

(1997) MEDITERRANEAN COUNTRIES

Energy Efficiency In Southern And Eastern Mediterranean Countries, An Imperious Need For Sustainable Development : Challenges And Constraints by Samir Allal

1. **Energy efficiency challenges in Southern and Eastern Mediterranean countries**
 2. **to overcome obstacles to energy efficiency in Southern and Eastern Mediterranean countries : towards a "liberal interventionism"**
 3. **Challenges and constraints of efficient equipments : towards an electricity demand side management policy**
 4. **A few elements of conclusion**
- Annex 1 :
Main indicators of the Mediterranean countries in 1992
 - Annex 2 :
A business as usual scenario for the Mediterranean countries in 2025
 - Annex3 :
Some significant graphs and trends in Mediterranean countries

See Tables and Figures at the end of the text

1. Energy efficiency challenges in Southern and Eastern Mediterranean countries

The southern and eastern Mediterranean countries have a strong energy constraint in their development path, rapidly growing consumption, particularly for electricity, with 9% per annum rates in some countries (e.g. : the Algeria, Tunisia, Morocco group, thereafter called ALTUMA). Their energy intensity is on a par with those of the northern Mediterranean countries, and on an increasing trend. Considering these facts, there is a large potential to improve their efficiency in the use of energy. The challenge for the Mediterranean basin is to allow a balanced growth while realising sustainable development, this is the next decades most important constraint for a Mediterranean development strategy.

Energy efficiency consists in choosing orientations and actions in various and complementary sectors (economical, industrial, energy) so as to provide a more efficient energy consumption system which will then allow an optimal service to the user for limited energy expenses, and minimum economical and environmental incidences (B. Laponche, 1992). Of course, the concept of «optimal use» may not have the same signification according to the concerned actor (distributor, user, producer national communities). Trying to answer how an energy efficiency policy can be implemented, it is necessary to elaborate an « optimal energy policy ».

Opposite to the northern Mediterranean countries, energy efficiency uncertainties in most southern and eastern Mediterranean countries, do not concern the future energy consumption levels but the socio-economical level of development they may reach with the energy available. One of the key issue concerning energy efficiency is the technology transfer mechanisms that will develop and also the capabilities of these countries to access to efficient technologies. Most of the time efforts to transfer efficient technologies are constrained by institutional obstacles rather than by economical or technical reasons.

One of the most controversies point related to energy efficiency was, and is still, at present time : how should industrialised and developing countries share efforts, knowing that both groups have strong disparities of consumption levels (and therefore of pollution), and considering the fact that both sides have very unequal possibilities towards financial, technical and human resources allowing them to implement energy efficiency. Besides speeches about energy efficiency hide a double ambiguity. The first one deals with the respective roles of policies and markets and on the cost that should be endured and investments that should be undertaken. The second one relies on the respective roles of industrialised and developing countries should play. This is especially important in the case of Mediterranean countries.

Energy problems in southern and eastern Mediterranean countries can not be disconnected from the economic and social context in which they are taking place. The weak consumption level do not mean that there is not any potential to save energy out of the existing stock. Most of these countries are characterised by a strongly contrasted situation with, on the one hand : urban and industrialised centres which are huge consumers and on the other hand, rural area where the energy consumption rate is extremely limited and access to energy is very low. Energy saving do not appear as priority in rural zones (although the amount which can be saved on fire wood in developing countries is equivalent to the one saved up on oil), it is a priority in « modern » urban regions where energy is frequently even more spoiled than in industrialised countries.



Top of file

2. To overcome obstacles to energy efficiency in Southern and Eastern Mediterranean countries : towards a «liberal interventionism»

In most developing countries, the institutional situation linked to energy efficiency seems extremely fragile. This weakness mainly finds expression in an absence of any strategic projection concerning the energy policy of these countries, a lack of real capacity to carry out energy efficiency programmes, and above all a very poor ability to mobilise effectively all the opportunities offered by the international centralised or decentralised co-operation. And because of the absence of any well structured and trusting credible national partner, co-operation supply concerning energy efficiency remains insufficient and is mostly characterised by a dispersion of isolated projects, too often defined and influenced by the supply side and directed from abroad and with inadequate ability to co-ordinate on long term periods.

