

THE BUILDING CONSTRUCTION SECTOR AND **THE LAST DEVELOPMENTS IN ENERGY** **POLICY**

"Past EU initiatives"

ECTP CONFERENCE

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Dr. Gonzalo Molina Igartua

- Professor of the University of Basque Country – Spain
 - Ex-Head of Unit of Innovation and Technology development in Energy
DG TREN – European Commission
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THE EUROPEAN THREE ENERGY CHALLENGES

**Competitiveness
"LISBON"**

FULLY
BALANCED
INTEGRATED
AND
MUTUALLY REINFORCED

**Sustainable
Development
"KYOTO"**

• **Internal Market**

- **Interconnections** (Trans-European networks)
- **European electricity and gas network**

• **Research and innovation**

• **Renewable energies**

• **Energy Efficiency**

- **Hydrogen**
- **Clean coal/CO2 capture**
- **Smart grids**
- **Nuclear fission and fusion**
- **Socio-economic research**

**Security of supply
« MOSCOW »**

- **International Dialogue**
- **European stock management (oil/gas)**
- **Refining capacity and energy storage**
- **Diversification**

- **Renewable energy**
- **Energy efficiency**
- **Nuclear**
- **Research and innovation**
- **Emission trading**

“EUROPEAN COUNCIL OF SPRING 2007”
OBLIGATIONS FOR MEMBER STATES FOR
THE YEAR 2020

-20 % MANDATORY TARGET FOR THE CONTRIBUTION OF RENEWABLE ENERGIES. MEMBER STATES DECIDE THE QUOTA FOR EACH SOURCE
FOR BIOFUELS 10% IS MANDATORY

- 20% REDUCTION OF TOTAL ENERGY CONSUMPTION (BY APPLICATION OF THE ACTION PLAN ON ENERGY EFFICIENCY)

- UNILATERAL COMPROMISE ON KYOTO (-20%)

European Council Conclusions

RES and EE Distribution

By source or application	Supply	Demand		
		BU	TR	IND
Wind	X	X		X
Biomass	x	X	X	X
Photovoltaics	x	X		X
Concentrated Solar Power	X	x		X
Small Hydro	X	x		X
Solar Thermal		X		X
EE in Buildings		X		
EE in Industry				X
EE in Transport			X	
EE in generation and conversion	X			
EE in transport and distribution of energy	X			4

DRAFT ANALYSIS

OF THE 20% OBLIGATION IN

ENERGY EFFICIENCY

1. Final Energy Consumption in Europe:

- Buildings: ~40%
- Transport: ~32%
- Industry: ~28 %

2. Expected reduction in buildings: 20% of 40% <> 8% of total <> 120Mtoe

3. From where this 8% for 2020?

- Existing stock of buildings: no much, if they are not rehabilitated
- Retrofitting of old buildings: important effort in each retrofitted building, by application of the EPBD
- New buildings: the intensity of the effort to be concentrated in new buildings. How much reduction in each new building: 50%?, 60%?... or more?

DRAFT ANALYSIS

OF THE TOTAL OBLIGATION OF

20% RES

1. Expected RES contribution in 2008:

- Very maximum optimistic of 8.5%

2. Increase of RES from 2008 to 2020:

- Minimum of 11.5% (more in terms of primary energy)

3. Potential sectorial increases:

- Supply: maximum optimistic of 6.5/7.5%, including biofuels and transport
 - Demand: the rest (4/5%)
 - **Industry**: maximum optimistic 1% (mainly wastes)
 - **Buildings**: 3/4%, let's take 3.5%, equivalent to more than 30% of the total increase. **Probably more!!!**
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HYPOTHETICAL SCENARIO

CONCEPT		OBLIGATION EE (ACTION PLAN)				OBLIGATION RES	
EU TOTAL ENERGY CONSUMPTION	%	CONSUMPTION 2008 (Mtoe)	REDUCTION (2008/20)		CONSUMPTION 2020 (Mtoe)	RES CONTRIBUTION IN 2020	
	100	1500	%	Mtoe	1200	%	Mtoe
			20	300		20	240
ENERGY CONSUMPTION EXISTING BUILDINGS REPRESENTING		CONSUMPTION 2008 (Mtoe)	REDUCTION (2008/20)		CONSUMPTION 2020 (Mtoe)	NEW CONTRIBUTION (2008/2020)	
			%	Mtoe		%	Mtoe
ALL EXISTING BUILDINGS	100	600	20	120	480	8,75	42
1st GROUP	50	300	12	36	264	2	5
2nd GROUP	30	180	25	45	135	9	12
3rd GROUP	20	120	47,5	57	63	25	16
ALL EXISTING BUILDINGS	100	600	23	138	462	79	33
NEW BUILDINGS IN PERIOD 2008/2020	10	60	70	42	18	50	9
						TOTAL	42

