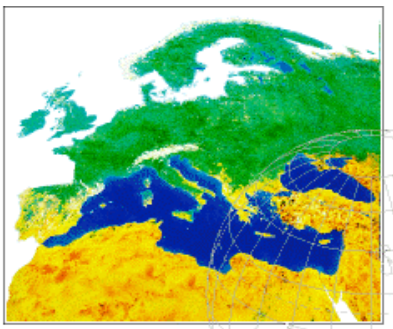
Friends of the Earth Middle East



Euro-Mediterranean Free Trade Zone

Implications for Sustainability

Case Studies, Assessments and Recommendations

DRAFT STUDY

The full report will be available on-line at *http://www.foeme.org/mftz/report.htm*

Environmental Impacts of a Euro-Mediterranean Free Trade Zone:
Case Studies and Assessments

This research publication is part of **Friends of the Earth Middle East's (FoEME) Mediterranean Free Trade Zone (MFTZ) Environment Watch Project** to build a broad network of organizations and individuals to monitor the environmental and social implications of the Euro-Mediterranean Partnership.

The research was coordinated by Friends of the Earth Middle East and was undertaken by researchers from Friends of the Earth Middle East, EcoCon (Egypt), the Jordanian Society for Sustainable Development (JSSD), Life and Environment (Israel), and the Palestinian Agricultural Relief Committees (PARC).

This research report presents preliminary research results. It is a **DRAFT ONLY**. As FoEME supports public participation, it welcomes feedback to this report. All individuals and organizations are encouraged to send us their comments. Comments should be sent to mftz@foeme.org
A final report will be issued in June of 2000.

Editor: David Katz
Friends of the Earth Middle East
April, 2000

Friends of the Earth Middle East (FoEME), is a unique umbrella organisation representing leading Middle East environmental non-governmental organisations. Our primary objective is the promotion of cooperative efforts to protect our shared environmental heritage. In so doing, we hope to help achieve both sustainable regional development and the creation of necessary conditions for lasting peace in our region.

FoEME is a member of Friends of the Earth International (FoEI), the world's largest network of environmental organisations, operating across the globe.

This project is part of FoEI's Trade, Environment, and Sustainability (TES) programme.

FoEME is also active member of Friends of the Earth's MedNet network, a network of FoE organisations from throughout the Mediterranean region.

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Friends of the Earth Middle East (FoEME)
PO Box 9341 **PO Box 55302**
Amman, Jordan 11191 **E. Jerusalem, 97400**
http://www.foeme.org/
info@foeme.org

Environmental Impacts of a Euro-Mediterranean Free Trade Zone: *Case Studies and Assessments*

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EXECUTIVE SUMMARY

THE EURO-MEDITERRANEAN FREE TRADE ZONE

The Euro-Mediterranean Partnership (EMP) is a regional policy framework involving the countries of the European Union and twelve non-EU countries from the Mediterranean region. The driving element of the Partnership is a trade liberalisation process which is to be implemented in stages and is expected to culminate in the establishment of a regional free trade zone (FTZ) by 2010. Due to the dominance of the EU market for MPC economies, the Euro-Med trade programme is likely to have significant impact on the economic structure of the non-EU Mediterranean Partner Countries (MPCs). The purpose of this study is to examine potential environmental impacts of the EMP, by examining experiences in other free trade zones and by assessing case studies on sectors of economic, social and environmental importance in MPCs.

The Euro-Med economic programme involves the removal of trade barriers on manufactured goods coming from anywhere in the Euro-Med region. As the EU already provides duty free access to most MPC manufactured goods, the core of the Euro-Med trade initiative is the opening of the economies of the MPCs. In addition to removal of customs duties, the Euro-Med supports broader structural adjustment programmes (SAPs) in the hope of better integrating MPC into the global economy. While the EU will clearly gain from such a process in terms of gaining easier access to Mediterranean markets, the incentive for the MPCs is the opportunity to attract European investment and technology, as well as increased direct financial assistance.

LESSONS FROM OTHER TRADE AGREEMENTS

Other free trade zones such as the EU itself or the North American Free Trade Agreement (NAFTA), indicate that trade liberalisation can have substantial environmental implications, especially among the less economically developed trade partners. Expansion of industrial activity and intensification of agriculture usually result as these economies receive foreign investment and become more export oriented. These generally lead to overall increases in resource consumption and pollution rates for the less developed partners. For many of the MPCs, which are already exploiting their limited natural resource bases at or beyond sustainable rates (e.g. for water), such an expansion could cause irreversible damage.

Both the EU and NAFTA are believed to have caused sharp rises in transportation and related pollution, as goods are now transported longer distances. For the Mediterranean region, this will likely mean increased pressure on ecologically sensitive coastal areas and the marine environment. Trade liberalisation agreements are also considered to accelerate trends of urbanisation, which would mean further pressures on already burdened urban environments in the Euro-Med region. Reduction of customs on foreign goods leads to rises in consumption of consumer goods and resulting increases in resource consumption and packaging waste. Infrastructure in MPC countries is insufficient. Removal of customs also means a reduction in funds available to governments to address environmental and social issues. Thus, a nation's capacity and willingness to address environmental issues decreases exactly at a time when pressures are on the increase.

Increased efficiency rates may result due to availability of better technology and removal of wasteful subsidies under SAPs and the possibility to capitilise on environmental niche markets offer genuine potential gains for the environment. Mitigation of negative impacts and promotion of possible win-win situations can only occur, however, with active promotion of strong supporting institutions and policies backed with sufficient authority and finances. The EU contains a Directorate General to address environmental issues, while NAFTA has a weaker set of institutions. The Euro-Med would benefit from a strong coordinating institution which can ensure integration of sustainability concerns, something currently lacking.

THE TEXTILE SECTOR IN EGYPT

Textiles are Egypt's leading non-oil export and an important source of employment. While textile quotas are being phased out under a World Trade Organisation agreement, it is believed that non-tariff barriers will remain an important issue. Based on current EU-MPC association agreements, the Euro-Med process is likely to impact the sector through increasing investment and the possibility for penetrating the EU market.

Equipment used in the textile sector in Egypt is old and inefficient. Prices of inputs such as water and electricity do not reflect environmental costs and so are used wastefully. Major environmental impacts of the sector include wastewater effluent and air pollution. Expansion of the industry will presumably lead to increased resource consumption and pollution, given current pricing and regulatory structures. The possibility that producers could benefit from environmental market niches provided by eco-labels or environmental management systems such as ISO 14000 seems unlikely. Most of the producers in the sector are small or medium sized enterprises which lack the financial capital and the knowledge about technical specifications which is necessary in order to take advantage of such opportunities. Indeed, in surveys conducted, they tended to see environmental issues as potential market barriers.

Euro-Med sponsored programmes to promote modernisation of industry could play a potentially beneficial role if they incorporate assistance directed at improving environmental performance into their activities. Such programmes could include collection and dissemination of information regarding environmental standards, technologies, and certification schemes, as well as development of funds to enable small-scale producers to act on such information.

THE PHOSPHATE SECTOR IN JORDAN

The phosphate industry is a major source of foreign currency and employment in Jordan. Mining and mineral processing however, have serious and in some cases irreversible impacts on the environment and on the well-being of the local populations. The sector already extracts water beyond sustainable limits, energy consumption is high, and air and water pollution negatively affect local human and wildlife populations.

Jordan is planning to expand phosphate mining by up to 67% over the coming decade and to rapidly develop its fertiliser and chemical production capacity in order to expand into new higher-value added product markets. The industry is seeking joint ventures in order to gain technologies and market contacts. While it is difficult to draw much definitive relation, there is some evidence that the Euro-Med free trade programme is contributing to the current expansion of the sector in Jordan , both in terms of increased access to finance (EIB loans) and in terms of facilitating new joint ventures between EU and Jordanian firms. Jordan's high quality phosphate should give it a potential comparative cost advantage in meeting high EU environmental standards. This may be a reason for additional EU interest in investing in this sector.

Given the current lack of internalisation of environmental costs for producers in Jordan (both in terms of consumption and emissions) and relatively weak enforcement of environmental regulation, the planned expansion of production is likely to exacerbate current negative environmental impacts, especially in terms of water and energy consumption. Recommended mitigation measures include region wide research and development into methods of reducing resource consumption for the sector, development of monitoring systems at the industrial level, and increased investment at the sectoral level for mitigation and environmental rehabilitation.

AGRICULTURE IN THE SOUTH-EAST MEDITERRANEAN

Agriculture is an important sector socially and economically for several southeast Mediterranean countries, employing large segments of the population, and generating much needed foreign currency. The region is characterised by limited amounts of water and arable land, and a very short rainy season, all of which largely determine the nature and extent of the region's agricultural production. In terms of environmental impact it is the primary consumer of the region's limited water resources. Fertiliser and pesticide use, which contaminate soil and water sources, is widespread due to the region's naturally low soil productivity and to price supports in some of the countries. Cultivation of cash crops for export tends to be much more resource intensive and polluting than does production for local consumption.

The Euro-Mediterranean Partnership's trade liberalisation programme calls for progressive liberalisation of agricultural trade in the region, stopping short of calling for completely free trade as it does in the case of manufactured goods. This is largely due to the EU's protective Common Agricultural Policy. In association agreements between the EU and southeastern Mediterranean countries, areas in which the EU granted trade concessions have largely been restricted to early (usually winter) crops of fruits and vegetables which do not

compete with production within the EU. Such limitations do not necessarily correspond to the natural peak production for these countries. Thus, in order to capitalise on the lucrative EU market opportunities many farmers are forced to choose crops that are not appropriate to the region and which demand intensive applications of inputs, e.g. water and agro-chemicals, and/or to farm on marginal lands.

The Barcelona Declaration of 1995which established the Euro-Mediterranean Partnership calls for promotion of environmentally-friendly agriculture. Actual activities promoting such an objective, however, were not apparent in the countries studied. While the EU market for organic agriculture is growing rapidly, for instance, relatively few farmers are able to take advantage of it due to: relatively limited export opportunities overall for agricultural goods, a high level of information needed regarding standards and market contacts, high up-front costs needed for certification, and a lack of necessary infrastructure. In order to genuinely promote such a goal, association agreements could be expanded to offer special concessions for sustainable agricultural production, programmes could be developed to develop networks for dissemination of information on environmental market opportunities, and price supports for agricultural inputs could be removed or restructured so as to be tied to sustainable production.

RECOMMENDATIONS

In order to mitigate some of the environmental pressures anticipated to result from the Euro-Mediterranean Partnership's trade policy and to actively promote potential environmental opportunities opened by the Partnership, the following measures are recommended:

- ***Incorporation of Environment in Bilateral and Regional Agreements.*** As most of the impacts of the Euro-Med economic policy will result from the EU non-EU relations, it is essential that environmental concerns be considered in the negotiation and implementation of the EU-MPC bilateral association agreements, as well as at the regional level.
- ***Sustainability Impact Assessments***. An officially sponsored sustainability assessment should be carried out immediately on the planned regional free trade zone and its recommendations incorporated into Euro-Med policies. Assessments of the bilateral agreements should also be undertaken and data shared among partner countries.
- ***Sustainability Indicators.*** A system of national and regional indicators reflecting progress in terms of sustainability which is specific to issues raised by trade liberalisation should be developed and monitored, so that member countries can evaluate and respond to social and environmental impacts.
- ***Specific Targets***. As it does for its trade programme, Euro-Med agreements and policies should designate specific sustainability targets, with schedules and finances for achieving them.
- ***Environmental Screening of Official Euro-Med Finance.*** All significant financing undertaken within the framework of Euro-Med institutions (e.g. MEDA and EIB) should undergo sustainability screening, especially that promoting industrial and/or infrastructure expansion. For such projects which receive funding despite expected environmental damage, matching funds should be made available for necessary mitigation and/or compensation measures.
- ***Capacity Building***. Programmes to develop technical and professional capacity both at the private sector and governmental levels, need to be implemented in order to identify and address trade-environment issues and to facilitate exploitation of environmental opportunities within the Euro-Med system.
- ***Institutional Support.*** A strong institution within the Euro-Med Partnership is needed to coordinate environmental programmes and policies and ensure that sustainability concerns are well integrated into overall Euro-Med policy initiatives.
- ***Internalisation of Environmental Costs.*** Policies to incorporate environmental impacts into pricing should be encouraged, including eco-taxes and the removal or reduction of wasteful subsidies and other price supports for water and electricity. As these price supports are often important for poorer segments of the population, alternative policies need to be in place to assure provision of basic needs. Work on developing such a restructuring of policies should be incorporated into MEDA funding for structural adjustment.

THE EURO-MEDITERRANEAN FREE TRADE PROGRAMME:
CASE STUDIES AND ASSESSMENT OF ENVIRONMENTAL IMPACTS

1. INTRODUCTION

In 1995, leaders of 27 governments, as well as the European Union, came together in official support of a joint policy initiative to increase the political, economic, and cultural ties between countries on both sides of the Mediterranean Sea. This 'Euro-Mediterranean Partnership', as it is called, includes Algeria, Cyprus, Egypt, Israel, Jordan, Lebanon, Malta, Morocco, the Palestinian Authority, Syria, Tunisia, and Turkey, as well as all 15 member states of the European Union. According to the Barcelona Declaration, the document signed by the Foreign Ministers of each partner country which officially initiated the Partnership in 1995, the Partnership's main goals are:

1. A definition of a common area of peace and stability through a reinforcement of political dialogue and security.
2. A construction of a zone of "shared prosperity" and the gradual establishment of the region as a free trade zone, to be functional by the year 2010.
3. A rapprochement between peoples through a social, cultural and human partnership.

Based on the resources dedicated and official activities undertaken under the Euro-Med banner, the economic programme with its focus on creating a regional Euro-Med free trade zone[1] is clearly the top priority among the three issue areas, and its implementation is likely to have significant impacts upon the other two, as well as on the social and environmental fabric of the region. The economic programme will effect the economies of the region in several ways, including through:

- Bilateral association agreements between the EU and SMPs which have been negotiated or are being negotiated during the interim period until the establishment of the regional free trade agreement.
- Structural adjustment programmes in the SMPs including introduction of value-added tax systems, investment protocols, harmonisation of standards, etc.
- Possible changes in cumulative rules of origin which would allow for increased south-south cooperation in joint production of goods to be traded within the region.
- Elimination customs duties on all manufactured goods traded within the region (in essence this means the opening up of the markets of the southern Mediterranean partners (SMPs), as the SMPs already have preferential (duty-free) access to the EU for most manufactured goods) by 2010.
- Possible liberalisation of agriculture and services, which represent large shares of the economies of several of the SMPs (While not scheduled for inclusion in the free trade zone, these fields are likely to be liberalised to some extent within a regional trade arrangement. Some reductions of trade barriers in these areas are already being negotiated into bilateral EU-SMP association agreements.)

In addition to the tangible changes in economic policy, the Euro-Med Partnership has been allocating substantial sums for technical support for economic transition, infrastructure projects, and various political and social programmes. New investment flows are also expected due to a more solid and predictable region-wide financial framework.

While the southern Mediterranean region represents a relatively small share of the EU's economy, the EU represents roughly half of the total trade of the MPCs, reachng nearly 70% in some cases. Thus, the Euro-Med's trade programme could have a profound impact on the economies and the lifestyles of those living in the MPCs, with direct effects on production and consumption, as well as on institutional roles and capacities. Clearly these changes will have direct and indirect social and environmental impacts. Some of the most obvious social impacts, such as effects on unemployment and aggravation of poverty have begun to be investigated, and research bodies have begun to propose various measures for achieving a balance between economic development and social stability. The associated impacts of the Euro-Med Partnership on the environment and long-term sustainable development, however, have remained largely unaddressed.

[1] The terms Euro-Med free trade zone or Mediterranean Free Trade Zone (MFTZ) are used interchangeably within this document to refer to the proposed regional free trade area.

2. PURPOSE OF THE REPORT

At the Rio Earth Summit of 1992, the countries of the world committed to considering environmental issues when developing other policies, including trade policies. While clear objectives stated in the Barcelona Declaration to respect the region's natural environment and promote sustainable development, relatively little in terms of research and programming concerning these issues has been carried out under the Euro-Med framework. This report attempts to address this gap. It is the culmination of a joint research project undertaken by Friends of the Earth-Middle East (FoEME) and partner organisations in Egypt, Israel, Jordan, and Palestine to investigate possible implications of the Euro-Med programme to establish a free trade area. The aim of the study, and of the project in general, is to contribute to a better understanding of the possible environmental impacts, and to suggest policy recommendations for promoting sustainable development in the region.

