



Local development new strategies: the experience of Barcelona

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CONFERENCE 1

OPEN SESSION – HIGH-LEVEL CONFERENCE
“EFFECTIVE POLICIES FOR URBAN ENERGY TRANSITION”

Barcelona, 8 June 2017



New Strategies for Local Development: a case study of Barcelona.

Joan Trullén / Universitat Autònoma de Barcelona

Vittorio Galletto / Institut d'Estudis Regionals i Metropolitans de Barcelona

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- 1. Introduction and Objectives**
 - 2. Barcelona 1986-2015: The creation of a global metropolis**
 - 3. The “Barcelona, City of Knowledge” project**
 - 4. The Barce-Lyon megaregion in a European context: indicators of innovation**
 - 5. The impact of the economic crisis**
 - 6. Barcelona and the inclusive urban growth model**
 - 7. Conclusions**
-

1. Introduction and objectives

Acknowledgment and pertinence of the seminar

International context: economic crisis and strategic changes in the globalization process. Inequality Growth

- Protectionism USA/Brexit vs. France/Germany
- Trans-Pacific Strategic Economic Partnership Agreement Vs. EMU
- OECD/World Bank: Inclusive growth

Local context: the role of cities. UN Habitat 2016/Quito

OECD: The New York Proposal for Inclusive Growth in Cities (2016)

1. Introduction and objectives

Theoretical framework:

- Piketty (*Capital in the XXI Century*): Globalization entails an increase in the weight of capital in the functional distribution of income, which translates into a tendency towards a deterioration in the personal distribution of income. Economies of scale / Large firms.
- Giacomo Becattini / Neo-Marshallian Analysis: Socioterritorial approach/Marshallian Industrial District Cooperation and competition / increasing returns / external economies. Small firms.

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1. Introduction and objectives

Hypothesis:

- The cities compete: Roberto Camagni. The role of urban external economies in the growth of competitiveness. Urban policies count.
- The trend towards an imbalance in productivity growth at urban scale. Baumol's cost disease. Different trends in productivity growth between activities exposed to external competition and local public services (Baumol-Bowen 1966: *Performing arts: the economic dilemma*).

→ *Urban Competitiveness and Social Inclusion are compatible if an active urban policy is adopted*

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1. Introduction and objectives

The thesis:

- Combine productivity growth with inclusiveness. No to protectionism. **The role of urban policies in raising productivity is strategic:** territorial factors are crucial to productivity growth. But so is the role of inclusive policies to improve the distribution of income.

is it possible to combine them?

- Barcelona 1986-2008: it is possible to grow and at the same time reduce inequality by adopting inclusive urban or metropolitan growth models. The role of urban policy is fundamental. The Great Recession 2009-2014: regression. Recovery from 2015 ...

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1. Introduction and objectives

Strategy: brains & infrastructures.

- Economies external to firms and of a territorial nature: *brains & infrastructures*
- Boosting external economies at both local and national levels
- Promote cooperation between companies: R&D, Innovation, Technology centers.
- Adapt urbanism to the knowledge economy strategy.
- Correct the trend towards increasing inequality

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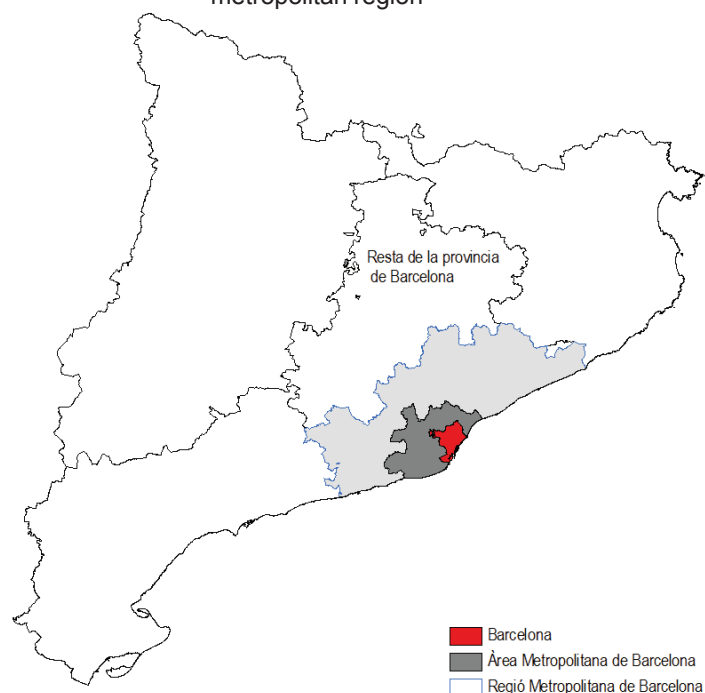
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2. Barcelona 1986-2015: The creation of a global metropolis



Barcelona, Metropolitan Region (AMB), functional metropolitan region



Source: IERMB

How has the Barcelona metropolis expanded geographically?

1. Between 1986 y 2001, the metropolis of Barcelona established itself as one of the biggest European metropolis.
2. In 2001, half of the labour market of the entire province of Barcelona was in the metropolitan area.
3. The expansion of the metropolis occurred at the same time as the expansion of the markets in the EU.
4. Transport infrastructure is paramount.

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Process of territorial expansion of metropolitan areas in Catalonia, 1986-2001.

a) 1986



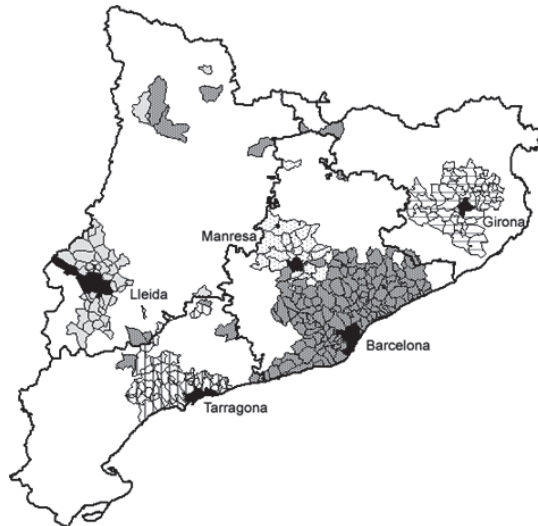
Source: Own creation based on Trullén and Boix (2000), Boix and Galletto (2004), and Boix and Veneri (2008).

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2. Barcelona 1986-2015: The creation of a global metropolis

Process of territorial expansion of metropolitan areas in Catalonia, 1986-2001.

b) 1991



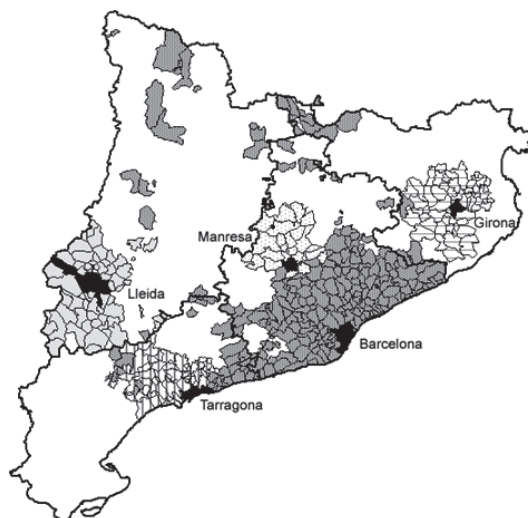
Source: Own creation based on Trullén and Boix (2000), Boix and Galletto (2004), and Boix and Veneri (2008).

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2. Barcelona 1986-2015: The creation of a global metropolis

Process of territorial expansion of metropolitan areas in Catalonia, 1986-2001.

c) 1996



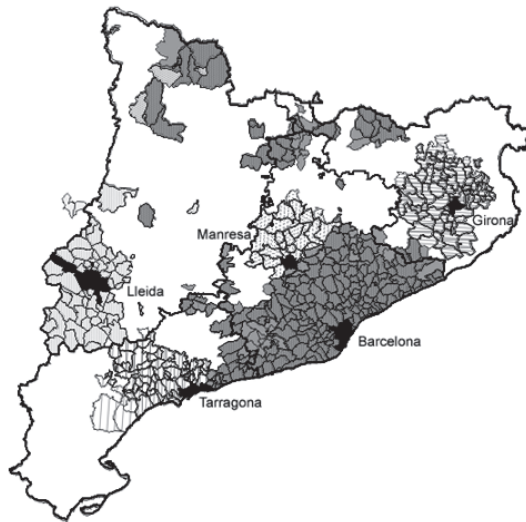
Source: Own creation based on Trullén and Boix (2000), Boix and Galletto (2004), and Boix and Veneri (2008).

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2. Barcelona 1986-2015: The creation of a global metropolis

Process of territorial expansion of metropolitan areas in Catalonia, 1986-2001.

d) 2001

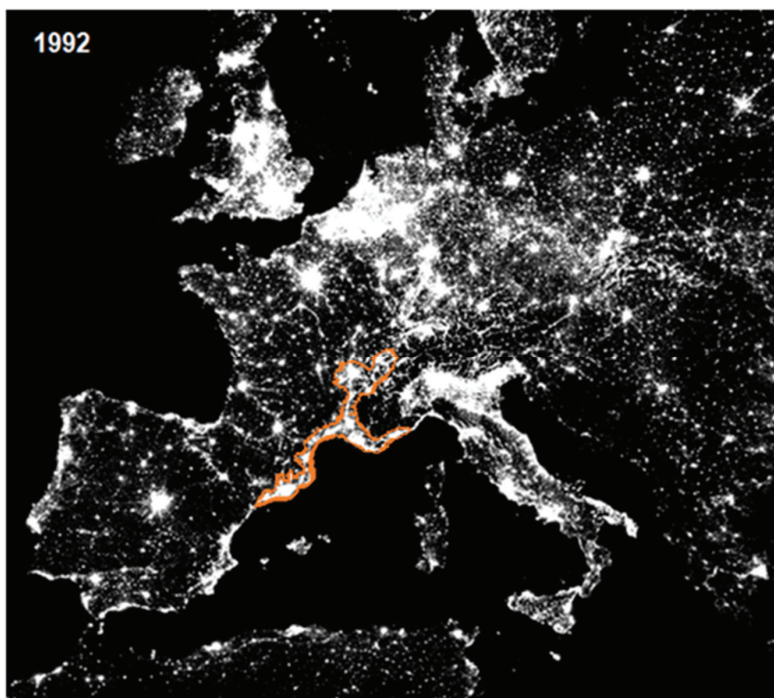


Source: Own creation based on Trullén and Boix (2000), Boix and Galletto (2004), and Boix and Veneri (2008).

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2. Barcelona 1986-2015: The creation of a global metropolis

Barce-Lyon megaregion

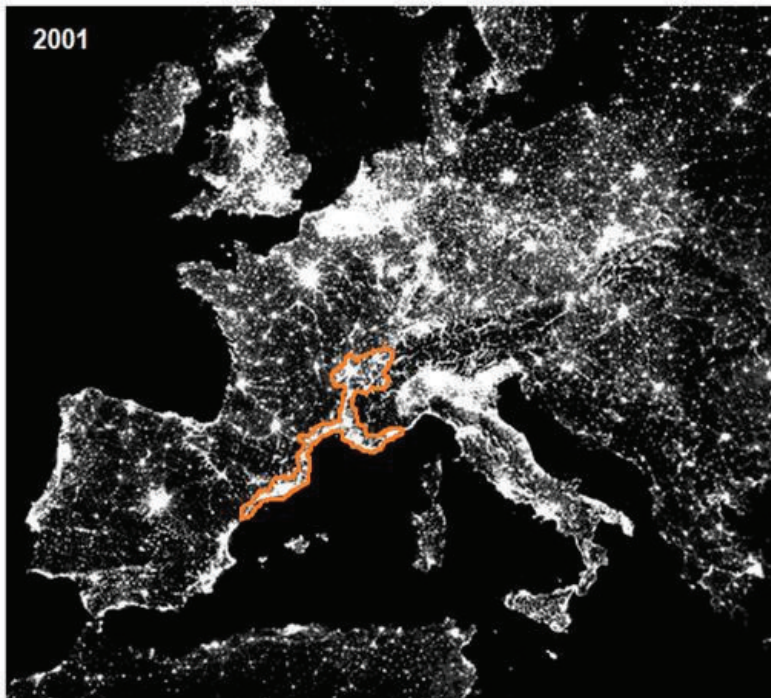


Fuente: IERMB

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2. Barcelona 1986-2015: The creation of a global metropolis

Barce-Lyon megaregion

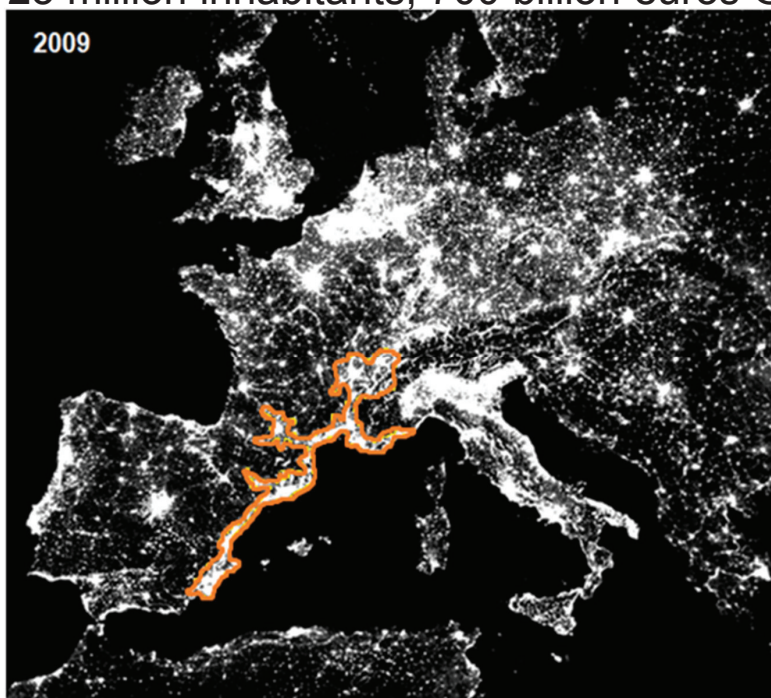


Fuente: IERMB

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2. Barcelona 1986-2015: The creation of a global metropolis

Barce-Lyon megaregion in 2009: 25 million inhabitants, 700 billion euros GDP



Fuente: IERMB

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Creation of a global metropolis, 1991 – 2014

Barcelona province population:

Year	Population	Population (1991=100)
1991	4.654.407	100,00
1995	4.713.494	101,27
2001	4.804.606	103,23
2005	5.226.354	112,29
2010	5.511.147	118,41
2014	5.523.784	118,69

Source: Idescat

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New local economic policy since 1980s:

- Small-scale urbanism projects aiming for equity (network of public services, transport, etc.)
- 1986, Barcelona is nominated as host for the 1992 Olympic Games
- 1986, Spain joins the European Union (EU)

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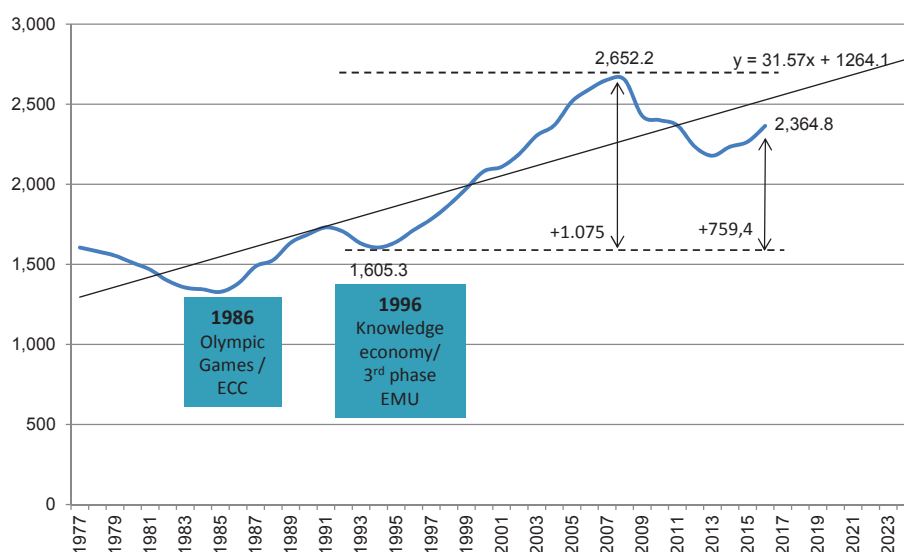
1992 Olympic Games:

- Response to the 1977-1985 crisis
- Beyond Keynesianism: huge infrastructural leap
- Putting Barcelona on the map: from large city to global metropolis
- Surge in employment
- Large-scope urbanistic transformation

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Surge in employment: 1986-1996

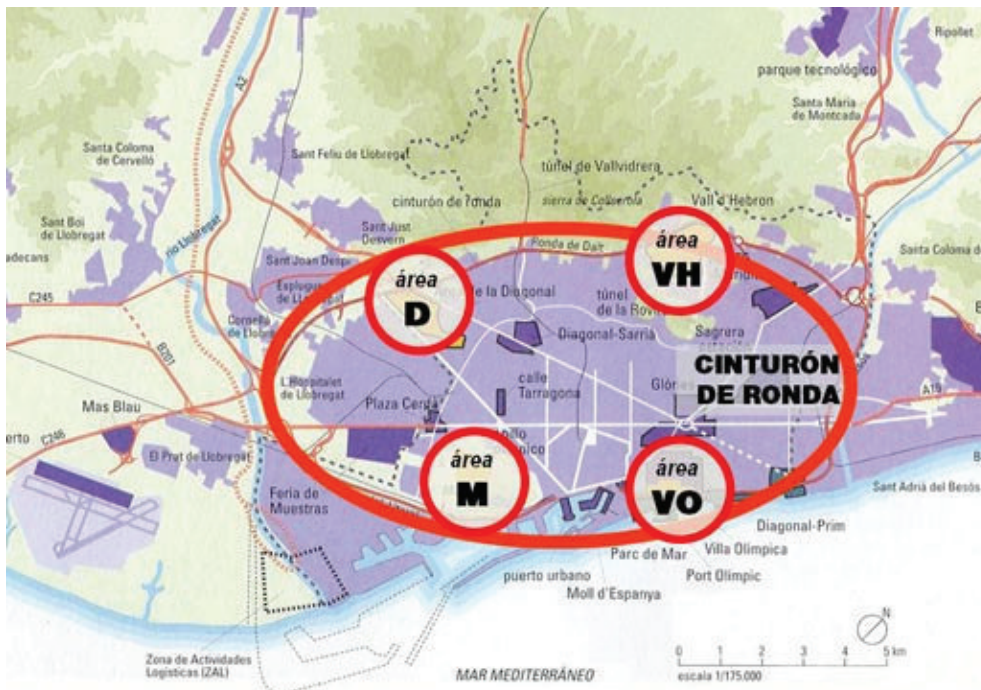
Employment in Barcelona 1977 - 2016 and trend to 2024 (thousands)



Source: INE

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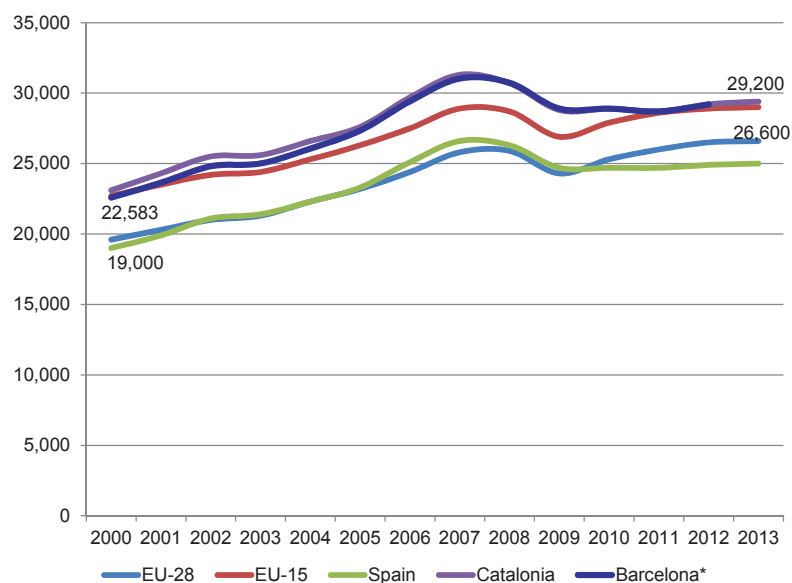
1992 Olympic Games: Urban Strategy



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Convergence of GDP and EU-15

GDP per capita of Barcelona, Catalonia, Spain, the EU-15 and the EU-28, euro PPS, 2000-2013



*Between 2000 and 2009, figures are estimations based on calculated GDP according to ESA-95
Source: IERMB from Eurostat

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Foreign sector

Weight of Catalan and Spanish exports on the UE15 total and world total, 1995-2016



Note: 2016 data provisional
Source: Own elaboration from WTO Statistics database, DATACOMEX (AEAT) and Eurostat.

