

Climate change and energy in the Mediterranean

Plan Bleu / EIB study



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UNEP/Mediterranean Action Plan /Plan Bleu



ENERGAÏA, Montpellier, 2008

Regional activity centres of MAP



- The sea, 21 countries and the EU, Parties to the Barcelona Convention
- One eco-region: 46 000km of coastline, 10% of vegetation species, 7% of marine species
- 430 Mio inhab., 7% of world pop., 13% of world GDP, 33% of international tourism,





Climate change and Energy in the Mediterranean 2008



Structure of the report:

PART I - Climate change in the Mediterranean: scientific knowledge, impacts and green house gas emissions

PART II - Mitigation of climate change: toward a low carbon energy sector

PART III- Vulnerability of, impact on and adaptation of the energy system



Organisation:



- ⇒ Coordination by Plan Bleu
- ⇒ Supported by the EIB, FEMIP/MEDA funds
- ⇒ International steering committee
- ⇒ 25 Mediterranean experts involved
- ⇒ Focus on South and East Mediterranean countries
- ⇒ Specialised Mediterranean institutions involved:

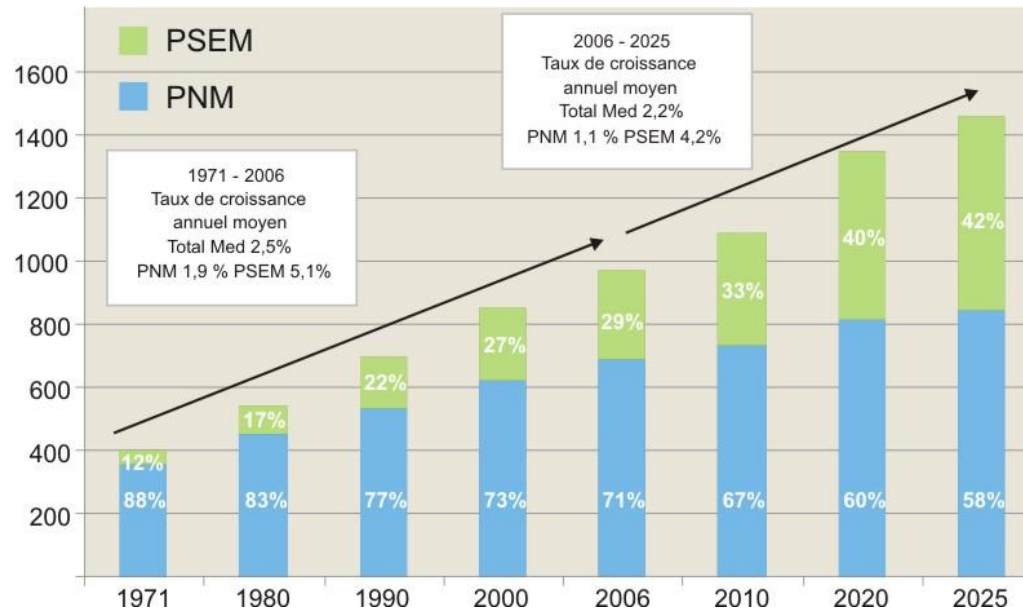


PART II - MITIGATION OF CLIMATE CHANGE: TOWARD A LOW CARBON ENERGY SECTOR

Energy trends in the Mediterranean : uncontrolled energy demand growth and CO2 emissions is not inevitable.