3. SCOPE OF THE REPORT

Due to the vast range of possible impacts across a large number of countries, the research presented herein does not attempt to be comprehensive in its assessment. The report consists of five separate case studies which together give an insight into a cross-section of some of the most significant issues:

- Lessons from other Trade Agreements – conducted by Friends of the Earth-Middle East
- The Textile Sector in Egypt – conducted by Eco-Con
- The Agricultural Sector in the Levant – conducted by the Palestinian Agricultural Relief Committees (PARC)
- Jordan's Phosphate and Phosphate Fertiliser sector – conducted by the Jordan Society for Sustainable Development

The first study presents several of the over-arching issues at stake and their relevance to the Euro-Med region, while the next three are case studies of specific sectors. The selection of each of the various studies was made in an attempt to address both broad, macro-level issues. The three economic sector studies were chosen because of the economic and social significance of the sector to the country/countries being examined. Although these studies are limited in their geographical scope, they are relevant to several of the Euro-Mediterranean partner countries. In these studies focus was placed largely on impacts of production, rather than on transportation, use, and disposal of the goods. While life-cycle-analysis using a cradle-to-grave approach would have been preferable, limits of time, resources, and capacity necessitated more modest assessments.

Analysis was not limited to the impacts of the eventual establishment of a regional free trade area, although this was a focal point for much of the evaluation. Rather, it was extended to the economic liberalisation process being promoted under the Euro-Med framework in general. The reason for this extended scope is due to the significant impacts which are likely to result from the bilateral association agreements and other processes outlined above, which will have effects prior to the 2010 target date, and may outweigh the implications of the regional agreement itself.

The collective study is not a broad sustainability assessment. Rather, it largely limits its focus to environmental implications and to social impacts which are closely related to natural resource management. Again, while wider social considerations should be an integral part of a comprehensive assessment, due to limits of resources and capacity, the current project should be viewed only as a contribution to what is clearly a much larger need.

4. METHODOLOGIES OF THE STUDIES

The studies were conducted independently of one another, and each of the researchers were allowed to develop their own methodology according their own assessment of the specific needs of their individual study. Thus, the methodologies vary, and include utilisation of industry interviews, extrapolation and regression analysis of primary macro and micro-level economic data, and empirical data from secondary sources. The overarching principle guiding all of the studies was the Euro-Med's impact on the sustainable

development of the areas being studied. Sustainable development was defined generally as living within the limits of natural ecological systems of which we are part, in a manner which best meets the needs of the current generation without compromising the ability of future generations to meet theirs.

While the studies attempt to be as objective as possible, they have an undeniable normative element, especially in terms of policy suggestions. In addition, they also make occasional use of the concept of "environmental space," which centers around notions of "fair" access to natural resources as well as fairness in paying environmental costs. These are inherently subjective matters, but ones for which clear criteria is generally presented (e.g. the polluter pays principle, etc.). The present studies offer limited cost-benefit analysis. Rather, they concentrate primarily on projecting only the environmental impacts and some environment-related social consequences, in the hope that this can serve as a basis against which policy-makers can evaluate other perceived economic or social impacts which have been studied elsewhere.

5. METHODOLOGICAL OBSTACLES

As with many studies on trade agreements, there is a tremendous difficulty in distinguishing between economic trends which result from the trade agreements in question and those which would have occurred irrespective of the agreements due to other similar trade liberalisation initiatives. In the case of the Euro-Med countries, most countries are either members or candidates for membership in the World Trade Organisation (WTO), and thus, many are undergoing similar economic reform and trade liberalisation programmes (e.g. reduction of trade barriers and harmonise standards) as they are obligated by commitments within the WTO framework. Furthermore, several of the MPCs have implemented or are in the process of implementing structural adjustment programmes, such as those mandated by the International Monetary Fund, which largely overlap with the economic programme of the Euro-Med. Indeed, the Euro-Med Partnership specifically calls for strengthening of such complementary policies, thus blurring distinctions between it and other programmes.

Another obstacle was lack of accurate, compatible and up-to-date data – both economic and, even more so, environmental – either because the data is not kept or because it is not openly accessible. In order to accurately predict environmental impacts of the Euro-Med trade policy, it would be necessary to have accurate predications of the expected economic changes. Unfortunately, because of the problems just mentioned, much of the economic studies conducted regarding the Euro-Med have either been very general or are based on relatively speculative modeling or even theoretical guess-work.. Under such circumstances, identifying specific environmental impacts of the Euro-Med free trade programme has been problematic and it was often necessary simply to address general trends to which the Euro-Med Partnership contributes, relying on experience from the Partnership's first four years, as well as on similar experiences from other parts of the world.

Despite methodological obstacles, certain trends do appear clear and it is the hope of these authors that the research findings provided herein are of use to policy makers in realising and addressing the issues at stake in order that the Euro-Mediterranean Partnership be able to fulfill its stated ambition of creating a "shared zone of prosperity."

The Euro-Mediterranean Free Trade Zone and the Environment – Issues and Evidence: *Lessons from other Trade Agreements*

by David Katz, Friends of the Earth-Middle East

1. INTRODUCTION

Over the past two decades, the world has witnessed a proliferation of regional trade arrangements. This work aims to explore experiences from some such agreements, as well as from other relevant economic liberalisation programmes, in order to better understand the issues at play in the context of the proposed Free Trade Zone (FTZ) called for under the Euro-Mediterranean Partnership.

2. METHODOLOGY

This study makes use of the following categorical distinctions in terms of environmental impacts of trade liberalisation:

- *Scale* – changes in the amount of resources consumed and/or products or pollution produced;
- *Composition* – shifts in terms of which economic sectors are active;
- *Technique* – changes in production methods and technologies used;
- *Regulation* – both regulatory attempts at addressing trade-environment issues, as well as the impact trade agreements can have on regulation itself;
- *Institutional Responses* – which institutions are established and/or designated responsibility for addressing the trade-environment dynamic.[1]

The study analyses experiences from other trade agreements according to the categories outlined above to see if and how they have affected these elements of sustainable regional development. Central to this concept is the need for countries to respect the carrying capacities of their natural physical environment. As most of the expected impacts are in the southern Mediterranean partner countries (MPCs), the study focuses primarily on these nations. Efforts were made to examine impacts at a sub-national level, as well, since severe local impacts may not necessarily effect national-level indicators.

Throughout the study reference is made primarily to two other FTZs which are of particular relevance to the case of the Euro-Med, the European Union and the North American Free Trade Agreement (NAFTA). While the EU is of obvious relevance in that it is itself one half of the Euro-Med Partnership, while NAFTA is the first major FTA to incorporate both industrialised and developing economies. There are, however, also several differences between the aforementioned FTAs and the Euro-Med FTZ which need to be kept in mind. The EU is much more than an FTA; it is a comprehensive political and economic regional integration. It also deals with nations of relatively high economic development. In the case of NAFTA, because it involves only one developing country the environmental issues possible methods of addressing these are more focused.

Other trade arrangements are referred to periodically when relevant. The Asian Pacific Economic Cooperation (APEC) policy forum is similar to the Euro-Med in that it is a broad policy forum of both developing and industrialised nations, however, since it is still too early to see any definitive tangible impacts, reference is made to APEC only in terms of regulatory and institutional measures.

3. SCALE

3.1. Economic Development and Environmental Protection

Perhaps the primary issues at stake is how economic development, which the Euro-Med's trade liberalisation proram is supposed to facilitate, impacts the environment. Several researchers have attempted to see if there tends to be a linear relationship whereby increased economic activity results in increased consumption of resources and increased pollution, or if, on the contrary, economic development leads to better technologies

[1] The categorisation follows similar frameworks used elsewhere, such as by the OECD, the World Bank, and others.

and demands for higher levels of protection thereby reducing environmental pressures. Such generalisations over-simplify the issues, however, as economic liberalisation is proposed as a remedy for environmental crises by several international institutions dealing with the region, the question is worth examining more closely.

Some seminal studies which examined the relationship between economic development and air pollution found that the output of pollutants per dollar equivalent produced tended to increase along with national income until a certain point, after which point it tended to decline. In the first studies, a level of annual Gross Domestic Product (GDP) per capita of roughly US$5,000 was found to be the watershed mark (Radetzski, 1991, cited in Bailey, 1993.). Thus, pollution levels, as plotted against per capita income, followed a sort of inverted "U" curve, sometimes called a Kuznets curve. Some studies of other types of pollution confirmed such a phenomenon.

This type of analysis, however, is open to several critiques. First, it only shows such inverse relationships for certain pollutants. Not all forms of pollution show a decline past a certain point of economic development. Second, some research shows that some pollution levels which do decline as income rises often level off at rates relatively close to the peak emissions rates.[2] Third, studies have tended to concentrate on pollution levels, as opposed to resource consumption, which is a crucial issue for many of the resource poor MPCs. Finally, the analyses generally do not consider carrying capacities, levels of ambient resource quality, or other concepts central to sustainability. In many developing countries, while the pollution as measured per unit of production has decreased, overall pollution loads have increased. Moreover, even if overall levels of pollutants eventually do decrease, the additional pollution emitted when emission levels are at their peak could exceed maximum sustainable rates. This could seriously disrupt the ecological systems, even lowering the original carrying capacity, as shown in Figure 1.

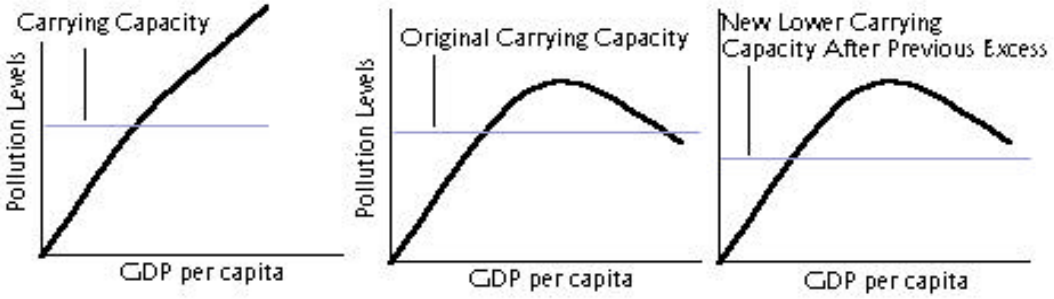


Figure 1. Many pollution emission levels do not decrease along inverted "U" curve (left) and even for those that do, peak emission levels may exceed carrying capacity, even causing permanent damage (center & right).

In the case of the Euro-Med, economic development in MPCs has tended to be accompanied by higher levels of resource consumption and increased pollution loads.[3] Even for the specific situations for which an inverted U curve phenomenon might be expected, 9 of the 12 MPCs are well below the estimated "watershed" levels of US$5000-7000 GDP per capita, after which improvements are projected. In the case of Egypt, for instance, even assuming an optimistic scenario per capita income will only reach the US$5000 level in roughly 40 years.[4] In sum, based on current trends, it can be expected that without additional mitigating policies, Euro-Med economic expansion, will tend to exacerbate environmental pressures in the majority of MPCs, not detract from them, at least in the short and medium term.

It is questionable how much more many MPCs can take in terms of pressures on natural resources, many of which are already facing critical threats. Several of the MPCs are already utilising over 100% of their renewable fresh water resources, for instance, and even more are facing serious problems of water quality.

[2] Per capita CO_2 emissions in high income countries in 1996, for instance, were equal to those of 1980, however, the rate at which they balanced off – 12.3 metric tons per capita – is over three times that of the Middle East and North Africa region (World Bank,1999).

[3] For example, all MPCs for which there was data have experienced increases in CO_2 emissions between 1980 and 1996 (World Bank, 1999), and all, with the exception of Syria, experienced increases in organic water pollution between 1980 and 1993.

[4] Calculations based on economic growth at a constant rate of 5% annually, given a constant annual population growth rate of 1.6%, as projected in UNDP, 1998.

In addition, levels of air and water pollution already exceed international standards in many MPCs as will be discussed later

3.2. Scale Effects of FTAs

According to studies investigating the 1992 initiation of the European Union's single market, the complete removal of trade barriers within Europe was likely to be the direct source of increases in transport, air pollution and domestic waste production (Task Force[5]), The study estimated, for instance, that each 1.5% increase in economic growth would lead to 10-20% increase in air pollution emissions. The expected changes varied largely according to geographical location. Significantly, all southern countries, the lesser developed within the EU, were likely to see increased air pollution emissions. Empirical data covering the period in question shows that all four least developed EU countries (Greece, Ireland, Portugal, and Spain), increased CO_2 emissions, with overall emissions for the four rising 30% between 1990 and 1996.[6]

In the case of NAFTA, the Clinton administration had promised that the agreement would ease environmental pressures on the US-Mexican border. Studies examining NAFTA's first five years of implementation, however, have shown that while the relative share of the border regions in national production decreased, in absolute terms, it continued to grow at rates of up to 20% annually (Jenkins and Branch, 1996). In addition, while substantial sums were invested in pollution control at the factory level, many of the communities on both sides of the border witnessed increases in both water and air pollution. Thus, instead of an improvement in the environmental situation of the border regions due to a redistribution of production, the net effect of NAFTA, thus far, has simply been an increase in the areas' total pollution loads. [7]

Lorry transport was projected to increase seven-fold between 1995-2005 due to NAFTA (FoEI, 1999). Increases in production and transport of wastes and toxics resulting from NAFTA seems to be overwhelming the ability of the governments to effectively supervise their use and disposal. Hazardous waste crossing the US-Mexican border reportedly increased by 50% in 1996 alone and it is estimated that less than 1% of lorry traffic at border crossings are inspected (Global Trade Watch, 1998). Such minimal enforcement measures offer little incentive to abide by environmental regulations. Indeed, reportedly the final disposal of one quarter of hazardous waste produced in maquiladoras is unaccounted for (ibid, 1998).

Based on economic development policies of the Euro-Med economic liberalisation programme, likely risks for MPCs include increases in:

- Water consumption and pollution from industrial, agricultural and domestic sources
- Air pollution from industrial and domestic sources, as well as transportation
- Solid waste production from increases in industrial and domestic consumption[8]
- Loss of open lands, including water recharge zones and wildlife habitat, due to increased road construction, urbanisation, and industrial development
- Resource extraction, including fuel and mineral mining and possibly also fishing
- Marine pollution, pressures on coastal areas, especially in ports serving as sub-regional commercial hubs, and risk of accidents resulting from increased marine transport

In most cases, the burden brought about by the Euro-Med FTZ will be adding to already alarming trends. Water use in the Maghreb is projected to increase by a factor of seven over the next 20 years (Pearce, 1996). A World Bank study on the Middle East and North Africa (MENA) region predicted a growth of 50% in industrial pollution and 60% in transport pollution for the region unless significant policy changes were taken (World Bank, 1995). Energy production in the MPCs is projected to increase 36% between 1999 and 2025, while consumption in these countries is to increase 124% during the same period, with fossil fuels as the primary energy source (MEDA Team-Information, 2000).

[5] Task Force Report on the Environment and the Internal Market (hereafter 'Task Force'), 1989.
[6] based on figures in World Bank, 1999.
[7] Recent figures indicated a 2% drop in the amount of pollution produced by large manufacturing facilities in the US and Canada between 1995 and 1996. However, in violation of the NAFTA environmental side agreement, data for Mexico was not collected due to lack of effective pollution monitoring systems there, and thus it is not possible to estimate overall trends.
[8] Increases in waste production and pollution should be expected both as a result of increased industrial activities and of changes in consumer habits in MPCs due to lower prices for goods imported from the EU after tariff reductions.

Discussions of increases in scale cannot be evaluated in isolation from questions of the ability of the affected nations to cope with predicted changes. As noted already, several of the MPCs already extract water beyond renewable rates. In addition, according to the World Bank, in MENA countries over 160 million lived in cities already exceeding World Health Organisation air pollution standards and only 20% of urban wastewater is treated (as compared to 60-70% in Europe) (World Bank, 1995). Moreover, most already face severe problems of lack of capacity both in terms of infrastructure and trained personnel, to treat solid and liquid wastes.