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The Barcelona, city of knowledge project (1997-2001)

- Knowledge as a factor in production
 - Information and knowledge
 - Skilled jobs/ Training/ R+D / Innovation
 - Identification of an economy based on knowledge and its indicators of development (OECD 1996)
-

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New urban economic strategy

- Reuse of old industrial land in the centre of the Barcelona metropolis as a location for new knowledge-intensive activities
 - Not substituting economic activity for residential
 - Fundamental economic principle: knowledge-rich activities provide many more employment opportunities than old industrial activities
-

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Urban policies

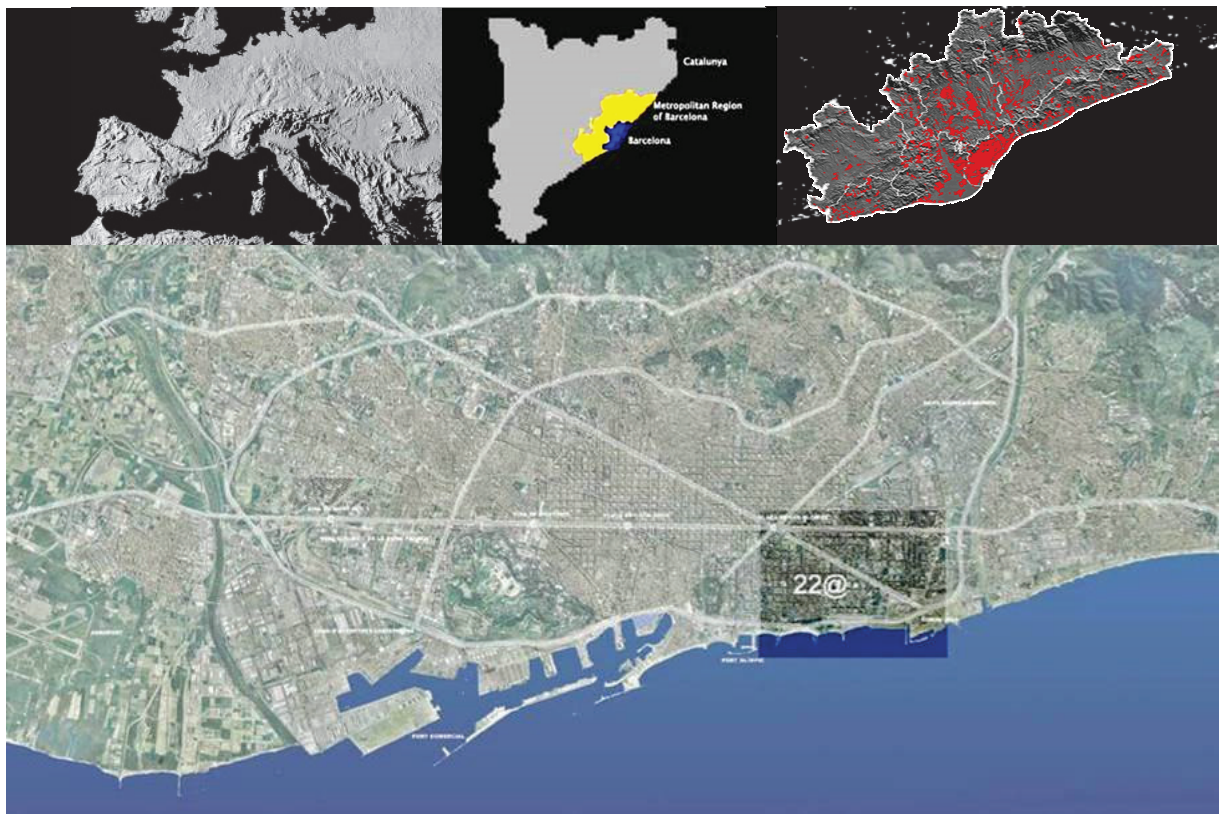
- Creation of zone 22@: a new urbanistic typology
- Creation of zone 7@: a new system of public amenities
- Special infrastructure plan
- Network of centralised air conditioning and heating
- Network of pneumatic refuse conveying systems
- Telecommunications network
- Electrical network

New economic planning of industrial land

- Changes in planning: NEW ZONING
 - Functional planning → Sector → Functional zoning like Le Corbusier (the “what is produced”) 22a (industrial activity)
 - City based on knowledge → Economy based on knowledge → New zoning (the “how it’s produced”) 22@

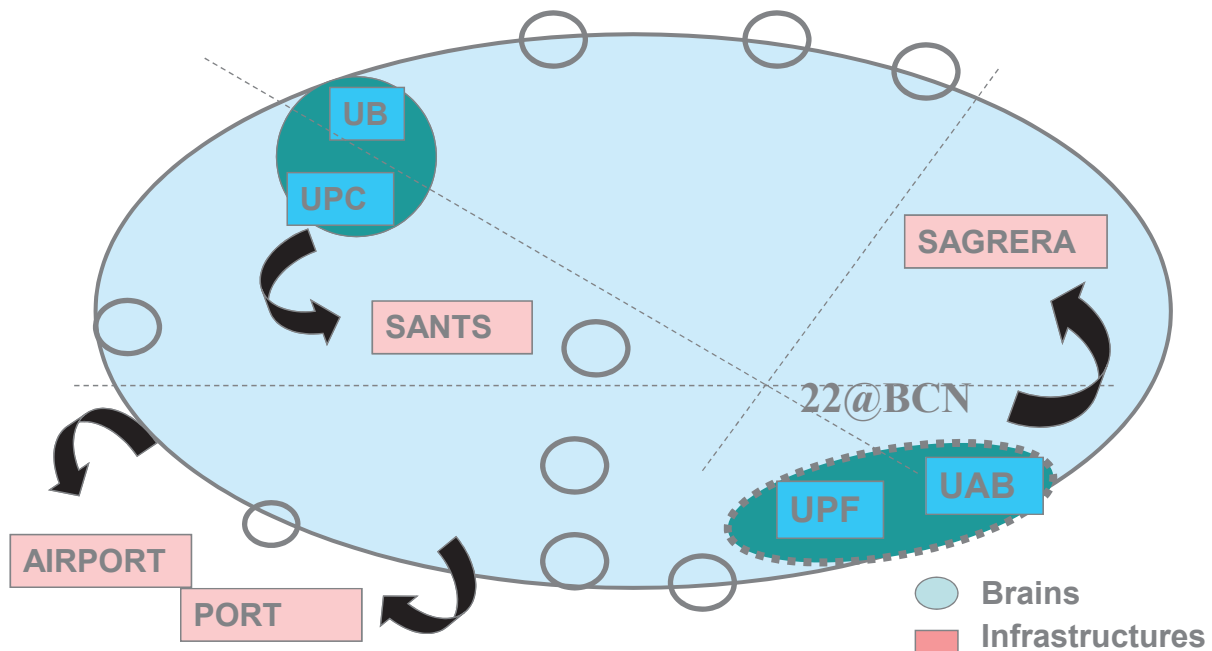
Policies

- **22@ Activities:** changes in metropolitan planning
 - Knowledge density
 - Qualified workers density
 - Use of new information technologies density



3. The "Barcelona, City of Knowledge" project

Barcelona, a knowledge-based city: two large university hubs, two major railway stations of high-speed



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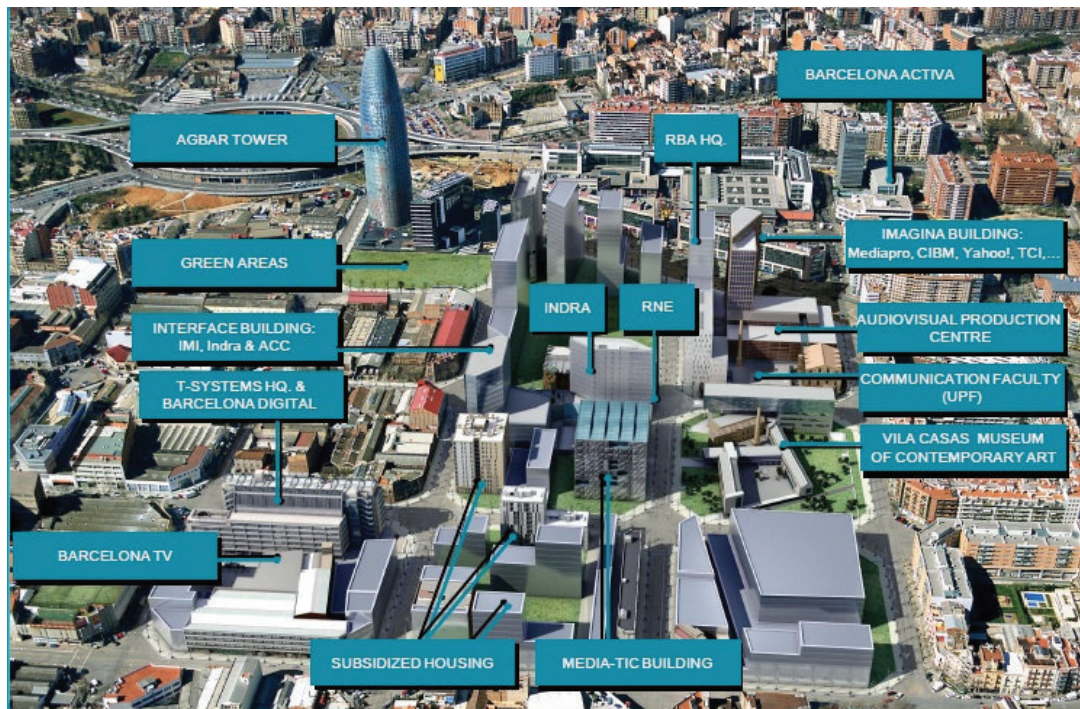
3. The "Barcelona, City of Knowledge" project



Source: Ajuntament de Barcelona.

3. The “Barcelona, City of Knowledge” project

Firms



Source: Ajuntament de Barcelona.

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3. The “Barcelona, City of Knowledge” project

Transport infrastructure in Barcelona: High-speed train–La Sagrera intermodal station



Source: Ayuntamiento de Barcelona.

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Transport infrastructure in Barcelona : Barcelona airport, new terminal



Source: AENA.

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Infrastructure for innovation in Barcelona: Synchrotron light facility

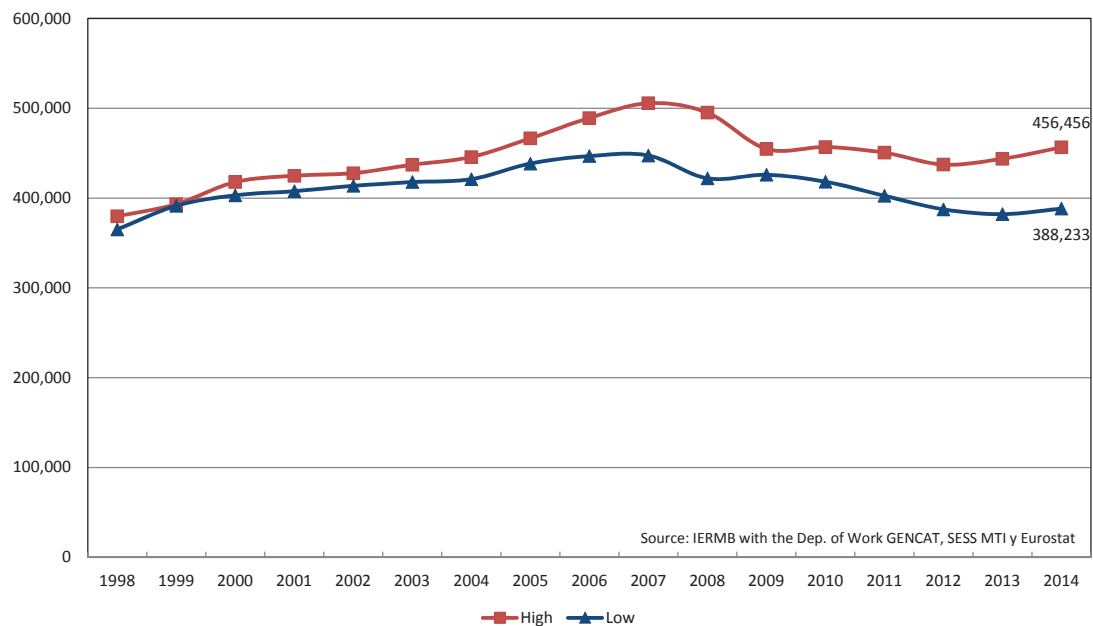


Source: CELLS

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3. The "Barcelona, City of Knowledge" project

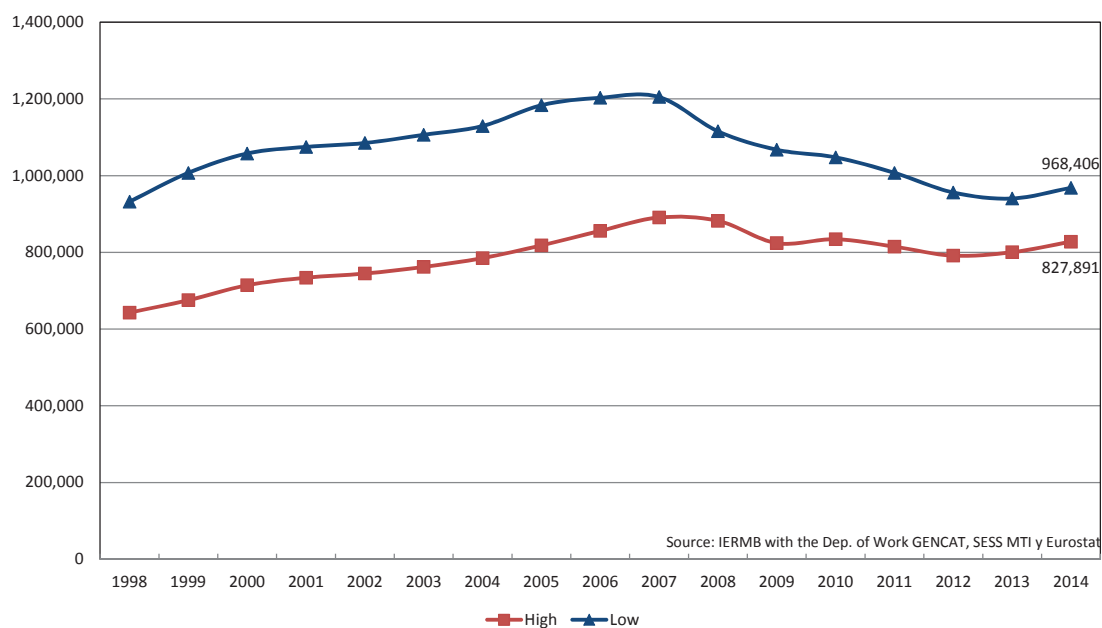
Employment and knowledge intensity, Barcelona city, 1998-2010.



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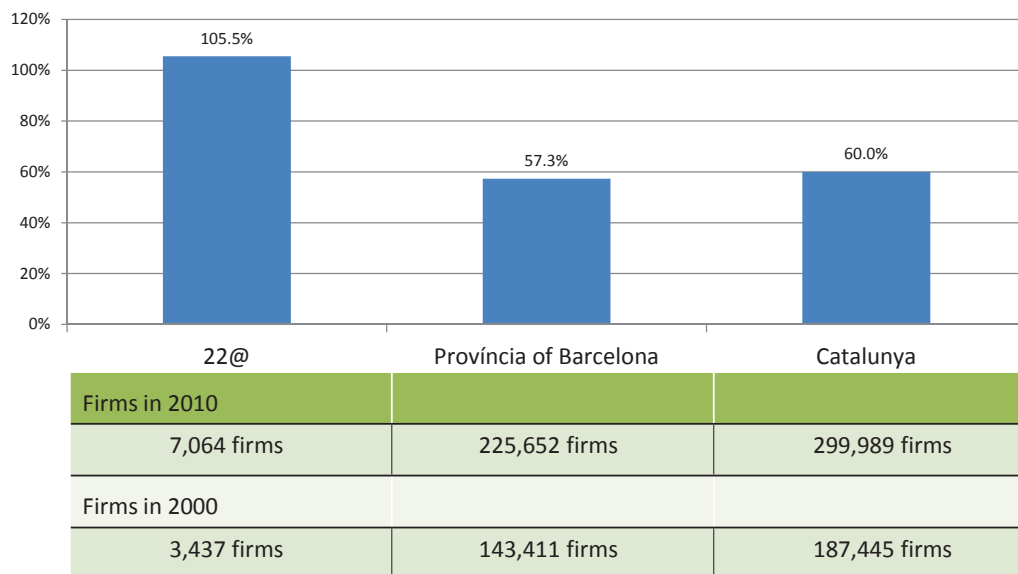
3. The "Barcelona, City of Knowledge" project

Employment and knowledge intensity, Barcelona province, 1998-2010.



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Increase in the number of businesses, compared with the 22@ district, 2000-2010.



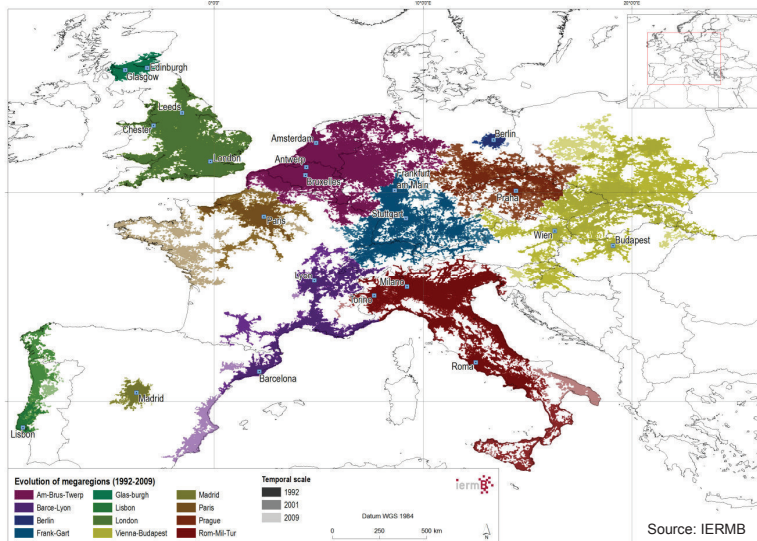
Source: Molas, O. i M. Parellada (2011): "22@: 10 anys de transformació econòmica", in Revista Econòmica de Catalunya, no. 54, Monogràfic: "Economia del Coneixement i Territori"

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4. The Barce-Lyon megaregion in a European context

Evolution de 12 European megaregions (1992-2009)



Main characteristics of megaregions (2009)

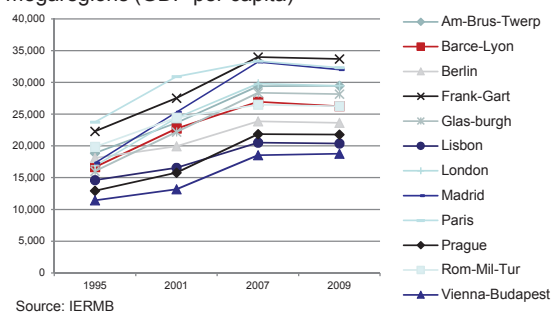
Mega-region	Population	km ²	hab/km ²
Am-Brus-Twerp	62.331.069	166.218	375
Barce-Lyon	29.067.891	111.816	260
Berlin	4.540.513	5.566	816
Frank-Gart	34.753.485	114.870	303
Glas-burgh	3.863.299	11.852	326
Lisbon	10.459.976	40.974	255
London	51.846.094	111.972	463
Madrid	6.904.141	14.340	481
Paris	24.204.737	97.080	249
Prague	17.778.045	92.606	192
Rom-Mil-Tur	55.614.000	199.791	278
Vienna-Budapest	46.574.691	217.372	214
Total	347.937.941	1.184.456	294

Source: IERMB

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4. The Barce-Lyon megaregion in a European context

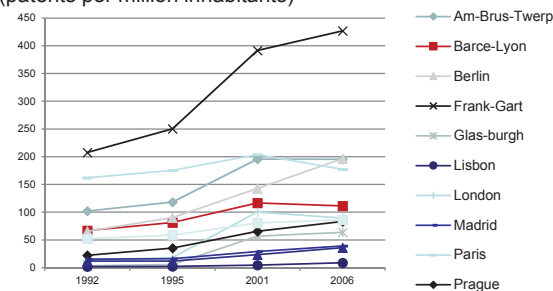
Development of **economic activity** in European megaregions (GDP per capita)



Source: IERMB

- There has been an increase in **GDP per capita** in all megaregions in the period 1995-2007. Signs of stagnation appear in 2008 due to the economic crisis.

Development of **innovative activity** in European megaregions (patents per million inhabitants)



Source: IERMB

- As for **innovation**, there is a slight rise in the number of patents per million inhabitants.

