MARKET BARRIERS TO ENERGY EFFICIENCY

- Buildings

INTERNATIONAL WORKSHOP: “COOPERATION BETWEEN EU AND MEDITERRANEAN PARTNER COUNTRIES IN THE ENERGY SECTOR: CHALLENGES AND OPPORTUNITIES” 22 – 23 FEBRUARY 2016 Athens Greece

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Scope

- Identify the most frequent barriers which impedes Energy Efficiency into the buildings sector and to map a concept of barriers' understanding and addressing.

Context

- Economic, social and environmental urgencies are today, maybe more than ever, strongly interrelated.
- Whereas economic perspectives are prudentially stable, and energy prices in Europe have become a burden to households as well as a very negative SME's competitiveness factor, scientists agree to alert decision-makers on greenhouse gases impacts on climate and environment.
- In consequence, a broad consensus exists on the necessity of developing new economic models and standards of living based on energy efficiency.
- Energy efficiency is taking its place as a major energy resource in the context of national and international efforts to achieve sustainability targets. This reflects a paradigm shift that is beginning to give credence to actions on both the supply and the demand side in the quest to achieve economic growth while supporting energy security, competitiveness and environmental sustainability.

…the globe turns !

Energy and the World Economy

- In recent years, the growth of energy consumption in developed countries has been flat or decreasing. Energy demand in developing countries serves as a main driver of the growth in world energy demand.
- The debt crisis in the United States and Europe sent shockwaves throughout the energy sector.
- Geopolitical conflicts continue to impact the societal and economic stability, relations between countries, world oil prices.
- Major accidents (Fukushima) have great impacts on the development of energy (i.e. a greater emphasis has been placed on clean energy, such as hydropower, wind power and solar power).
- Global climate change will push forward reform in the field of energy.

Source: World Bank

Before: Desert

After LEED Platinum

- …a broad consensus exists on the necessity of developing new economic models and standards of living based on energy efficiency.

The Mediterranean: # 1

…and climate change
A "hot spot"

For the Mediterranean region, climate experts anticipate during the 21st century:

- An increase in air temperature in the range of 2.2 C° to 5.1 C° for the countries of Southern Europe and the Mediterranean region over the period 2080 – 2099 with respect to the period 1980 – 1999 (**IPCC 2007**, scenario A1B);
- A significant decrease in rainfall, ranging between -4 and -27 % for the countries of Southern Europe and the Mediterranean region (**IPCC 2007,** scenario A1B);
- Increase in drought periods manifested by a high frequency of days during which the temperature would exceed 30 °C (**Giannakopoulos** et al. 2005). Extreme events, such as heat waves, droughts or floods, are likely to be more frequent and violent.
- An increase of the sea level which, according to some specific studies, could be around 35 cm up to the end of the century.

The Mediterranean: # 2

…Business as usual is no longer possible

Current energy trends in the Mediterranean are not sustainable.

Conservative scenarios are not an option:

- Overall energy demand could grow by 40% to 2030.
- CO2 emissions would exceed 3000Mt in 2030, up from 2200Mt currently.
- Electricity boom ahead: average annual growth rate of about 2.8% and 5% in the South: overall over 380 GW of additional capacity needed.
- Fossil fuels will continue to dominate the energy mix and natural gas will overtake oil.
- High potential for RE & EE not fully exploited

Source: **Observatoire Méditerranéen de l'Energie**

The Mediterranean: # 3

A significant increase in primary energy demand is expected for the whole region:

- Reaching more than 1.2 billion tons of oil equivalent (toe) in 2020 and 1.4 in 2030 compared to 1 in 2008.
- The share of South and East Mediterranean Countries (SEMC) would increase from 31% to 40% in 2020 an 47% in 2030, a three times energy consumption growth rate higher than in the North with a tripling of electricity consumption.
- Important impacts are foreseen from the point of greenhouse gas emissions.

Source: Mediterranean Association of the National Agencies for Energy Conservation

The Door Step

… trying not to waste your energy and time

- Buildings' energy efficiency market is a place where all the policies related to energy interact and are engage in exchange.
- The building sector, combining the residential and tertiary sectors, alone accounts for 33% of final energy consumption. Source: Mediterranean Association of the National Agencies for Energy Conservation
- 10% of the regional energy consumption can be saved through energy efficiency measures by 2030. Source: Observatoire Méditerranéen de l'Energie
- Energy intensity must not be ignored. Despite a downward trend of total energy intensity in the Mediterranean Basin (-0.3% per year between 1992 and 2003), the objectives of reduction in the range of 1 to 2% per year, such as set by the "Mediterranean Strategy for Sustainable Development", are unlikely to be reached .
- The region is characterised by a growing population and increasing urbanisation rates. This urban growth - represented by increasing annual growth rates of population, new dwellings to be constructed and new cities to be built in the region - would lead to increasing energy consumption occurring even more strongly in the urban environment. **Source:** World Bank