In order to avoid additional pressures, anticipatory policy measures and infrastructure will be necessary. Currently these are largely lacking. In Jordan, for instance, an over 50% reduction of customs duties on motor vehicles was implemented in 1999, despite no comprehensive strategic traffic management plan for the country – a situation criticised as likely to result in more traffic jams and higher air pollution.

Should the Euro-Med FTZ lead to removal of environmentally harmful subsidies (e.g. for fossil fuels, water, fertilisers, etc.) and to improved access to advanced environmental technologies (to be discussed below), some of the negative environmental impacts may be somewhat mitigated. Such outcomes are only likely, however, if the MPCs actively develop and implement national and regional strategies which promote sound environmental and economic policies, such as price internalisation and economic incentives for investment in environmentally desirable initiatives.

3.3. Geographical Shifts within Nations

Free Trade Agreements can also lead to shifts in the location of production, which can also bring about population shifts as well. Analysis of the EU indicated that unification would accelerate trends of urbanisation, as people moved away from non-competitive rural livelihoods, thus threatening several valuable natural areas on the outskirts of cities. Empirical data confirm a trend in urbanisation for the EU, although at rates comparable to those of other industrialised nations. Similar population shifts were projected due to NAFTA, especially in Mexico. During NAFTA's first 3½ years employment in maquiladoras along the US-Mexican border rose 50% (Seligman, 1997). This movement has put further pressures on areas already incapable of supplying basic resources to the population and coping with the population's industrial and domestic pollution loads.

A Euro-Med FTZ is projected to exacerbate trends of urbanisation in MPCs, as well as possible increases in immigration from MPCs to urban centers in Europe (Handoussa and Reiffers, 1999). It is also likely to lead to increased pressures on the coastal areas, including on already overcrowded ports along the Mediterranean Sea, as the economies become increasingly oriented around exports to Europe. For many of the MPCs, these coastal areas are of unique ecological significance. In Algeria, for instance, 75% of the country's renewable water resources are concentrated in the coastal strip which makes up only 6% of the total area (Kayamanidou, 1998) while in Jordan, the nation's only port city is home to the world's northern-most coral reefs. Thus, even small additional pressures can have severe consequences.

4. COMPOSITION

Aside from changes in the *amount* of production, trade liberalisation also affects what types of products are produced and consumed, and can lead to production shifts between sectors or even within sectors. In the case of energy production, for instance, the Euro-Med FTZ is expected to facilitate greater use by EU nations of natural gas from the southern Mediterranean, in place of more polluting coal and oil sources.

Trade agreements often encourage export-oriented economies in developing countries which previously focused on meeting their own needs. Transitions from cultivation of traditional food stuffs to that of export-oriented cash crops, for instance, generally involve more intensive use of machinery and of agricultural inputs, such as water, fertilisers, and pesticides. This has direct impacts upon water and soil quality, as well as physical health of the workers. In addition, because agricultural production in developing countries which is designated for Europe generally involves non-native crop species, there is also the danger of the inadvertent introduction of exotic pests which can seriously disrupt local ecosystems.

NAFTA has been found to have threatened the livelihood of Mexican producers of maize, a traditional staple crop there, as local producers cannot compete economically with cheap US imports. Thus, they are faced with the prospect of either changing crop types and cultivation techniques in favor of more intensive methods or abandoning their traditional livelihoods and seeking employment in other sectors (CEC, 1999). While the Euro-Med Partnership does not call for free trade in agricultural goods, it is important to note that such shifts in agricultural production are likely to take place to some degree in any event, as the overall economies of MPCs will become increasingly foreign trade focused.

In addition to shifts in economic production, it is also important to note that FTAs also affect consumption patterns among consumers. This is especially likely as the MPCs open their markets to European manufactured goods. As those who can afford to, adopt Western consumption habits, there is likely to be a corresponding rise in such environmental loads as packaging wastes and domestic water and electricity consumption due to increased use of products such as home appliances.

4.1. Pollution Havens

One of the most debated issues in trade-environment research is that of "pollution havens" – the relocation of polluting industries from countries with high environmental standards to those with lower environmental standards and/or poorer enforcement of standards. Some have even posited that countries may purposely keep standards low in order to attract such "dirty" investment. Much of the economic research undertaken on this topic comes to the conclusion that the economic benefits of low environmental regulation are insufficient to motivate industries to relocate or to attract new investment, as environmental control costs are generally minor for most industries. For certain polluting sectors, however, environmental costs may be high enough to influence location decisions (Ewing and Tarasofsky, 1997).

Empirical evidence is mixed. One study claims that at one time Ireland and Spain tried to offer themselves as pollution havens within Europe, but were unsuccessful (cited in Bailey, 1993). Industry growth in Mexico since NAFTA came into effect, however, suggest that concern over pollution haven formation may be justified, as there has been an overall increase in the share of "dirty industries," such as chemicals, metals, and minerals, in Mexican exports (Jenkins and Branch, 1996). While it is difficult to predict what will occur in the Euro-Med case, the serious gaps between partners in terms of levels of economic development and systems of environmental regulation and enforcement means that conditions for a migration of polluting industries do exist and MPCs could become a dumping ground for equipment being phased out in the EU.

4.2. Economies of Scale and Efficiency

While removal of trade barriers can cause shifts in production which are environmentally detrimental, it can also allow for taking advantage of economies of scale and other methods of more efficient use of resources. Opening the countries to competition was also found to be beneficial in terms of efficiency ratios. In the case of electricity production, both the formation of the European single market and NAFTA were thought to have improved overall power production efficiency by integrating electrical grids, allowing for production at the most efficient locations (Task force, 1989; CEC 1999). Opportunities for such efficiency improvements in utilities and other sectors almost certainly exist in the Euro-Med region as well.

5. TECHNIQUE

One of the primary arguments supporting a win-win relationship between trade and environment is the prospect of facilitating technology transfer. In the case of the EU, the establishment of the common market has facilitated the transfer of technologies throughout member states. The EU mandate, however, meant that members countries were often forced to adopt relatively high standards which demanded use of advanced technologies. In the case of NAFTA, in a position paper released prior to the adoption of NAFTA, the White House promised that new investment would bring better, less-polluting technology (White House, 1992). To the knowledge of this author, however, no studies have been done to evaluate to what extent such processes have indeed occurred.

With trade liberalisation between industrialised and developing countries there are higher incentives for developing nations to implement environmental management plans, such as ISO 14000. Such a trend is already occurring in Europe and is getting underway in some of the MPCs as well. Since such certification

schemes oblige businesses to seek sound environmental management throughout their production and supply chains, increased trade contacts between the EU and the MPCs could mean an increase in environmental management plans by MPC businesses with European partners.

Environmental technologies and environmental certification often involve real economic costs, however, and while many of the technologies or management systems pay for themselves over time, initial capital outlays are often necessary and thus present serious obstacles for small and medium sized enterprises (SMEs), who make up the overwhelming majority of producers in many MPCs.[9] In addition, adoption of advanced environmental technologies remains unlikely as long as countries lack sufficiently high environmental standards and levels of enforcement.

A Euro-Med FTZ could facilitate technology transfer, however, such a scenario is not a given. Policies which focus on environmental technologies as a priority for customs and tax benefits for instance, would be needed. Programmes such as that of Euro-Mediterranean Energy Forum to promote renewable energies may be beginning to facilitate some transfer of technology, and institutions such as Egypt's Business and Technology Development Centres could also contribute if they focus more specifically on environmental technologies. Despite the potential, however, relatively little progress is actually being made in implementing such concepts in MPCs.

Other changes in technique, such as the expected shift from traditional to intensive agriculture, generally mean increased consumption of resources, higher pollution rates, drops in soil quality, and marginalisation of poorer farm workers. Spanish olive growing since its accession to the EU largely confirms this, as does a comparison between export-oriented Israeli olive production and traditional Palestinian olive cultivation (Bonazzi and Gomez y Paloma, 1998; FoEME, 1998).

6. REGULATORY ISSUES

6.1. Addressing Environmental Concerns

Environmental regulation is often seen as a barrier to trade, whether because of outright bans on certain types of goods or production methods, technical restrictions, or costs involved which affect competitiveness. Conversely, free trade regulation, by emphasising competitiveness as an over-riding value, is also sometimes seen as undermining effective environmental regulation.

Although the original Treaty of Rome establishing the European Community in 1957 did not specifically mention environmental issues, their transboundary nature, their impact on trade, and mounting public concern, pushed them onto the Community agenda. The Single European Act of 1987 directly addresses environmental issues. Article 100a of the Act states that environmental protection is a legitimate priority within the mandate of the EU, and Article 230 commits to integrating environmental concerns into other policy areas.

Environmental concerns were neglected during the early stages of negotiation of NAFTA, however, public pressure forced the trade teams to incorporate environmental concerns. The preamble to NAFTA states that it is the intent of the agreement to, "Contribute to the harmonious development of world trade...in a manner consistent with environmental protection and conservation...; promote sustainable development...; [and] strengthen the development and enforcement of environmental laws and regulations. While this is a general and non-binding clause, inclusion of explicit environmental goals in the agreement's preamble expresses the notion that NAFTA is intended to promote a specific type of development which includes social goals as well as purely economic ones.

Details regarding methods and instruments for dealing with environmental issues under NAFTA were included in a separate, parallel agreement – the North American Agreement on Environmental Cooperation (NAAEC). This marked the first time that the environment was seriously addressed in the context of a trade agreement, however, such a dual-track approach was criticised as going against commitments made to

[9] Firms with less than 10 employees make up 94.7% of total enterprises in Egypt, 93.2% in Jordan, and 88% in Lebanon, for instance (Di Pietro, Gomez y Paloma, and Ghazi, 1998).

'mainstream' environmental concerns into trade policy and is thought by many to have reduced the effectiveness of the environmental clauses.

The Asian Pacific Economic Cooperation (APEC) forum lists sustainable and equitable growth among its primary objectives. APEC Environment Ministers have produced both an 'Environmental Vision Statement' and a 'Framework of Principles for Integrating Economy and Environment.' Despite such symbolic steps, APEC suffers from a lack of political will among most partner nations to actively address the environment.

The Barcelona Declaration establishing the Euro-Mediterranean Partnership calls for "sustainable and balanced economic and social development." It also mentions such environmental goals as the need for conservation of fish stocks, sustainable management of water supplies, and promotion of "environmentally-friendly agriculture". The Euro-Med process does not specifically address actual causal links between its trade agenda and the environment, however.

At the core of the the Euro-Med's economic programme are the bilateral association agreements between the EU and southern Mediterranean countries. The name "association agreement," as opposed to "trade agreement," implies that more than just trade issues are to be agreed upon, and thus, provides hope that sustainable development concerns could be incorporated. There is, however, little if any mention of environmental issues within the association agreements already concluded. Even in the association agreement between the EC and the PLO, which is exceptional in that it does list some such objectives, actual sustainable development targets and programmes for reaching such targets are noticeably lacking. This is in sharp contrast to the trade objectives which list specific tariff reduction rates and schedules for implementation.

6.2. Harmonisation of Standards and Compatibility between Trade and Environmental Regulation

Harmonisation of standards is central to facilitating trade. It also lies at the heart of questions over national sovereignty. According to decisions of the European Court of Justice, nations have the right to restrict trade for environmental purposes. In reality, in the EU, community-wide standards are often a compromise between environmentally progressive states and those lagging behind. According to one analyst, for EU members "with relatively weak environmental movements, the EC has been the single most important factor in improving their environmental quality" (Vogel, 1995). This upward harmonisation occurred because of the EU's binding governmental structure and was aided by 'structural funds' which were made available for assisting development needs of the poorer EU members. This notwithstanding, there have been several examples when environmental regulation has been restricted following challenges by member states within the EU that it violated free trade, including regulation on food standards, fuel content, automotive design, and numerous others.

Officially, NAFTA discourages downward harmonization of environmental standards, stating that any harmonization should be implemented, "without reducing the level of protection of human, animal, or plant life or health." It also states that it is "inappropriate to encourage investment, by relaxing domestic health, safety, or environmental standards." (NAFTA, Articles 713 and 1114.2). NAFTA has been criticized, though, for what it does not address, e.g. provisions allowing for preferential treatment of environmental policies, such as subsidies for environmental conservation projects (Greenpeace, 1993). Actual evidence indicates that the overall level of Mexico's environmental legislation has risen since NAFTA, as has the level of enforcement of these policies.[10] Despite overall improvements, incidents of standards lowering in probable deference to trade interests have occurred: Mexico repealed its requirement that environmental impact statements be prepared for highly polluting sectors such as petrochemicals and fertilizers and the US relaxed standards regulating food safety and farm workers' exposure to toxic pesticides (Public Citizen, 1997; Global Trade Watch. 1998).

NAFTA's rules on investment protection have brought about serious challenges to national sovereignty to determine environmental policy, as companies claim that according to NAFTA governments must

[10] The number of environmental inspectors, for instance, increased by a factor of five between 1990 and 1995, while the number of regulatory inspections increased by a factor of ten over the same time period (Jenkins and Branch, 1996; Husted and Logsdon, 1997). While it is difficult to draw a definitive correlation between an improvement in environmental regulation and NAFTA, as the improvement had already begun before the agreement went into effect, even much of this pre-agreement improvement might be attributed to NAFTA, as Mexican authorities wanted to diffuse objections.

compensate companies for economic losses (including loss of future profits) due to changes in regulatory measures. One observer has commented that this amounts to a complete contradiction of the internationally accepted "*polluter pays principle*," and that NAFTA's investment protection regulation has resulted in a situation in which governments must "pay polluters not to pollute." (Seligman, 1997).

Given that the MPC economies are of relatively marginal importance overall to that of the EU, it is unlikely that a Euro-Med FTZ will result in downward harmonisation, but there is no political impetus pushing for upward harmonisation either. Moreover, many of MPCs already have basic environmental regulation in place, but lack proper monitoring and enforcement.

6.3. Multilateral Environmental Agreements

Several multilateral environmental agreements (MEAs) which address global environmental issues include trade measures, or measures which affect trade, such as the Basel Convention, which bans trade in hazardous waste between OECD and non-OECD countries. Such measures, environmentally beneficial, are open to challenge under free trade rules. The EU, as a supra-governmental organisation is itself a signatory to several MEAs, and thus, its member nations are obligated to uphold them. NAFTA has officially granted certain MEAs preferential status within the agreement, whereby obligations under the MEA take precedence over general trade rules. The Barcelona Declaration states that the Euro-Med Partnership should support the goals of Barcelona Convention and the Mediterranean Action Plan (MAP). Many of the most important protocols of the Barcelona Convention, have yet to be ratified, however, thus reducing the Convention's effectiveness.

7. INSTITUTIONAL RESPONSES

7.1. Prior Assessment

Realising the potential environmental implications of free trade policies, the European Commission itself commissioned a study of expected impacts soon after the signing of the Single European Act in 1987. After much public outcry, the governments of Canada and the USA both conducted their own studies of NAFTA prior to ratification of the agreement. Such studies were significant in determining the eventual institutional and policy responses taken to avoid or mitigate expected environmental consequences. For the Euro-Med Partnership, a limited number of studies, including the present report, have investigated some aspects of the environmental impacts of its trade programme, however, none have any status within official Euro-Med policy-making institutions. In 1999, the European Commission announced its intention to conduct a sustainability impact assessment of the Euro-Med FTZ, however, nearly a year later there has been no noticable progress in carrying this out.

7.2. Structural Adjustment Programmes (SAPs)

Many economic liberalisation programmes, including that of the Euro-Med Partnership, involve structural adjustment programmes, which can have far-reaching effects on sustainable development. In so far as they force countries to open up to competition and reduce subsidies for sectors such as energy and water, they can lead to more efficient resource use. This would be important for the Mediterranean region, which has substantial energy subsidies and low energy efficiency rates. A World Bank study on the MENA region estimated that removal of the region's US$25-26 billion in fossil fuel and electricity subsidies could reduce total air pollution by up to 20% (World Bank, 1995). Similarly, removal of subsidies for fertilisers and pesticides, both of which are heavily subsidised in several MPCs, could also pay environmental dividends. Under the Euro-Med sponsored SAPs reduction of subsidies are not guaranteed, although a trend in this direction is developing.