HYPOTHETICAL ACTIONS TO BE TAKEN PER GROUP

1st GROUP	IMPROVEMENTS IN EFFICIENCY OF EXISTING EQUIPMENTS OR REPLACEMENT. VERY LITTLE MODIFICATION OF ENVELOP; EXCEPT WINDOWS... VERY LITTLE CONTRIBUTION OF NEW RENEWABLES (5 Mtoe<->2% OF ITS ENERGY CONSUMPTION)
2nd GROUP	NOT DEEP RETROFITTING, BUT IMPROVEMENTS IN THE ENVELOP, REPLACEMENT OF EXISTING EQUIPMENTS AND USE OF SOME NEW RES (12 Mtoe<->9% OF ITS ENERGY CONSUMPTION)
3rd GROUP	DEEP RETROFITTING WITH IMPORTANT IMPROVEMENTS IN THE ENVELOP, REPLACEMENT OF EQUIPMENTS AND IMPORTANT NEW RES (16 Mtoe<->25% OF ITS ENERGY CONSUMPTION)
NEW BUILDINGS	REDUCTION IN TOTAL ENERGY CONSUMPTION OF 70% COMPARED TO CONVENTIONAL BUILDINGS AND CONTRIBUTION OF 9 Mtoe RES (50%)

THE INTEGRATION OF COMMUNITY INSTRUMENTS. THE NEW TRENDS

Energy Policy:
To solve problems
and needs of society

Research Policy:
Development of
new technologies

DG TREN

DG RTD

Market

LEGISLATION

IEE

FP7 ENERGY AND OTHERS

RES – electricity

RES – fuel production

RES – heating and cooling

ENERGY EFFICIENCY

- ECOBUILDINGS

- CONCERTO

- POLYGENERATION

Demonstration

Research and Development

Short term

Medium term

Long term

POLITICAL AND LEGISLATIVE INSTRUMENTS

Political and legislative instruments:	Sector		Supply	Demand		
	RES	EE		BU	TR	IND
White Book on RES	X		X	X		X
White Book on Transport 2001					X	
Action Plan on Energy Efficiency in Europe	X	X	X	X	X	X
Directive on RES-electricity	X		X	X		X
Directive on Appliances		X		X		X
Directive on Energy Performance of Buildings	X	X		X		
Directive on Cogeneration	X	X	X	X		X
Directive on Bio-fuels	X		X	???	X	???
Directive on Energy Services	X	X		X	X	X
Directive on Eco-design...		X		X	X	X
Other: Lighting, Informatics...	X	X		X		

INTELLIGENT ENERGY.EUROPE 2

KEY ACTIONS

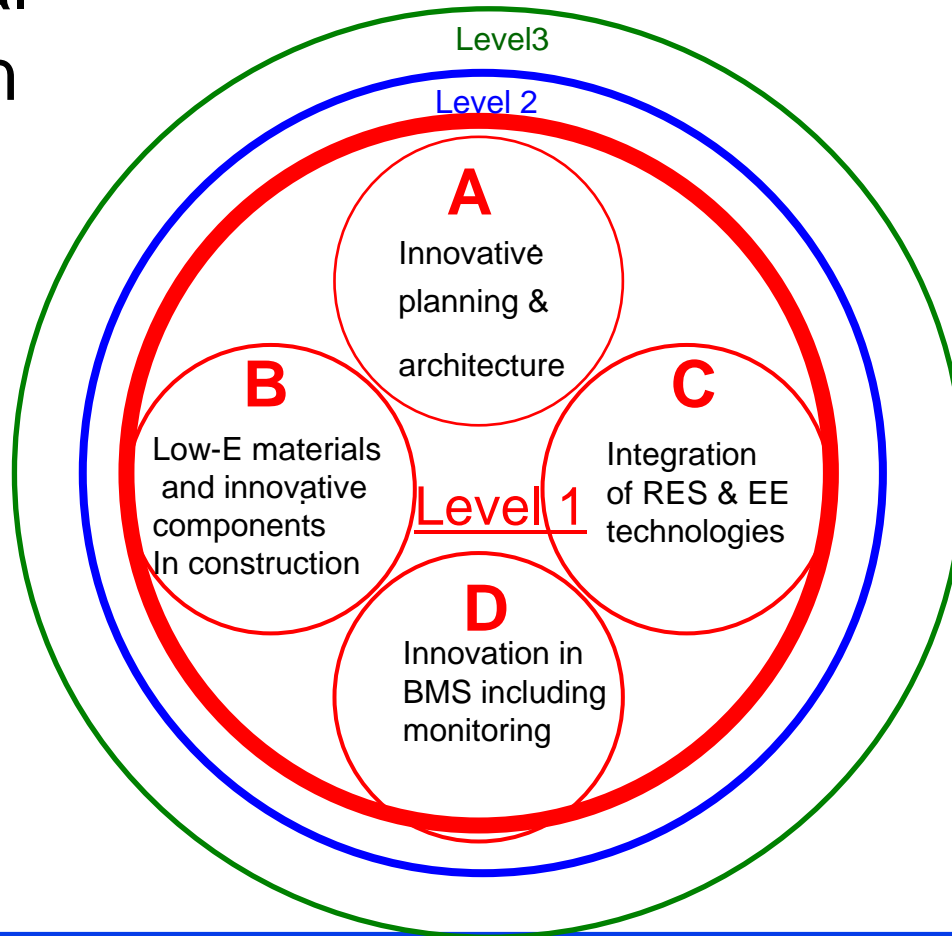
						Integrated Initiatives							
Indicators: Fields:	Enable Policies	Transform Markets	Change Behaviour	Access Capital	Training	Local Leadership		Special Initiatives			(from 2008 onwards)		
SAVE	Energy-efficient buildings					Creation of local and regional energy agencies	European networking for local action	Sustainable communities	Bio-business initiative	Energy services initiative	Intelligent energy education initiative	CHP initiative	Concerted Action buildings (CA EPBD II)
	Industry excellence in energy												
	Energy-efficient products												
ALTENER	Renewable electricity												
	Renewable heating & cooling												
	Domestic and other small-scale renewable applications												
	Biofuels												
STEER	Energy-efficient transport												
	Clean vehicles and alternative motor fuels												
	Strengthening of local players in the transport field (from 2008 onwards)												
						Market Replication Projects		Programme support					