Energy Efficiency and Sustainable Targets:

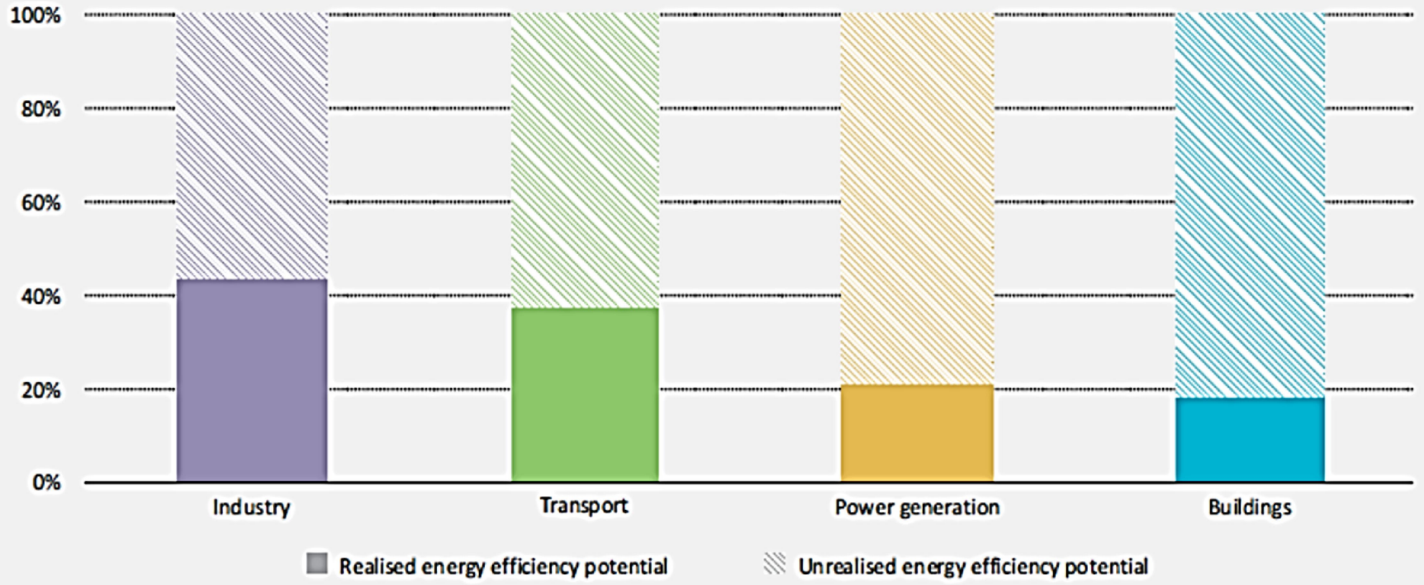
In general, both sides of the Mediterranean, strategically should intent on the following:

- Use of sustainable sources to boost the economy, competitiveness and employment.
- Diversify energy supply sources and therefore reduce the risk of fossil fuel prices and variability.
- Precipitate co – production of renewable energy and improve supply security through the development of interconnections.
- Reduce production costs and make savings on the fossil fuels imports replaced by renewable sources.
- Minimize the environmental footprint of economic activities and make more efficient use of energy sources.
- Adequate policy, regulatory and financial frameworks are necessary to create the favourable conditions to undertake effective energy efficiency programmes.

Source: **MARE REPORT Market & Technology Opportunities**

Energy Efficiency: The Untapped Potential

Figure ES.1 Long-term energy efficiency economic potential by sector



Note: These energy efficiency potentials are based on the IEA New Policies Scenario outlined in the World Energy Outlook 2012. Investments are classified as "economically viable" if the payback period for the up-front investment is equal to or less than the amount of time an investor might be reasonably willing to wait to recover the cost, using the value of undiscounted fuel savings as a metric. The payback periods used were in some cases longer than current averages but they were always shorter than the technical lifetime of individual assets.
Source: IEA (2012), *World Energy Outlook 2012*, OECD/IEA, Paris.

Key point IEA projections to 2035 show that as much as two-thirds of energy efficiency potential will remain untapped unless policies change.

Mediterranean Specificities and Challenges of the Energy Renovation of Buildings

Climatic conditions: The Mediterranean climate, benefiting from mild winters and warm summers, is probably the most significant specificity.