However, while SAPs generally improve productivity and efficiency ratios, they also tend to cause utilisation of marginal lands by subsistence farmers, reduce resource rents, reduce the governments' capacity and/or willingness to address social and environmental issues due to budgetary pressures, and lead to an expansion and intensification of resource extractive industries (Reed, 1996). Moreover, SAPs also often have severe social impacts. For instance, under SAPs, women almost always tend to suffer more than men, the poor suffer due downward pressures on wages and upward pressures on prices, and large-scale unemployment is common. In several MPCs, such impacts have led to wide-spread, sometimes violent protest, as alternative policies to provide basic needs were not developed.

The loss of customs duties under a free trade agreement and its associated SAPs means additional budgetary pressures for governments. In the case of some of the MPCs, loss of customs duties under a Euro-Med FTZ will mean losses of 10-20% or more of overall government revenues.[11] Under short-term budgetary crises, social and environmental budgets are often the first to be slashed. The Lebanese Ministry of the Environment, for instance, was threatened with closure in 1999 as a result of budget constraints. Thus, economic liberalisation under the Euro-Med Partnership, could well result in reduced governmental capacity to deal with environmental and social challenges exactly at a period when increased economic activity is likely aggravating the problems.

The EU allocated massive funds (over 200 billion ECU for 1989-1999) for structural adjustment of its southern members. Under the Euro-Med Partnership, only roughly 9% of total development aid (the MEDA programme) is dedicated to coping with structural adjustment (MEDA Information Team, 1999) and despite the likelihood of negative environmental implications of the Euro-Med SAPs, environmental protection is not directly covered by structural adjustment funding.

7.3. Environmental Institutions

Under the EU system, environmental issues are managed by Directorate General offices within the European Commission which is in charge of developing community-level policies. As such a system involves a political body with defined statutory and regulatory authorities, it is not a useful model for the Euro-Med case, in which trade occurs between independent sovereign states.

Under NAFTA and its environmental side agreement, several bodies were created to address expected environmental problems. These included the tri-national Commission for Environmental Cooperation (CEC), designed to serve as a contact point for public comment, offer advice to NAFTA authorities, and act as a dispute resolution forum. While well-intentioned, CEC suffers from quite limited authority, as it cannot demand changes in government policy or impose punitive measures for violations of environmental regulations. In order to address specific problems likely to arise along the US-Mexican border two additional bodies were established: the Border Environment Cooperation Commission (BECC) and the North American Development Bank (NADBank). The main task of the BECC is to work with local communities in order to coordinate the development of environmental infrastructure, while role of the NADBank is to offer funding for such projects (its performance is discussed in the following section).

In addressing environmental issues APEC has held a Sustainable Development Summit, as well as meetings of environmental ministers. In addition, it has set up various sectoral working groups, some of which have environmental issues as part of their permanent agenda. Critics claim however, that the environment lacks an institutional home within APEC, and that the working groups that do handle issues with environmental impacts lack expertise to adequately address these matters (Bello, and Bullard, 1997; Hunter, 1997).

The Euro-Med Partnership has set up several institutions which attempt to address environment-related issues. The highest level of activity is via ministerial meetings on the environment, water, energy and other relevant topics. The level of governmental interest in addressing the environment in the Euro-Med framework is questionable, however, given that during the more than four years of the Euro-Med process there has been only one meeting of Environmental Ministers, at which less than half of the countries were represented by their Ministers. In any case, these meetings tend to result in official statements which are rarely followed up in terms of concrete actions. The Euro-Med process also hosts high level working groups dealing with energy, water, and other relevant topics, which may be more reasonable fora in which to pursue genuine sustainable development goals. Their projects to expand energy, transportation and water networks, however, far outpace their achievements in promoting resource conservation.

The Euro-Med Partnership has produced a Small and Medium-Term Priority Environmental Action Programme (SMAP), managed by the EC's DG for Environment, which aims to coordinate small to medium-scale environmental projects. While an important first step, SMAP suffers from a lack of secure resources and institutional backing, and has suffered long delays in actually granting support to projects.

[11] Implementation of value-added tax (VAT) systems, as suggested under the SAPs of the Euro-Med Parternship as a replacement for customs duties, will only recover lost revenues, if at all, in the medium to long-term. Thus, at least in the short-term, government's capacity is likely to be reduced.

7.4. Financial Support

In terms of specifically addressing concerns related to the development of the European market, the EU dedicated massive structural funds in order to assist less developed member nations with their accession into the Union. Such funds were crucial in helping nations upgrade regulation and facilities in order to meet EU standards, including environmental ones, however, analysis of overall structural fund policy determined that there was inadequate compliance with measures designed to mitigate adverse environmental impacts of fund projects, especially in the economic periphery which contained many of the EU's unique wildlife areas (Task Force, 1989). Furthermore, because the funds were restricted to 'development' projects, conservation of important natural areas and other such projects did not qualify for funding.

NAFTA's NADBank, utilizing initial investment by the US and Mexican governments to provide supplemental funding for environmental projects along the border, has failed to raise projected lending capital. Moreover, because it is a commercial lending institution, access to NADBank funds by poorer communities is limited. Several beneficial projects have begun receiving support of the CEC and NADBank, however, both institutions have been criticised for long delays in although several analysts have stated that NADBank funding is seriously inadequate to address actual pollution mitigation costs for the region (Seligman, 1993; Housman, 1994b).

According to some observers, within APEC, the environment is seen as an "aid" issue, and therefore has become a hostage to struggles between the US and Japan, which disagree over the role of aid within the forum, resulting in little economic support for environmental issues.

A programme entitled MEDA is the principal financial instrument of the Euro-Med Partnership. The programme, funded and managed by the European Commission, was responsible for 3.4 billion ECU worth of funds for the 1995-1999 period (European Commission, Unit IB/A.1, September 1997). The programme directs 90% of funding through bilateral channels, with 10% going for regional efforts. Its primary goals are:

- supporting economic transition among the Mediterranean countries, in order "to prepare for the implementation of free trade through increasing competitiveness…",
- alleviating "the short-term costs of economic transition," and
- promoting regional cooperation.

While environmental projects could certainly fall under these objectives, there is no set minimum allocation for environmental issues, and while some environmental projects do benefit from MEDA funding, the programme lacks an overall integrated sustainable development strategy.

The European Investment Bank (EIB) acts as the other major funder of the Euro-Med partnership, charged with lending up to 4 billion Euro between 1995 and 1999, for investment projects in the 12 MPCs. In terms of the environment, the EIB offers environmental projects funding concessional terms, and has been a significant funder of projects such as water supply and treatment facilities in the Mediterranean region. The EIB has been harshly criticised, however, for being supporting many environmentally damaging projects, including those promoting road transport and fossil fuel energy use (See for example, CEE Bankwatch, 1999). The capacity of the EIB to undertake quality environmental assessment of projects it funds is seriously inadequate. It employs only one staff member to evaluate environmental impacts of over 300 projects per year.[12]

Funds dedicated for the Euro-Med partnership are distributed among a large number of recipient countries, and only a small portion of these funds is for environmental purposes. Given the massive investments necessary for environmental protection in the MPCs – the World Bank estimated that US$55 billion would be necessary to install basic water and sanitation networks in the MENA region (World Bank, 1995) – Euro-Med funding is insufficient to mitigate the environmental damages it is likely to cause. Finally, as both the European Commission and the EIB are wholly European institutions, there is no southern Mediterranean representation in the governance of Euro-Med finances. Such a lack of balance presents a picture of the Euro-Med process as more of a regional foreign policy programme of the European Union, rather than a true Partnership.

[12] This compares with roughly 300 such staff at the World Bank, which has a similarly-sized lending portfolio (ibid, 1999).

7.5. Civil Society Participation

Civil society organisations have been crucial in placing the environment on the trade agenda both within the EU and NAFTA. Failure to consider such viewpoints was nearly fatal to NAFTA, and has contributed to the recent failures to pass the Multilateral Agreement on Investment (MAI) and the so-called "Millenium Round" of the World Trade Organisation.

The EU now offers significant financial support for several non-governmental organisations, including in social and environmental fields, and offers a semi-official status to an umbrella organisation for European environmental NGOs, the European Environmental Bureau (EEB). Under NAFTA, citizens can bring issues to the attention of the CEC. In addition, the CEC is advised on a permanent basis by a Joint Public Advisory Committee (JPAC) which includes staff from members of the public, such that public environmental concerns are given a permanent channel to communicate with and influence the NAFTA governing board. Although ASEAN offers the private sector an official channel for input through a Business Advisory Council, it lacks such opportunities for non-for-profits and other citizens organisations. Efforts by civil society groups to form a People's Forum to communicate opinions to APEC ministerial meetings have had mixed success, as governments differ greatly as to what role civil society should have in APEC's agenda.

Under the Euro-Med Partnership, official recognition of civil society's role has been given for such issues as the environment, trade unions, and human rights and civil forums have been held on these topics in parallel to high level Euro-Med ministerial meetings. Official activities in terms of social and cultural interchange also exist. Despite this, there are still few if any permanent channels for civil society input into the Euro-Med decision-making process. In the field of the environment, an informal channel of communication has been organised between the European Commission's DG for Environment and a group of environmental networks active in Europe and the Mediterranean region.

Civil society contact with the EIB is almost non-existent, as the EIB has relatively few field branches in MPCs and is largely closed to outside scrutiny. In addition, as EIB announces funding decisions only after they have already been approved, it prevents any opportunity for meaningful civil society input into its lending policies. Furthermore, because so much of the decision-making regarding the Euro-Med policies is located in northern Europe (Brussels, in the case of the EC and Luxembourg, in the case of the EIB) organisations based in MPCs – the areas most likely to be affected by the policies – suffer basic logistical difficulties in communicating their positions.

8. CONCLUSIONS AND RECOMMENDATIONS

From preliminary examination of other trade agreements, it appears likely that the Euro-Med's economic liberalisation programme will lead to increased resource consumption, intensification of agricultural production and increased industrial and domestic pollution in most of the MPCs, at least in the short and medium term. If this is the case, such additional environmental burdens will in many cases be beyond the technical and/or financial capacities of the MPCs, and in some cases, such as water consumption, will contribute to exploitation of resources in excess of the natural carrying capacity of the affected ecosystems.

- Anticipatory mitagation policies should be put in place prior to tariff reduction. This will include development of technical capacity, large-scale funding for infrastructure, and integrated cross-sector policy strategies.

- Potentially positive environmental impacts include increased technology transfer, increased efficiency due to removal of wasteful subsidies and opening markets to competition, and possible opening up of environmental markets. Such outcomes are not a given, however, and will demand a great deal of political will, something currently lacking in the present Euro-Med framework. In order to promote environmental technology transfer, environmental technologies should be made a priority for customs removal, policies including tax incentives and government subsidies should be put in place, and technical assistance programmes should be encouraged. Programmes to assist small businesses in accessing technology, implementing environmental management schemes, and exploiting 'environmentally

friendly markets', should be incorporated into structural adjustment plans, and executed by centers for promotion of the private sector.

- The elimination of customs duties and structural adjustment programmes involved in the Euro-Med process may reduce the MPC governments' capabilities to deal with mounting environmental problems. In addition, they are likely to lead dramatic social disruption. To combat such effects, governments could use the revenues saved from removal of environmentally damaging subsidies to support subsidies and/or other economic incentives which support environmentally desirable activities (e.g. solar energy, water conservation technology, etc.) or to issue financial support directly to those most in need.

- As strong institutions are vital for integrating environmental concerns into multilateral agendas, the Euro-Med should establish an environmental coordinating body with appropriate authority and financial backing to monitor and address sustainability issues.

- The Euro-Med needs to make a priority of promoting integration of environmental concerns within the trade agenda and within the various regional sector programmes. Attempts to deal with trade and environment through separate tracks make an artificial distinction between the two, and thus in other FTAs they have proven largely inefficient and inadequate.

- Prior environmental assessments of the Single European Act and of NAFTA led to incorporation of several preemptive policies and the creation of some useful institutions and programmes. Such assessments of the Euro-Med's bilateral and regional trade programmes should be undertaken, especially with the support of official bodies who are empowered to implement research recommendations.

- Given the potential scale of the environmental problems facing the southern Mediterranean region and given that the Euro-Med trade programme will likely exacerbate many of these problems, current funding for sustainability measures seems inadequate and should be reviewed and increased.

- Civil society input has been essential in promoting a sustainable development agenda within other trade fora, and failure to consider such input has often frustrated trade and investment programmes. The Euro-Med Partnership should establish official channels for civil society contacts.

Reviewing the Environmental Implications of a Euro-Mediterranean Free Trade Zone - The Textile Sector in Egypt

by EcoCon, Cairo

1. INTRODUCTION

The objective of this study is to address the possible environmental implications of the establishment of a Euro-Mediterranean Free Trade Zone (hereafter referred to as MFTZ) as a result of its effect on the textile sector in Egypt. It will also draw preliminary implications for Palestine, Israel and Jordan. To Egypt this topic is of an extreme significance, as the cotton and textile sectors represent the country's most important non-oil exports, and the EU is the primary market for Egyptian exports, as well as its primary supplier. The European market is also of great significance to the textile sectors of several non-EU Mediterranean members of the Euro-Mediterranean Partnership. The research study will address the possible implications of the MFTZ on the growth of the textile sector, and relate that to the known environmental impacts of textile production. It will also recommend a strategy for avoiding expected negative impacts and promoting positive impacts.

2. TEXTILE SECTOR IN EGYPT

2.1. Textile Industry

The textile sector's significance to Egyptian economy is very important on the macro level. There are 31 public enterprises operating in the textile industry as well as almost 2,100 private enterprises that are members in the Egyptian Textile Manufacturing Federation (ETMF) as of 1998. In addition there are thousands of small factories and workshops (non-members in the ETMF), as well as informal workers that are unaccounted for in official statistics. According to ETMF, almost one million workers supporting five million Egyptians are employed in this sector, accounting for 30% of Egypt's total industrial labor force.

Approximately US$7.4 billion is invested in the textile industry. In 1997, the aggregate value of domestic textile production reached around US$2.34 billion on average, of which US$ 1.47 billion were traded within the Egyptian market while roughly US$870 million dollars were exported. It is also important to note that this industry acting as a large market for domestic cotton production, absorbing 80% of it.

An important characteristic of the textile industry is that it is one of the very few manufacturing processes that is handled completely in-country. It also has the highest value added. The value added of exports of one ton of raw lint cotton ranges from 7,000 to 8,000 Egyptian pound (LE) while the value added of one ton of textile exports reaches on average 23,000 LE.

2.2. Textile Sector Pattern

The public sector plays a major role in the Egyptian textile and clothing sector representing 90% of the productive capacity in spinning and 60% of the productive capacity in weaving, while the private sector dominates the much smaller clothing sector, as shown in Table 1. Of the 8 billion LE value production in 1997, cotton yarns from the spinning sector and cotton fabrics from the weaving sector account for almost 65% of the total sector production, while 20% is for ready-made garments and clothing. Wool, polyester and other blends account for the rest.

	Public Sector	**Private Sector**
Spinning Sector (Yarns)	90	10
Weaving Sector (Fabrics)	60	40
Clothing Sector	30	70

Table 1: Public vs. Private Share in Egypt's Textile Industry in 1997 (in %) *Source: ETMF*

2.3. Egyptian Textile Exports

In preparation for new developments such as creation of a Euro-Med free trade zone, it is important to evaluate the recent trends of the industry to determine how it may be affected by the events soon to take place.

2.3.1. Nature of Exports

Together cotton and textiles were the country's most important non-oil exports, representing almost 50% of non-oil exports in 1998. For the period 1995-1997 Egyptian textile exports averaged around US$700 million per year, accounting for almost 25% of total exports. This compares with 40% of total exports in the 1980s. This drop was mainly due to the collapse of the Eastern European block, which had been the main market for Egypt's textile exports. Egyptian textile exports with the exception of ready-made garments have stagnated in the early 1990s, as cotton yarn and cotton fabric exports declined due to a decrease in world demand and relatively high prices, and fine-count yarns lost the Eastern European markets. As a result, spinning mills shifted their production to coarser yarns, which negatively affected cotton yarn exports since Egypt was not competitive in this area. This was clearly manifested by the acute decline of cotton textile exports from US$809 in 1989 to US$497 in 1997 – a drop of 61%. In contrast to the deteriorating export performance of cotton lint, yarns and fabrics, exports of manufactured clothing boomed reaching a total of US$163 in 1997 up from US$59 in 1989 an increase of 173% (CAPMAS, 1989 and 1997).