To undertake such a programme of energy efficiency fundamental objectives must be considered : first of all, « correct » the actual bad utilisation of the existing equipment and plants, then prepare a better future insisting on the importance of systematically taking into account and integrating energy efficiency concept before thinking of any other new equipment or installation.

Such a policy, to be adapted to southern and eastern Mediterranean countries needs a support from public intervention. In the context of a developing strategy concerning energy above industrial policies, the most important for an organism in charge of energy efficiency should particularly consist in trying to keep structured and continuous stable actions. The ability of the team responsible for the implementation of such a programme is also of prime importance : the team must be able to define, negotiate and co-ordinate concisely the programmes.

Experience shows that political authorities as well as technical staff lack both knowledge and

information about the potential and the means associated to the carrying out of energy efficiency, especially concerning efficient equipment. Quite often, the most basic information : the energy consumption in various sectors is unknown, even in the industrial sector. An important constraint depends on the definition and the perception of the energy efficiency policy, especially from the decision makers point of view. Its essential characteristic is to be considered at the same horizontal level as the other activities : human, economic and social. Its fields of action does not coincide with energy sector nor with the industrial sector alone, its main objective is to contribute to the construction and development of an economy taking into account economic constraints, technical progress and environment.

The mission of an institution responsible for the national energy efficiency programme is not to carry out the various projects but to create the necessary conditions to the realisation of these projects so that their impact in term of technical, economic, social and environmental efficiency can be optimum. It is a question of promoting and facilitating the implementation of energy efficiency actions so that everybody on the economical scale can participate : it is a public service but with a new task, comparing to the traditional role of governments and requiring a strong capacity of animation, dialogue, flexibility, rapidity of both execution and comprehension of problems and constraints with regard to the extreme variety of partners.

Finally, the question about the status of the organism has also to be considered. The organism must not have any hierarchical position with regard to other activities, since it is necessary that it remains as independent and neutral as possible so as to negotiate and communicate with all the actors concerned. The organism must not be confined to a strict system of energy nor to any industrial system because both of them tend to privilege the supply and production side.

All these considerations call for a Mediterranean basin wide development strategy, with the experience and the financial support from northern Mediterranean EC countries, the co-operation should be strongly oriented towards energy efficiency in the south and the east. This means a strategy going farther than a mere trade accord, i.e. : a Mediterranean co-development strategy.



Top of file

3. Challenges and constraints of efficient equipment : towards an electricity demand side management policy.

Since twenty years the urban style of living in southern and eastern Mediterranean countries has moved and has been accompanied by a massive increase in the use of electrical equipment : electric domestic appliances, refrigerators, televisions, washing machines, air conditioning. All these equipment are more and more widespread over "affluent" families, although their diffusion rate is far below the saturation level known in the northern Mediterranean countries, thus a growing increase in domestic electric appliances is likely to remain steady in the future.

Despite how weak the energy consumption of these appliances can be, the increase of the volume is enough to be seriously taken into consideration, more especially as electrical supply systems in southern and eastern Mediterranean countries are not as preferment as in Northern countries : (voltage drops and variations, power cut, unpayment of bills difficulties). Such a high electric appliances diffusion level involve massive investments in generation equipment. These important amounts could be allowed to other more urgent needs such as education,

health, communication infrastructures, rural development, etc. Having exposed the coming challenges and the actual problems known by this sector, it is important to clearly define the main objectives with regard to this market, without forgetting to surround the principal one for them when dealing with an energy efficiency policy including the electricity consumption.

A study made on the diffusion of these products reveals that consumers seem to show little interest for the energy efficiency criteria. This statement can be easily explained by the fact that consumers only integrate investment cost when making their decision, instead of taking into account the global operating cost. For this same reason, constructors have no inducement to improve energy efficiency in their products as it isn't perceived as a sale argument.

In southern and eastern Mediterranean countries, programmes which intend to correct the market failures for a better electricity consumption management are of two kinds :

- Programmes which influence consumers behaviour towards efficient products (labels, information campaigns) or financial incentives.
- Promotion actions concerning the most efficient products and voluntary mandatory regulation to eliminate inefficient products from the market.