Trends in primary energy demand (Mio Toe), 1971-2025



Source: Observatoire Méditerranéen de l'Energie

Demand Trends in the SEMC (2006-2025) :

- Primary energy multiplied by 2,2
- Electricity : multiplied by 2,6



Unsustainable scenario

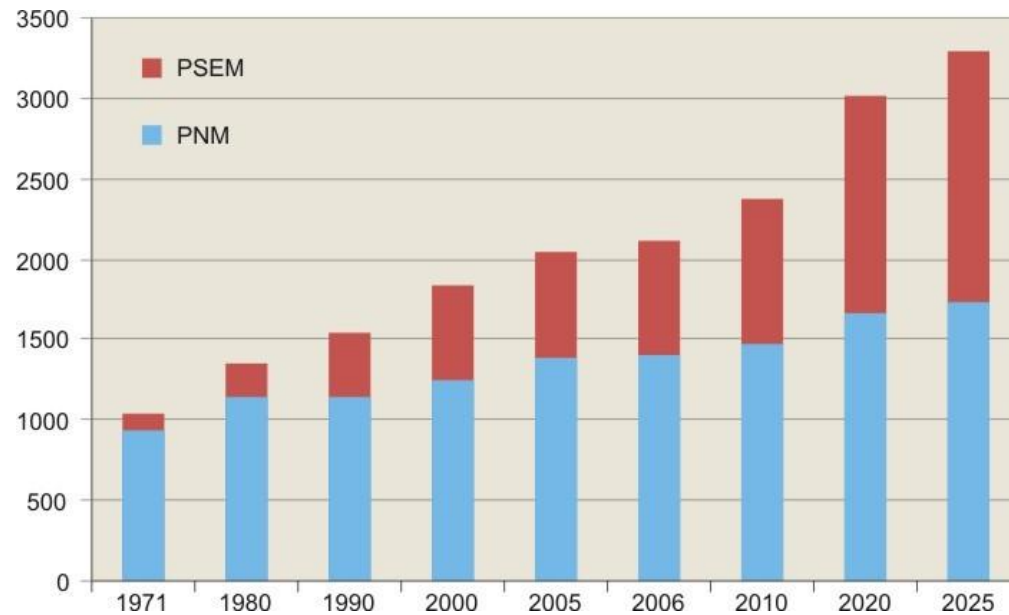
Pattern:

- Dependency on fossil energy 94%
- Renewable energy (CWR excl.): 3% of TPES
- PSEM: 42% of total Med. Demand in 2025 (29% in 2006)



CO2 emissions from energy activities in the NMC and SEMC, trend scenario, 1971-2025

Unsustainable scenario



Source: Observatoire Méditerranéen de l'Energie

Increase of current risks:

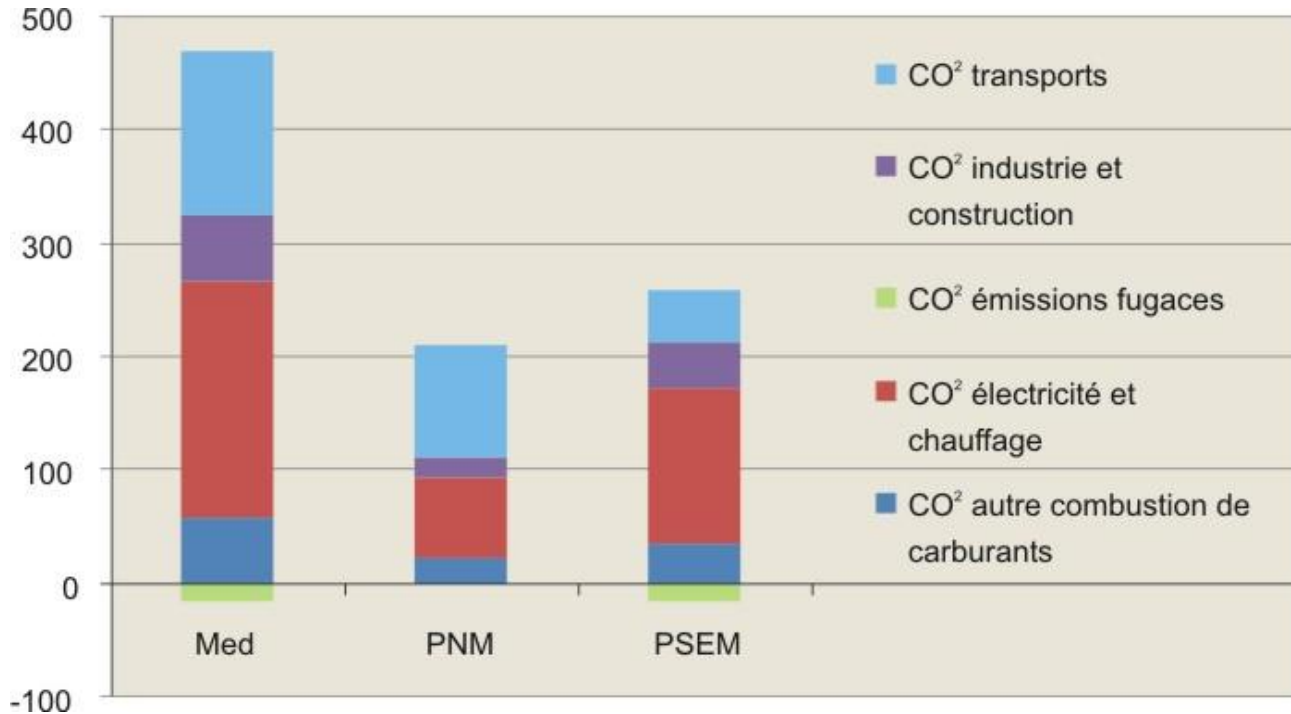
- Increase of energy dependency
- Socio-economic risks linked to energy price
- Global and local environmental impact
- Vulnerability of the energy/electricity system vis-à-vis climate change