2.3.2. Export Destinations

Yarns and Fabrics: Export performance of yarns and fabric has been stagnant since the loss of Egypt's main market of East Europe. The geographic pattern of Egyptian cotton yarn exports has changed dramatically between 1989 and 1997. In 1989, the share of the Eastern Europe accounted for 33.8% (the U.S.S.R share alone accounted for 23%), dropping to 3% in 1997. The main market for cotton yarn and fabrics exports has now become the EU, which claimed a 68% share in 1997 up from 39% in 1989.

Clothing: In contrast to yarns and fabrics, Egypt has been successful in expanding markets in ready-made garments and clothing accessories. The main market for Egyptian garments and clothing exports during 1989-1997 has been the US, which increased its share from 36% of Egypt's textile exports in 1989 to 56% in 1997. The EU is the next major market for Egyptian clothing exports, with a share of 26.1% in 1989, increasing to 33% in 1997. The share of Arab and Middle Eastern countries in Egypt's textile exports increased from 6.6% to 9% during the same period.

2.4. Problems and Challenges Facing the Textile Industry in Egypt

There is no doubt that the textile industry is playing a major role in the Egyptian economy, but it is also facing significant problems, some internal, related to industry structure, and some as a result of external influences. Problems which have had negative effects on the growth and the performance of the public and private sector spinning, weaving, and clothing companies, include the inefficiency of the public sector and the loss of the Holding Companies, the old technology in use, and the absence of knowledge about new markets after the fall of the Eastern-European block.

2.4.1. Egypt and the Agreement on Textiles and Clothing

In the early years of GATT, countries especially the industrial ones believed that textiles and clothing had special conditions and problems and therefore this sector had its own agreements, such as the Cotton Arrangement and the Multi-Fiber Agreement. In general most countries were protective of their domestic textile industries. Industrial countries such EU members and the US imposed quotas, while Egypt imposed conditional prohibitions. Lengthy and difficult negotiations to formulate modalities that would permit the eventual integration of the textiles and clothing sector into GATT on the basis of its strengthened rules and disciplines resulted in a new Agreement on Textiles and Clothing (ATC) in 1994.

According to the ATC textile and clothing imports will soon no longer be subject to bilateral quotas, rather, they will fall under GATT's non-discriminatory rules. The integration process should be carried out by the members maintaining such restrictions (i.e. quotas): Canada, European Community, Norway and the United States. In addition, all other members who have retained the right to use a transitional safeguard mechanism which allows the imposition of temporary measures to protect local industry are obliged to have an overall integration programme. By the end of 1996, 49 members including Egypt decided to join the programme.

The integration process is being carried out in three stages over a ten-year transition period (3 years, 4 years, and 3 years). Importing members decide themselves which products to integrate at each stage. The only constraint is that the list of products at each stage in the integration process must include products from each of the four manufacturing levels: *tops and yarns, fabrics, made-up textile products and clothing*.

It is important to note that while the ATC should liberalise trade, textiles and apparel will still be subject to normal GATT rules and national tariffs, and are still expected to be subject to significant non-tariff barriers, so that the ATC is not a comprehensive opening up of the sector.

3. MFTZ AND EGYPT

3.1. The MFTZ

The aim of the Euro-Mediterranean Association Agreements (EMAA) is to progressively create a free-trade area between the EU and southern Mediterranean countries (MFTZ). Bilateral association agreements with the EU have already signed by Tunisia, Morocco, Israel, the Palestinian Authrority, and Jordan, and are currently in the process of being finalised with Egypt, Algeria and Lebanon. The main economic aspects of the agreements are the elimination of restrictions on trade, which remain with respect to the free access of exported industrial products of Mediterranean countries to the European market (in principle, already liberalized, but which are still the object of non-tariff limitations, technical standards, rules of origin, and so forth), the gradual elimination (over a period of 12 years) of all tariffs on imported industrial products from the EU, the immediate withdrawal of quotas on most manufactured products, and the harmonization of policies on competition, intellectual property and other trade norms.

3.2. EU Association Agreement with Egypt

Currently, economic relations between Egypt and the EU are governed by a Cooperation Agreement dating from the 1970s. The agreement provides Egypt duty-free access to EU markets for industrial goods products wholly originating in its territory, although under a quota system. The agreement is not reciprocal, and Egypt continues to apply Most Favored Nation tariffs to goods of EU origin. The agreement is complemented by periodic financial protocols, which establish the amount of financial resources provided the EU over five-year periods. These institutional arrangements will be changed with the implementation of a Euro-Med Association Agreement.

The basic objectives of an EMAA are to achieve reciprocal free trade between the EU and Mediterranean countries in most manufactured goods; grant preferential and reciprocal access for agricultural products; establish conditions for gradual liberalization of trade in services and capital, and encourage the economic integration of Mediterranean countries.

The first EMAA, negotiated with Tunisia, was signed in July 1995, coming into effect in March of 1988. The general terms of the EMAAs, there is likely to be very little variance across countries. At the time of writing the specifics of the EMAA between Egypt and the EU were still under negotiation, but the available drafts suggest that the agreement will closely resemble that of Tunisia. The EMAA is unlimited in duration and is to be implemented over a 12-year period.

4. THE MFTZ' S POTENTIAL IMPACTS ON TEXTILE SECTOR GROWTH IN EGYPT

4.1. Europe's Textile Imports on the Increase

It is expected that the rate of imports of the EU's textiles and garments will increase due to both the ATC and EU-Mediterranean agreements, and some believe that this increase will reach 55%-64% in the year 2005 (Textile Outlook International, Textile Industry, 1996). While, official figures show an expected decrease in the manufacturing of textiles and garments of 2% per year due to the increase in the outward processing trade. Sub-contracting opportunities for Egyptian producers with EU contractors are seen as a potential source of additional sector growth. Subcontracting increased Central and Eastern European exports to the EU by 26% between 1989 and 1993 (Hoekman, 1995). Mexican-US subcontracting in the textile sector increased sharply following the North American Free Trade Agreement (NAFTA).

Some experts and managers interviewed for this study claim that signing of an MFTZ agreement will also give a boost to the textile sector in the long term through the increase of the competitiveness of the local manufacturers. Structural inefficiencies have prevented Egypt until now from taking advantage of its relative comparative advantage, which it should naturally have due to the sector's very low labor costs.

4.2. EU Technical and Financial Assistance

The principal financial instrument of the European Union for the implementation of the Euro-Mediterranean Partnership is the MEDA-grant programme. It accounts for US$3.8 million out of the over US$5 million of the budgetary resources allocated for the financial cooperation between the EU and the Mediterranean partners for the period of 1995-1999. The EU supports the economic and industrial transition in Egypt with some key programmes providing a total grant funding of about US$ 385 million through:

- The Private Sector Development Programme.
- The Public Enterprise Reform and Privatisation Programme.
- The Banking Sector Reform.
- The Industrial Modernisation Programme.

The Private Sector Development Programme will offer financial assistance and other services to a wide range of private sector enterprises. All of the small and medium sized enterprises interviewed for this study were aware of the existence of the programme's activities. Half were already engaged in them, while the other half indicated a desire to apply. According to the Egyptian Minister of Industry, the Industrial Modernisation Programme will focus especially on the textile sector. European management and consultancy firms will be hired to inform Egyptian firms about the EU market.

4.3. An Export Boom ?

Export prospects are becoming a major concern for Egypt given the new international trade environment. The appointment of Dr. Youssef Boutros Ghali, a liberal, open market, free trade advocate as Minister of Foreign Trade is expected to increase Egypt's focus on world trade. Imports are due to increase, but serious reductions in exports costs and burdens are on the agenda, including a law alleviating several types of taxes on exporting enterprises, expected to come into effect in 2000. Textile factories are said to be the most obvious beneficiaries. In addition, infrastructure projects, such as new port construction to handle EU-Mediterranean trade is also expected to facilitate an increase in overall and regional exports. Increased exports specifically in textiles may be expected due to the following.

4. 3.1. Flow of Foreign Direct Investment (FDI) from Europe to Egypt

Transfer of factories from Europe to the region due to incentives by the Egyptian government is expected, especially after the signing of the Euro-Med association agreement (World Bank, 1998). The World Bank figures show an overall increase in FDI to Egypt of 55 % since June 1996, and projected a US$2 billion annual amount for the next 5 years. Much of this investment is expected from the EU as Egypt adopts a more Euro-friendly investment climate and regulatory structure in line with the EMAA. Already European firms have been actively investing in other major industries in Europe.[1] Technology from new investments is generally assumed to be better than local technology (and thus less environmentally harmful), however, there remains a chance that leaner environmental legislation implementation for manufacturing in Egypt and Egypt's geographic location may also play a role in attracting less desirable FDI.

4.3.2. Restructuring and Privatization of the Public Sector

The Egyptian government is determined to boost textile industry to capitalize on its relative comparative advantage. An ambitious programme by the Ministry of Industry for boosting Egyptian industry places the textile sector as its prime target since it represent the highest value added.

The public sector textile companies are being restructured and prepared for privatisation. Three unprofitable holding companies for textiles comprising 28 large state owned enterprises are due to be sold before the end of 2001 according to the minister of Public Affairs, Mokhtar Khatab (Alam Al-Youm, 1999). Most Egyptian privatized companies showed increasing revenues and increasing exports from exports after being

[1] Recent developments in cement industry include the purchase by some of the biggest European cement producers like Lafarge (France) and Blue Circle (Belgium) of two of the largest Egyptian cement factories, contributing to an impressive 10 % annual growth rate for the sector.

privatized. Khattab also announced (Al-Ahram, 2000) that half of the total privatization revenues will be directed towards restructuring the enterprises, mainly in the textile sector.

5. CHALLENGES TO THE EGYPTIAN TEXTILE INDUSTRY

5.1. Market Characteristics

Despite new potential which the MFTZ process may bring, there are several obstacles which still remain in terms of Egypt exploiting a Euro-Med market. For one, equipment in the textile sector in Egypt is quite old. Second, Egypt will face aggressive competition from the central and eastern European countries which have cheap labor, geographical proximity to the EU and several of which will be EU members soon. Third, rules of origin vis-a-vis market entry to the EU remain quite complicated and may serve as a barrier. Currently inter-regional trade among southern Mediterranean partners is quite limited, due both to trade barriers to protect domestic industries and to similar comparative advantages. Changes in the system regulating cumulation of origin under a regional free trade agreement could possibly alleviate this problem and promote intra-sectoral specialisation among Mediterranean countries, however, for the time being, rules of origin remain an obstacle.

The EU is Egypt's largest trade partner, both in terms of imports and exports, however, the relative importance of Egyptian textiles for the EU market is minimal (3% of total). The EU-Egyptian trade balance clearly favors the EU. Despite this, the EU has initiated anti-dumping measures against Egyptian textile (cotton fabric) exports already twice since 1997. In both cases, the European Council rejected the accusations against Egypt and removed the compensatory tariffs imposed on the Egyptian exports, however, the incidents caused real economic damage to Egyptian companies and has created a feeling of uncertainty regarding the reliability of the EU market.

5.2. EU Environmental Regulation & Egyptian Textile Exports

5.2.1. Environmental Legislation

Environmental legislation of importance to exporters of textile products to the EU is largely the area of Product Standards. While several such standards exist, for the purposes of this study, we will concentrate on two main aspects of legislation concerning Product Standards for textiles, both concerning the environment:

- The ban of Azo dyes
- The ban of PCP (Pentachlorophenol)

Germany has direct bans on azo dyes and PCP. Following this lead, it is expected that 80% of types of azo-dyes will be banned in all countries of the EU by 2005. If generalized on the European level, the impact of such bans will be economically tough on textile producers. For example approximately 70% of all dyes currently used by the textile industry in Egypt are azo dyes. They are brilliant, give adequate fastness and are inexpensive while more eco-friendly substitutes are more expensive and not as effective in providing a satisfactory final product.

5.2.2. Environmental Instruments

Voluntary practices by business to undertake environmental instruments of various natures are becoming common trading practices and marketing tools. Of these, Eco-labels and Environmental Management Systems such as ISO 14000 are most important to exporters to the EU. Eco-labeling implies the use of labels in order to inform consumers that a product is determined by a third party to be environmentally more friendly relative to other products in the same category (UNCTAD, 1994 definition). Eco-labels are thus awarded by a third party for products which meet preset environmental criteria. Producers can apply for such labels on a voluntary basis. Eco-labeling – though to date still voluntary – has been described as a potential threat to developing countries' exports as the new product categories covered by such schemes are of great export interest to these countries (for example textiles and footwear), however, certification costs can serve as barriers of entry into the eco-labeled market (UNCTAD, 1994).

ISO 14000 is also largely seen as a market barrier, especially in sectors like textiles where the majority of producers are small and medium sized enterprises (SMEs) who generally cannot afford certification – which may include costs of eco-friendly chemical substitutes, capital costs for necessary equipment and/or

additional labor, and the costs of testing and verification itself. Thus, they risk being closed out of the EU market as more and more ISO 14000 certified firms in the EU seek to ensure certification along all of their supply chain.

SMEs are also at a disadvantage in terms of acquiring the information necessary regarding both environmental regulation and environmental instruments (see for example, Vossenaar and Mollerus, 1996; or Variria with Barrera and Sanchez, 1996). In surveys undertaken for this study, most Egyptian companies knew nothing of eco-labeling programmes, or environmental management standards. Estimates as to cost increases to enter such niche markets varied greatly and were based on guessing. Only one company actually uses an eco-label. Awareness of technical standards was limited, although bans such as that of azo dyes and PCPs were known.

5.2.3. Egyptian Manufacturers Response

The results of semi-structured interviews show that for now Egyptian producers' awareness and exposure to environmental regulations in the EU (legislative and institutional) are still limited. For the meantime, the majority of the Egyptian textile products to the EU are in the form of yarn, an intermediary good, which involves some of the most environmental hazardous stages of production, bleaching and scouring. Production in later, higher value stages such as ready-made garments, is less environmentally damaging.
Adjustment to basic EU environmental regulations might not necessarily constitute a serious additional obstacle to small-scale Egyptian producers who represent the majority of the producers, simply because their role lies beyond the most serious environmental hazardous stages. Eco-labeling and environmental management systems, however, cover both final goods and production process methods and thus may still be a barrier to market entry.

Given its textile export structure Egypt cannot afford to choose non-compliance to the EU's environmental constraints mainly because of lack of substitute markets of the same size. Local institutions will thus have to guide producers in that direction and take actions to reduce the transaction costs they face if Egypt intends to compete in the EU market.

There are no guarantees that Egyptian exporters can successfully complete export transactions to the EU even if they meet all the required conditions, including environmental standards. In fact, given the complex nature of the recently introduced environmental regulations and the loose definitions of many of the items involved, potential problems with the EU on grounds of environmental considerations are quite possible. Moreover, based on the distrust on the Egyptian side regarding the issue of what is perceived as unfair EU anti-dumping measures against Egypt, there is a feeling in Egypt that technical standards such as environmental requirements could easily be a new tool to exclude the Egyptian market. Again recent problems related to Egypt's exports of some agricultural products to the EU, also seem to support the above.

6. ASSESSING THE ENVIRONMENTAL IMPLICATIONS THE TEXTILE SECTOR IN EGYPT

6.1. The Textile Industry and its Effect on the Environment

Today, the textile industry is considered as one of the most polluting industries in Egypt. Textile processing generates many waste streams including wastewater effluents, solid wastes, air emissions and hazardous wastes. Among the contributions to wastes generation from the textile industry, liquid wastes are the most serious in terms of severity of environmental impacts. Liquid wastes generated from the various washing operations contain substantial pollution loads in the form of organic matter, suspended matter such as fibers and grease. These liquid wastes are generally hot and alkaline with strong smell and colors from dyeing processes. Some of the chemicals discharged can also have toxic effects on the receiving environment. Discharge of such effluents into aquatic bodies can cause lowering of dissolved oxygen, and thus damage to aquatic life and expose downstream water users to possible toxic effects. An overall deterioration in the aesthetic value of water quality will also result.