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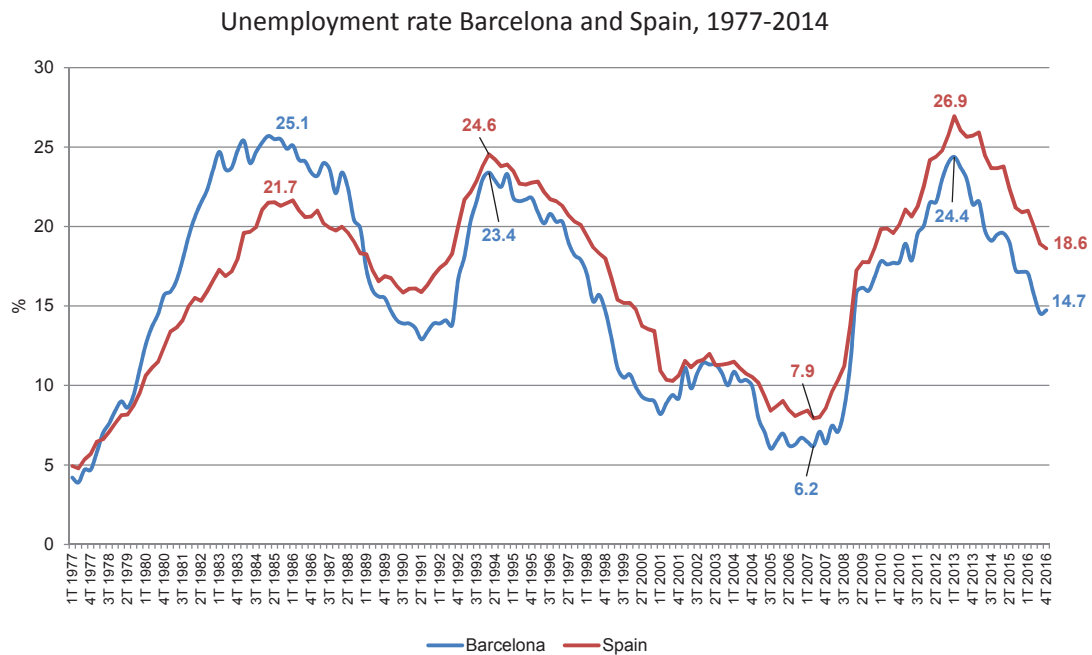
5. The impact of the economic crisis

How has the crisis affected the metropolis of Barcelona? Large imbalances and the dual labor market

1. Unemployment rate reaches the highest value in the first quarter of 2013: 24.4%
2. Between 2008 and 2013 the crisis has resulted in the destruction of 0.5 million jobs (province of Barcelona).
3. The distribution of income has worsened to the value of 1995
4. Foreigners and young people: the great protagonists of the adjustment in a dual labor market

5. The impact of the economic crisis

1. Unemployment rate reaches 24.4% in 1stQ 2013



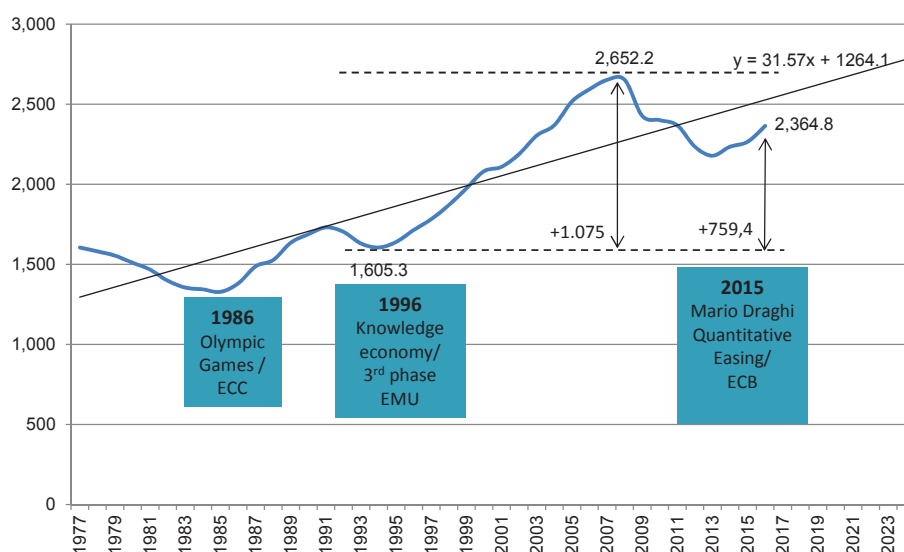
Source: EPA, INE

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5. The impact of the economic crisis

2. Destruction of 0.5 millions of jobs (2008-2013)

Employment in Barcelona 1977 - 2016 and trend to 2024 (thousands)



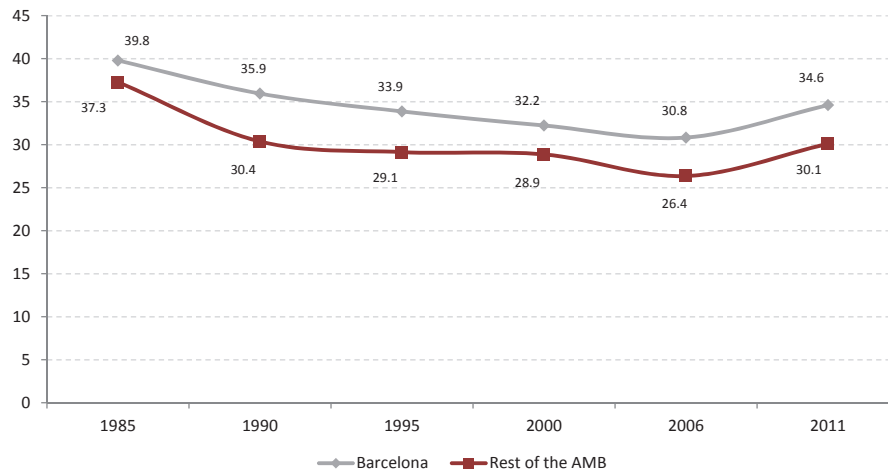
Source: INE

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5. The impact of the economic crisis

3. The income distribution worsens (1/2)

Gini coefficient of disposable income. Barcelona and the rest of the Metropolitan Area (AMB), 1985-2011.



Note: Data for 1985 refer to the 27 municipalities of the former Metropolitan Corporation of Barcelona.

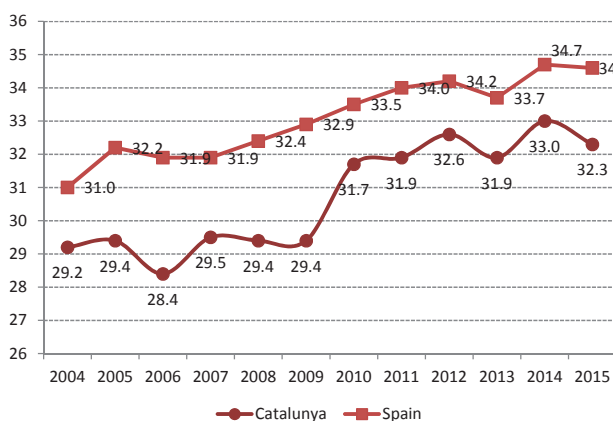
Source: IERMB Survey of Living Conditions and Habits of the Population, 1985-2000; Idescat and IERMB Survey of Living Conditions and Habits of the Population, 2006-2011

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5. The impact of the economic crisis

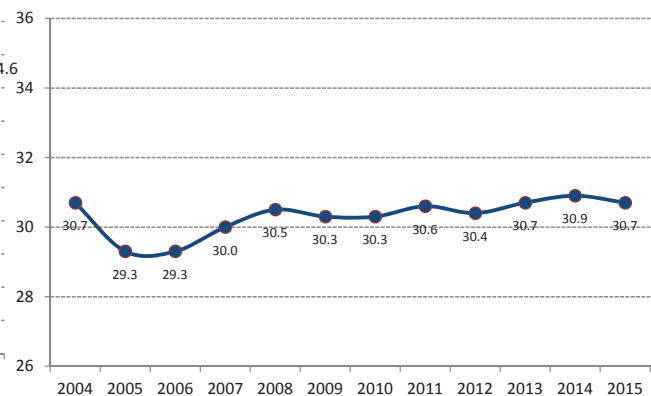
3. The income distribution worsens (2/2)

Gini coefficient of disposable income.
Catalunya and Spain, 2004-2015



Source: Idescat and INE, from INE Survey of Living Conditions.

Gini coefficient of disposable income.
Euro Area (18 countries), 2004-2015



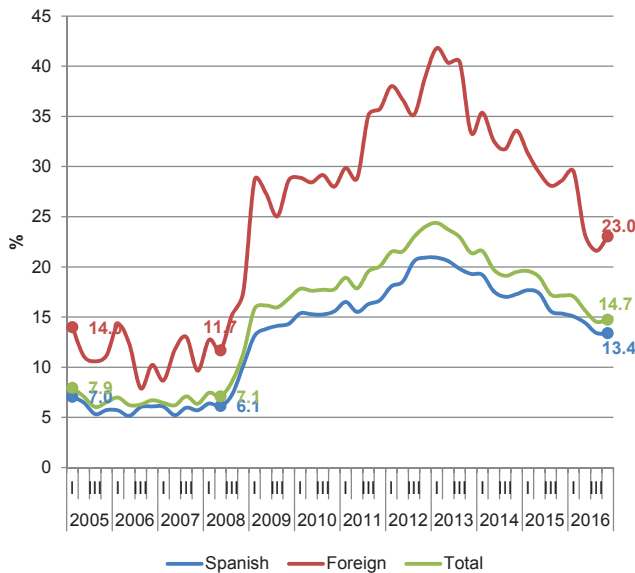
Source: Eurostat, from EU-SILC.

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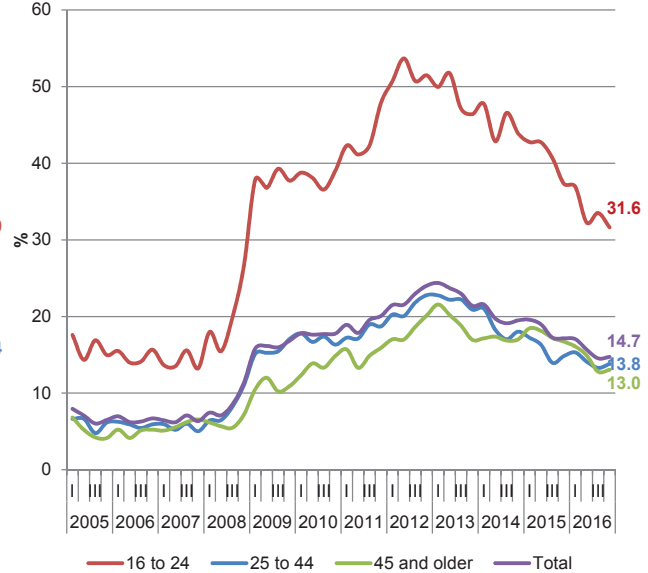
5. The impact of the economic crisis

4. Foreigners and young people: the great protagonists of the adjustment in a dual labor market (1/2)

Unemployment rate by nationality, Barcelona; 2005-2016



Unemployment rate by age, Barcelona; 2005-2016



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Characteristics of the inclusive urban growth model:

1. It is not based on protectionism, but on well-regulated globalization.
2. It is built upon urban-based productivity growth.
3. It needs improvement in income distribution, with redistribution policies at local and national scales.
4. Education and training are key in creating the conditions necessary for an inclusive growth model and an urban strategy is paramount: *brains and infrastructures*.

Fundamental strategic objective: productivity growth

1. The passive route to productivity growth: internal devaluation. Competition on labor costs. Current labor reforms.
2. The active route to productivity growth: back to the industrial model, strengthening the knowledge economy, promotion of advanced services, strengthening metropolitan infrastructure. The new metropolitan strategy.

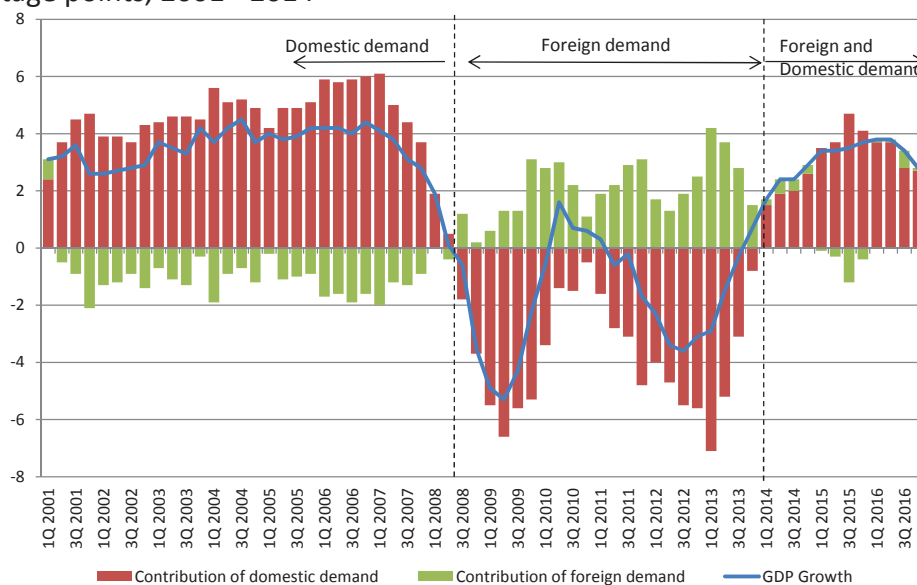
A narrow but passable road to employment recovery:

1. External competitiveness
2. Promoting the active route: R&D, training and education, regional factors
3. The export manufacturing activities and export services activities (tourism and advanced services)

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Foreign sector

Contribution of domestic and foreign demand to GDP growth in Catalonia, in percentage points, 2001 - 2014



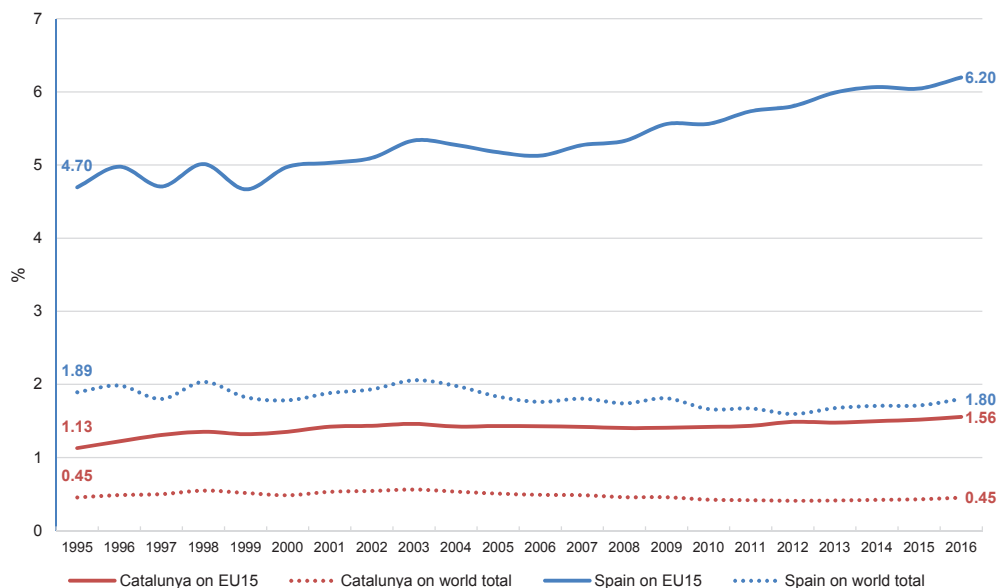
Source: Idescat

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6. Barcelona and the inclusive urban growth model

Foreign sector

Weight of Catalan and Spanish exports on the UE15 total and world total, 1995-2016

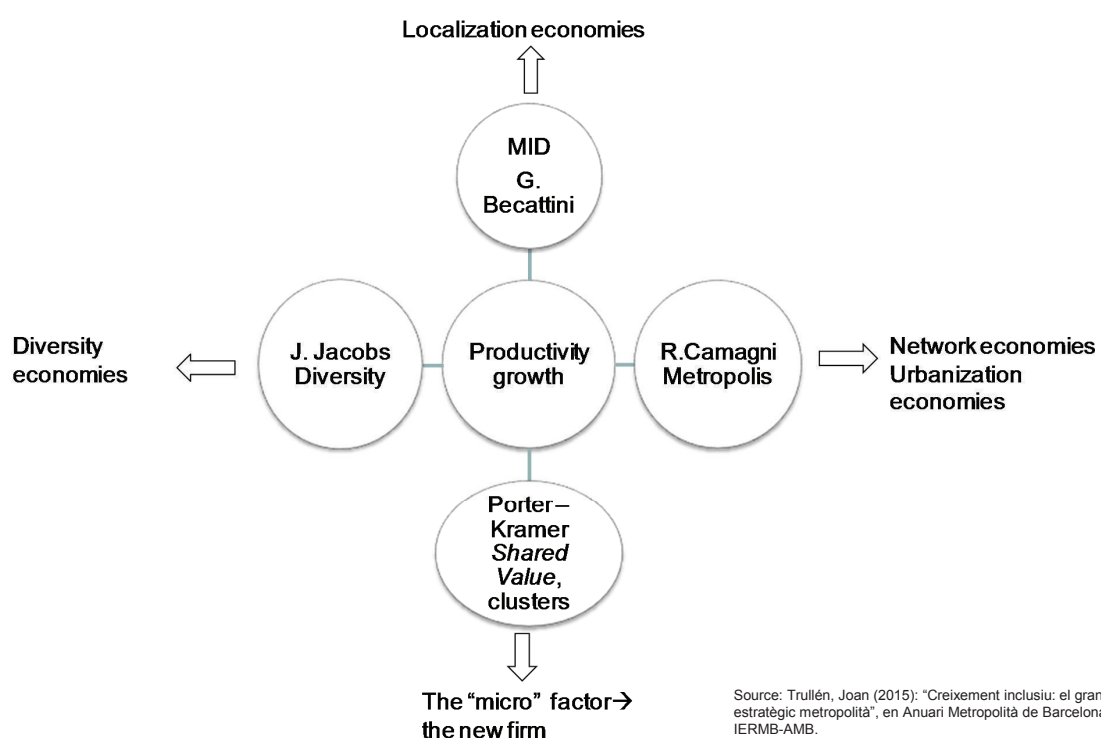


Note: 2016 data provisional
Source: Own elaboration from WTO Statistics database, DATACOMEX (AEAT) and Eurostat.

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6. Barcelona and the inclusive urban growth model

Territorial factors to increase productivity



Source: Trullén, Joan (2015): "Creixement inclusiu: el gran repte estratègic metropolità", en Anuari Metropolità de Barcelona 2014, IERMB-AMB.

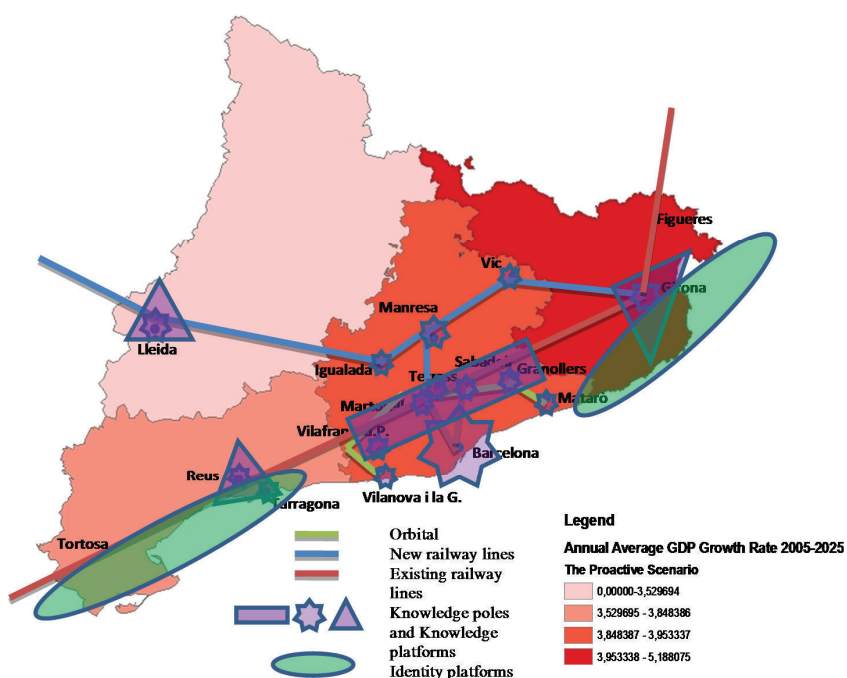
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Urban policies based on 22@Barcelona

- Reuse of the old industrial land: from 22a to 22@
- Marshallian industrial district / Becattini: cooperation and competition
- Localization Economies - Clusters / *Innovative Business Groups* / Industrial policy for SMEs
- Knowledge-intensive activities
- Job density
- Intensive use of Information and Communication Technologies

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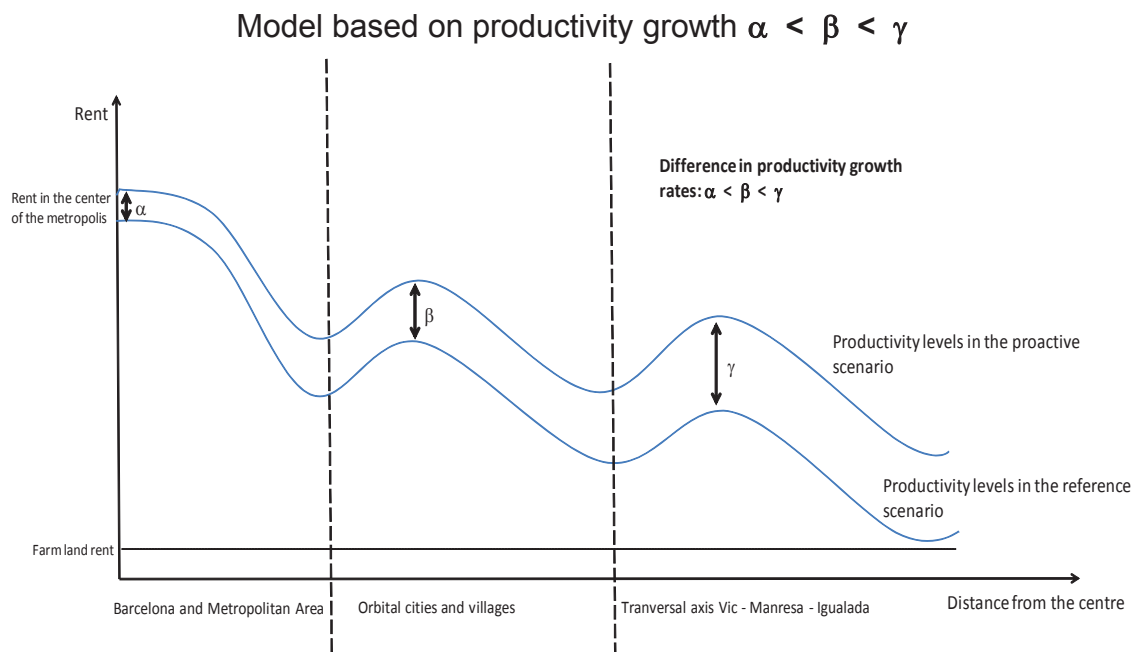
Policy strategies for the Barcelona Province