Experience gained from the past few years demand side management in the world shows the need to implicate electricity utilities in order to succeed in these programmes. Developing countries are concerned because of the problems mentioned above and of the risk to develop local industrial producing a high electrical consumption equipment. Characteristics of southern and eastern Mediterranean countries will have therefore to be clearly defined and studied so that distribution networks, products and local industrial strategies can be well known in order to define the most efficient means to set up. For the moment, buying determinants are not sufficiently known even though the experience done in Morocco, Tunisia and Egypt with fluocompact lamp has revealed the importance to analyse the different categories of consumers as well as their justifications and choice criteria.

When considering the supplier side, it is essential to understand what are the motives for industrial decision makers to look for compared advantage on energy efficiency criteria. Once again, it is fundamental to study and define how we can find ways and means to induce distributors to influence and participate to the progression of energy efficiency.



[Top of file](#)

4. A few elements of conclusion

Public intervention on energy policies can be compared with the movement of a « balancing-rope » : first, a strong intervention following the first oil crisis accompanied by vigorous energy efficiency policies in few countries, and then a falling of energy preoccupations because of the various economical and political evolution the 1980's.

It seems that interest for energy efficiency has recovered. But this new change has nothing to do with another evolution of oil prices, it is linked to a new kind of externality : environmental costs (D. Finon, 1994). Whatever may be the different forms of intervention, governments cannot hence afford to disengage themselves from energy, they cannot simply ignore the problems and abandon them to the « blindness » of the market. In this context, energy efficiency and electricity management become a priority of the Mediterranean basin energy policy, which where in the past, and remains for some Mediterranean countries,

focusing only on energy supply.

As for the southern and eastern Mediterranean countries, it seems therefore obvious that they now really need to consider energy efficiency as a prerequisite condition to a sustainable development because they are confronted to a more difficult economy and energy situation than industrialised countries. The total debts of the southern Mediterranean countries are approximately 1000 billions \$ with an annual charge interest of 100 b \$, which is, of course a too much unbearable burden for them. In addition, their needs associated to their development require a logical increase of their energy consumption, increase that they will have to manage with carefully and with rationality.

Potentials for saving energy resources in southern and eastern Mediterranean countries are considerable

Because of their low energy consumption, the southern and eastern Mediterranean countries have deliberately considered that saving energy was not really adapted to their situation and that their development needs would imply a proportional increase of both their consumption and production levels. In most cases, their energy policy was and remains based (and is still based) on an increase of their energy supply, despite the limitation of their financial possibilities.

The idea that southern and eastern Mediterranean countries should recover or make up for the industrialised Mediterranean countries situation must be banished. The solution consists in both energy efficiency and on the availability of a large spectrum of technologies

In those countries where the level of consumption is low but where efforts to lay in a supply of energy or to produce more energy must be enormous in order to foster their development, it is essential that energy consumption forecasts should be seriously taken into account in each single step of development and in each different sector since the very beginning of the process. Southern and eastern Mediterranean countries must find their own way to development, they mustn't follow the same « beaten track » as their northern counterparts. The solution consists in both Energy efficiency and technological pluralism

But exploiting potentials of energy efficiency is facing obstacles

It is a fact that there is a very important potential for southern and eastern Mediterranean countries to save huge quantities of energy in the coming years. However, its exploitation has to face several obstacles such as market, institutional, technological and financial failures. Nowadays, industrialised Mediterranean countries have an ambivalent behaviour towards southern and eastern Mediterranean countries and concerning how to finance energy efficiency programmes in these countries.

As creditors, they worry about the increasing amount of the debt and then require through the I.M.F., drastic « structural adjustment » policies as well as reduction of the internal demand so as to favour export activities. On the contrary, as industrials, they obviously see a fantastic and very attractive potential market in developing countries. And this ambivalence does also exist when concentrating on the one hand on Keynes and Marshall theories (Brandt Report) and on the other hand on the liberal orthodoxy starting in 1980. It is just as if energy behaved as a mirror that would reflect both development problems and difficulties with Northern/Southern relations. However, the trade relationships in the Mediterranean basin are focused between the southern side and the EC countries.