6.1.1. Wastewater Generation

The textile industry is characterized by its large water consumption throughout its operations, from the washing of fibers to bleaching, dyeing and washing of finished products. On average, worldwide approximately 80 liters of water are required to produce 1 kg of textiles (EPA, September 1996). In Egypt,

however, 200 liters are used on the average to produce 1 kg of textiles (SEAM project, June 1999), with some of the larger mills using up to 300 liters per kg. This is due to such factors as old and inefficient equipment, low resource recovery and re-use, low prices for water. The large volumes of wastewater generated also contain a wide variety of chemicals used throughout processing. These can cause damage if not properly treated before discharging to the environment. The aquatic toxicity of textile industry wastewater varies considerably among production facilities. The sources of aquatic toxicity can include salt, surfactants, ionic metals and their complexes metals therein, toxic organic chemicals, biocides, and toxic anions. Most textile dyes have low aquatic toxicity. On the other hand, surfactants and related compounds, such as detergents, emulsifiers, and dispersants are used throughout processing and can cause damage if not properly treated prior to discharge. Of all the steps involved in textiles processing, wet processing creates the highest volume of wastewater.

Almost 90% of Egyptian textile products are cotton yarn (spinning), cotton fabrics (woven and knitted) and apparel. According to the Ministry of State for Environmental Affairs (SEAM project, 1999), most of the textile mills in Egypt do not possess effluent treatment plants. From pollution perspective, there are three parameters that are causing the most worries. These concerns are mainly affecting wastewater effluents:

Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) levels seem to be the most persistent since they far exceed the Egyptian environmental regulation for discharge limits in sewage or in rivers. An audit in three public sector large textile mills in 1995 revealed an average of 900 mg/l of BOD and 1000 mg/l in COD. The Egyptian Regulation for discharge in open water average is 40 mg/l for BOD and 50 mg/l for COD. The Standards in Germany are 40 and 280 respectively for discharge in receiving waters.

6.1.2. Groundwater Consumption and Contamination

Groundwater is being extensively exploited, as this is the main source of water for the textile industry according to the Ministry. The lack of adequate treatment for effluent leads to its disposal to receiving water bodies or on land. This could lead to widespread contamination of the groundwater.

6.1.3. Air Emissions

Coating, finishing and dyeing operations represent the greatest concern as sources of air pollution. Although the textile industry is a relatively minor source of air pollution as compared with many other industries, it emits a very wide variety of air pollutants making sampling, analysis, prevention and treatment more difficult. Textile mills usually generate nitrogen and sulfur oxides from boilers. Hydrocarbons are emitted from the drying process, as are formaldehyde, acids, softeners and other volatile compounds. Solvent vapors are emitted during dyeing, including acetic acid, formaldehyde, and other volatile compounds.

In addition, cotton cultivation accounts for 75% of all pesticides use in Egypt. The chemicals are applied through sprays, thus affecting the air, soil, and water quality of the cultivation area, as well as the health of the rural population.

6.1.4. Solid Wastes

The primary residual wastes generated from the textile industry are non-hazardous. These include scraps of fabric and yarn, off-specification yarn and fabric and packaging waste. There are also wastes associated with the storage and production of yarns and textiles, such as chemical storage drums, cardboard reels for storing fabric and cones used to hold yarns for dyeing and knitting. Cutting room waste generates a high volume of fabric scraps, which can often be reduced by increasing fabric utilization efficiency in cutting and sewing.

6.2. Waste Management and Mitigation for the Textile Sector

Waste management is absent and wastewater treatment is very primitive if found in the textile industry in Egypt (SEAM, 1999). Wastewater treatment is largely limited to equalization and chemical precipitation.

6.2.1. Status of the Existing Technology

A common observation in the audited textile mills by the SEAM project team has been the old manufacturing machines in use. Some mills are still in operation with production machines that are over 35 years old. This situation has been encountered more frequently in those textile mills, which belonged to the public sector. Wet process machines are not much better, with scouring and dyeing machines being

generally old and with no water or chemical recycling, and huge losses in steam. Maintenance varies depending on the factory, but for most, there was no consistent maintenance.

6.2.2. Waste Management Practices

The following is a brief overview of the Egyptian waste management in the textile industry:

? Wastewater treatment is still very primitive and limited to equalization and chemical precipitation. In most cases wastewater is collected in one stream and either treated in a wastewater treatment plant in the factory or discharged to the public sewers, whereby local authorities treat it with domestic wastewater. Most of the textile companies discharge their wastewater into a soak way or into drainage canals that dump into the sea, and in a few cases to streams of potable water.
? Solid wastes are mostly collected for reprocessing or selling.
? Particulates from gaseous emissions (dust or fibers) are collected and reprocessed or emitted into the atmosphere inside and outside factories.

The practices are listed in more detail in Table 2:

Table 2. Current Wastewater Management in the Textile Sector in Egypt

Section	Waste	Composition/Characteristics	Management
Sizing, Desizing	Liquid	Strach-based materials (High BOD)	To public sewers or treatment plant.
		Modified carbohydrate soluble synthetic polymers (low BOD, high COD).	Reused or sold.
	Solid.	Containers	Reused or sold.
Scouring, Mercerization	Liquid	Dissolved solids(high pH)	Alkalis are recycled
		Suspended solids : - Fibers - Cotton waxes - Wool waxes	Wool wax is recovered, purified and sold Some factories neutralize high pH effluent streams before discharge to public sewers.
Bleaching	Liquid	Low BOD - residual bleaching agents, stabilizers, surfactants and dissolved solids.	Discharge to public sewers. Discharge to wastewater treatment plant.
	Gas.	Chlorine gas and oxides in case of hypochlorite and chlorite bleaching.	Disposed to air.
Dyeing and/or printing	Liquid.	Dyes and auxiliaries, salts and carriers.	Discharge to wastewater treatment plant, public sewers or drainage canals.
	Gas.	Kerosene in pigment. Printing.	Discharged to air.
	Solids.	Dye and chemical containers.	Collected and sold.
Chemical finishing	Gas.	Formaldehyde, carriers, oligomers, ammonia.	Discharged to air.
	Solid	Chemical containers, residual finishing agents, surfactants, acidic pH, softeners.	Collected and sold Discharge to wastewater treatment plant or public sewers
Packing	Solid	Cartons, polyethylene sheets and bags, wrappings, etc.	Collected and sold
Workshops	Solid & Liquid	Scrap metal, used motor oils	Scrap metal collected and sold. Motor oils collected and sold, or refined and reused.
Ready-made garments.	Solid	Fabric due to cutting.	Collected, stored and reprocessed or sold "as is".

Source: SEAM project.

6.2.3. Lenient Law Enforcement

For economic reasons, primarily lack of governmental budget, Egyptian environmental regulations are not enforced. The Ministry of State for the Environment has little done to implement Law 4, a comprehensive environmental law. The textile huge Holdings Companies were already working at loss and the government was reluctant to place on them additional environmental burdens which would come with enforcing proper environmental management. While, now in recovery, they may again be vulnerable if forced to comply with environmental regulation.

6.3. Possible Impacts of an MFTZ

In light of relevant literature (Ministry of Industry forecasts) and conducting interviews with managers in different segments of the total textile sector concerning their future prospects, we calculated an average of 2-3 % annual growth of the textile spinning and weaving sector exports and 4 % for production in the next 5 years. This was assumed to lead to 2.5-5% average annual growth in exports and 5% for production between 2005 and 2010. The managers assumed difficulties for the next five years due to various market constraints, as discussed earlier. Last year growth in the whole textile sector production grew by 3.3% (against 11% for the whole manufacturing sector). Then they expected a boom when producers become accustomed to EU environmental regulations and when quotas are totally abolished.

The growth is expected to affect all sub-sectors within the industry, although much more for the clothing segment as the country tries to increase higher value added production. When quotas are abolished, the clothing and household sub-sector which is showing rising competitiveness is assumed to grow by an average 10% annually for the next 10 years, mainly due to expansion in the EU markets. This tendency was assumed according to the actual pattern of growth. In 1998, this sub-sector's exports to the EU grew by almost 50% according to ETMA. The environmental impact of such growth in the textile segment could be very detrimental if not well managed, and currently actual status is not encouraging.

6.3.1. Environmental Impacts

There is little willingness and awareness towards minimising the potential positive environmental impact of stricter European regulation. European regulation (legislative or instrumental) will positively influence Egyptian producer in the long run. No noticeable adjustments are being made for the time being to meet European environmental regulation. Attempts to qualify for environmental certification would be enhanced once it is believed that the premium price would justify it, but today, the willingness of producing companies to monitor the environmental impact of their industries and take positive steps towards reducing its negative impact found it to be limited.

Only 13% of a sample of 30 textile exporting companies interviewed had departments or units in charge of controlling or estimating environmental impacts of production (Abdel-Latif, 1999). In contrast 60% had departments for research and development with the purpose of improving the quality of products. The latter does not necessarily take environmental impact as one of its parameters. Along the same lines 90% of the sample responded negatively to having international environmental regulations as a factor affecting new investments in their companies.

Efforts to meet environmental standards despite being involved in exports was also found to be limited. Only 10% of the companies interviewed confirmed having the ISO 9000 certificate, and only one company (3% of the sample) confirmed knowledge of eco-labeling and ISO 14000 and is using the latter. According to one survey environmental management systems and/or eco-labels are applied by less than 5% of firms (ETMF).

The textile sector, especially the clothing sub-sector is predicted to grow, both as a result of the Euro-Med process as well as general liberalisation of the economy in Egypt. For the short term at least, EU legislation on product standards and programmes such as eco-labeling and environmental management will have a relatively minor impact on reducing actual environmental impacts in Egypt.

If the EU-Egyptian EMAA and the MFTZ process leads to increased foreign direct investment in the Egyptian textile industry, then improved equipment may lead to increased efficiencies, especially in terms of water and energy consumption per unit of production. If the current practices are simply expanded, as is

likely if increased exports to the EU simply involves subcontracting, then current environmental impacts are likely simply to increase at rates compatible with increases in production.

According to economic experts, as well as relevant literature (FEMISE, 1999) and (Hoeckman 1997), the EMAA to be signed with Europe will lead to deregulation, accelerate economic liberalization and privatization. In terms of environmental impacts privatisation of large textile mills may bring increased production efficiency, a potential environmental gain. Theoretically, with large mills under private control as opposed to governmental control, there may also be a greater willingness on the part of governmental authorities to enforce environmental regulation, although such an outcome is not guaranteed, and current enforcement of private sector practices is not encouraging.

As stated earlier, production and exports of clothing are increasing in higher rates than for cotton yarns and textiles due to the relative competitiveness of the private sector. Many European and other international brand names have now subcontractors in Egypt, such as Marks and Spenser, Mexx, Benetton, Daniel Hechter, and others. This trend seems to be extended to other brands now in negotiations for subcontractors, and as stated, the Egypt-EU EMAA is expected to give an additional boost to the clothing industry.

The manufacturing of clothing gives rise to fewer environmental problems than the manufacture of fabrics or yarns. Clothes manufacturing, which involves design, cutting, sewing, assembly, pressing, finishing, give rise to relatively limited environmental concerns, except for buttons and zippers which contain toxic heavy metals, and increases in production are assumed to be manageable.

6.3.2. Social Effects of Deregulation

Deregulation, to accelerate economic liberalization and privatization. This will have an impact on the workers in the textile sector. According to the Ministry of Public Enterprise, textile public enterprises, accounting for more than 60% of employment in the sector need only 50% of their workers. The destiny of this surplus after full privatization of the 31 public companies by 2001 is still undecided.

Cotton agriculture is mainly dependent on children below 12 years for cotton gathering during the harvest seasons. It is estimated that 300 thousand child work in this activity. An expected decision to cultivate more cotton could involve more child labor.

Workplaces safety and health is a serious concern in the textile industry in Egypt. Site visits to workplaces of this nature showed overcrowding, poor aeration and a grave lack of safety measures. Accidents are frequent and fire control systems are often not operational. Many workers in private sector clothing industry have very bad work contracts with poor social security. They are sometimes obliged to write their resignation (and a paper saying that they decline to any rights) while signing their work contract. It was noticed, however, that working conditions for the EU or other international markets are generally better than those producing for the local market, thus increased privatisation may be cause for concern regarding workers rights and work condition, however, an increase in EU designated production may offset such a trend to some extent.

7. RECOMMENDATIONS

7.1. Enhancing the Benefits of Complying to EU Environmental Conduct

Strict environmental regulations in the EU on product standards will create an additional push factor to better environmental performance on the production end. Given its textile export structure and the size fo the EU market, Egypt cannot afford to choose non-compliance with EU environmental regulation. Local institutions have to thus guide producers in that direction and take actions to reduce the transaction costs they face. Leaving things to individual decisions will probably discourage exports altogether and direct producers towards selling in the local market.

A high level of cooperation is needed at the level of local institutions for the above plan to work. Local institutions in the case of Egypt include: the Ministry of Industry, the Ministry of Economy and Foreign Trade, the Federation of Industries, ETMF, Export promotion institutions, the Textile Consolidation Fund, and private producer's or businessmen's associations and non-governmental environmental institutions.

As seen, the effect of regulation could be detrimental to exporters if an environmental upgrade does not take place. The real problem lies in finished textiles:

One. They are subject to the most demanding environmental constraints.

Two. They can cope with the environmental legislation in Europe with more difficulty because the vast majority of these products are produced by small and medium enterprises (SME).

Suggested programmes to assist in this matter, which can be implemented unilaterally or preferably incorporated into Euro-Med funded projects include:

- Assisting Egyptian producers and exporters to qualify to Environmental Management Systems like ISO 14001 or textile eco-labels and to abide by European legislation. The limited number of firms in the region utilizing these systems seems to indicate that their sales pay off their environmental investments.
- Establishing an information network on international standards for EMS and product eco-labels, as well as for legislation concerning product standards.
- Providing technical support and training on such standards.
- Enterprises seeking to introduce new machinery or replace old machinery must find out the best available technologies, and which equipment will best conform to EU regulations. They have also to be advised on the sources of reasonably priced friendly (or not banned) dyes.
- Vertical integration of companies should be encouraged as it facilitates the following of the life cycle of the product and has proved to be more successful with compliance of environmental regulation (EPA,1996).
- In terms of capacity building, the ministry of Environmental Affairs could establish a unit within it to develop and strengthen its relationship with the private sector, especially with SMEs. This Unit could deal with the following:
  - Promoting the Greening of the Egyptian Trade, by encouraging the implementation of programmes for cleaner technology actually working on the textile industry with the support of European or other European organizations.
  - Dissemination of information on environmental product standards in Export Markets (could be done with the Support of the EU).
- Upgrading existing standardization bodies, or creating new ones to conduct testing and certification verification. This could be done in a regional approach.
- Arranging long term credit at concessional terms to enable firms, especially SMEs to comply with environmental measures. This could be through environment funds, or through the European Investment Bank already involved in programmes to upgrade the industry in the southern Euro-Mediterranean partner countries.

7.2. Application of Egyptian Environmental Legislation and Governmental Capacity Building

Egypt has a strict environmental law concerning industrial wastes, however, it is not implemented for economic and technical reasons.

- A serious and well equipped monitoring body should be created in the Ministry of Environmental Affairs to tackle this problem. A small unit exists now, but lacks the needed skills, resources and political backing to effectively carry out its tasks.
- The Ministries of Environment needs to build internal capacity in terms of monitoring and addressing industrial waste.
- Extensive research and analysis to determine environmental impacts of governmental and industrial policies for future growth. This will help the Ministry of Environmental Affairs to adequately plan, particularly regarding industrial waste management, and the preservation of natural resources.

7.3. Reducing Taxes on Treatment Equipment

Reduction of taxes on equipment has been a constant demand by companies trying to comply to the Egyptian regulations. The import of such environmentally beneficial equipment should be made a priority for customs reductions within the EMAA and other taxes should be reviewed and restructured to lower costs.