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6. Barcelona and the inclusive urban growth model

Strategy for the metropolitan region of Barcelona: metropolitan area, orbital cities and transversal axis



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7. Conclusions

The metropolis of Barcelona should focus its strategy towards an inclusive growth model

- The model must be oriented towards external demand, with a growing weight of the export manufacturing activities and advanced services activities
- This export-led growth has NOT to be based on wage reductions but on the territorial factors of productivity, which will lead to a relevant improvement of competitiveness

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7. Conclusions

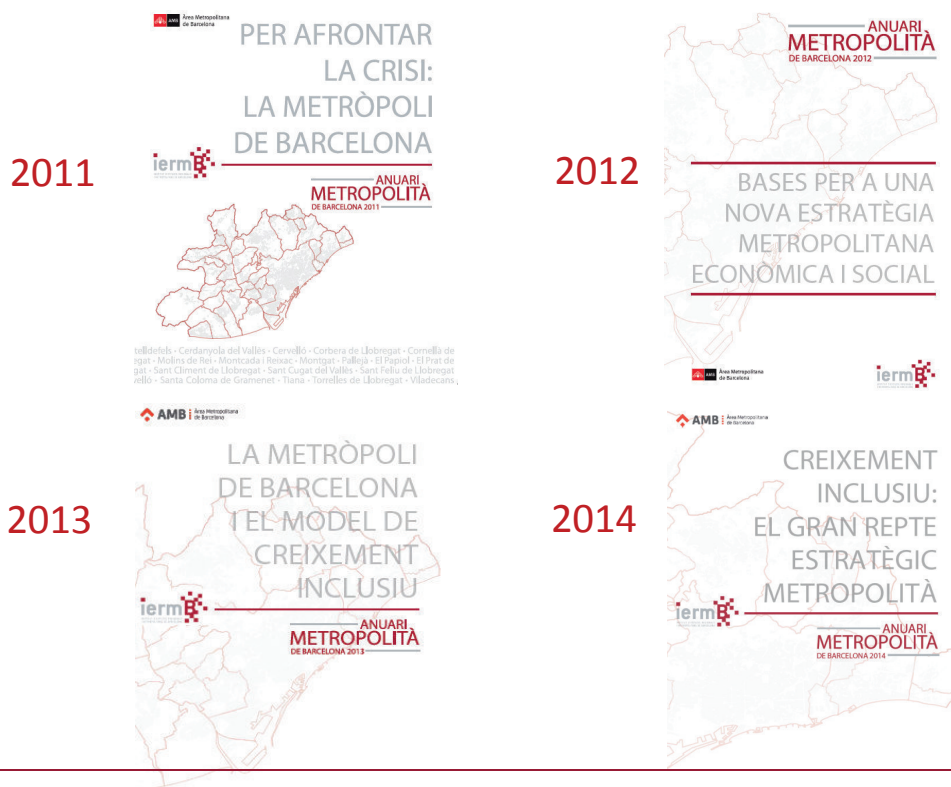
The metropolis of Barcelona should focus its strategy towards an inclusive growth model

- The growth in the weight of manufacturing and of advanced services must translate into a growth in the weight of wages in Gross Value Added, given their higher wages
- Therefore, the aim is to make economic growth compatible with improving income distribution and so to return to a model of inclusive growth

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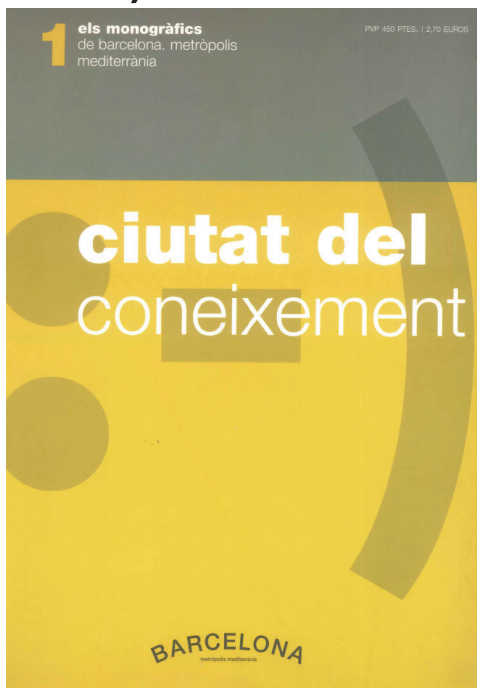
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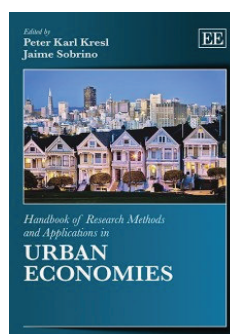
Spanish version [“El proyecto Barcelona -Ciudad del conocimiento desde la economía”](#), en F. Mosconi, F. Sole Parellada, A. Chantiri Zamudio (eds.): *Política Industrial y tecnológica II*, Edicions de la Universitat Politècnica de Catalunya, Barcelona. ISBN: 84-8301-507-2.

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Thank you for your attention

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European cooperation Network on Energy Transition in Electricity



Sustainable development in urban areas

Arnau Queralt

Consell Assessor per al

Desenvolupament Sostenible de Catalunya (CADS)

DAY 3: EFFECTIVE POLICIES FOR URBAN ENERGY TRANSITION

OPEN SESSION – HIGH-LEVEL CONFERENCE

**TABLE 1: THE ROLE OF PUBLIC STAKEHOLDERS IN CATALYSING
TRANSITION TOWARDS SUSTAINABLE DEVELOPMENT**

Barcelona, 8 June 2017



- Half of the world's population lives in urban areas, occupying 2.8% of the planet's land surface.
- According to United Nations projections, by 2050 the population of the world will reach 9 billion (as against 7 billion today) with urban populations accounting for 86% in developed countries and 64% in developing countries.
- 85% of the population increase by 2050 will be in urban areas (mainly in poor districts) in developing countries (Africa and Asia) with substantial growth on the edges of cities or in the urban-rural transition area, where urban and rural lifestyles overlap, sometimes leading to friction.
- This rapid urbanisation will be accompanied by the explosion of the mega-cities (those with more than 10 million inhabitants), their number rising from 2 in 1970 to 28 in 2014 and 41 by 2050. In all of them the existence of extensive slums will be an important issue.

- The urbanisation process will not be efficient: in the next 30 years in developing countries the urban population will double and the land area occupied will treble as a result of the increase in unplanned settlements.
- Cities generate 80% of world GDP, but urban life leads to very important changes in the consumption of resources and the use of energy. Cities are responsible for over half of greenhouse gas emissions.
- Between 2005 and 2015 over 1.5 billion people were affected by natural disasters, as a result of which 700,000 died, 1.4 million were injured and over 23 million lost their homes.
- Rapid, unplanned urbanisation, combined with poverty, inequality and climate change are factors which increase the risk of disasters.
- The effects of disasters are especially serious in developing countries, which accounted for 89% of all deaths with material losses equivalent to 5% of their GDP.

- Indoor and outdoor air pollution is the biggest environmental health risk: it is blamed for approx. 7 million premature deaths per year worldwide, most of them in cities.
- Around half of all cities with more than 100,000 inhabitants worldwide are located in water-scarce basins. Water scarcity can be expected to get much worse as a result of climate change and urban growth.
- Waste generation is increasing specially in developing countries and above all emerging economies cities. The production of waste could double worldwide by 2025.
- Many urban areas have no organized waste collection and disposal: about 70% of municipal waste ends up on landfill sites (with surface water, ground water or soils pollution + GHG emissions).

- 70% of the population of Europe is urban, a percentage which is expected to rise, especially in peri-urban areas, which are growing four times faster than urban areas.
- The global market and competition for resources, as well as the impact of global environmental phenomena (such as GHG emissions) on these resources, place Europe, and especially its cities, in a vulnerable position given that they lack the resources they need (fossil fuels, minerals and food, etc.).
- Air pollution is the main environmental risk for health in the EU-28: in the period 2011-2013 the population exposed to PM₁₀ levels higher than the limits set by the EU ranged from 17% to 30%, while 83% were exposed to concentrations exceeding the stricter WHO limit.
- The same applies to O₃, with exposure rates ranging from 15% (EU limit) to 98% (WHO limits).

(SOME) KEY ELEMENTS FOR AN URBAN TRANSFORMATION

- Urban development within the limits of the planet (low-carbon cities, contributing to reduce global environmental change).
- Good environmental conditions (condition for urban quality of life).
- Cities connected with their hinterland (environmental goods and services, food, energy, material resources, etc.)
- Citizens at the core of the city (infrastructures and technology only a –very useful- tool).
- Socio-economic inclusive and participatory cities (socio-economic inequalities and exclusion threaten the quality of life and stability of urban societies).
- Smart cities... for smart citizens?
- Specific character of cities: no-single-development-model exists (based on social, economic and cultural trends and heritage).

6



MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE

- 11.1 By 2030, ensure access for all to **adequate, safe and affordable housing and basic services**, and upgrade slums.
- 11.2 By 2030, provide access to **safe, affordable, accessible and sustainable transport systems for all**, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.
- 11.3. By 2030, enhance **inclusive and sustainable urbanization** and capacity for participatory, integrated and sustainable human settlement **planning and management** in all countries.

7

- 11.4. Strengthen efforts to protect and safeguard the **world's cultural and natural heritage**.
- 11.5. By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by **disasters**, including water – related disasters, with a focus on protecting the poor and people in vulnerable situations.
- 11.6. By 2030, reduce the adverse per capita **environmental impact** of cities, including by paying special attention to air quality and municipal and other waste management.
- 11.7 By 2030, provide universal access to safe, inclusive and **accessible green and public spaces**, in particular for women and children, older persons and persons with disabilities.

Thanks for your attention!

Website: <http://cads.gencat.cat>
Email: cads@gencat.cat
Twitter: @catsostenible

TOULOUSE L'OPEN MÉTROPÔLE

Stratégie
Smart City
2015-2020

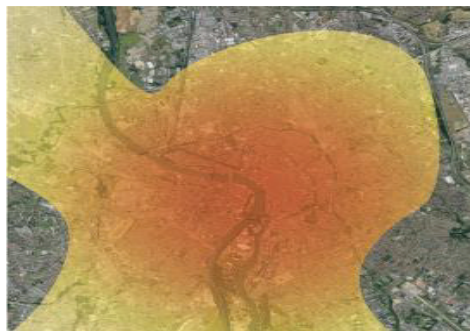
« The Open Metropolis, a FabCity to
catalize sustainable transition »

TR@NSENER Summer School,
Barcelone – 8th june 2017

TOULOUSE
L'OPEN
MÉTROPÔLE

Stratégie
Smart City
2015-2020

A climate change taken into account



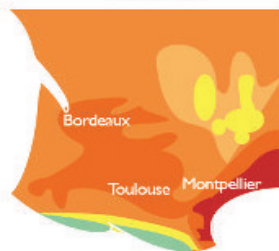
3 x 20 % until 2020

- Gaz emissions
- Energy optimization
- Renewable solutions

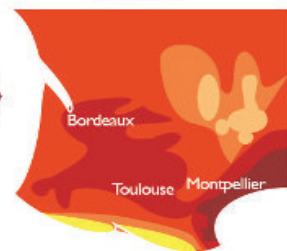
1945 – 2007

+1,3° Toulouse
+0,9° France entière

2000



2050



Le réchauffement pourrait atteindre +4°C
à l'horizon 2071-2100 par rapport à la période
1976-2005 (profil climatique Toulouse-Météo France)

POUR LE CITOYEN, L'OPEN MÉTROPOLIS EN 2016 C'EST...

9
COMMUNES DÉJÀ IMPLIQUÉES
DANS LA SMART CITY



« Toulouse the Open Metropolis »

3 PRINCIPLES

- the citizen at the heart of the whole approach ;
- public-private co-construction ;
- sharing public data : smart data.

5 AMBITIONS FOR

- an adaptable, efficient and breathable city ;
- simpler and more fluid mobility ;
- an international metropolis with strong roots in its past ;
- a warm, intergenerational city of good living ;
- Toulouse to be more beautiful, cleaner and safer.

15 FIRST EMBLEMATIC PROJECTS

500 M€ of public investment (2020)



« Toulouse the Open Metropolis »

The citizen at the heart of the approach

LABORATOIRE DES USAGES TOULOUSE

E



Several consultation modes :

- «Laboratoire des usages» (lab research center on uses)
- e-consultation
- Seminars
- Call for Citizen ideas (october 2016)
- Forum Smart City (7 december 2016)

International Label, FabCity
Shenzen, Août 2016



Expressed expectations by citizens in 2015 (e-consultations, focus group ...)

MULTI MODALITY &
INTER MODALITY
★★★★★

FIGHT AGAINST
CONGESTION
★★★

MOBILITY - INTELLIGENT
TRANSPORTATION SYSTEMS



SOFT MOBILITY
★★

IMPROVING COMMUNICATIONS
PERIPHERY / PERIPHERY
★★★★

BEAUTIFUL AND CLEAN CITY
★★★★★

VEGETALISATION
★★★



ENERGY – NETWORK : RESILIENCE

RENEWABLE
ENERGIES
★★

REDUCE ENERGY CONSUMPTION
(self-sufficiency)
★★★★

DEMATERIALIZED
PUBLIC SERVICES
★★★

SAFETY AND WELL-BEING
★★★

E-services : Democracy,
administration, Tourism & Heritage



STRENGTHENING THE CITIZEN
IMPLICATION
★★★

DIGITAL FOR ALL
★★

TRANSPORT ACCESSIBILITY
FOR ALL
★★★

WELL-BEING
METROPOLIS
★★



AUTONOMY & SILVER AUTONOMY :
Inter-generational

DYNAMIC & WELCOMING
METROPOLIS
★

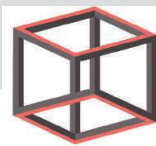
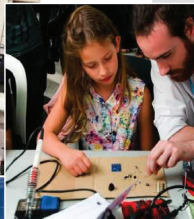
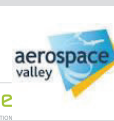
FACILITATE THE SOCIAL LINK, THE
MEETING, FRIENDLINESS
★★

« Toulouse the Open Metropolis »

Economic actors at the heart of the approach

- Clusters
- Sme, startup
- Institutions
- Key actors :

Première Brique, social innovation incubator
ARTILECT FabLab , FrenchTech...



Artilect
Fablab Toulouse



**PREMIÈRE
BRIQUE**
INCUBATEUR D'INNOVATION SOCIALE
TOULOUSE MÉTROPOLIS



The Open Metropolis, 4 levers of actions



Emblematic projects of 2016-17

Project 1 : Reinforce the implication and interactivity

- Citizen Relation Management
- User Relation Management
- Mobile application



Habitants
vos services en ligne 24h/24

Project 2 : Promotion of citizen and business initiatives

- Launch calls for ideas among citizens.
- Launch calls for innovative urban projects 2016-2017

« Je participe » - A collaborative space



Uses Lab and citizens groups

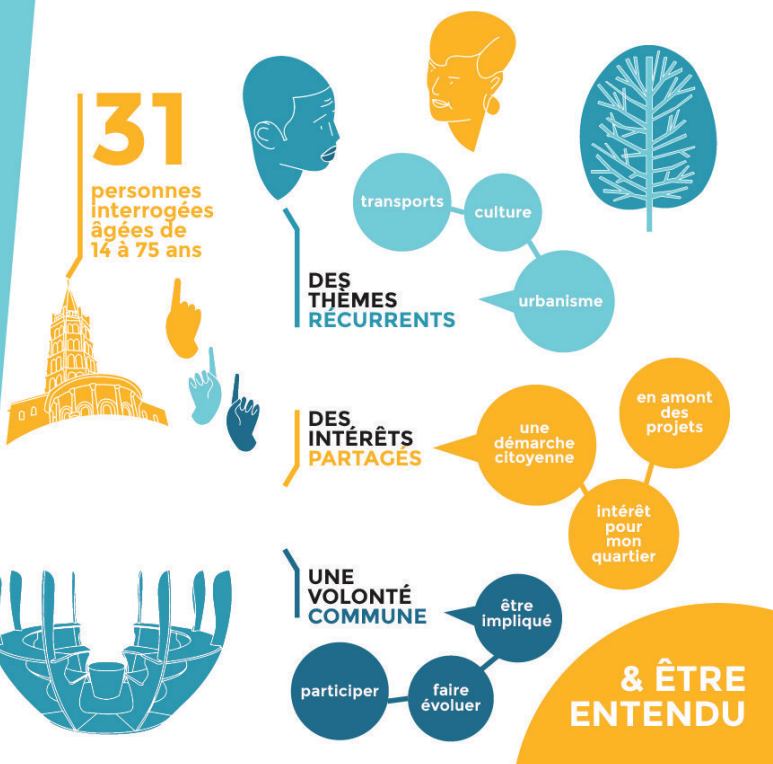
LE LABORATOIRE DES USAGES

DONNER SON AVIS

ATELIER /
LE REGISTRE
DÉMATÉRIALISÉ

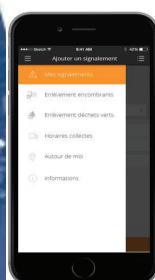
05 octobre 2016
SAINT-SERNIN

Nacelles



An interactive and mobile application to enable citizen responsive

ALLO 24h/24
TOULOUSE
05 61 222 222



Phone service

253 64 appels 24h/24 et 7j/7

202 045 interventions

97% de satisfaction sur l'accueil

85% de satisfaction des interventions

+3% par an de croissance moyenne
des appels

Octobre 2016 on the stores !

L'Application mobile

Signalements

Rendez-vous : déchets verts et
encombrants

Autour de moi

A Citizen Call launched in 2016 in order to promote citizen ideas and initiatives

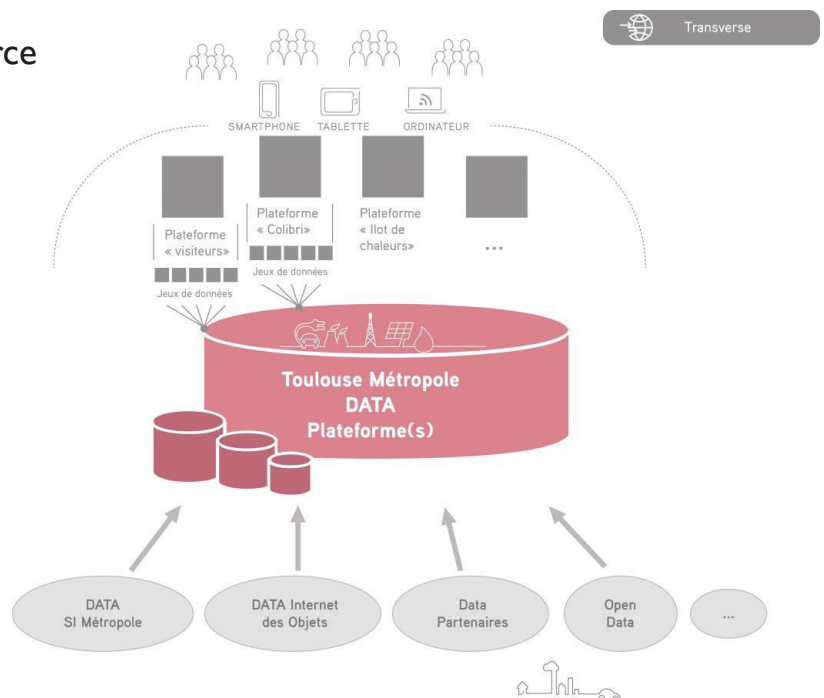
- **72 candidatures**
 - 31 autour de la création de lieu de rencontre
 - 15 autour de la thématique de l'agriculture urbaine et des jardins partagés
 - 11 sur la culture
 - 6 sur le service à la personne



Emblematic projects of 2016-17

Project 3 : Data Plateform around open datas ...

