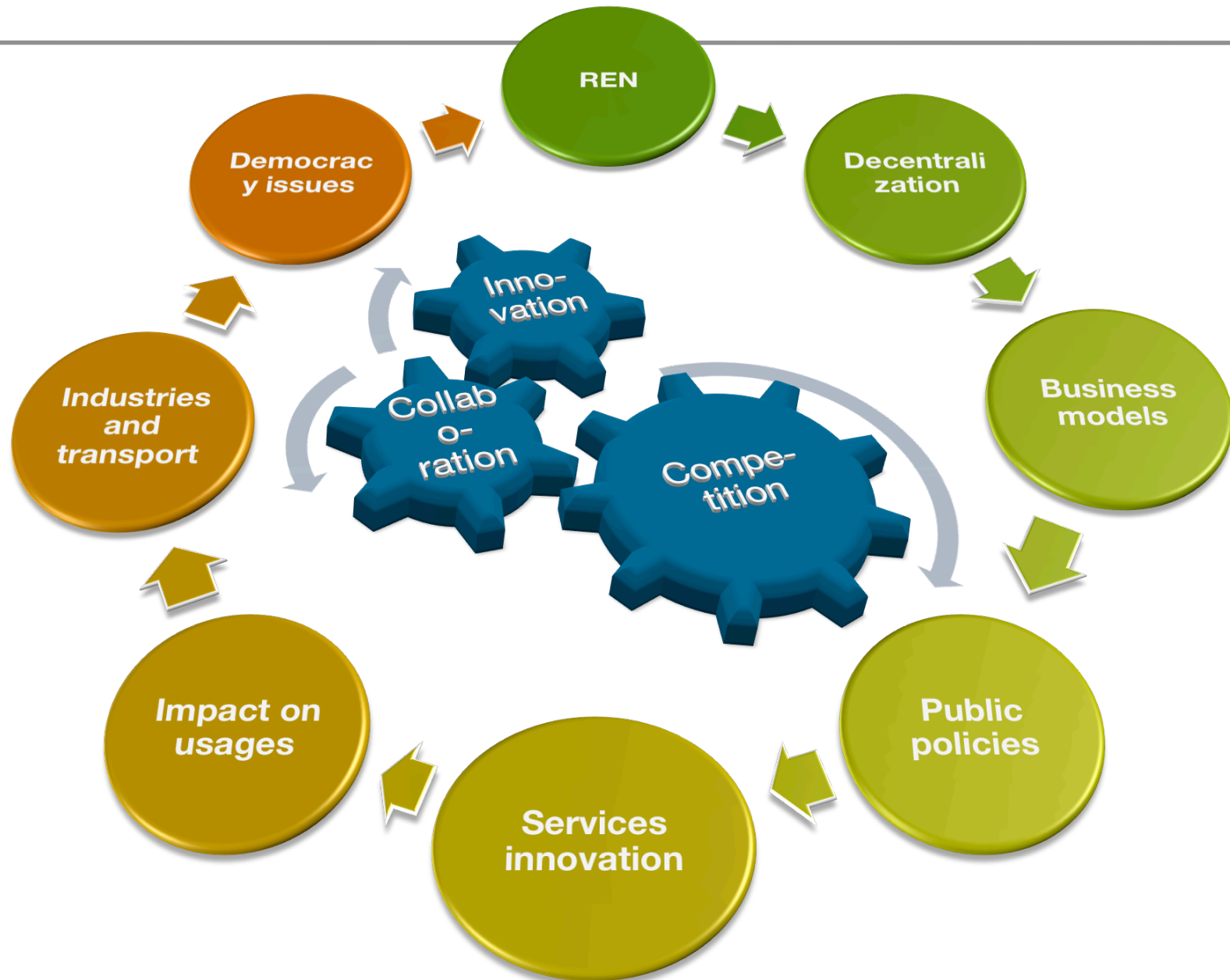| A Microsoft type model	An Apple type mode	A Google type model
• major player in a country that provide all solution « on the shelves »	• major player that manage and control a platform of elected services	• player that is the engine and the reference of a ecosystem where each one do what he wants to do … and reinforce the key role of this player

… and the time comes when Google take 37,5% of Atlantic Wind Connection that is going to build up a wind energy offshore plant on east US coast

A new field for debates

REN

Democrac
y issues

Decentrali
zation

Business
models

Industries
and
transport

Inno-
vation

Collab
o-
ration

Compe-
tition

Public
policies

Impact on
usages

Services
innovation

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Differences between countries

- Energy market structure is different depending of countries
  - US model: decentralized including local utilities all over the country. Strong role of State administrations
  - France: centralized including the dominance of Nuclear in production
  - Most of the countries in Europe: mixed with differences that can be :
    - Geographical,
    - Core business (Production, Transport, Retail).

