Toward Carbon Neutral Alps - Make Best Practice Minimum Standard "

Chambery (F), 27-28 October 2011

building for a climate neutral future

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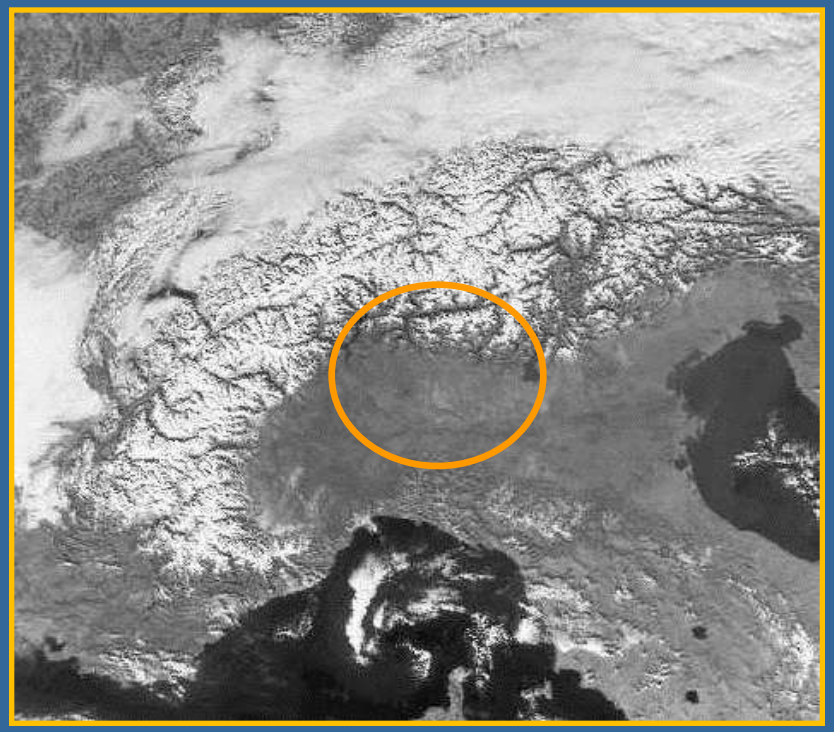
Milan, Italy



RegioneLombardia

Resident population (2010) : 9.917.714

(Expectation in 2050: 11.157.000)

GDP pro-capita 2010 € 33.900

Energy consumption for sector	TEP (ton of oil equivalent)	%
INDUSTRY	7.585.210	30,4%
RESIDENTIAL	**7.305.568**	**29,3%**
TRANSPORT	6.613.245	26,5%
TERTIARY	3.064.177	12,3%
AGRICULTURE	382.743	1,5%
	24.950.943	

SiReNa

About 20% of national consumption

Energy from Renewable Sources (2009): 7,5%
(electric energy only: 18%)

… residential sector in Lombardy Region

Energy consumption	TEP	%
NATURAL GAS	5.172.770	70,8%
ELECTRIC ENERGY	1.012.803	13,9%
BIOMASS	461.498	6,3%
GAS OIL	349.086	4,8%
Others < 2%	309.410	4,2%
	7.305.567	

Buildings Age

<1919	16,7%
1919-1945	8,9%
1946-1960	15,9%
1961-1971	24,4%
1972-1981	15,7%
1982-1991	9,3%
>1991	9,1%

Property Units 7.953.500

Houses	4.639.300
Garages	1.971.700
Offices	129.100
Business	436.500
Manufacturing	118.600
Others	658.300

Building firms:
over 120.000 per 370.000 operators

MARKET 2010 turnover: **€ 22.660.000.000**
(over 122.000 buy and sell)
(-44 % turnover compared with 2006)
(operators: -46.000 from 2008 to 2010)

… goals of regional energy policies

Italian goals		Lombardy current
ENERGY SAVING	-20% of energy consumption in 2020 (2005)	-4,6%
RENEWABLE SOURCES	17% of total energy consumption in 2020 10% in transport sector	+7,5%
EMISSION REDUCTION	-13% CO_2 in 2020 (2005) (-20% for industries ETS)	-2%