- Open data
- Open source



Emblematic projects of 2016-17

An optimized, simple and fluid mobility

Project 5 : multi-services Hub- villages squares

Project 6 : Structuring and innovative transport network regarding energy and connectivity

3rd metro line Toulouse Aerospace Express, Cable car Urban South, Bus lines Linéo

Project 7 : Fight against urban congestion

Colibry on the airport area (Aibus, airport, Sopra Steria)

Project 8 : Autonomous and connected vehicle



Emblematic projects of 2016-17

An adaptable, efficient and breathable metropolis

Project 9 : Integrated planning operations and exemplary planning operations

Eco-Neighbourhood , « city of tomorrow »

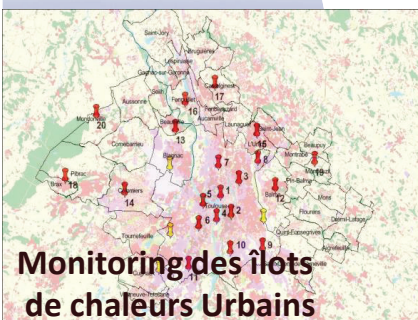
Project 10 : Environmental Urban Observatory ,

integrated to the « Local Climate Energy Air Scheme », with Météo France

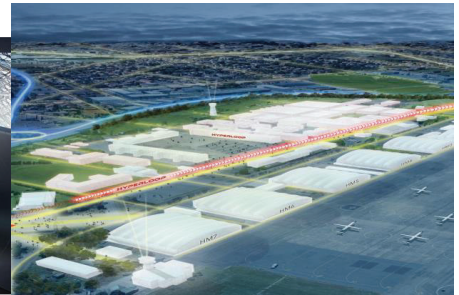
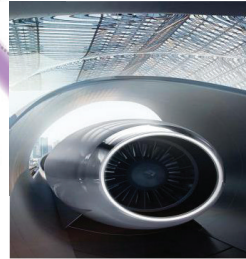
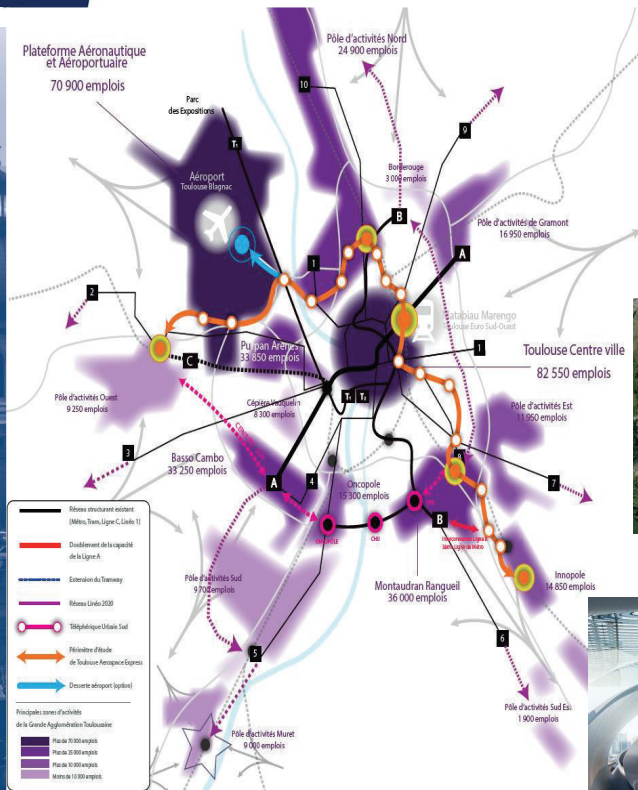
Project 11 : Intelligent public lighting system

80 % of economy compared to the existing devices

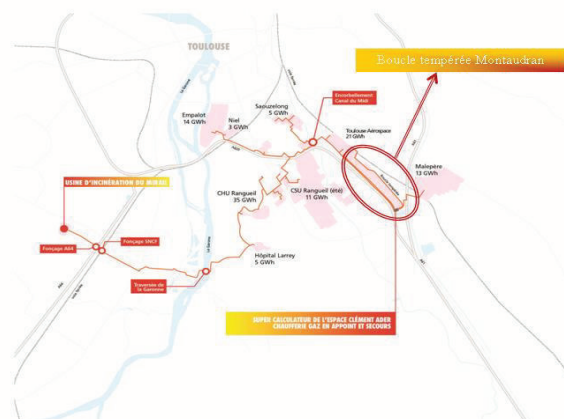
Project 12 : Network pooling – Smart grids



Smart approach in urban planification



Toulouse Aerospace Campus - « Eco-cité »



Emblematic projects of 2016-17

An international metropolis anchored in her roots

Project 13 : Simple and fluid visitor trail

Offer an intuitive, interactive cultural and touristic experience

3 « Smart City » international prizes :

- Smart Mobility City Award (Hong Kong)
- Access City Award (Bruxelles)
- Fabcity (Shenzhen, august 2016)

ACCESS•CITY
THE EUROPEAN AWARD
FOR ACCESSIBLE CITIES



European
Commission



CINEV
SMART MOBILITY
IN SMART CITY
Show Hong Kong



Emblematic projects of 2016-17

A good living, warm and intergenerational metropolis

Project 14 : 10 pilots of intergenerational neighbourhoods in 5 years

A beautiful, clean and safe metropolis

Project 15 : Cleanliness and public walkway renovation

Investments and Small Business Act

SMALL BUSINESS ACT

Charte des marchés publics

Version du 14/03/2014

Première étape vers le travail collaboratif souhaité pour l'élaboration d'une démarche de type « Small Business Act » adaptée aux contraintes et enjeux locaux, cette charte permettra d'utiliser tous les leviers permis par la réglementation en vigueur pour favoriser l'accès des PME à la commande publique de Toulouse Métropole et de ses entités partenaires.

Elle s'appuie sur les axes de la politique d'achat de la métropole, et notamment sur :

- le développement de la performance économique des achats, concrétisée par des réductions de coût, une meilleure qualité pour les utilisateurs et une maîtrise de la consommation, le choix de modalités d'adjudication les plus appropriées pour organiser et structurer la commande en fonction du besoin et du tissu économique et l'encouragement à l'innovation ;

- le développement d'une politique d'achats responsables, prenant en compte la démarche d'insertion par l'activité économique, par le biais des marchés et clauses d'insertion et marchés réservés aux entreprises adaptées et établissement d'aide par le travail, et poursuivant l'intégration du développement durable dans les pratiques achats, aux moyens de critères environnementaux, privilégiant les circuits courts et la prise en compte du coût global ;

- la connaissance du tissu économique et l'approfondissement de la relation fournisseurs, avec la volonté de donner une bonne visibilité sur les activités, le fonctionnement et les achats programmés.

La présente charte s'applique aux marchés dont la collectivité est maître d'ouvrage et à ceux passés dans le cadre de projets dont elle aura confié la réalisation à un opérateur, dont les DSP.

Elle donnera lieu à une évaluation annuelle de sa mise en œuvre et de son impact effectif sur les PME ayant accès à la commande publique.

Sommaire

- Article I : Garantir la performance de l'achat
- Article II : Développer l'achat durable
- Article III : Encourager l'achat responsable
- Article IV : Simplifier / Dématérialiser
- Article V : Améliorer les conditions d'adjudication des marchés
- Article VI : Améliorer la relation fournisseur et la maîtrise des risques
- Article VII : Soutenir l'innovation et accélérer la croissance sur les marchés de la Smart City

toulouse

MAIRIE DE TOULOUSE

toulouse
métropole

- Small Business Act
- Key figures 2016 : 715 M€
 - 81,1 % to M. Pyrénées business
 - 77,1 % to H. Garonne business
 - 67 % to Metropolis business
 - 46 % to sme

24 startup experimentations

24 experimentations have been realised or launched since 2015, with the support of startups with innovative projects

9 « E-services » experimentations

- Spotminder
- Myfeelback
- Qui dit miam !
 - Kézacod
 - CityMéo
- Nacelles 0.2
 - Wilty
 - Oabike
 - Vériclean

4 « Mobility » experimentations

- Coovia
- Parkisseeo
- Ze watt
- ThirtyOne

3 « Autonomous » experimentations

- Helpiness
- Telegrafik
- Adveez

2 « Sustainable development » experimentations

- Citizen Farm
- Alg & you

24 startup experimentations In progress



QUI DIT MIAM!
APPLICATION FOR MEALS SERVED IN SCHOOLS

ALG AND YOU
SPIRULINE PRODUCTION



NACELLES
MOBILE AND CONNECTED SPACE



CITIZEN FARM
URBAN FARMING DEMONSTRATOR USING AQUAPONICS



Experimentation - startup Nacelles

4 months, 23 places, 20 events....1/15 toulousain !



<http://www.toulouse-metropole.fr/je-participe/appeles-a-projets/start-up-experimentez-votre-projet>



International meetings for the Open Métropole 2017-2018

Fab Festival – 11 et 12 mai 2017 (Fab Lab Europe)

ESOF – 2017-2018, « Capitale européenne de la Science » . Juillet 2018, ESOF

Fab 14 - Août 2018 (rencontre internationale des Fab Lab et Fab Cities)

European Projets H2020 2017

...for a european innovative Capitale in 2017

- Smart Mobility City Award (Hong Kong)
- Access City Award (Bruxelles)
- Fabcity (Shenzhen, august 2016)

Thank you for your attention

<http://www.toulouse-metropole.fr/projets/smart-city>

Caroline LAPELERIE

Delegated Director for development and programmes

Toulouse Métropole

Caroline.lapellerie@toulouse-metropole.fr

toulouse
métropole



Public boost for sustainability: The financial District of L'Hospitalet

Victor Ruiz. Ceng, PMP
Urban Development Agency - Ajuntament de L'Hospitalet

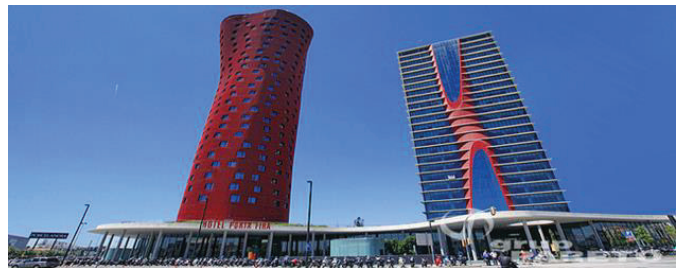
TABLE 1: THE ROLE OF PUBLIC STAKEHOLDERS IN CATALYSING
TRANSITION TOWARDS SUSTAINABLE DEVELOPMENT

OPEN SESSION – HIGH-LEVEL CONFERENCE
“EFFECTIVE POLICIES FOR URBAN ENERGY TRANSITION”

Barcelona, 8 June 2017

INDEX

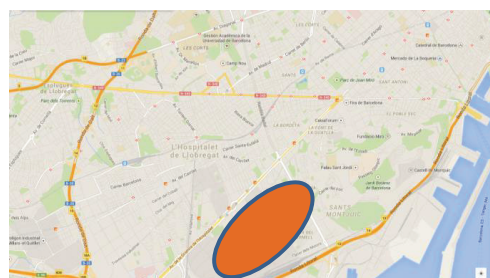
1. Introduction
2. Smart Social District
3. Smart tools in Financial District
4. Action Plan
5. Smart App in LH



2

1. Introduction

L'HOSPITALET DE LLOBREGAT



Financial District

L'Hospitalet de Llobregat is located south of Barcelona

Area: 12.5 km²

Population: 265.000 hab.

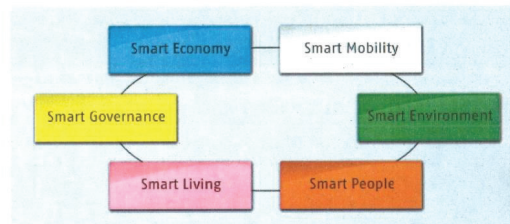
Density: 21.500 hab / km²

In some neighbourhoods: 50.000 hab / km²

According to Eurostat: Most dense city in Europe

3

L'HOSPITALET DE LLOBREGAT – SMART CONCEPTS



Smart people

SMART SOCIAL DISTRICT

Smart living

Smart Economy

Smart Mobility

Smart Environment

FINANCIAL DISTRICT

Smart Governance

LOCAL GOVERNMENT POLICIES

4

2. Smart Social District

SMART SOCIAL DISTRICT

- ✓ Areas where we will test new concepts (Pubilla Casas, la Florida)
- ✓ Aged people living alone: about 6000 in L'Hospitalet
 - Partnership with Regional Government (Diputació de Barcelona) and Cisco
- ✓ Health: facilitate mobility and home care
 - Partnership with ICO (Oncology Catalan Institute)



5

SMART SOCIAL DISTRICT

- ✓ Social inclusion
 - ✓ Urban Innovative action Project
 - Facilitate job insertion to young people (14-25)
 - Implement new technologies on exclusion social sectors
 - Fight against dropping out of school
- ✓ Our obligation is to facilitate their daily lives through smart tools

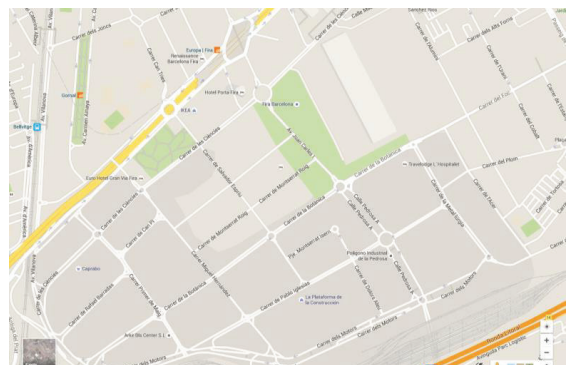


6

3. Smart tools in Financial District

FINANCIAL DISTRICT

- Limited to the north by the Gran Via Avenue, Motors street at south, east and west by Vilanova Avenue and Metal·lurgia street
- 1.8 Km² area
- Financial center
- 250 companies
- 20,000 employees (approx.)



7

3. Smart tools in Financial District

SMART TOOLS IN FINANCIAL DISTRICT

- Technology to solve problems in Financial District
- Pilot tests in order to implement successful results in other parts of the city
- Stakeholder engagement – Looking for new opportunities
- Boost through local administration (Metropolitan Area – AMB)
 - Funding actions – Improve efficiency and new technologies
 - Enhance companies competitiveness

8

3. Smart tools in Financial District

THREE DIFFERENT APPROACHES

-Private sector	
➤ Several actions	2.4 M
-Public companies	
➤ Ecoenergy: District heating	4 M€
-Local Government	
➤ Mobility	
➤ Communications	5 M€
➤ Ecosustainability	
-Total Budget	11.4 M€
-AMB grants with up to 70 % of the total inversion	

9

MAJOR ACTIONS IN SMART CITY PROJECTS



10

INCREASE BIKE USE

- ✓ Definition and adaptation of cycling itineraries.
- ✓ Implementing parking for bicycles (bike parking, Bicibox).
- ✓ Implement bicycle rental system in the public transport - interchange points (L9, FGC, Railway and Bus lines).
- ✓ Pilot project AMB bicycle loan for use by employees.



11

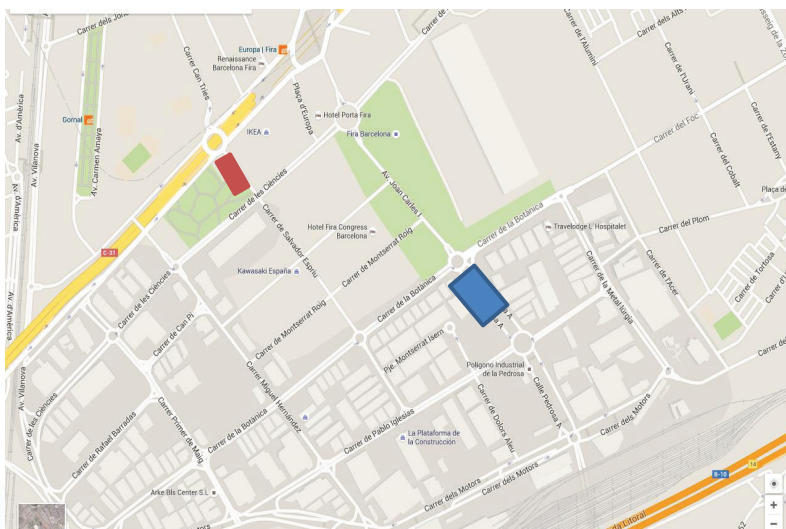
PROMOTE ELECTRIC VEHICLES

- ✓ Metropolitan regulations – New laws in order to implement charging points in public and private parkings
- ✓ Trainings to new workforce
- ✓ Public fundings – New charging points
- ✓ Publicity – give more visibility to public fundings
- ✓ Charging points
 - Slow / normal
 - Semi fast
- ✓ Fast charging point – emergency cases
- ✓ Promote the use of less polluting vehicles (AMB and City Council)



12

ELECTRIC CHARGING CAR STATION & CHARGING POINTS



- ELECTRIC STATION
- CHARGING POINT AMB

13

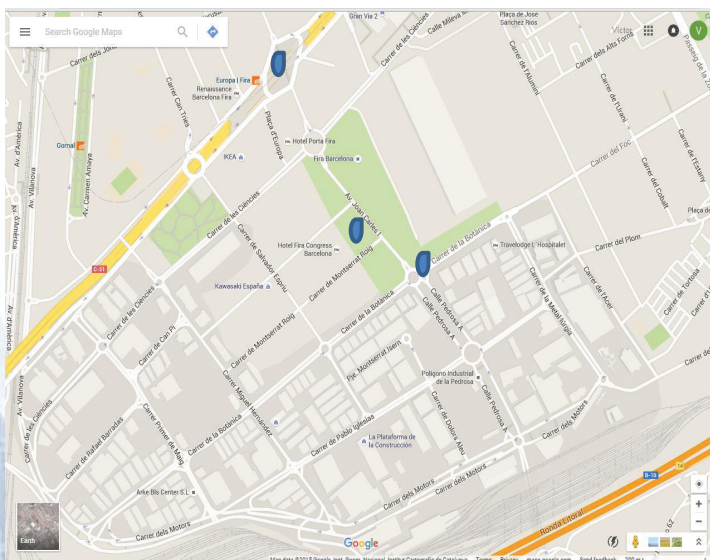
ELECTRIC CHARGING CAR STATION



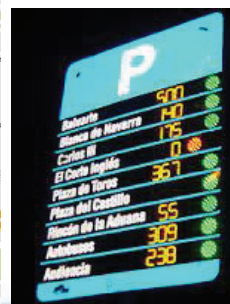
14

SMART MOBILITY

- ✓ Implement variable signaling parking
- ✓ Expand traffic lights network
- ✓ Implement detection routes via bluetooth
- ✓ Information points – Relevant information on line



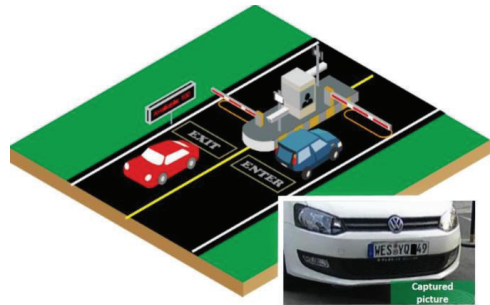
Smart information points



15

READING CAMERAS

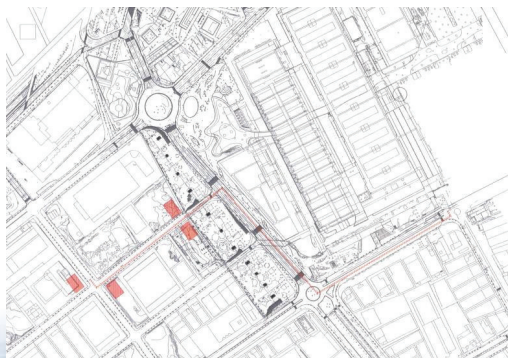
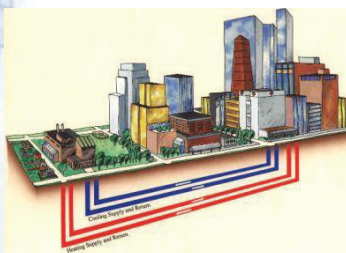
- ✓ Not surveillance cameras
- ✓ Number of vehicles in several sections
- ✓ Meetings with traffic authority – experience in speed sectors
 - Plate identification permits identify trajectories
 - Environmental quality
 - Safety procedures
- ✓ Data in order to improve ZUAP areas



16

DISTRICT HEATING

- ✓ Provide hot and cold water to Companies and Hotels
- ✓ Existing pipeline on the Convention Centre
- ✓ Enhancing network on the Financial District



17

SMART PARKING

- ✓ Sensors installed indicating free / occupied places
- ✓ Only with 20 % sensored parking places is enough to achieve a qualitative information
- ✓ 40% reduction of residual traffic (looking for parking)



18

GROUNDWATER USE

- ✓ Enhance groundwater network
- ✓ Use water that is captured on subway tunnels.
- ✓ Several water treatments to reuse water



IRRIGATION SYSTEMS

- ✓ Improve and modernize the existing irrigation network
- ✓ Integrate overall management from the technicals headquarters.

19

SMART ILLUMINATION SYSTEMS

- ✓ Point to point control
- ✓ Knowledge on line. Lights out of order quickly repaired
- ✓ Substantial savings on electricity use
- ✓ Maturity in the sector – More possibilities



20

5 G PILOT TEST

- ✓ Located at Europa Square
- ✓ Successfully tested during Mobile World Congress
- ✓ Studying partnerships with private companies
- ✓ More tests in the near future



21

OTHER ACTIONS

- ✓ Free wi-fi at Fira sector
- ✓ Environmental station vs pollution sensors
 - ✓ Obtain a bigger and better database – test with simpler sensors
 - ✓ Equipment calibration – find data relationship in order to improve sensors
 - PM10
 - PM2.5
 - NOx
- ✓ Sensors in wastewater pipelines
 - Quantity of solid elements
 - Improve maintenance



22

5. Smart App in LH

SUCCESSFUL IMPLEMENTATION

- Smart concept of Stakeholder engagement
- Increasing efficiency and wellness



A NEW MANAGEMENT MODEL FOR PUBLIC SERVICES IN L'HOSPITALET DE LLOBREGAT		
OBJECTIVE DATA		
	PREVIOUS MODEL Until NOV. 2014	NEW MODEL From DEC. 2014
INCIDENTS CREATED BY CITIZENS	24/month	484/month
AVERAGE INCIDENT RESOLUTION TIME	7.22 days	15.55 hours
INTENSITY INDICATOR EFFICIENCY OF ENERGY USE	0.64 GJ/incident unit	0.4 GJ/incident unit

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THANK YOU VERY MUCH FOR YOUR ATTENTION

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European cooperation Network on Energy Transition in Electricity



The role of regional and local governments in Catalonia towards sustainable development

Iñaki Gili jauregui

Department of Territory and Sustainability
DG Environmental Quality and Climate Change

TABLE 1: THE ROLE OF PUBLIC STAKEHOLDERS IN CATALYSING
TRANSITION TOWARDS SUSTAINABLE DEVELOPMENT

OPEN SESSION – HIGH-LEVEL CONFERENCE
“EFFECTIVE POLICIES FOR URBAN ENERGY TRANSITION”

Barcelona, 8 June 2017



One of the very encouraging effects of the international climate change negotiations is that we are seeing ever increasing actions on both adaptation and mitigation **undertaken at the national, subnational and local levels**. We have learned over the past few years that the path forward cannot be either a **top down** (intergovernmental regulation) or a **bottom up** exercise (domestic policies, business action, public engagement). The path forward has to be the **result of concurrent, mutually reinforcing efforts** that help us to spiral up toward the tipping point of transformation.