“ECO-BUILDINGS” Conceptual integration – Physical integration

Conceptual
Integration



Level 1
Level 2
Level 3



Level 2

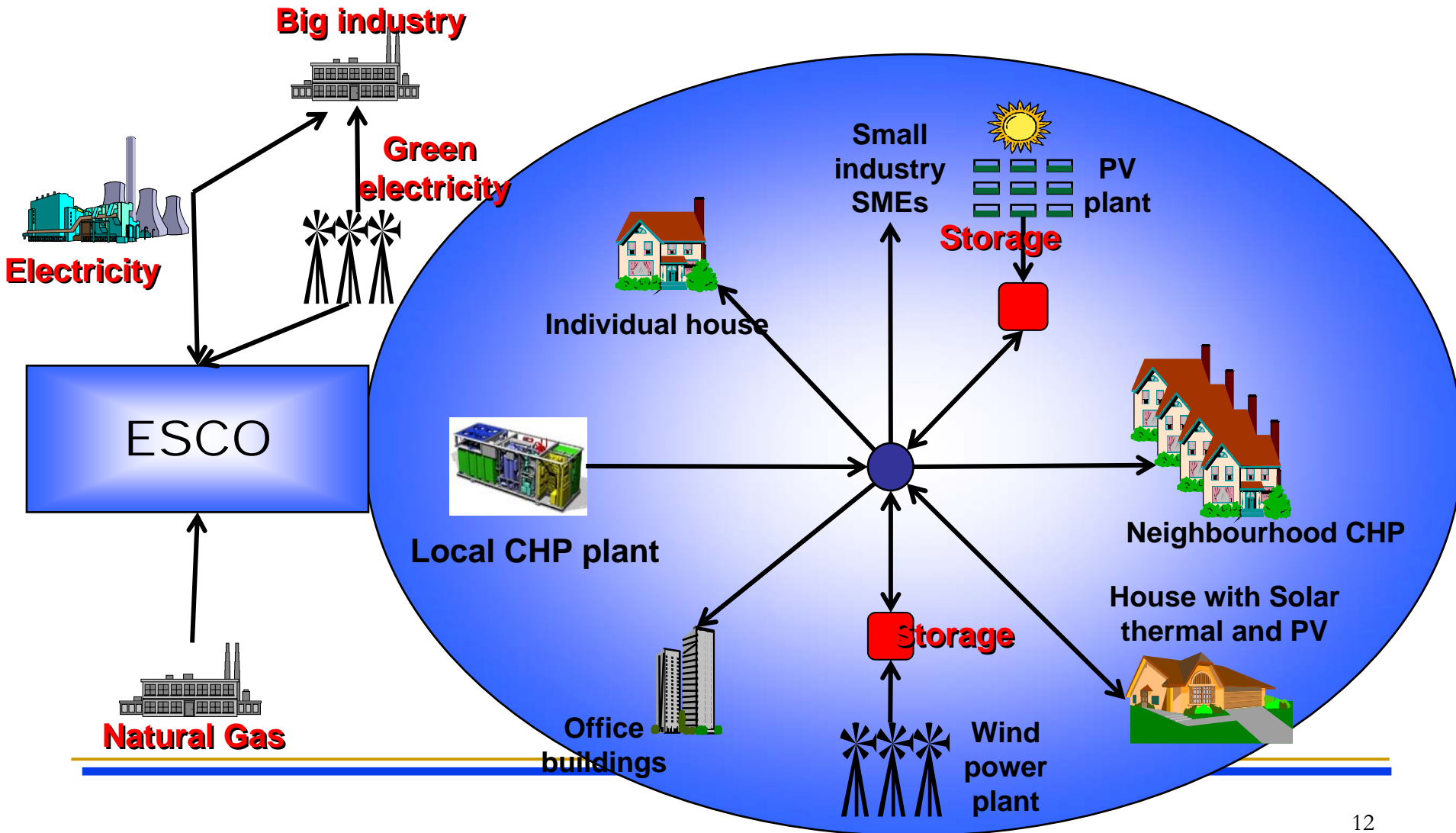
- Optimised operation
- Users influence
- Maintenance
- Energy Services