Sectoral contribution to absolute variation of CO2 emissions due to energy use by region and sector, variation 1990-2004, million TCO2.

Source : Plan Bleu computations and formatting after WRI CAIT 5.0 data



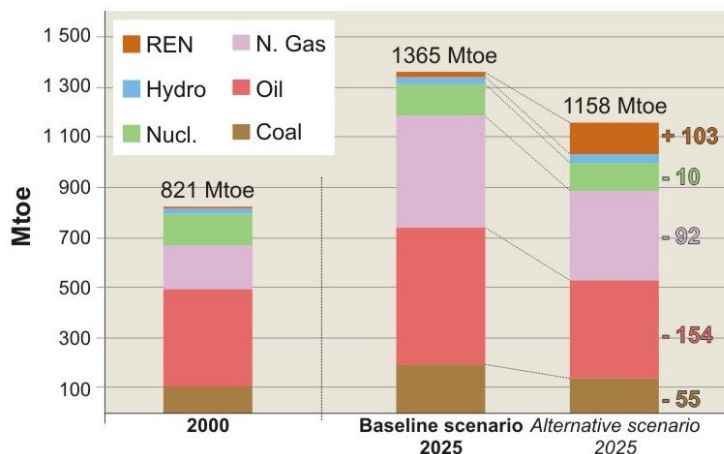
Source : Plan Bleu from WRI data.

- North and Souht Med. : contribution to CO2 emission growth since 1990
- Electricity and heat: the most important contributor in the SEMC,
- In the North: Transport sector mainly responsible for the increase.

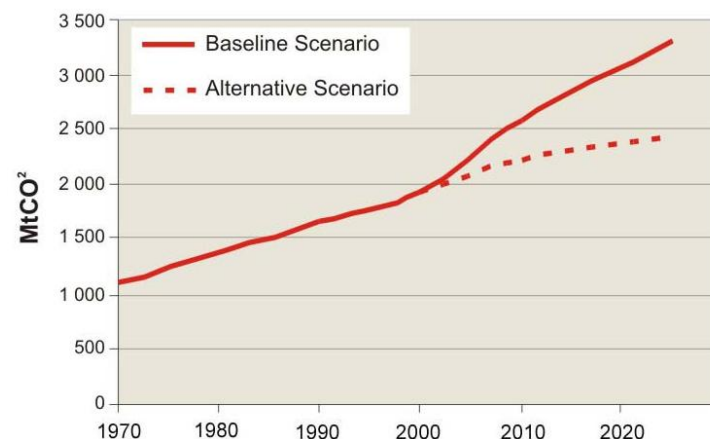


Plan Bleu 2005 study : An Alternative scenario is possible

Primary energy demand in the Mediterranean



CO2 emission from energy in the Mediterranean



- By 2025, up to 11% of renewable energy, Energy savings of 208 Mtoe Decrease GHG emissions, 858 million tonnes CO2 avoided