Structure of the ownership: The lack of strong and well structured social operators, and a high proportion of low-income owners-occupiers, “far to reach” with classic and non-segmented public policies, are also typical characteristics of the Mediterranean area.

Low energy efficiency of the buildings: As compared with the rest of Europe, the Mediterranean climatic conditions have led to a low emphasis on insulation and to a growing use of air conditioning.

Low refurbishment rates: The current energy efficiency refurbishment rates in MED regions range from 0.12% to 0.26%, which corresponds to a 2-3 times slower energy refurbishment rate than the North-Western EU Countries.

Lack of detailed data: There is no complete energy information over the MED building stock.

Governance Barriers and their Consequences on the Energy Renovation of Buildings

- **A difficult articulation between regulations from different decision-making levels:**
  - lack of national political commitment to increase buildings energy efficiency,
  - difficulty for public actors to develop consistent and multi-sector schemes and incentives.
- **A dispersion of funds:** The lack of articulation between policies, designed and implemented by different institutions at several levels, contributes to a dispersion of the funds.
- **A difficult involvement of the private sector due to inappropriate regulations:** Regions from the Mediterranean area do not use all the money they have at their disposal. One of the reasons is the inadequacy of regulations.

Source: AViTeM, France, 2014, Agency for Sustainable Mediterranean Cities and Territories

Barriers Pertaining to the Deployment of EE Technologies: # 1

ECONOMIC & FINANCIAL BARRIERS:

Economic and financial barriers in diverse forms are the main constraints, in particular energy price subsidies, limited access to capital (particularly for low income organisations or households) for some of the EE technologies.

- **Energy price distortion:** The main economic and financial barrier is energy price.
- **Discount rate / financial risk perception:** The financial risk perception of most investors in EE technologies is identified as an additional barrier.
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- The picture can be further complicated when hidden costs are difficult to be “framed”.

Source: UN - Trade and Environment Review

Barriers Pertaining to the Deployment of EE Technologies: # 2

ORGANISATIONAL BARRIERS

- **Inadequacies in the Institutional and regulatory frameworks**

Other organisational barriers identified relate to the weak compliance and enforcement of currently existing regulatory frameworks, and the centralised institutional frameworks in the region.

- **Split incentives issue**

A first organisational barrier identified is split incentives or principal-agent issues which relate to investment in technologies for which multiple stakeholders are involved during the design, construction and implementation stages.

- **Lack of awareness and qualified capacity**

Finally information barriers, lack of awareness and capacity among suppliers, promoters, financiers, and end-users can impede decisions to invest in EE and technologies and measures.

- Source: European Investment Bank, 2013

Barriers Pertaining to the Deployment of EE Technologies: # 3

TECHNICAL BARRIERS

Unofficial data evidence suggests that there could be some technical barriers linked to the lack of capacity to implement some of these technologies, as well as their actual performance against initial expectations.

- Several types of EE with varying quality levels, can coexist in some markets. Investing in low quality technologies would affect the performance and reliability of the technology and would result in decreased levels of energy savings.

- Source: European Investment Bank, 2013

Energy Efficiency in Buildings SWOT

Weaknesses

- Poor energy efficiency performance of the housing market.
- Energy efficiency of existing buildings has been substantially overlooked by policy makers over the previous years.
- Inefficient legal framework in some MPCs and lack of monitoring mechanisms.
- Lack of qualified personnel, particularly in South Mediterranean countries.
- The financial crisis particularly in Greece and Spain has deeply shrunk the building renovation market and the new construction market.
- Low awareness of the general public in EE in all countries.
- Low awareness of the public sectors in EE particularly in the South Mediterranean countries.
- Low cost of electricity due to the governmental subsidies mainly in the South Mediterranean countries.
- Local authorities' lack the awareness in EE issues mainly in South MED countries.
- In South MED countries, the policy making in EE is still centralized.

Source: Market & Technology Opportunities MARE Deliverable 1.1

Energy Efficiency in Buildings SWOT

Threats

- The absence of net metering and feed in tariffs policies and mechanisms in many MED countries.
- Inefficient legal framework in some MPCs and lack of monitoring mechanisms.
- For non producing countries (e.g. Lebanon) the costs for RES and other energy saving appliances are relatively expensive, partly due to high import tariffs.
- Limited financial or tax incentives provided to consumers, particularly to low and medium income households.
- Limited financial mechanisms.
- The cost of installation of RE & EE technologies particularly for housing purposes (new and existing buildings) is high for many consumers.
- Economic crisis has led to a significant reduction of available market liquidity and financing opportunities.
- Weak management of funding for research projects in EE.
- Political stability in some South Med countries is volatile.
- Limited private sector volume in EE technologies and materials especially in South MED countries.