Level 3

- Education: professionals, users
- Planning of structures in relation to energy behaviour
- Benchmarking, Indicators
- Guidance for authorities
- Defining tariff structures

Physical
integration

“CONCERTO” (IN FP6)



1

st component

Eco-buildings

Energy consumption of **CONCERTO** ecobuildings :

refurbished/retrofitted buildings lower National regulations for new buildings

New buildings at least 30% lower than National regulations for new buildings

2nd component Renewable Energy Sources

Eligible Renewable energy sources are:

NEW installations
substantial **increase**
in the share of RES

- wind energy
- solar energy
- hydroelectric power
- biomass energy
- landfill gas energy
- biogas and sewage treatment gas energy
- geothermal energy
- wave energy
- tidal energy

3

rd component

Integration

1. Physical / Technical integration

Production connected to consumption through a network and controlling mechanisms

2. Conceptual integration

- RES and EE are combined in order to optimize the system's performance
- Green energy should not just replace conventional sources. This should be done in more EE systems.

ASSOCIATED COMMUNITIES

- **Participate in the project**
- **Not receive EC support for demonstration actions**
- **Have a clear role in the project**
- **Are committed to develop their own local energy policies and plans**

SOME RESULTS FROM CONCERTO

(APPROXIMATIVE)

- **45 CONCERTO Communities supported**
 - **Equivalent population: 1000000 people**
 - **Approximative extracost of the total communities: 650 M€**
 - **Total energy reduction: higher than 30% compared to national regulations**
 - **Total renewable energies contribution: 43% of the total final energy consumption**
 - **Conventional energy consumption: 40% of the total energy consumption allowed by the national regulations**
 - **Average direct payback: 4/5 years**
 - **Average final payback: 6/7 years**
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THE STRATEGIC ENERGY TECHNOLOGY PLAN (SET- Plan)

- **1. The insufficient scale of the current effort**
- **2. Transforming energy technology innovation: a European Strategic Energy Technology Plan (SET-Plan)**
- **3. Process to arrive at the SET-Plan**
- **4. Conclusions**

PROCESS TO ARRIVE TO THE SET-PLAN

- **Commission to adopt the first SET-Plan by the end of 2007** and put it forward to the 2008 Spring Council or even to the 2007 Autumn Council
- Two-stage consultation:
 - **Until May 2007 – experts groups (ECTP was also consulted)**
 - **Until July 2007 – general public**

CONCLUSIONS SET-Plan

- A new energy era.
- Energy technology has a vital role to play
- Adequate combination of innovation because 'business as usual' is no longer an option
- MS and industry should at least match the increased budgets of FP7 and IEE in a very integrated way
- A shared and inclusive European vision, involving all relevant actors.
- SET Plan must be ambitious in setting targets, but realistic and pragmatic regarding resources.
- The SET-Plan will propose specific and concrete result-oriented initiatives

FINAL CONCLUSIONS

for the buildings construction sector

The challenges for the buildings sector are enormous !!!

- Only the adequate combination of permanent innovation (technological and non-technological) with powerful commercial action, in the framework of the existing legislation, will facilitate the achievement of these challenges

- The buildings contribution:

- To be not only energy demanders but also suppliers
- Buildings are a “natural place” for energy storage
- Innovation in buildings means innovation in people’s quality of life

Sun/Earth: the miracle of the Universe; the buildings of the future: the intelligence of Man !!!