Energy action Plan (PAE) 2007

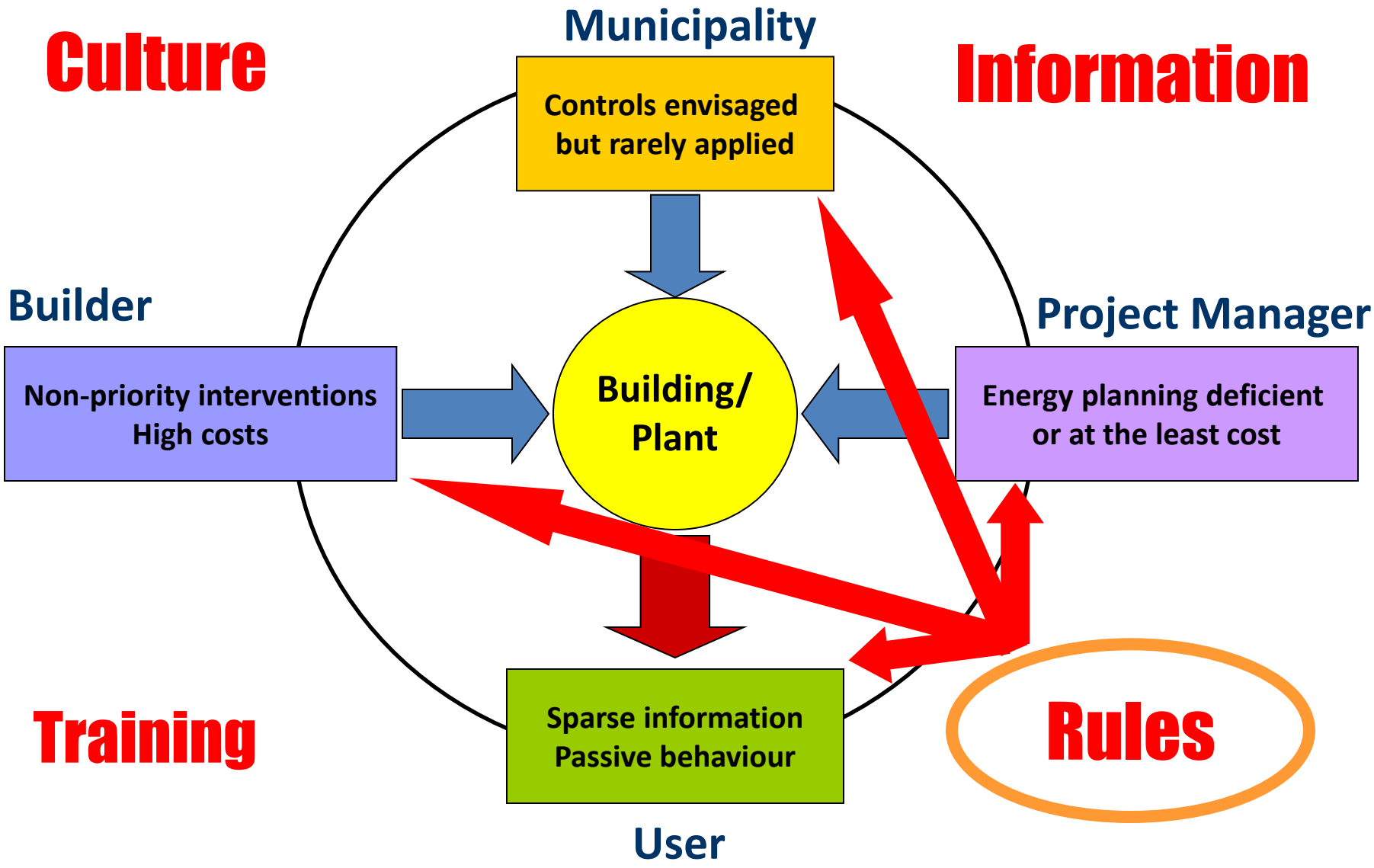
"Action Plan for a Sustainable Lombardy" 2010
(Lombardy 2020, Region with high energy efficiency and low carbon intensity)

2020: Decrease in consuming **3,5 millions of tep**
Greenhouse gas Emission reduction of about **8 millions of tons of CO_2**

CO_2 emissions reduction: **residential 48,6%** (3850 kt); transport 21,1% (1670 kt); industry 20,9% (1650 kt); tertiary 9,4% (750 kt).