Climate Change: Why We Need a Multilateral Solution

S. Rajaratnam School of International Studies. Singapore, 18 October 2012

Christiana Figueres, Executive Secretary

United Nations Framework Convention on Climate Change

2

The objectives of the EU (and UNFCCC) for the non ETS sectors are binding only on the level of countries

The relationships between the federal and the regional government are of great importance.

Objectives

Responsibilities

Resources

At regional level

Countries are built in different organizational levels, and a large part of the responsibilities on climate policy, specially in non ETS sectors, are in the hands of regional and local governments.

3

COMPACT OF STATES AND REGIONS

HOW STATE AND REGIONAL GOVERNMENTS ARE DRIVING CLIMATE ACTION AROUND THE WORLD

BROUGHT TO YOU BY THE CLIMATE GROUP
STUDIOS & MORE

DATA POWERED BY CDP

The Compact of States and Regions is the first-ever reporting mechanism for states, provinces and regions to showcase and analyze their climate efforts. In 2015, 44 governments reported their commitments and GHG inventories.



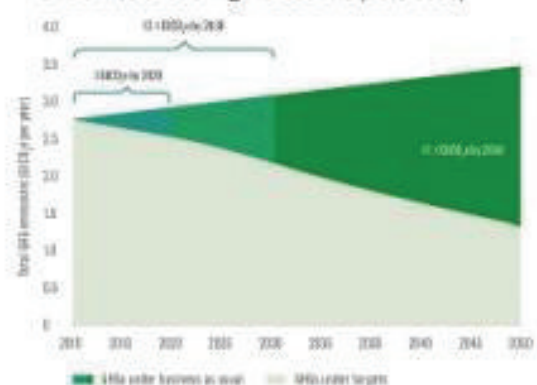
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Through reported GHG emissions reduction commitments, the projected cumulative savings are equivalent to:

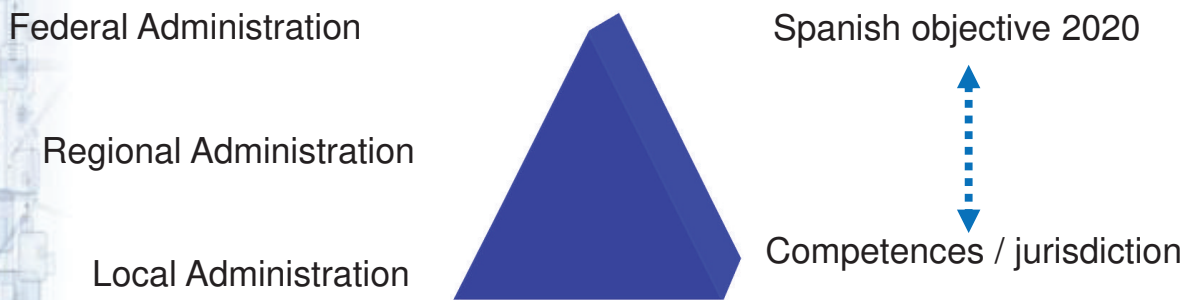
Annual savings of	Cumulative savings of
• 0.6 GtCO ₂ e/year in 2020	• 3 GtCO ₂ e by 2020
• 1.2 GtCO ₂ e/year in 2030	• 12.4 GtCO ₂ e by 2030
• 2.2 GtCO ₂ e/year in 2050	• 47.4 GtCO ₂ e by 2050

By 2050, these governments will have reduced their annual emissions from 2.81 GtCO₂e to 1.28 GtCO₂e, which equals an average absolute reduction of 55%. This constitutes a 63% reduction compared to a business as usual scenario, which would see emissions rise to 3.5 GtCO₂e.

GHG emissions savings versus BAU (2010-2050)



The light green area represents the annual emissions of the reporting governments, both forecast and reported, which reduce toward 2050 based on their targets. The dark green areas represent the BAU scenario that is linked to state and regional population projections.



- Decoupling between the reduction targets established at the Spanish level and the other levels of government.
- Difficulties to include the regional or local action in the state sectorial plans.
- If the goals do not come down to territorial scale, an autonomous region or a municipality has no obligation to reduction (mitigation) or to act (adaptation). Neither a legally binding obligation, nor a reference to what should be done.

Roadmap towards a low-carbon society in Catalonia

➤ Main Catalan Actions

2005	• 1st report on Climate Change in Catalonia
2006	• Catalan Office for Climate Change
2008	• Climate Change Convention: 1.000 proposals; 800 participants
	• KP Mitigation Framework Plan 2008-2012 (voluntarily commitment)
	• Monitoring & Evaluation: annually since 2009
2009	• Carbon Expo / BCN talks (UNFCCC)
2010	• 2nd report on Climate Change in Catalonia
	• Voluntary Agreement Program (160 organizations joined)
2011	• Carbon Expo
	• Kick off Climate Change Observatory of Pyrenees
2012	• Energy & Climate Plan 2020
	• Catalan Strategy for adapting to climate change 2013-2020

2013	<ul style="list-style-type: none"> • Carbon Expo • Climate Change Act: Kick off • Life project on Adaptation MEDACC: forest, agriculture and water (5 y)
2015	<ul style="list-style-type: none"> • Climate Change Act: proposal approved by Government • “INDC” (2030 targets) COP21 Paris • Adaptation indicators • Launch: CO2eq Offsetting program • Life project on Adaptation ADMICLIM: tourism, agriculture, water, fisheries (4 y)
2016	<ul style="list-style-type: none"> • First tender CO2eq Offsetting program • Climate Change Act: discussion in the Parliament • ForEsmap: Evaluation and mapping of ecosystem services of forests • Evaluation & Monitoring Catalan Strategy for adapting to climate change • Life project on Adaptation CLINOMICS: tourism, agriculture, forest (5 y) • Study of vulnerability and building capacity for local Adaptation Plans • 3rd report on Climate Change in Catalonia
2017	<ul style="list-style-type: none"> • Life project on mitigation CLIMARKT: Markets and forest management (4 y) • Roadmap 2020 • Innovate for Climate

8

The different programmes that have been described before, are actions that the Government of Catalonia has decided to develop in order to fulfil its commitment towards the Catalan society and also towards the objectives set up in the EU, as a developed region.

But the Government of Catalonia has decided to go further and it is engaged in the elaboration of a Climate Change Act. This initiative will boost a political and social debate in the Catalan society that ultimately will make the Catalan climate action stronger to face future challenges

9

Roadmap towards a low-carbon society in Catalonia

➤ Climate Change Act



10

Current situation (2015)

➤ GHG emissions



31.200 MT CO₂
(WEO2012).
50.000 MT CO₂eq
(IPPC/AR5 -2010)

<0,1%



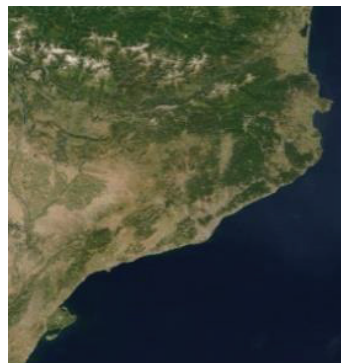
335,7 MT CO₂ eq.

13%



4.306,7 MT CO₂ eq.

1%

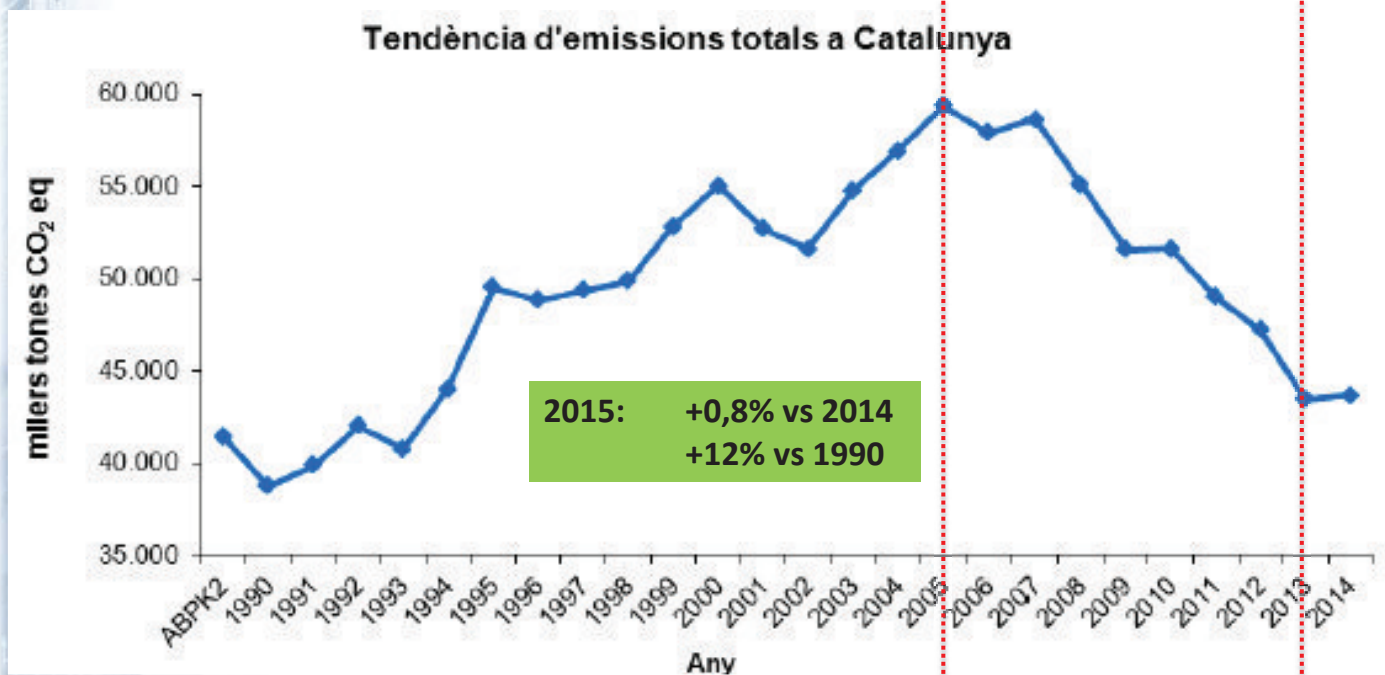


43,5 MT CO₂ eq.

11

Current situation (2015)

➤ GHG emissions

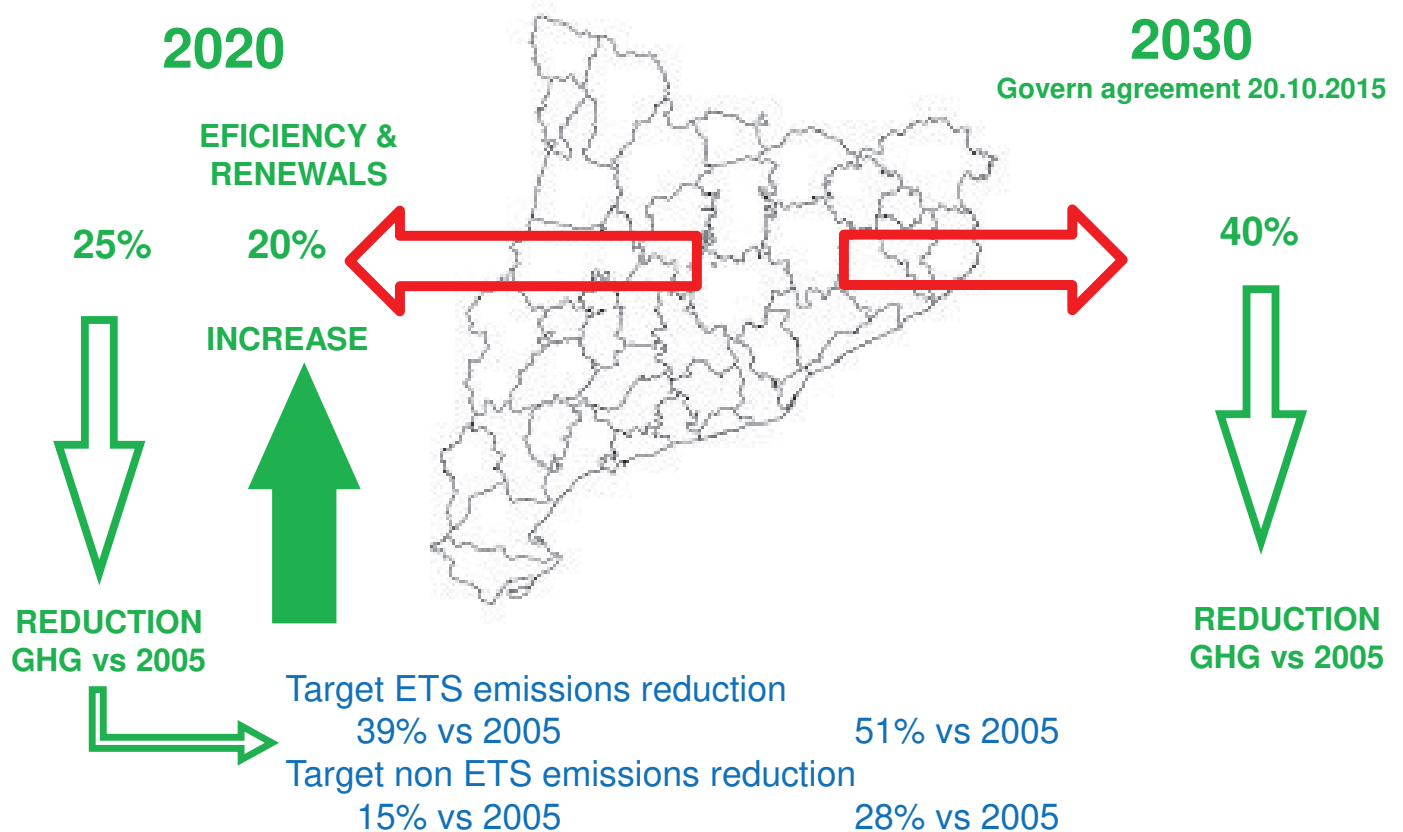


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Targets

➤ Horizon 2020 and 2030



Thank you very much !!

Iñaki Gili Jauregui
Direcció General de Qualitat Ambiental i Canvi
Climàtic
Av. Diagonal, 523-525
08029, Barcelona

<http://territori.gencat.cat/ca/inici/>
<http://canviclimatic.gencat.cat/ca/>



European cooperation Network on Energy Transition in Electricity



Smart Grids, distributed generation and the role of utilities

Antonio Gomis Sáez
Club Español de la Energía (ENERCLUB)

DAY 3: EFFECTIVE POLICIES FOR URBAN ENERGY TRANSITION
OPEN SESSION – HIGH-LEVEL CONFERENCE

CONFERENCE 2

INTERNATIONAL SUMMER SCHOOL
"SMART GRIDS AND SMART CITIES"
Barcelona, 6-8 June 2017



THE SPANISH ENERGY CLUB



- ❑ **Non-profit Association** created in 1985 which brings together more than 150 companies and institutions and 170 individual associates
- ❑ ENERCLUB's **main goals** are:
 - ❑ contributing to a better understanding of the different energy issues,
 - ❑ to be a valuable forum and meeting point of reference,
 - ❑ seeking to highlight the importance of energy for society, the economy and sustainable development

2



THE SPANISH ENERGY CLUB

**WORLD
ENERGY
COUNCIL**

COMITÉ
ESPAÑOL



WORLD PETROLEUM COUNCIL
COMITÉ ESPAÑOL

- **WEC Committee Activities:** holding an annual event for discussion of relevant issues of the global energy agenda, networking, Energy and Geostrategy publication, Spanish Issues Monitor...
- **WPC Committee Activities:** coordination of the Spanish representation at the World Congresses, Conference organization, etc...

ENERCLUB WAS RESPONSIBLE FOR ORGANIZING THE 19TH WORLD PETROLEUM CONGRESS IN MADRID, HELD IN JULY 2008 , WITH MORE THAN 4.500 DELEGATES AND 500 SPEAKERS

3



THE SPANISH ENERGY CLUB

EXECUTIVE ASSOCIATES



PROTECTOR-ASSOCIATES

BP Oil España

Cores

Enagás

Red Eléctrica de España

Siemens

Ciemat

Deloitte

Enresa

Sedigas

Unesa

CLH

EDP Energía

SPECIAL COLLABORATION COMPANIES

Accenture, Acciona, AOP, APPA, AEE, Duro Felguera, Emp. Agrupados, Enusa, EY, Fertiberia, Foro Nuclear, Galp Energía España, GNF Engineering, Hunosa, Indra, Naturgas ,OMI, Sonatrach, Técnicas Reunidas, Total España, Vinci Energies

More than 80 Associates Companies



THE SPANISH ENERGY CLUB

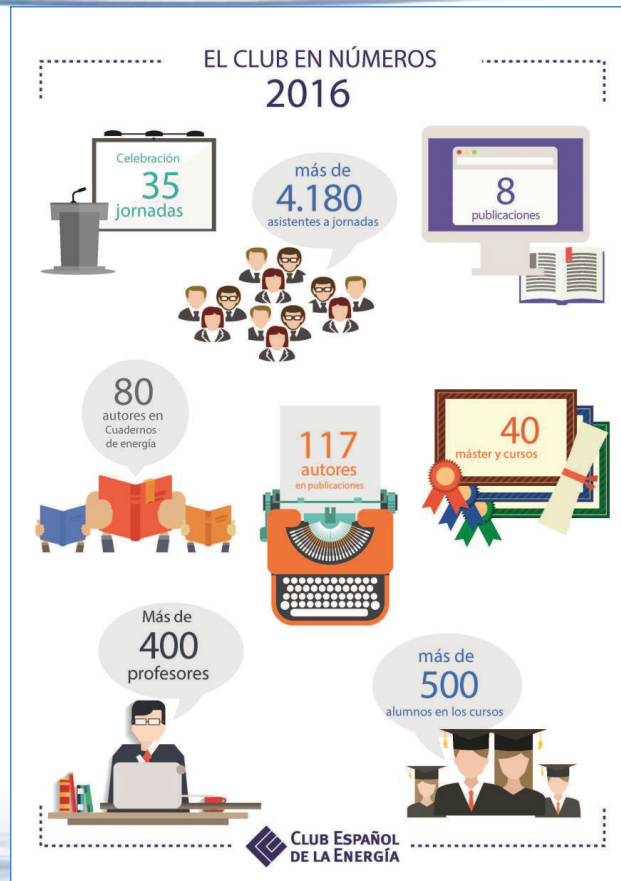
Postgraduate and Continuity
Academic Activities

Institutional Events, Conferences and
Seminars

Analysis and Reflection Activities



THE SPANISH ENERGY CLUB



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European cooperation Network on Energy Transition in Electricity



Smart Grids, distributed generation and the role of utilities

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- ❑ A CHANGING WORLD
- ❑ A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK
- ❑ THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

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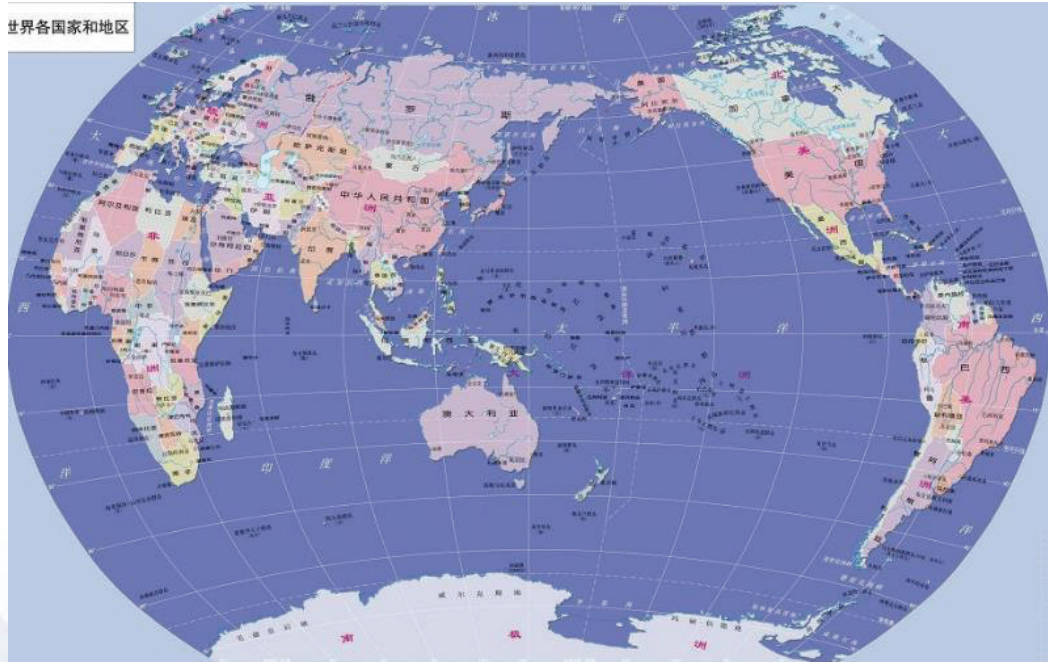
CONCLUSIONS

- Big changes are taking place in the world
- Energy is no exception to these changes
- Providing energy in a sustainable way becomes a priority, and all efforts are being done in this direction
- It's not an easy path but changes happen fast, and with digitalization they are happening even faster
- Business models are appearing, and the role of the consumer is getting more protagonism
- In fact, only us, citizens, will be able to change the future
- We should all work together to find the best solutions

9

A CHANGING WORLD

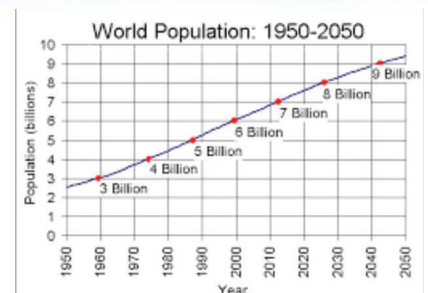
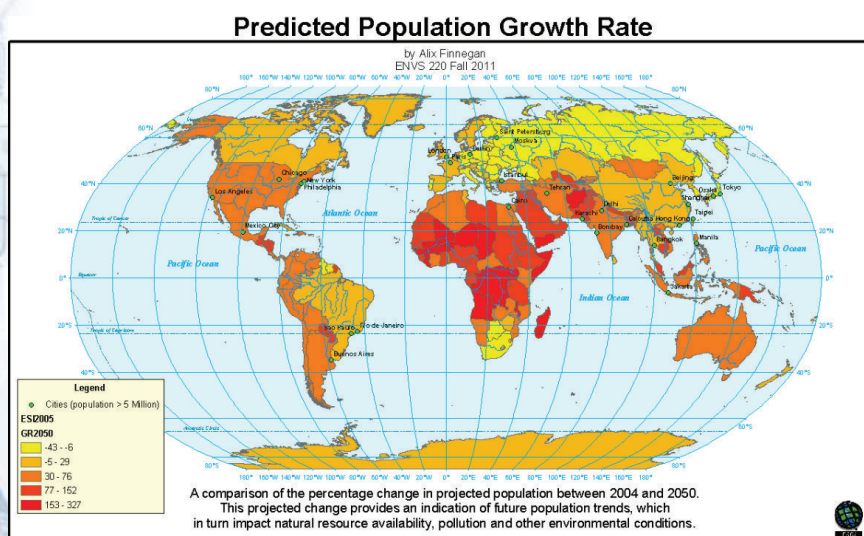
There is no doubt that the world is changing...