Plan Bleu 2008 study:

Cost of « business as usual » up to 2015 ?
 Cost of emissions reduction options ?



Cost of « business as usual » up to 2015

Macroeconomic simulations

Annual cost of non action in 2015:

30 billion USD

(barrel at 120 USD)

Comparable to the GDP of Tunisia in 2005

*Regional extrapolation, MEDA countries (TR included)

⇒ CO₂ emission avoided in 2015: between 120 and 140 million tonnes (CO₂ emission from Tunisia in 2005: 20 million de tonnes)



Cost of emissions reduction Options?



Cost of emissions reduction Options

=

Cost of action

Country cases:

Tunisia

Egypt



Cost estimate

-In Tunisia:

-The cost to save 1 Toe is about 40 euros

-In Egypt:

-The cost to save 1Toe with renewable energy (wind) is about 50 euros; the cost of saving 1 Toe with energy efficiency actions is about 20 to 30 euros



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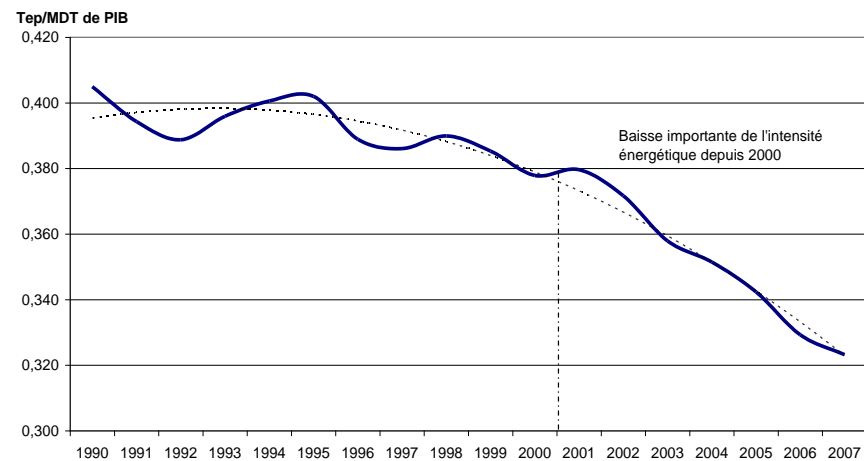
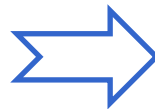
Renewable energies: A timid breakthrough, promising experiences

- Wind energy: Egypt, a proven leader in Africa
- Solar thermal energy: Turkey and Israel among world leaders
- Solar photovoltaic energy: Decentralized Rural Electrification (DRE) success story in Morocco
- Solar thermodynamic (concentrating solar energy) A potential for the near future? Pilot experience in Algeria

Energy efficiency : an under-exploited potential in all countries and all sectors

=> Building, transport are strategic sectors

Tunisia stands out: decreasing its energy intensity by more than 1% per year on average between 1992 and 2003



Urgency to overcome obstacles blocking the development of a large scale energy efficiency market in the SEMC:

- Harmonise and complete legal and administrative framework
 - **Issue of connexion to the electricity network for independent RE producers,**
No institution responsible for energy efficiency
- Subsidies to fossil, fiscal Incentive and pricing framework
 - ✓ **Urgent need to planify the transition taking into account social issues**
- Education/training/information
 - ✓ **The need to rise awareness of energy efficiency opportunities**
- Research & Development in renewable energy and energy efficiency of process and products
 - **To adapt equipment to the local need and to prepare the future**
- At the regional level: Technology transfer from North to South, Infrastructure development and electricity interconnexions, ODA has a key leverage effect
- Key sectors: building, public transport network, urban planning (see later)