Estimated total investment value : about **5 billion euros**.

energy efficiency in a building sector … an unsustainable situation



… regulatory planning

2000-2005 : innovative municipal building Regulations applied by the municipalities on a voluntary basis

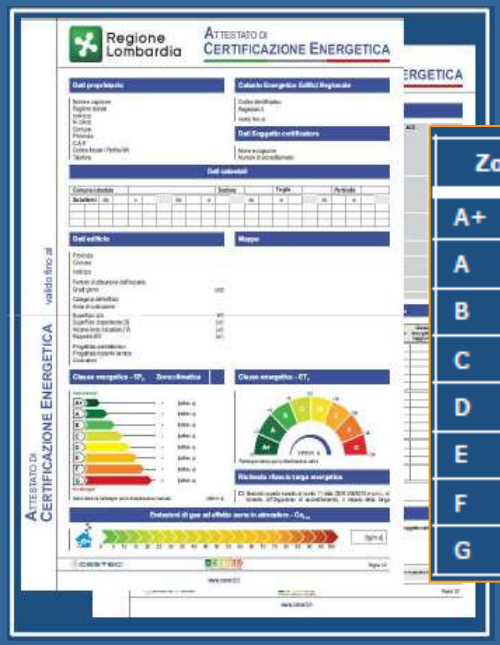
2003-2007: regional regulations on energy efficiency in buildings, in anticipation of the national implementation of European standards (DIR.2002/91/CE)

2007-2011: Progressive alignment between regional and national laws and standards + some new existing regional laws (es. LR 3/2011)

EPBD 2010/31/UE "nearly zero-energy buildings" … UNI TS 11300

… technical support tools

CENED
Certificazione ENergetica degli EDifici



Zona E (edifici E.1)	
A+	$EP_H < 14$
A	$14 \leq EP_H < 29$
B	$29 \leq EP_H < 58$
C	$58 \leq EP_H < 87$
D	$87 \leq EP_H < 116$
E	$116 \leq EP_H < 145$
F	$145 \leq EP_H < 175$
G	$EP_H \geq 175$

Energy certification of buildings' system taken since 2007 (n. **618.000** current certificates). Uniformity in procedures and rules; certification management (more than **15.000** accredited); unified and free computation model (CENED). (**www.cened.it**)

Regional land register of thermal plants (**CURIT**-2008) (**www.curit.it**).
telematic platform that manages programming and coordination of inspections, checks and maintenance of heating systems with unified procedures throughout the region. **3.970.000** plants, **11.000** accredited maintenance, **3.900** condominium administrators.

CURIT

REGIONAL REGISTER FOR GEOTHERMAL PROBE - 2010

http://geotermia.cestec.eu.