- Decentralized energy markets could be in better position to take profit of the implementation of smart grids and the development of services

Three key messages

Citoyens
- **Economic and sociatal stakes**
- New fields of debates

Services
- **String potential increasing of value in services**
- Risk for Europe not to be in the best position in this market

Local
- **Growing role of local authorities in energy sector**
- New economic models are going to emerge

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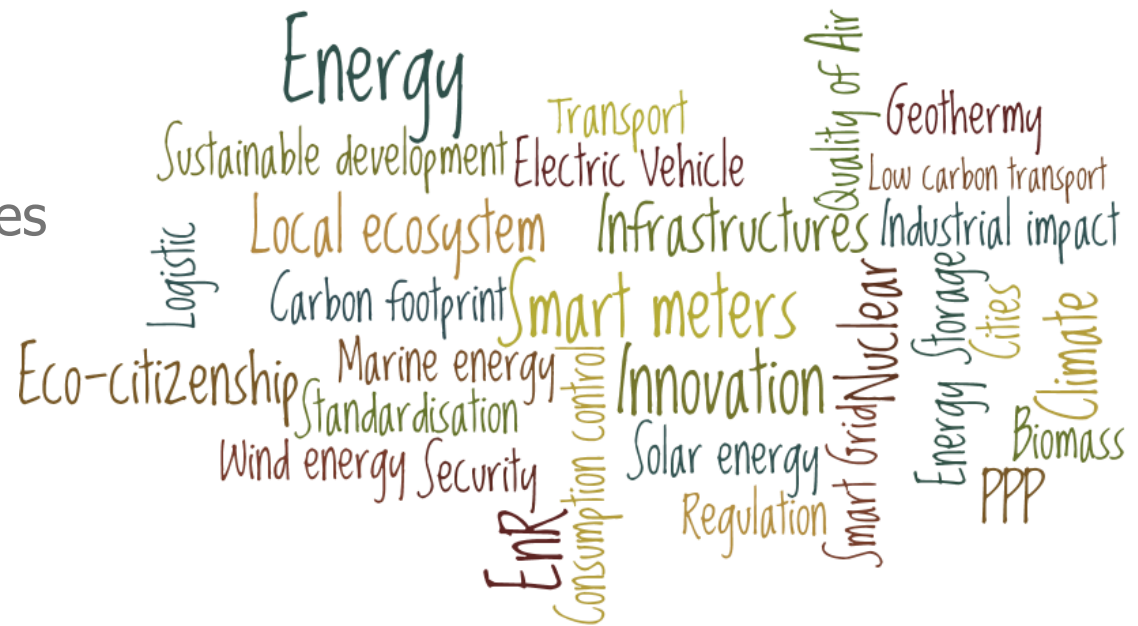INTERNATIONAL

ITEMS International
in Energy

Consulting experience since 2010

- A core of activities in **digital technologies & services** and **energy**

- Three activities:
  - Consulting
  - International conferences
  - HR resources

- Offices and partners
  - Paris, Marseille
  - Rome, Algiers, Newcastle, Bucarest
  - Partners : Brussels, Barcelona

A expertise with local authorities

- Mecanisms to foster **economic development** in sector that is going to face to major changes

- Experience in **public debates between public and private players** at a national and local level

- Ability to **setup structures** including technical analysis, business plans and legal aspects

- Strategic assistance to local authorities

- Numerous references with **cities** and **regions**

Partners in Energy, Air and Climate

Nort East Economic
development Agency
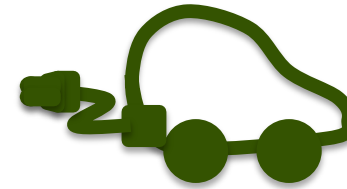
Air and Climate Technical Studies