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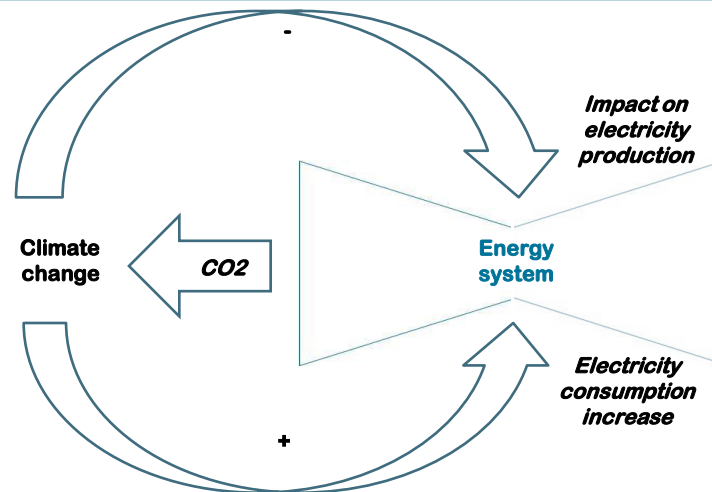


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Informations to bear in mind

- 1- Energy efficiency and renewable energy are economic opportunities with huge co-benefits (energy, industry, employment)
- 2- Participate to the mitigation of climate change in a particular vulnerable region and to make more sustainable the energy system

Not only the issue of emission; Climate change puts the energy sector under pressure :



PART III - VULNERABILITY OF, IMPACT ON, AND ADAPTATION OF THE ENERGY SECTOR VIS-à-VIS CLIMATE CHANGE

It is not any more possible to consider the energy sector independently from other sectors: forest, water, tourism, building, cities, transport



Information to bear in mind

- It is not any more possible to consider the energy sector independently from other sectors

Strategic sector in a prospective view:

- Water and energy policies needs to be more integrated
- Urban development in the SEMC is booming; huge potential of adaptation and mitigation options in building
- Structural investment in public transport and urban planning choices will drive the energy consumption of cities in the future



Conclusion

Energy sector is both at risk and strong CO2 emitter,

Progress toward EE and RE are slow but experiences show that solutions are adapted, feasible and advantageous for the MPC , with decrease of risks, of GHG and local pollution

Energy efficiency is an underexploited cost effective option to be set up first. Information is crucial;

The transformation of the energy system to be better adapted to climate change and less CO2 emitter implies integration of energy/other sectors policies



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For more information and last report on « Climate change and energy » :

www.planbleu.org



Changement climatique et énergie
en Méditerranée



Plan Bleu
Stratégie méditerranéenne
2009-2015

COMMISSION CLAUDE FERRAZZINI-BOU

**L'efficacité énergétique et les énergies
renouvelables au cœur des solutions.**

Le développement durable est un défi majeur de notre époque. Il implique une prise de conscience collective et une action concertée. Dans ce contexte, l'efficacité énergétique et les énergies renouvelables jouent un rôle central. Elles permettent de réduire les émissions de gaz à effet de serre tout en assurant la sécurité énergétique et la compétitivité économique. Cette note de synthèse explore les enjeux de ces deux domaines et propose des pistes d'action pour les acteurs méditerranéens.

Les énergies renouvelables ont un potentiel énorme. Elles sont disponibles partout et ne s'épuisent pas. Elles sont également plus sûres et plus silencieuses que les énergies fossiles. Cependant, leur développement est freiné par des obstacles techniques, économiques et réglementaires. Il est donc essentiel de favoriser leur intégration dans le système énergétique global.