7.4. Environmental Assistance through MEDA

The MEDA is the principal financial instrument of the EU for the implementation of the Euro-Mediterranean Partnership. Although it has a programme for the environment, other programmes receiving MEDA support for private sector adjustment such as the Industrial Modernization Programme, should focus more on improving environmental aspects of the production. The IMP should finance sound investments for environmental upgrades. It is now limited to consultancies for industrial upgrades.

7.5. Establishment of a Permanent Environmental body for the Euro-Med Partnership

In light of the probable effects of the economic policies of the Euro-Mediterranean Partnership it is recommended to establish an official body to monitor the environmental developments underway in the region for various economic sectors.

Jordan's Phosphate Sector: Implications for the Environment of Euro-Med Trade Liberalisation

by Jordan Society for Sustainable Development (JSSD)[*]

1. INTRODUCTION

The phosphate industry is an important economic sector – both in terms of revenues and employment – for many southern and southeastern Mediterranean countries, including Jordan. The industry also has substantial environmental impacts, including impact on landscape, significant consumption of water and electricity, marine and air pollution, and others. Economic restructuring and trade and investment liberalisation currently being implemented in the region could have significant impacts on the structure and operations of the phosphate industry. This study aims to analyse possible environmental implications from such economic restructuring vis-a-vis the Jordanian phosphate industry, especially that resulting from Euro-Mediterranean Partnership's plans for a regional free trade zone.

The study covers the production and trade of phosphate as well as that of phosphate-containing products such as fertilisers and industrial chemicals. It will present a brief survey of the industry in Jordan, followed by an estimation of possible impacts of the policies leading up to the establishment of a Mediterranean Free Trade Zone (MFTZ). A description of the current environmental impacts of the sector is then presented followed by an analysis of what the changes for the sector will mean in terms of environmental impact. Finally, a series of recommendations are given for minimalising predicted negative effects.

It must be stated from the beginning that the study encountered difficulty in isolating expected impacts of the economic policies establishing the MFTZ, from similar and even over-lapping policies being implemented in Jordan as part of structural adjustment programmes suggested by the International Monetary Fund (IMF) and World Trade Organisation (WTO). Thus, some of the analysis is necessarily broad and refers to trade liberalisation in general, to which the Euro-Med policies contribute.

2. THE PHOSPHATE INDUSTRY

The Phosphate based products considered for the purpose of the study are the following:

1. *Raw Phosphate Rock*: Phosphate rock is exported directly and is used as a raw material for many industries. This product constitutes Jordan's single most important export item.
2. *Phosphate-based Fertilisers*: 80% of phosphate rock is used in the production of mineral fertilisers.[1] The primary phosphate materials for these fertilisers are raw phosphate rock and phosphoric acid.
3. *Chemicals for Industrial Purposes*: 20% of raw phosphate is used to make detergents (12%), animal feeds (5%), specialty applications e.g. food grade and metal treatment (3%), and other miscellaneous applications.

The key environmental specifications for phosphate products are levels of radioactivity and heavy metal content, especially cadmium, but also zinc, chromium, vanadium and others. Other technical specifications such as grindability and corrosion levels are also of importance from a production viewpoint.

The production of phosphate and phosphate products is a major industry for several south Mediterranean Euro-Med partner countries. The Mediterranean region produced 46.3 million tons of phosphate in 1998, representing 33.6% of total world production. Seven counties in the Mediterranean region are among the top 15 phosphate producing countries, chief among which are Morocco, Jordan, and Israel. Other large producers include the US and some West African nations. As of 1998, about 25% of world phosphate production was exported in raw or semi-processed form, down from 35% in 1983. This drop is due to the

[*] Lead researcher Ahmad Abu Hijleh, with assistance from David Katz and Ghassan Khatib.

[1] This includes MAP/DAP & other NP compounds which constitute the other main item produced and exported by Jordan. There are other phosphate-based fertilizers manufactured worldwide that are not produced in substantial quantities in Jordan and not considered in this study.

increase of production of downstream products at or near the mine sites and the shipment of those upgraded products. Large consumers include Eastern Asia and North America. Collectively, the EU is the single largest importer of phosphate products. Western Europe as a whole imported 9.3 million tons (29.7% of total world trade) in 1998, although its share is declining along with overall declining trends in fertiliser use.

3. PHOSPHATE IN JORDAN

The phosphate industry is of particular economic and social importance for Jordan. In 1996, sales of Jordanian phosphate and phosphate products were worth roughly US$360 million (MoP, 1999), or roughly 5% of the total Gross Domestic Product (GDP). Jordan has proven phosphate reserves of nearly 1.7 billion tons. All of phosphate excavation is handled under a long-term renewable monopoly concession granted to the Jordan Phosphate Mining Corporation (JPMC), of which the Jordanian government owns a majority share (69%), with other Arab governments and the private sector holding the rest (19% and 12% respectively). Yearly production of phosphate stood at roughly 6 million tons in 1999, most of which was designated for export. Production reached a peak in the 1989 at 6.7 million tons, but decreased sharply in the early 1990s due to a decline in world demand and due to restricted flows of traffic through the Red Sea port of Aqaba, Jordan's only seaport, as a result of the Gulf War. Production has been increasing since 1994, however, and is projected to continue to increase to levels of 10 million tons per year by 2005, after which production is projected to remain relatively steady (JPMC, 1998).

Currently the JPMC operates three separate mines – the Hasa, Abyiad, and Eshidiya mines – all in Jordan's southern region, the nation's poorest. The company is progressively phasing out production in the Hasa and Abyiad mines, and expanding production at Eshidiya, which is planned to account for almost all production by 2006. The JPMC is one of the largest industrial employers in Jordan. Overall in Jordan, mining accounts for 7% of the country's total industrial employment. Following government dictates, the JPMC actually over-employs for reasons of social policy, and thus has relatively high administrative costs and lower than average worker productivity ratios. Average income for workers at the JPMC is US$450 per month, as compared to US$200-250 for average non-mining work in the same region, making it an attractive source of employment in the South.

Jordan is the world's second largest exporter of phosphate, accounting for 15-18% of world phosphate trade, trailing only behind Morocco. In terms of importance to the Jordanian economy, exports from the mining industry (including both phosphate and potash) represented nearly 37% of total Jordanian exports in 1996. The traditional markets for Jordanian phosphate include India, Indonesia, the Netherlands, and Australia. As a whole, the EU accounted for 21% of all Jordanian phosphate exports in 1996, however, following a general decreasing trend in phosphate fertiliser use in the EU, the share declined to just 11.6% of total phosphate exports in 1998 (JPMC, website). Jordan's lack of a Mediterranean port means that it suffers from a relative disadvantage in serving the European and southern Mediterranean markets vis-a-vis competitors such as Morocco or Israel due to higher transportation costs.

Currently Jordan primarily exports raw phosphate, phosphoric acid, and low grade fertilisers. Such products have a relatively low value-added. The industry as a whole earns merely 3% value added on its products, as compared to an average of 16% in manufacturing, or even 6% in agriculture (MoP, 1999). Phosphate, as a raw commodity, is also subject to drastic fluctuations in market price – between 1990 and 1996 average price fluctuations exceeded 5% annually, with annual price swings sometimes reaching 10%. In order to increase value-added and to insulate itself from market shocks, Jordan is planning on increasing production of downstream products, such as higher grade fertilisers and pure chemicals. As of 1996, the country's sales of 4.4 million tons of raw phosphate generated slightly less revenue than the country's sales of 0.7 million tons of basic fertilisers and chemicals. It is estimated that if Jordan exported only phosphate fertilisers and other processed phosphate-based products instead of raw phosphate, it could increase sales revenues by a factor of nearly four, to nearly US$1.5 billion (based on figures in ibid, 1999).

Jordan has already constructed and upgraded several industrial complexes for fertiliser production. Currently the primary destinations of Jordan's exports of phosphate-based fertilisers are South Asia and the Middle East. This is due to the proximity to the markets via Jordan's Aqaba port, and the demand in these countries for basic fertilisers, as opposed to more developed markets such as the EU were higher grade

fertilisers are more in demand. Jordan's lack of a Mediterranean sea port also means it suffers from a relative disadvantage in accessing the European market, as mentioned above. Jordan benefits from several comparative advantages in terms of potential for advanced fertiliser development, however, including high quality phosphate and a large and well developed potash industry, which produces several raw materials and chemicals used in combined complex fertilisers.

4. JORDAN'S PHOSPHATE INDUSTRY AND THE EURO-MED FREE TRADE ZONE

4.1. Structural / Sectoral Reforms

Beginning in the end of the 1980s, Jordan embarked on a policy path of economic liberalisation. Major initiatives in this respect include structural adjustment programmes undertaken by the government under advisement of the International Monetary Fund (IMF), reforms taken in order to join the World Trade Organisation (WTO), membership in the Euro-Mediterranean Partnership, including eventual participation in the regional free trade zone to be established by 2010, and planned participation in the Arab Free Trade Area (AFTA). Much of the structural reform, including tariff reductions, investment liberalisation, harmonisation of industrial standards, and establishing regulation ensuring intellectual property rights are policies called for under all of the various frameworks, and so it is difficult to isolate the effects of only one of these institutions/programmes.

Jordan signed an association agreement with the European Union in 1997 which is (as of the time of publication of this study in April 2000) still undergoing ratification. According to the agreement Jordan will progressively eliminate customs duties on imported manufactured goods from the EU. Jordanian manufactured goods already have unilateral duty free access to the EU market and will continue to under the association agreement. In accordance with both the Euro-Med and the AFTA programmes, Jordan is also liberalising its trade with other countries in the Middle East/North Africa region. In terms of the country's phosphate sector, the Euro-Med Partnership offers potential to attract European investment and market contacts, advanced technology, and an increased possibility of accessing finance from the European Investment Bank and other European financial institutions. Furthermore, should a regional free trade zone lead to a possibility for Jordanian products to be exported via Israeli or Palestinian ports without customs fees, transportation costs could be substantially reduced.

In addition to a desire to penetrate the current EU market, the expansion of the EU to include countries of Eastern Europe should afford the Jordanian phosphate industry a larger market. Currently Jordanian exports of phosphate and phosphate fertilisers to the Eastern European countries awaiting accession to the EU are sporadic and negligible economically. The expansion of the EU will mean duty free access to countries which are likely to emphasis their comparative advantage in agriculture in supplying Western Europe, and thus will be in need of high grade fertilisers.

Because of expenditure pressures due to its large reliance on exports of raw materials with little value-added, the high share of administrative costs in company budget, and high mining fees, and possibly also due to a sense of complacency at being a government-owned monopoly, the Jordanian mining industry as a whole invests relatively little in research and development, including in market research. Overall R&D expenditures equal only 3% of net sales, and are only $1/12^{th}$ that of neighboring Israel, which for which the share of R&D equals 5.4% of sales (MoP, 1999).

Due to the relatively low shares of R&D and its relatively small emphasis on downstream product production until now, the Jordanian phosphate industry is therefore interested in attracting additional investment and possible joint ventures with foreign firms. Based on discussions with officials involved in the phosphate industry, the government and industry believe that such capital and joint ventures with international firms will bring:

- The introduction of modern technologies with high efficiency of raw material use.
- Improved chances for entering a highly developed fertiliser markets in the EU countries, Eastern Europe and the developing countries of Asia and possibly Latin America, as these international firms are believed to have advanced logistics and distribution networks.

- Development of local labor skills in Jordan through training with the skilled and trained labor of theses international firms.

In line with this policy, the Jordanian government has already taken several measures to attract such investment including:

- Fertiliser products of joint venture projects are exempted from the governmental mining tax of US$7 per exported ton of fertilizers for 5 years from the start of production.

- The maximum custom duties on exported industrial by-products was reduced to 10%. This condition will reduce the cost of importing some of the by-products used in manufacturing certain fertilizers (e.g. NPK).

4.2. Product and Marketing Competitiveness

Currently factors discouraging investment in Jordanian phosphate and fertiliser industries include market disadvantages such as high production costs, and, in the case of businesses interested in capturing European or Mediterranean (or indeed, other non-Asian) markets, relatively high transportation costs as compared to Jordan's competitors for these markets. In addition to the regulatory and policy changes initiated to attract foreign capital mentioned above, there are certain technical specifications which could specifically influence European investment decisions. The quality of Jordanian phosphate may give it an advantage over other Mediterranean competitors vis-a-vis the European Union market which has strict standards for such specifications as radioacitivity and heavy metal content. The primary element affecting radiation is uranium, while cadmium is the most prominent heavy metal in phosphates. Radioactivity is known to mutate body cells and cause malformations and cancer, while cadmium at excess concentrations is thought to lead, inter alia, to disruption of the renal functions and cause anemia.

The uranium content of Jordanian phosphate ranges from 42.6 to 69.8 parts per million (ppm) depending on the mine, falling within the 80 ppm maximum limit on uranium content given in the EU Council Directive 96/29. The Eshidiya mine has the lowest uranium content of all three active mines, and as mentioned this mine is to supply the overwhelming share of Jordan's future phosphate production. In the production of phosphoric acid and other chemicals, the concentration of radioactive elements increases, however, and so products based on some of these products may exceed maximum EU standards and need to be treated if they are to enter the EU market. While treatment costs are substantial, radiation standards should not negatively impact Jordan's competitiveness.

The maximum limits for cadmium content in fertilisers in Europe vary between 22-150 milligram per kilogram of phosphoric acid (which translates into 50-344 mg/kg of phosphate (al-Zubi and Mansur, 2000) with the highest standards in the Scandinavian countries. Cadmium content in Jordan phosphate rock ranges from about 6-12 ppm, which generally falls below the EU maximum levels. Some phosphate at the Eshidiya mine exceeds EU limits and products using this phosphate (e.g. phosphoric acid) would have to be treated to reduce cadmium levels. There are several known methods for cadmium removal, ranging in cost from US$6.7 per ton to US$39 per ton. The removal of cadmium would raise the price per ton of fertiliser produced by an estimated 1.9-4.6% depending on the method chosen. Due to the relatively high quality of Jordanian phosphate, it is assumed that the cheaper technologies will be sufficient for cadmium removal. While overall costs of the phosphate-based fertilisers would rise, because the rates of cadmium in Jordanian phosphate are low it is believed that Jordan will maintain a significant competitive advantage in this sphere over its competitors for the European market including the Eastern European countries currently in the EU accession process.[2] Such an advantage will help to compensate for high production and transport costs.

[2] The author was unable to obtain precise figures regarding cadmium content levels in Jordan's competitor's phosphates, however, discussions with officials in the phosphate industry stated that Jordan in fact had a significant advantage in this respect over major competitors. It should be noted, however, that if world standards are raised to European levels, Jordan's advantage would be diminished to some extent, as under current circumstances phosphate with higher cadmium content can be used for non-European markets.

It should also be noted that while the EU radioactivity and cadmium standards are in place to protect environmental quality within the EU, the processing necessary to refine phosphate products means additional water and energy consumption.

For theoretical purposes, if one assumes that Jordan will reach the same ratio of exports to Europe as that achieved by its North African competitors, for instance Morocco, the resulting sales will be as follows:

For fertilizer, if Jordan claims a market share proportional in terms of its production capacity with competitors, the expected sales of fertilizer to Europe would rise from zero (current sales) to 1.2 million ton per year, given an average price of US$241 per ton, or a total sales of US$290 million. If, for rock phosphate, an assumption is made that Jordan will match its competitors in ratio of exports, this would result in total exports of 0.5 million tons (1998) to 1.25 million tons per year, or a total sales of US$53.8 million, given an average price of US$43 per ton.

4.3. Preliminary Results in Attracting Investment

As stated, it is hoped that the Euro-Mediterranean economic partnership in particular will help attract European investment in particular as a result of the expected improved financing options and resources, favorable investment climate, improved local regulations, and product and market conditions. While until recently Jordan's phosphate industry had not benefited from much European investment, it already has some empirical backing for its optimistic view of the possibilities stemming from the Euro-Med Partnership:

- The European Investment Bank (EIB) granted the JPMC a 30 million Euro loan package to support a project to expand phosphate production capacity at the Eshidiya mine by 36%. The loan was made within the framework of the EIB's lending mandate under the Euro-Mediterranean Partnership (EIB Press Release, 1999).