Cluster of
Competitiveness

Energy technical
Studies

Véhicules électriques
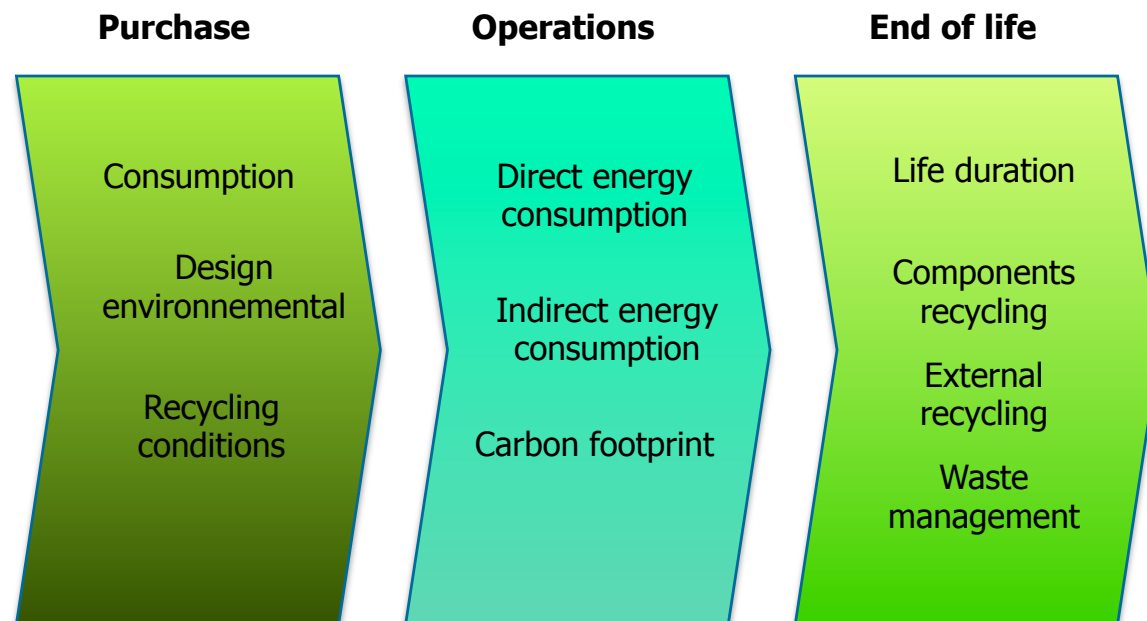
- Stratégie, faisabilité
  - Réorganisation de la chaîne de valeur
  - Problématiques : Batteries, Energies Renouvelables, C02, Services vs Achats …

- Bilan énergétiques
  - Bilan de consommation de parc de véhicules
  - Bilan CO2
  - Scenarii énergétiques selon l'évolution du parc

- Stratégies pour les collectivités territoriales
  - Enjeux (Economie, Environnement, Infrastructures),
  - Quels modèles imaginer entre acteurs privés et publics ?
  - Quelle contribution pour les citoyens ?

- Véhicules Electriques et Smartgrids
  - Quelles relations entre Energie Renouvelables et Véhicules Electriques ?
  - Comment concilier modèles locaux et contraintes de gestion de la production et de distribution ?

Green ICT

A partnership in sustainable and green ICT

- **Green ICT strategy**
  - Managing ICT development and Green ICT strategy
  - Benefits understanding
  - Impacts on other strategic issues and on operational processes
  - Product fooprint management
  - Logistic real time processes impacts
- **Green IT strategy**
  - Data processing consumption
  - Energetic balance
  - Recycling constraints
  - Green Data Center constraints and

Purchase

Consumption

Design environnemental

Recycling conditions

Operations

Direct energy consumption

Indirect energy consumption

Carbon footprint

End of life

Life duration

Components recycling

External recycling

Waste management

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Conference & International Networking

ITEMS has developed a real expertise in gathering high level people in international conference and maintains proactive relationship with its network all over the world

GLOBAL FORUM
Shaping the Future

- Global Forum – Shaping the Future: a reference in ICT conference setup un close relationship with European Commission
- Conferences & Workshops background:
  – Mobile TV,
  – Internet of Things-Internet of the Future,
  – Open World Forum,
  – Future TV,
  – e-Book,
  – Digital Culture …
- Experience in international sponsorships
- Conference operation assistance for other organizations, governments and local authorities
- Development of communities (Forums, Think Tank, Social Networking …) based on conferences networking
- Organization of trips: Business relationships, Best practices assessment, Public policies understanding …

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