There is no miracle solution, nor extraordinary discovery capable of releasing increasing energy, environmental and financial constraints that suffocate southern and eastern

Mediterranean countries. But many hopes exist provided that various levels of action are activated in order to cumulate their efforts from demand side management to a redefinition of supply models. But priority remains the energy efficiency increase and the renewable energies development. It belongs to southern and eastern Mediterranean countries to define and carry out new strategies along a clear strategy : increasing co-operation between the more affluent northern countries, technology transfers so that development in the southern side is to be sustainable by increasing their energy efficiency.

In most southern and eastern Mediterranean countries, technical and administrative abilities are lacking at different levels (institutional, financial, industrial), it is therefore necessary to create and promote them as quickly as possible at a local or regional level if those countries want to achieve good results concerning sustainable development.

Anyway the Mediterranean community has a strong responsibility to create these institutions and local teams, not only because it would correspond to each country interest but also because it represents an advantage for itself.

Question about sustainable development

There is no doubt that if developing countries are to reproduce the northern development scheme, Earth would simply deteriorate more each day and nobody would ever benefit of any sustainable development. Nevertheless, it does not mean that the southern countries must sacrifice themselves to save the planet and the future generations, but it means that sustainable development in the Mediterranean basin will be possible only if energy efficiency concerns are systematically included in all development strategies as soon as they appear. Energy efficiency, throughout programmes enable to improve knowledge about the needs of the different actors and to correct market failures. These are strategies of no regret that should be included in a broader co-operation policy between the two Mediterranean rives.



Top of file

Annex 1 : Main indicators of the Mediterranean countries in 1992.

| | FR,ES,GR,IT | ALTUMA | Rest Mediterranean |
|--|----------------|---------------|-----------------------|
| Population (thousands) | 163853 | 60865 | 229439 |
| PIB (millions US \$ 80 ppp) | 1576138 | 105769 | 582359 |
| PIB per capita (k \$ 80 ppp) | 9,62 | 1,74 | 2,54 |
| Final Energy Cons. (ktoe) | 350516 | 22279 | 126288 |
| Per Capita Cons. (toe/cap/year) | 2,14 | 0,37 | 0,55 |
| Energy Intensity (toe/k \$ 80 ppp) | 0,22 | 0,21 | 0,22 |
| Electricity Cons. (Gwh) | 714382 | 27240 | 230738 |
| Per Capita Cons. (Mwh/cap/year) | 4,36 | 0,45 | 1,01 |
| Electric Intensity (kwh/ \$ 80 ppp) | 0,45 | 0,26 | 0,40 |
| CO2 emissions CO2/hab | 243687 1,49 | 26620 0,44 | 114833 0,50 |

Source : ENERDATA.

Fr, Es, Gr, It : the group France, Spain, Greece, Italy

ALTUMA : Algeria, Tunisia, Morocco

Rest Mediterranean : the Mediterranean countries except the four EC countries.



Top of file

Annex 2 : A Business as usual scenario for the Mediterranean countries in 2025.

| | FR,ES,G,I | ALTUMA | Rest Mediterran | Total |
|--------------------------------------|-----------|--------|--------------------|--------|
| population (millions) | 166 | 104 | 381 | 547 |
| PIB/cap (1000\$80 ppp) | 16 | 6,7 | 6,7 | |
| PIB (G\$ 80 ppp) | 2656 | 697 | 2553 | 5208,7 |
| FEI (toe/k\$80 ppp) | 0,12 | 0,22 | 0,22 | |
| FEC/cap (toe/cap) | 1,92 | 1,47 | 1,47 | |
| FEC (Mtoe) | 318,72 | 153,30 | 561,59 | 880,31 |
| CO2 Emissions (MtC) | 223,10 | 122,64 | 449,28 | 672,38 |
| Elec Cons./cap (Mwh/cap) | 4,50 | 2,30 | 2,40 | |
| Elec Cons. (Twh) | 747,00 | 239,20 | 914,40 | 1661,4 |
| Electric Intensity (kwh/\$80 ppp) | 0,28 | 0,34 | 0,36 | 0,32 |
| CO2/cap (tc/cap) | 1,34 | 1,18 | 1,18 | 1,23 |