10

A CHANGING WORLD

Population growth...



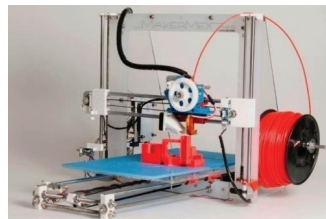
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A CHANGING WORLD

New technologies...



POWERWALL
TESLA HOME BATTERY



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A CHANGING WORLD

Penetration of the mobile phone started around 1998...



Just ten years ago no one had a smart phone...

I-PHONE: 2007 - 2017



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A CHANGING WORLD

New ways of sharing things and sharing information ...



SHARING ECONOMY

.....

Collaborative Consumption, Relationship Economy,
Access Economy, Peer-to-Peer Economy

One of TIME Magazine's 10 ideas that will change the world (2011)



What?

.....

A people's Economy based on 'Access to' rather than 'Ownership of' physical and human assets like time, space and skills.



Sharing is the new buying...

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A CHANGING WORLD

New ways of seeing things...

The Vatican 2005



The Vatican 2013



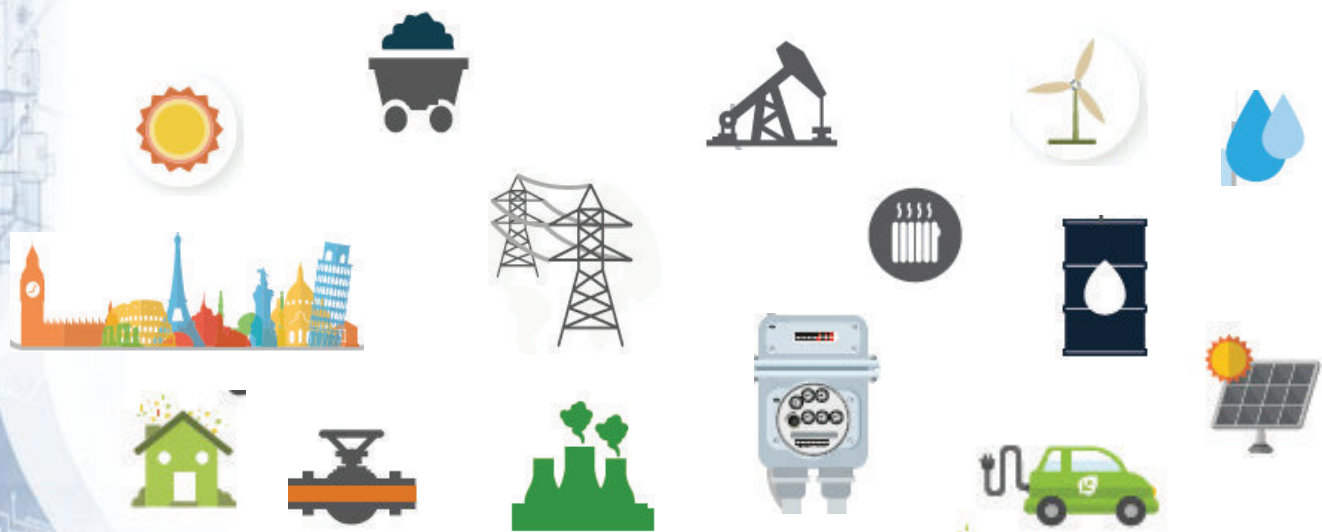
Source: Ericsson

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A CHANGING WORLD

All these changes are having, and even more in the future, a great impact in the energy industry and its companies...



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A CHANGING WORLD

All these changes are having, and even more in the future, a great impact in the energy industry and its companies...

Fortune 500: 1955 / 2015



Companies in F500 in 1955, but not in 2015

Companies in F500 in 2015 were not in 1955

Source: Ericsson

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A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

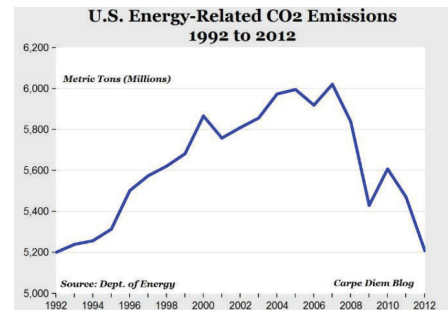
Good news first...



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A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

However...

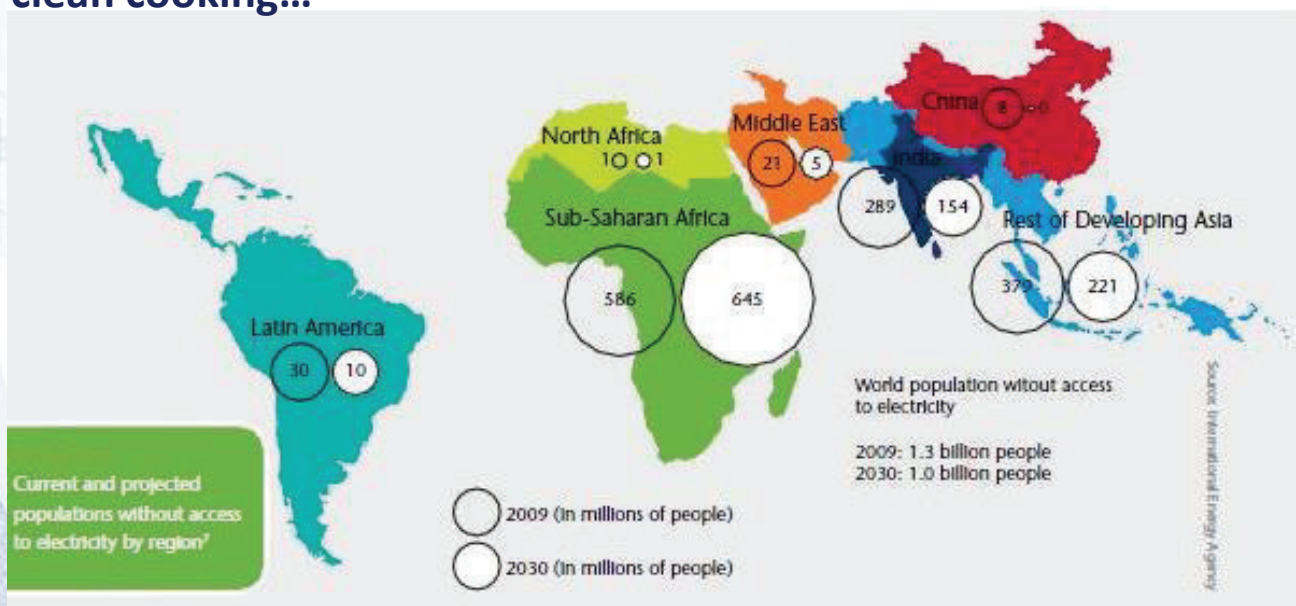


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A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

However...

1.2B people lack access to electricity; 2.7B people lack access to clean cooking...



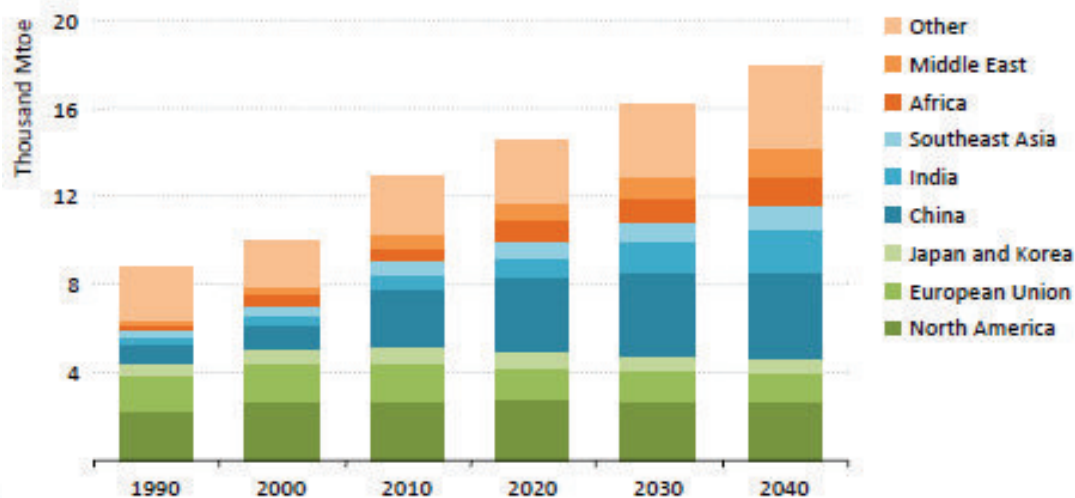
Source: IEA. WEO 2015

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A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

The energy demand is going to keep growing

Energy Demand in the NPS



Source: IEA

The geography of global energy demand continues to shift

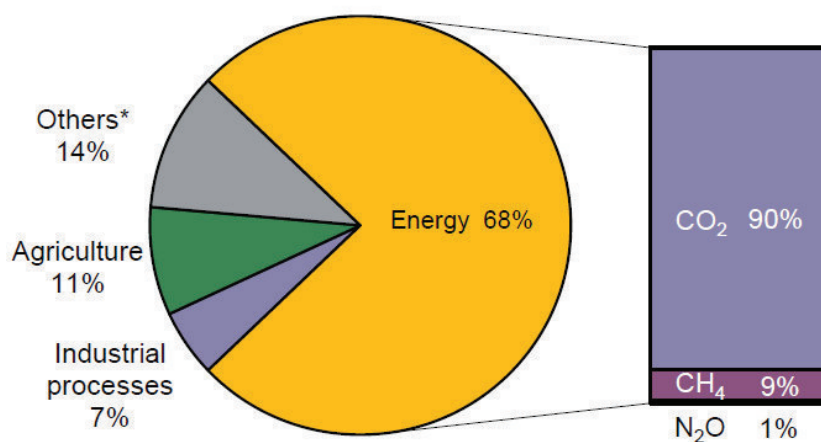
...and energy's centre of gravity has moved outside of OECD countries

22

A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

Energy is responsible for 68% of GHG emissions

GHG Emissions in the world and its sources

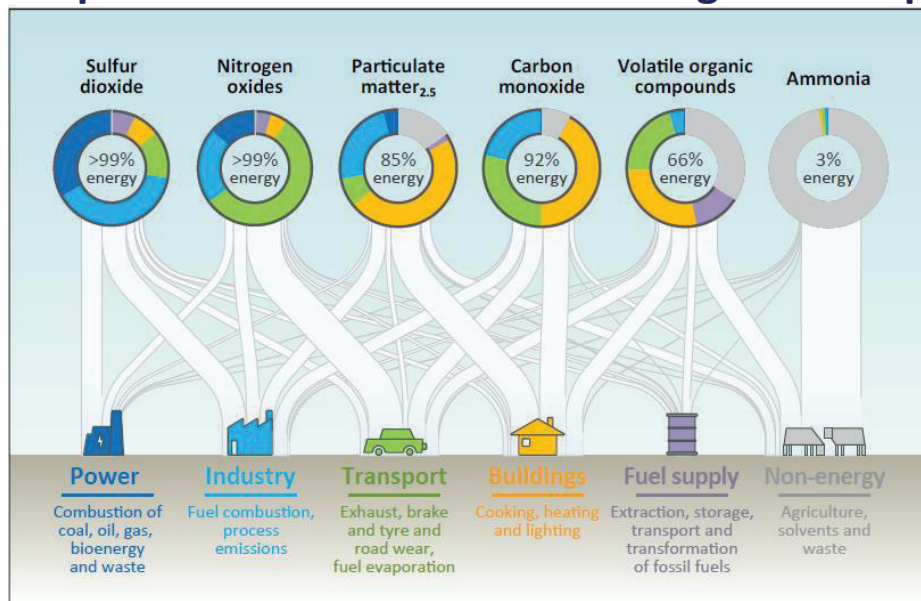


Source: IEA. Key CO₂ Energy Trends, 2016

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A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

...and is responsible for emissions of other gases: air quality



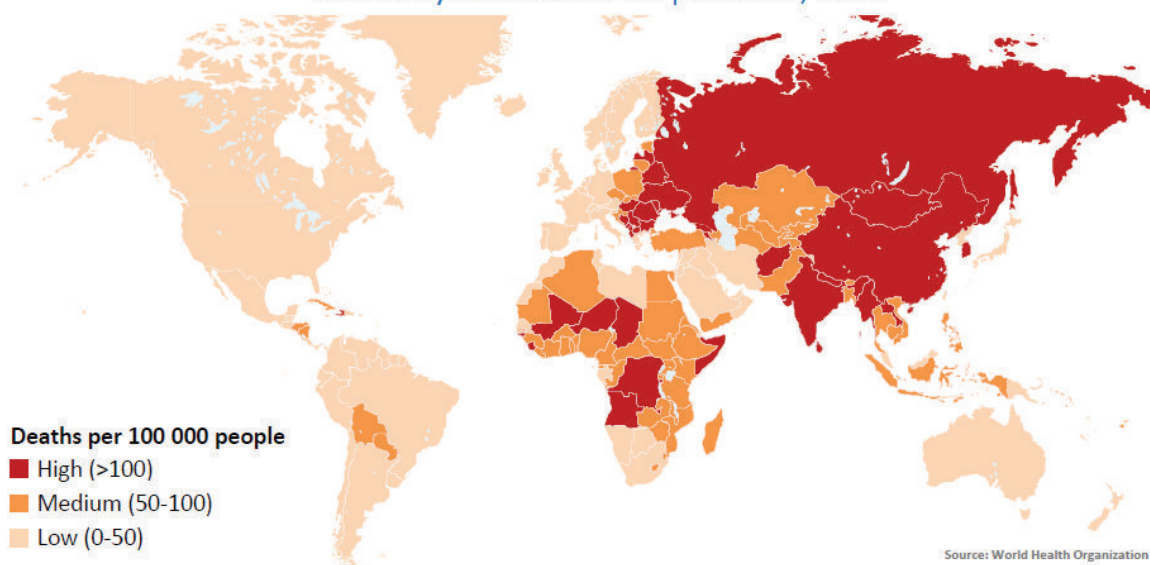
Source: Energy and Air Pollution. World Energy Outlook 2015. Special Report

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A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

air quality: big concern, where cities play an important role

Mortality rate due to air pollution, 2012



Source: World Health Organization

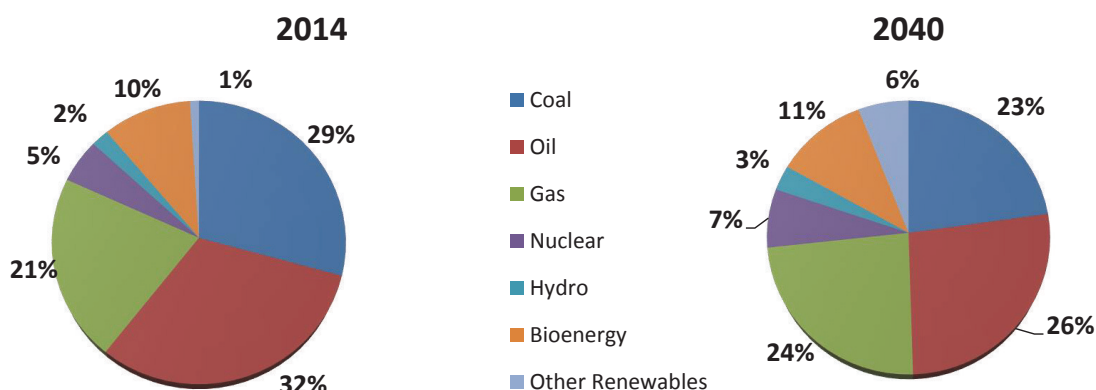
Source: WEO 2016, AIE

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A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

It seems difficult to change the current situation...

Primary Energy Demand



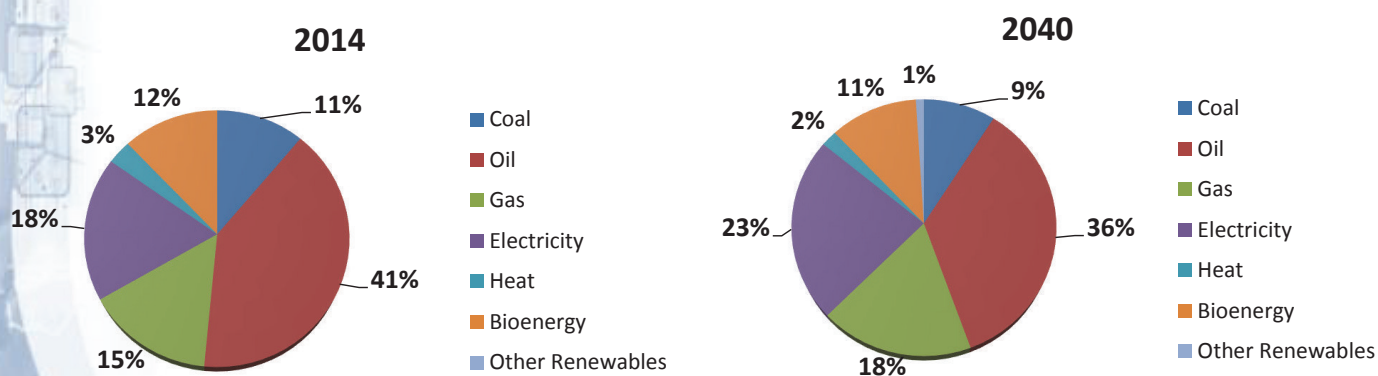
Source: WEO 2016, New Policies Scenario

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A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

It seems difficult to change the current situation...

Final Energy Consumption

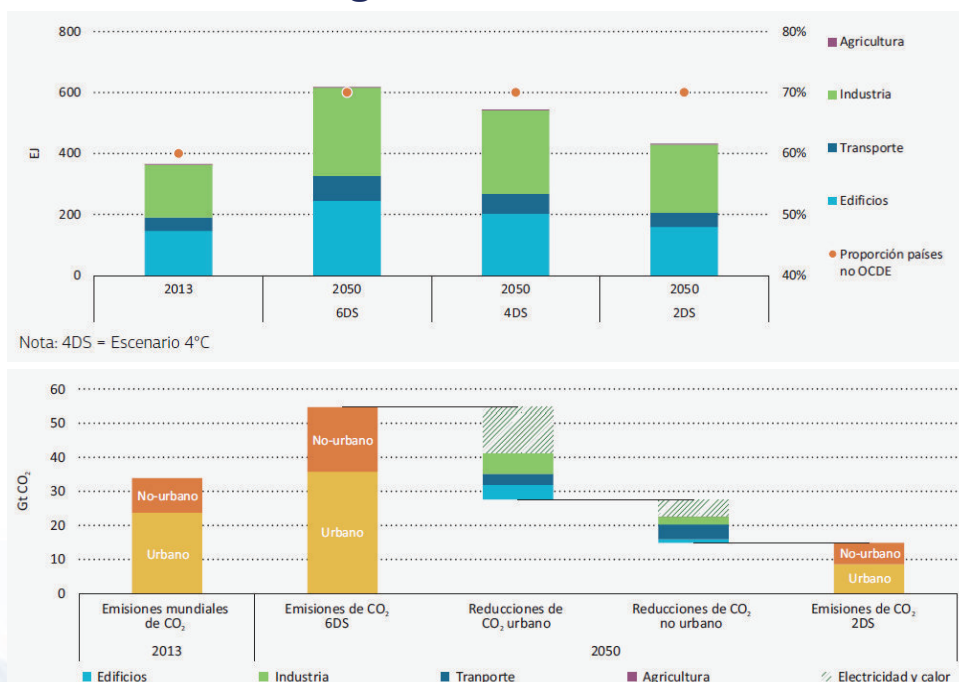


Source: WEO 2016, New Policies Scenario

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A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

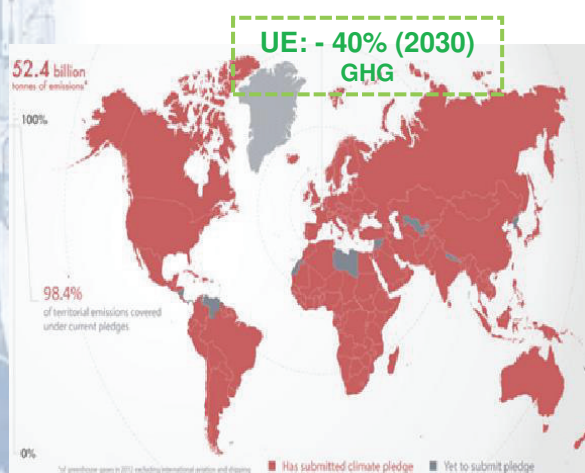
It seems difficult to change the current situation...