Fondazione Lombardia per l'Ambiente

Medium EPH Residential buildings [kWh/m²a]: 193,70

CENED Certificazione ENergetica degli EDifici

LA CERTIFICAZIONE ENERGETICA IN REGIONE LOMBARDIA: STATO DELL'ARTE E PROSPETTIVE FUTURE

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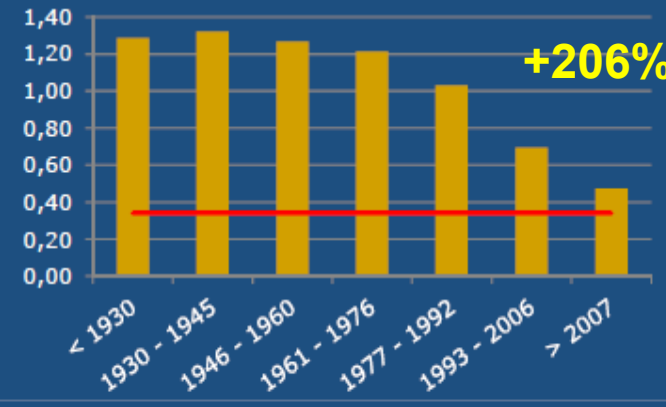
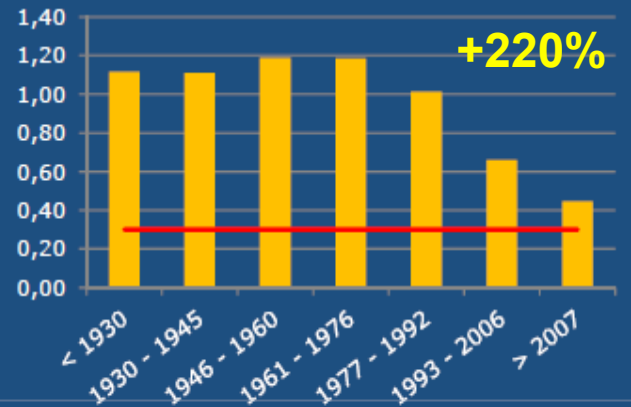
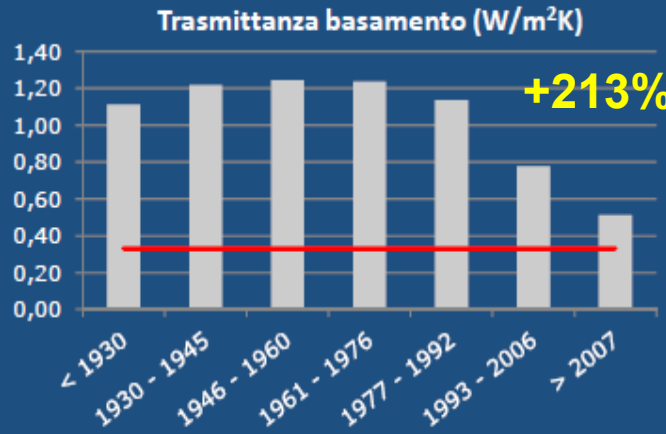
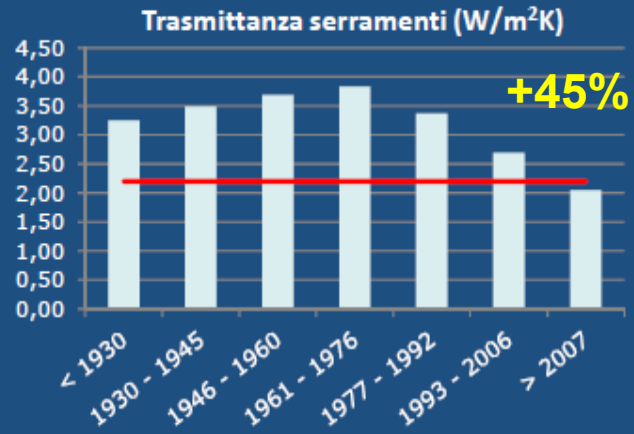
PRIME ANALISI DEGLI ACE DEPOSITATI (EDIFICI RESIDENZIALI)