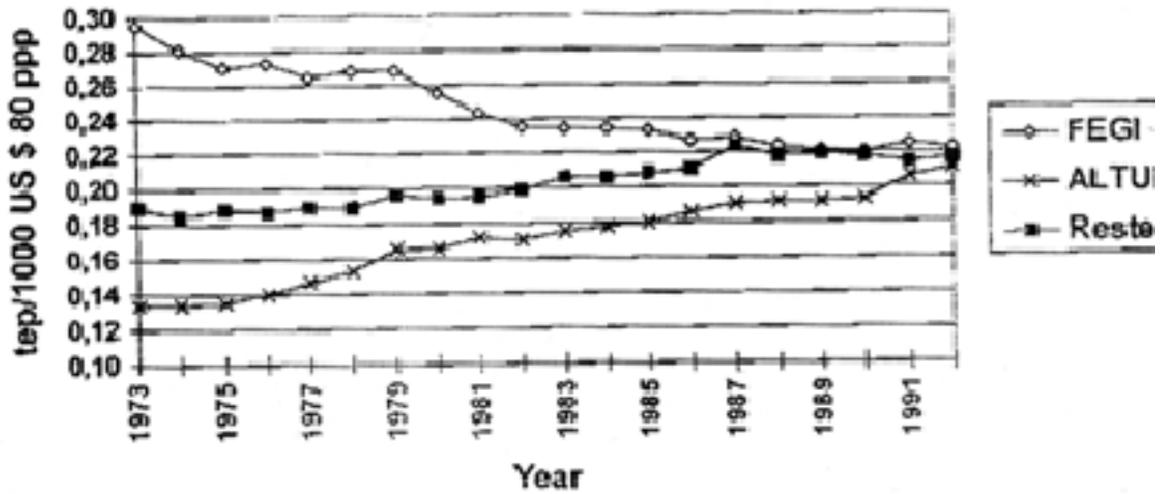
Source :data are from PNUD demographic projections, ENERDATA for macroeconomic and energy indicators.



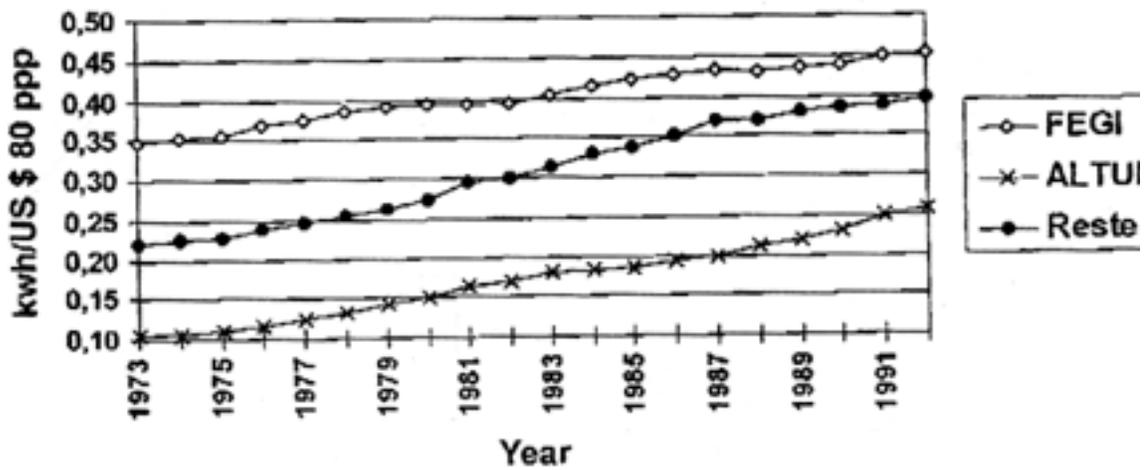
Top of file

Annexe 3 : Some significant graphs and trends in Mediterranean countries

Trends in Final Energy Intensity In Mediterranean Countries
1973-1992



Trends in Electric Intensity of Mediterranean Countries
1973-1992



Trends in CO2 Emissions of Mediterranean Countries 1973-1992