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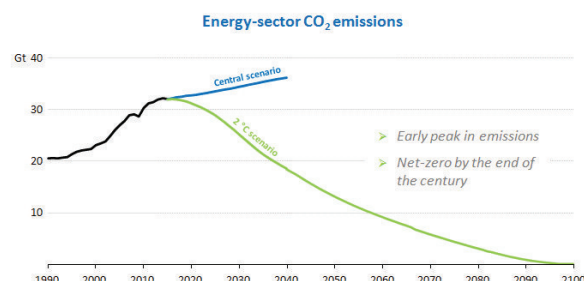
A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

Finding -2°C (-1.5°C) is way difficult...more efforts are needed



98,4% of emissions covered

*INDCs



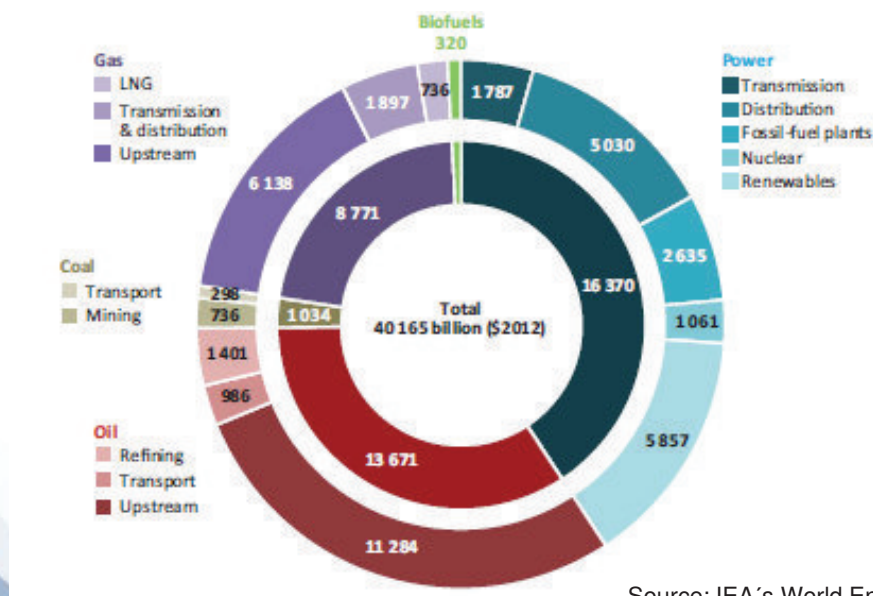
Source: WEO 2016, AIE

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A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

Finding -2°C (-1.5°C) is way difficult...more efforts are needed

Needed investments 2014-2035



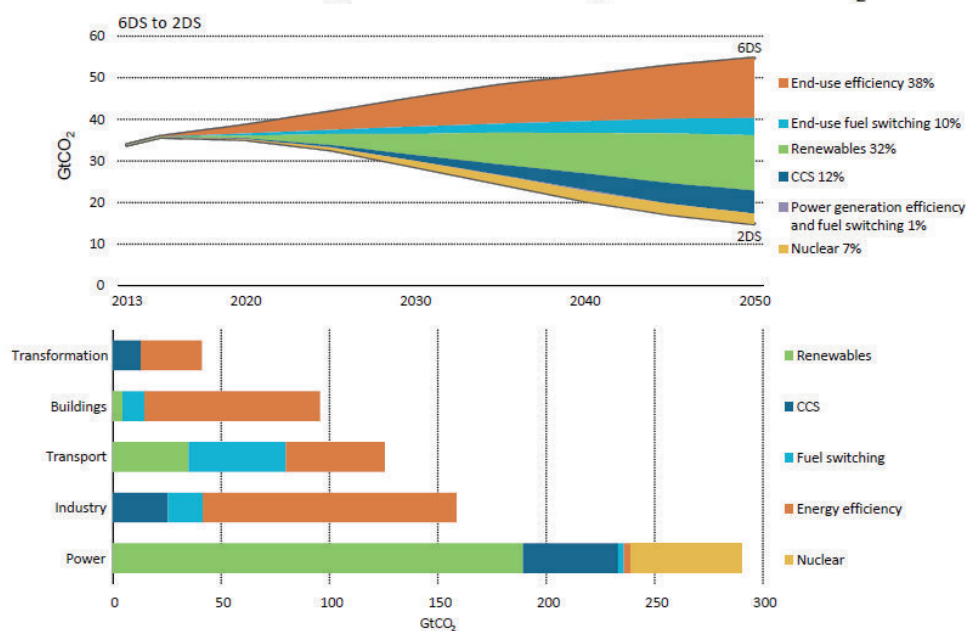
*INDCs

New Policies Scenario
Source: IEA's World Energy Investment Outlook 2014

A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

Technologies are key...

Contribution of technology area and sector to global cumulative CO₂ reductions



Source: ETP 2016

A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

...a decade may seem very little time...but big changes occur fast...

NY 1900



Source: Tony Sebas

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A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

...a decade may seem very little time...but big changes occur fast...

NY 1913



Source: Tony Sebas

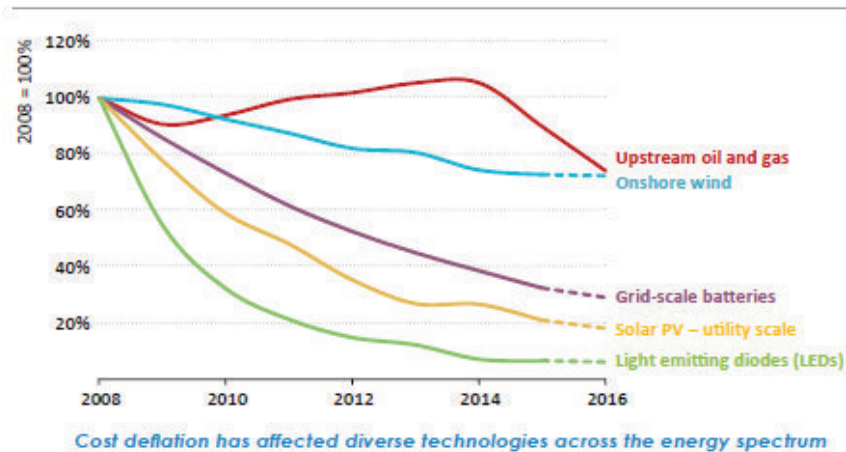
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A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

and we have to be optimistic...lets look at the past...In 10 years the energy landscape has completely changed...

Cost Reductions

Figure 1.7 Recent cost trends for selected technologies



Source: WEO 2016

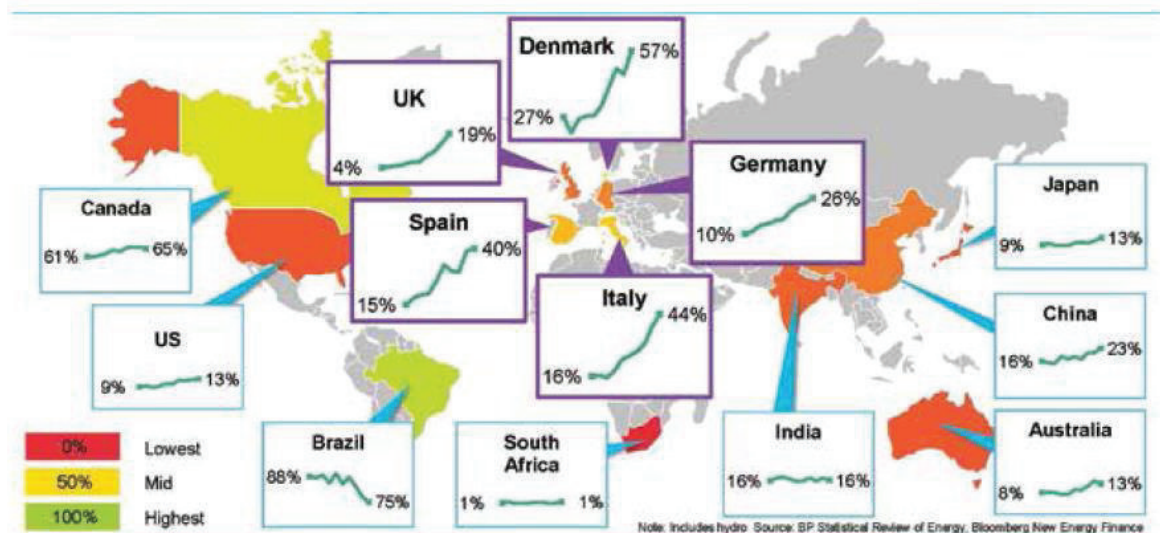
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A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

In 10 years the energy landscape has completely changed...

Policies

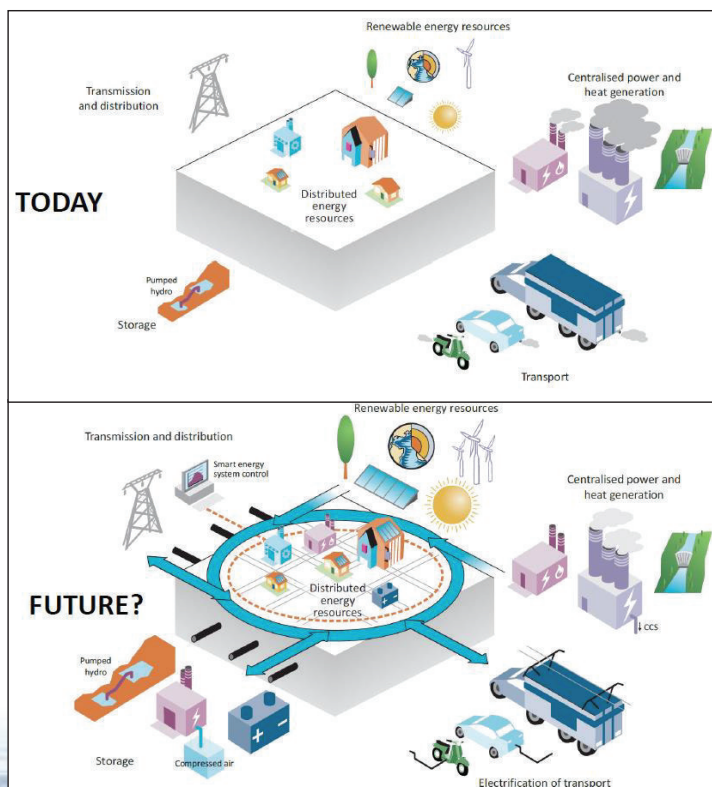
Figure 1.3: Renewable Energy's Share of Power Generation, 2004-2014



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A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

And in the next 10 years really big changes will probably occur...

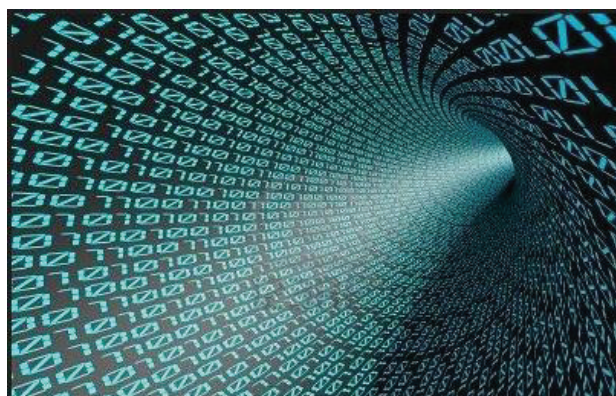


A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

and 2 new protagonists are appearing...



The consumer



Digitalization

A VIEW OF THE ENERGY LANDSCAPE AND OUTLOOK

The consumer



Citizens must be aware of their critical role

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THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

It seems something simple...

digital

adjective • **UK**  /'dɪdʒ.ɪ.təl/ **US**  /'dɪdʒ.ə.təl/

recording or storing information as series of the numbers 1 and 0,
to show that a signal is present or absent:

digital data

using or relating to digital signals and computer technology :

a digital recording

a digital camera

digital TV

showing information in the form of an electronic image:

a digital clock/display

a digital watch

Source: Cambridge Dictionary

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THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

But it is not...



THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

The relation between the consumer and the companies was only in one direction and limited to contracts and to resolving issues related with billing and the supply.

With digitalization a new two way relation is being established.

Energy changes from being a commodity to become an expression of the people that use it and its values.

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THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

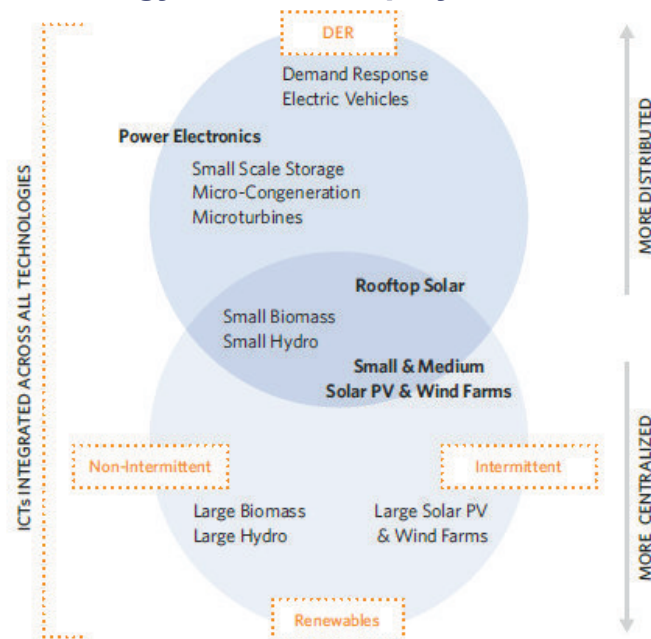
..The evolution of the Grid is key for the changes to become a reality...



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THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

Decentralised energy comes into play...



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THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

With two important challenges for distributed generation...



Competitiveness of the Costs



Balance between incomes
and costs of the system

45

THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

What is clear and what is not

- **CLEAR**
 - Traditional way of the way energy works is changing
 - Utility business model will go through big changes
- **NOT** clear
 - When will these changes be implemented?
 - To what scale?

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THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

Technologies and markets are very important...

Does the Target model need to be enhanced to address the new challenges?

- An **energy-only market** is **not sufficient** to face the challenges derived from decarbonisation, large scale **development of renewable**, **security of supply** and the development of flexibility including demand-side flexibility.



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THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

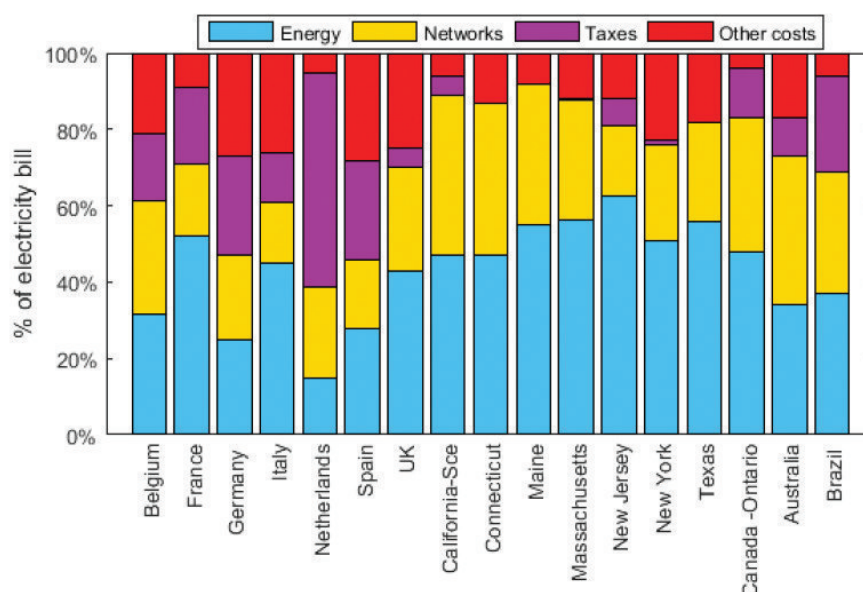
But regulation is the big challenge...



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THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

The Design of prices and charges is a key factor...

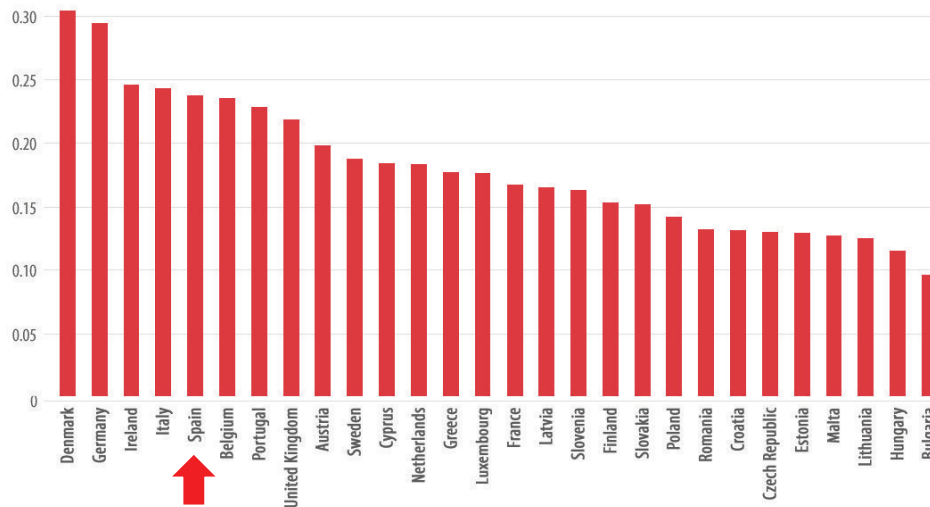


..and its important to create a comprehensive and cost-reflective system of prices and charges...

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THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

The Design of prices and charges is a key factor...



Source: Eurostat. Consumer prices. 2^o half 2015

..and its important to create a comprehensive and cost-reflective system of prices and charges...

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THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

“The impact of digital on traditional utilities has parallels with the impact of the internet on high street retailers in the early 2000’s.

There will be those organisations who view it through the lens of their existing business processes and transactions, and there will be those who see the potential of a different way of doing business”

Richard Postance
UK&I Customer Strategy Partner, Ernst & Young

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THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

...In the case of Spain, utilities are well aware of the coming changes and adapting to them...



ENERGIA SOLAR EDP
Adira e poupe dia e noite

EMPRESAS - Plan estratégico 2016-2020

Gas Natural también se lanza al autoconsumo de luz en los hogares

Endesa lanza productos fotovoltaicos de autoconsumo eléctrico para hogares

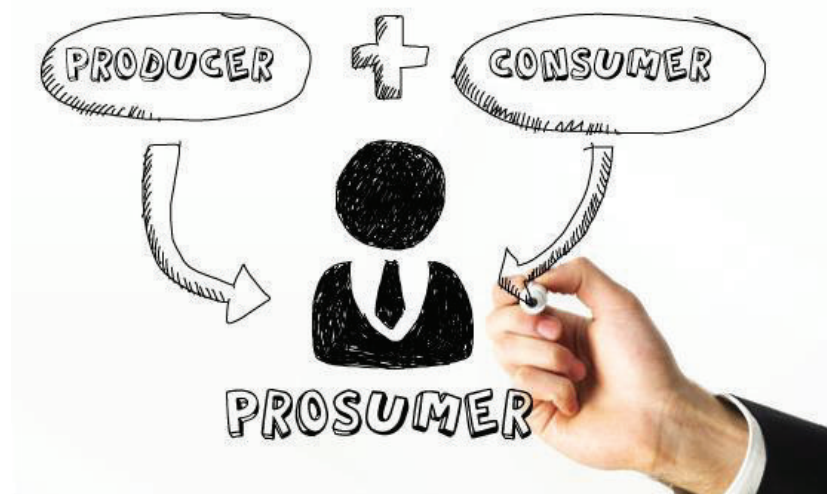


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THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

..and a new role of the consumer appears...



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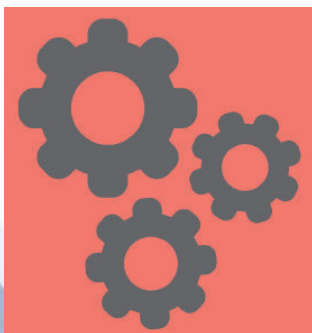
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THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE COSTUMER

..but we must also adapt ourselves to the challenges and respond accordingly



...by beeing conscious of the challenges ahead of us...



...and taking action on the way we use energy...

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THE DIGITAL REVOLUTION AND THE EMPOWERMENT OF THE CONSUMER

..By working together, we will reach our objetives...



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CONCLUSIONS

- Big changes are taking place in the world
- Energy is no exception to these changes
- Providing energy in a sustainable way becomes a priority, and all efforts are being done in this direction
- It's not an easy path but changes happen fast, and with digitalization they are happening faster
- Business models are appearing, and the role of the consumer is getting more protagonism
- In fact, only us, citizens, will be able to change the future
- We should all work together to find the best solutions