Valore limite per interventi di ristrutturazione edilizia

* I dati sono riferiti ad un campione circa 344.000 ACE

Relatore: Ivan Mozzi — 3 ottobre 2011 — CESTEC SPA: Area Edilizia Sostenibile

… building towards 2020 … and beyond

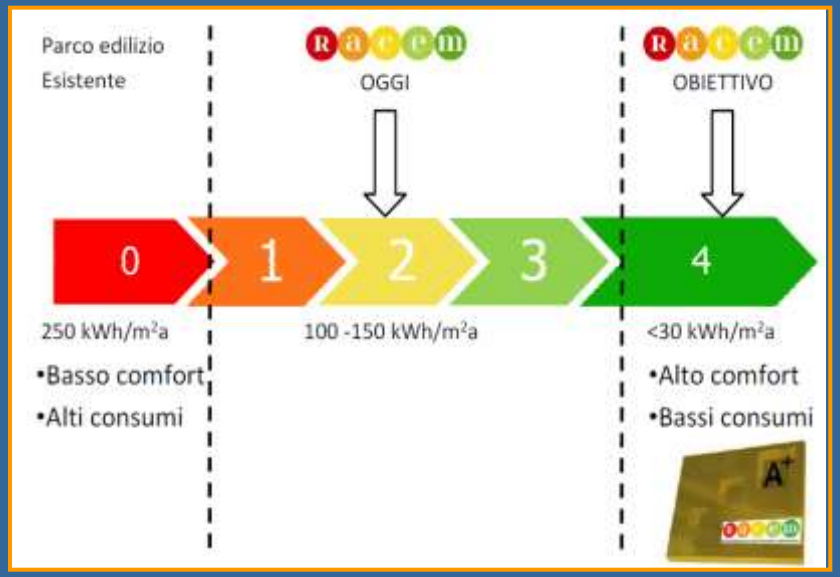
- define a vision of sustainable buildings in 2020
- identify and develop the necessary innovations
- train companies to make sustainable building

- define obligations of companies
- prepare data sheets for the construction of environmentally friendly facilities and works (Protocol)
- establish procedures for obtaining Quality mark

… current problems of local construction companies

Case study: 32 companies in "HOUSE chain": constructions, wood, plants

- Executive planning not always correct
- High number of variations during construction
- Gaps or lack of technological project (housing and facilities)
- Supervision not always adequate
- Manpower not always skilled
- High costs for energy requalification of existing buildings
- No semplifications in administrative procedures



… from vision… to innovation

"*incremental innovation*" in building sector

1) Integrated planning

- Planning according the cycle of life, assessment tools, financial instruments
- Land use (brownfield land vs. greenfield; requalification vs. new building)
- Efficient use of existing buildings (resources conservation; new functions; long life)
- Impact on surrounding environment (environmental quality of sites)
- Materials and waste (Life Cycle Assessment, Ecolabelling, Primary Energy Input)
- Water savings and conservation

2) Energy conservation: heating and cooling

- Thermal insulation (recycled materials, vacuum insulation panels, nano-materials, etc..)
- Coating materials (self-cleaning, green roofs, pollutant absorbers)
- Parts transparent (high insulation, insulated frames, aesthetics)
- Thermic Accumulation in building elements
- Natural ventilation (solar chimneys, passive systems, hybrid)
- Management Systems (Building Automation and Controls , Technical Building Management)

3) Energy generation and distribution from renewable sources

- Systems integrated with buildings (PV, heat pumps, solar cooling)
- Systems not connected with buildings (solar concentrator, solar farms)
- Integrated generation (smart grid, energy storage)

4) Buildings construction and management

- Origin and production of materials (innovative processes for procurement and supplies)
- Assembly and site logistics (tools and management)
- Demolition, reuse and recycling (smart Waste, recycled aggregates, waste management

5) Policies

- New energy legislation with integration of cooling

6) Financing and incentives

- Green consciousness
- Public support for thermal insulation, micro-generation, etc..
- Concessional funding for individuals and businesses
- Incentives to distributors and utilities and / or tax breaks on renewable technologies

7) Communication & Training

- Maximum disclosure of information, case studies, application tools: publications, web, etc..
- Skills updating plan
- Sustainable planning strategies
- Highlighting deficiencies
- Successful examples
- Cost reduction
- Risk reduction
- Return of investment (ROI)
- Competitive advantages and market differentiation
- future proofing and change management

…"HOLISTIC planning"

A philosophy of balance between man, land and environment that is reflected in a well-rounded understanding of the project, where city planning, architectural design, building construction and materials choice contribute to a single purpose ... the **eco-sustainability** .

DISSEMINATION & REPLICATION of Racem **PROTOCOL**

in the whole Valtellina Valley and in other territorial realities in Lombardy Region

Make Best Practice Minimum Standard !!!