Source: Market & Technology Opportunities MARE Deliverable 1.1

Energy Efficient Renovation of Buildings: CHALLENGES

- The multiple benefits of energy efficient renovation of buildings must be captured and well-articulated, with evidence, and as a priority, to key financial decision makers.
- Processes and Standards for Energy Performance Certificates, Energy Codes and their Enforcement need to be strengthened and improved.
- Making it easy to get the right data to the right decision makers.
- Standards should be developed for each element in the energy efficiency investment process.
- Optimal use of Structural and Investment Funds, public financial institutional schemes through public-private financial instruments can boost investment volumes and help accelerate the engagement of private sector finance through scaled risk-sharing

- Source: European Investment Bank, 2013

Possible Additional Measures to Address Economic and Financial barriers

- Energy subsidy removal could be combined with social compensation programmes to help low-income communities invest in EE and small-scale RE technologies.
- Moreover, financial support could be provided through capital subsidy programmes, tax credit (or tax exemption) schemes or preferential loans and funds (IPCC, 2007).
- Private bank loans combined with public subsidies could also play an effective role in reducing the impacts of high initial, hidden and transaction costs as well as providing access to capital for consumers.
- Standardised measurement and evaluation techniques adapted to EE projects taking into account the quantification of ancillary benefits (e.g. job creation, human well being, health conditions, etc.) could be used by financiers and promoters to address the uncertainty levels associated with these investments (Thollander, 2010).

- Source: European Investment Bank, 2013

Possible Additional Measures to Address Organisational Barriers

- Building labelling and certification could be used to provide information related to the state, age and energy performance of building. Such information would minimise potential disputes between the tenant and the landlord (split incentive barrier) as tenants can be aware of their future energy bills.
- Energy policies in the MPCs could further address EE and small-scale RE measures in existing buildings (building retrofits) by establishing requirements for minimum levels of performance, replacing conventional technologies with energy efficient ones and performing regular inspections of heating and cooling systems in these buildings.
- Moreover, harmonisation of test procedures, labels and standards among the different counties would improve the cost-effectiveness and market impacts of standards and labelling programmes in the region.
- Comprehensive, integrated education and training programmes could be developed to target all stakeholders involved in the building sector from building officials and inspectors to professionals and end-users (IPCC, 2007).

- Source: European Investment Bank, 2013

Possible Recommendations to Policy Makers # 1

Six priority areas for consideration:

- Existing EU Legislation and local Buildings Regulations should be fully implemented and consistently enforced across EU Member States.
- Future Regulatory Pathways for EU Buildings should provide concerted and consistent regulatory pressure to improve buildings efficiency.
- High quality decisions and low transaction costs can only be delivered by easily accessible data and standard procedures.
- Reporting, accounting and procurement procedures must facilitate, and not hinder, appropriate energy efficiency investments in public buildings.
- The “at-scale” energy efficiency upgrade of residential buildings can only happen with a concerted address of the specific investment demand and supply drivers of this segment and the engagement and alignment of retail distribution channels.
- Energy efficiency investment supply targeted through greater project development and technical assistance, the smart deployment of ESIF 2014-2020 and Horizon 2020 and up-scaling of financial models that work.

- Source: Energy Efficiency Financial Institutions Group, 2015

Possible Recommendations to Policy Makers # 2

Priority areas for action in local level:

- Provide clear and unambiguous information to consumers regarding the long run benefits of energy efficiency building renovations and of other similar programmes.
- Greater focus with regard to energy efficiency must be given to SMEs, either as developers of EE technologies, or as potential users.
- Create mechanisms for the enforcement of the building codes and make them mandatory for new and deeply renovated existing buildings
- Bring together academic community and local manufactures.
- Install EE technologies to public buildings to set the example.

Possible Recommendations to Market Participants

Five priority areas for consideration:

- Engage key decision makers (owners and managers) with a clear business case that raises their awareness of the multiple benefits of buildings' energy efficiency renovation with evidence:
- Make it easy to get the right data to the right decision makers:
- Improve the Processes and Standards for Buildings Labels, Energy Performance Certificates and Energy Codes:
- Standards should be developed for each element in the energy efficiency investment process.
- Leverage of private sector finance through optimal use European Structural and Investment Funds 2014-2020 and Member States' funds.

- Source: Energy Efficiency Financial Institutions Group, 2015

Thank you very much for your attention !

إسأل روحك .. Ask your soul ..

https://www.youtube.com/watch?v=JycQWWxkIyE oum kalthoum