- Kamri-Agro, a company from Finland, is initiating a joint venture with Jordan's Arab Potash Company to establish an industrial complex in Aqaba to produce chemicals, including phosphate-based chemicals, for the production of fertilisers. The project's estimated worth is US$95 million, and it is expected to have a yearly production capacity of 175,000 tons of dicalcium phosphate, 150,000 tons of potassium nitrate, and 100,000 tons of nitric acid.

- The Norwegian-based Norsk Hydro-Agri company is now initiating a US$650-700 million investment project in partnership (60/40%) with the JPMC to expand production of phosphate-based fertilisers. This deal was finalised relatively close in time to the point at which a free trade agreement between Jordan and the European Free Trade Association (EFTA), to which Norway belongs, came into effect. The project will establish two new plants, one near the Eshidiya mine to produce of phosphoric acid, with a capacity of 440,000 tons per year, and another in Aqaba to produce over 1 million tons per year of phosphate-based fertilisers (NPK & DAP). This project is expected to consume roughly 1.5 million tons of phosphate rock per year, beginning in 2001 (JPMC, 2000). Two EU-based companies (German and French) were among the final three contenders for contracts to handle actual construction of the project's facilities (Skold, 1999).

- A 25-year concession agreement to upgrade and operate the Aqaba Railway Corporation worth US$20 million was finalised in 1999. While the winning international consortium is led by a US firm, it contains an EU partner (Greek). The project comes as a direct result of Jordan's economic liberalisation programmes to privatise state industries. The railway will primarily serve the Eshidiya mine, transporting phosphate and phosphoric acid to the Amman fertiliser facilities.

Other initiatives, such as a recent Danish-Jordanian joint venture in production of potassium nitrate for use in fertilisers, demonstrate further that EU investment and finance of the sector has taken a recent up-turn. While it is difficult to say how much of this investment and financing would have occurred even without a Euro-Med trade zone, it seems likely that the Euro-Mediterranean Partnership may have already begun to contribute to the development and expansion of Jordan's phosphate industry, both directly – in terms of access to EIB loans – and indirectly – in terms of contributing to structural and policy reforms which may have been conducive to European investment.

5. ENVIRONMENTAL IMPACTS OF THE PHOSPHATE SECTOR IN JORDAN

Mining and processing of phosphate has serious impacts on the natural environment of the south of Jordan. The sector is a huge consumer of water and electricity, which it receives at concessional rates. Jordan's phosphate and fertiliser sectors together currently consume an estimated 35.4 million cubic meters (mcm) of water, over half of all industrial water consumption in Jordan. As the mines and production facilities are located in the country's dry southern region, local water supplies are particularly scarce. Water withdrawal at the mines currently in operation is already far in excess of natural replenishment rates of the groundwater sources which supply them. Water use in the phosphate production sector is expected to grow by 70% between 2000 and 2005 due to expanded production.

Mining and exploitation of phosphate rock in all operating mines in Jordan is carried out through a mechanized open cast mining technique using electric walking drag-lines with various bucket capacities. In addition to the obvious changes to landscape and geomorphology involved in the removal of mineral resources, the open-mining technique means local air pollution in the form of particulate matter and pollution of soil and groundwater resulting from run-off from the mine areas.

Types of emissions resulting from phosphate production and processing and fertiliser production include particulate matter (dust from mining), heavy metals in air such has cadmium, mercury and lead from processing, gaseous flourides from phosphoric acid production, and acid fluid wastes, in addition to CO_2 emissions from electricity consumption. In addition, workers are exposed to low level radiation.

These forms of pollution can impact health of the workers and the local population, either directly as in the case of air emissions, or indirectly via their impact on water resources and soil quality. Agricultural production in the Mhai village near the Hasa mine, for example, has already suffered due to dust and soil contamination. In addition to the impact on the human health, the pollution also impacts the area's biodiversity which includes several rare and endangered species, such as the grey wolf, the sand cat, and the golden jackel.

The production and transport of phosphate-based fertilisers at the Aqaba port is a serious potential threat to the local marine environment. Aqaba is home to the world's northernmost coral reefs – a particularly fragile marine ecosystem. In addition to the obvious and severe threat which increased marine traffic will have, phosphate-induced algael blooms resulting from dust from fertilisers entering the marine system during loading process suffocates and kills the corals, which are the core of the local ecosystem as well as a major tourist attraction. Despite efforts which have been made to install facilities to minimise such dust releases,[3] it is still not a completely closed system and so the threat still exists and is likely to increase along with increases in transport.

The phosphate and fertiliser industries, due to their large scale of production, are capable of affording environmental management and certification schemes. JPMC, for instance, is undertaking ISO 14000 series certification and it is expected that joint ventures with European partners will do likewise. Despite such efforts, however, the industry still has serious environmental impacts which are expected to increase as production expands. This negative scenario is especially expected to be the case, given the current situation of cheap supply of water and electricity which does not reflect their true environmental costs, and given the current lack of political will or ability to enforce environmental and health and safety regulation.

A brief description of the major environmental and related socio-economic issues associated with the phosphate and fertiliser industries is presented in Table 1, followed by a schematic in Table 2 which lists mitigation measures currently being implemented. Tables 3 lists anticipated impacts due to projected future industry growth and Table 4 provides a schematic of proposed mitigation measures.

[3] This is in contrast to the neighbouring Eilat port in Israel, which has not installed any such dust prevention facilities, despite legal orders to do so, and thus, remains a much higher hazard (Bartov, 1999).

TABLE 1 – CURRENT ENVIRONMENTAL IMPACTS FROM THE PHOSPHATE AND FERTILIZER INDUSTRY IN JORDAN

IMPACT	***STATUS***
1) Energy Consumption	1) In 1997, the phosphate extraction industry consumed about 144.4 Gigawatt hours (GWH), representing about 8% of the industrial sector electricity consumption and about 2.7% of the total electricity consumption in Jordan. 2) Producing one ton of phosphate consumed about 230 Kilowatts on average, and consumed 7.3 kg of fuel (1 GWH = Consumption of 309.4 tons of fuel).
2) Major geo-morphological changes in the mine sites and surrounding areas.	1) The estimated volume of overburden (unused earth and minerals left over after mining) excavated in the Hasa and Abyiad mines during the period of 1984-1998 was about 545 million mcm, while in the Eshidiya mine it was 63.5 mcm for the period 1988-1998. 2) Extracting one ton of raw phosphate required between 3.9 m^3 to 11.8 m^3 of lost material in best and worst cases scenarios respectively, with an average of 8.1 m^3.
3) Deterioration of water resources: Quantity & Quality. Phosphate extraction	1) The phosphate industry is highly water consumptive compared to other industrial activities in Jordan. Water consumed by phosphate extraction industry was about 28% of the water consumed by the total industrial sector in 1998, and about 1.3% of total water consumption in Jordan. 2) Estimated total water consumption for Hasa and Abyiad mines during the period of 1982-1998 was 194 mcm, while for the Eshidiya mine it was 20.8 mcm for the period of 1990-1998. 3) Natural groundwater recharge to the aquifer system in mining areas was 112 mcm on average for 1982-1988 period. 4) Average water consumption per ton of phosphate extracted averages 2.4 m^3, however, quantities of consumed water per unit of phosphate show a sharp increase over the last five years, reaching about 3.1 m^3 per ton in 1998. This indicates that the phosphate extraction industry not following a strategy for water consumption management.
4) Deterioration of water resources: Quantity & Quality. Fertilizers industry	1) In 1998, water consumption for fertilizer production in Jordan was 11 mcm representing about 21.6% of total industrial water consumption, and 1% of total national water consumption. Average annual water consumption by the Aqaba industrial complex alone is 4-5 mcm. 2) About 2.8m^3 was consumed to produce one ton of fertilizer in the Aqaba industrial complex.
5) Generation of solid wastes from different industrial activities within the phosphate extraction sites.	1) About 0.7 ton of phosphate wastes resulted from the production of one ton of phosphate ready for use or for export. 2) During the period of 1990-1998, about 32.7 million tons of wastes resulted from phosphate cleaning and upgrading. 3) These quantities of solid wastes are left in areas around the mining areas generally without treatment.
6) Solid wastes resulting from phosphatic fertilizers industry	1) The total volume of phosphogypsum from the Aqaba industrial complex was about 8 mcm for the period of 1990-1998, or roughly 0.9 million tons per year.
7) Air Pollution	

TABLE 2 – SCHEMATIC OF CURRENT IMPACT LEVELS AND ON-GOING MITIGATION MEASURES

Significant Environmental & Socio-economical Issues	Status Impact	Impact Level	On going Mitigation Measures for Negative Impacts
Regional & International Level			
1- Contribution to climate change	-	**M**	None for phosphate extraction, although modern techniques are applied to reduce the emissions resulted from fertiliser manufacturing.
2- Contribution to desertification	-\+	**H**	Treated wastewater is used to a limited extent in a trial forestation activities within the plants sites.
Local Level			
I- Environmental Issues			
1- Changing the local geomorphology	-	**H**	None
2- Affect on the local air quality and local climate	-	**H**	None for phosphate extraction, although modern techniques are applied to reduce the emissions resulted from fertiliser manufacturing
3- Consumption of limited water resources.	-	**H**	None
4- Affect on biodiversity in southern Jordan	-	**L-M**	None
5- Affect on marine ecosystem in the Aqaba Gulf	-	**M**	Use of dust absorbers in the Aqaba port to reduce the level of dust and particulate resulted from phosphate un-packing and ship loading - Threat still exists of equipment failure and other accidents Modern techniques are applied to reduce emissions resulted from fertiliser manufacturing plants in Aqaba New coastal zoning plan for Aqaba - may further endanger corals
6- Affect on public health of workers and the local communities	-	**L-M**	Masks are provided to workers but rarely used No measures are taken vis-a-vis local communities Assessment of possible health impacts of sector just getting underway
II- Socio-Economic Issues			
1- Contribution to employment	+	**M**	
2- Upgrade the infrastructure in nearby areas	+	**L-M**	

TABLE 3 – EXPECTED IMPACTS OF GROWTH IN THE PHOSPHATE AND FERTILISER INDUSTRIES*

EXPECTED IMPACT	EXPECTED STATUS
1. Increasing consumption of limited water resources in Jordan.	1) Water consumption quantities for the Jordanian phosphate extraction sector are expected to increase from 14 mcm in 1998 to 24.6 mcm by 2006. Total consumption rate of water in the phosphate extraction sector during the next ten years will varies as a total from 140 mcm (best case scenario) to roughly 340 mcm (worst case scenario), with 224 mcm as an average value. 2) Water consumption for the fertilizers industry is expected to increase from 11 mcm in 1998 to 15.5 mcm by 2003.
2. Impact on groundwater safe storage	1) Available natural recharge to the groundwater aquifer system used by this industry varies between 10-12 mcm year, which is equal to 100-120 MCM during the next ten years. Thus the shortfall, which is likely to be supplied by unsustainable withdrawal rates from the groundwater system is estimated at between 20 and 120 mcm for the ten year period.
3. Geomorphological changes of the extraction area and nearby areas.	1) During the next ten years, the expected overburden materials resulted from phosphate extraction are 360 mcm (best case scenario) to about 1090 mcm (worst case scenario). In general, it is estimated to produce about 750 mcm of loss materials between 1999-2008.
4. ***Increase in solid wastes***	1) Expected volume of solid wastes resulting from the process of upgrading the raw phosphate will be about 65 mcm during 1999-2008. 2) New projects will add about 2.2 million tons of phosphogypsum to current levels of solid wastes from the fertilizers industry in Jordan.
5. Increase in fluid wastes	1) The volume of fluid wastes is expected to increase significantly as result from expanded industrial activities both in mining and in fertiliser production. (In the Hydro-Agri Jordan project alone, the increase will be about 220 m^3 per hour, or about 1.9 mcm per year.)
6. Higher energy consumption	1) Electricity consumption by the phosphate industry will increase from an estimated 190 GWH in the year 2001 to 235 GWH by the year 2006, and the fuel consumed in this regard will increase from roughly 53,700 tons of oil equivalent to 74,600 tons for the same period.

· Note: It is not the authors' intention to claim that the environmental impacts listed herein are a direct result of trade liberalisation, whether within the Euro-Mediterranean framework or otherwise. It is merely the intention to state that the aforementioned Euro-Med trade liberalisation and its support for structural adjustment and provision of funding is a contributing factor to the growth in the phosphate and fertiliser industries, as outline above, and therefore bears some responsibility for the resultant environmental impacts.

TABLE 4 – SCHEMATIC OF IMPACT LEVELS AND PROPOSED MITIGATION MEASURES

Significant Environmental & Socio-economic Issues	Impact Status	Impact Level	Proposed Mitigation Measure For Negative Impacts
International & Regional Levels			
1- Local contribution to climate change	-	**M-H**	Applying the Best Available Technologies (BAT) regarding the reduction of gaseous emissions. Developing broad forestation campaign supported by phosphate industries, using treated wastewater from the phosphate and fertiliser industries.
2- Desertification	-	**H**	Developing broad forestation campaign supported by phosphate industries, using treated wastewater from the phosphate and fertiliser industries.
Local Level			
I- Environmental Issues			
1- Changes in local geomorphology	-	**H**	Re-dumping of the resulted overburden materials resulting from the phosphate excavations activities into original excavation sites.
2- Affect on the local air quality and local climate	-	**H**	Applying BAT regarding the reduction of gaseous emissions (e.g. closed loop filter gas vacuum, hemihydrate scrubbing units, water cover on phosphogypsum to reduce radon gases, etc.) Developing broad forestation campaign supported by phosphate industries, using treated wastewater from the phosphate and fertiliser industries.
3- Consumption of water resources.	-	**M**	BAT for water management. Usage of treated wastewater for some simple irrigation practices and industrial activities.
4- Ground and groundwater pollution	-	**M-H**	BAT (e.g., closed system resource recovery and reuse programme, lining tailing storage areas)
5- Affect on biodiversity in southern Jordan	-	**M**	The establishment of natural reserves in the southern parts of Jordan. Financial support for these reserves could be provided by companies working in affected areas.
6- Affecting the marine eco-system in the Aqaba Gulf	-	**H**	Using the BAT regarding the emissions resulted from the fertilizers manufacturing. Diversion of ship traffic in Aqaba Gulf away from sensitive marine areas. Installation of monitoring system for phosphate releases in sea.
7- Affect on the public health of the workers and local communities	-	**M**	Upgrading enforcement of current safety precautions.
II- Economical & Social Issues			
1- Increasing local income	+	**H**	
2- Increasing employment in southern Jordan.	+/-	**M**	(Effect of expansion on employment is thought to be positive overall, given current policies, although privitisation and removal of government mandated employment practices has a negative affect on employment.)
3- Upgrading the infrastructure in the mining areas and nearby areas.	+	**H**	(Development of Aqaba railway and other infrastructure is assumed to be beneficial overall.)

6. CONCLUSIONS

The phosphate industry is a major source of foreign currency and employment in Jordan. Mining and mineral processing however, have serious and in some cases irreversible impacts on the environment and on the well-being of the local populations. The sector already extracts water beyond sustainable limits, energy consumption is high, and air and water pollution negatively affect local human and wildlife populations.

Jordan is planning to expand phosphate mining by up to 67% over the coming decade and to rapidly develop its fertiliser and chemical production capacity in order to expand into new higher-value added product markets as well as into new geographical markets. Due to relatively low profit margins and allocations for research and development, the industry is seeking joint ventures in order to gain technologies and market contacts.

While it is difficult to draw much definitive relation between the Euro-Med free trade programme and the current expansion of the sector, there is some evidence that the former at least contributes to the latter, both by means of increased access to finance and through promotion of an investment climate conducive to joint ventures between EU and Jordanian firms. Such initiatives have recently begun to develop. Jordan's potential comparative cost advantage in meeting high EU environmental standards regulating phosphate products may be one reason for the current EU interest in Jordan's phosphate and fertiliser industries.

Given the current lack of internalisation of environmental costs for producers in Jordan (both in terms of consumption and emissions) and relatively weak enforcement of environmental regulation, the planned expansion of production is likely to exacerbate current negative environmental impacts, especially in terms of water and energy consumption. Increased shipping of products via Jordan's only sea port, means increased risks to the area's fragile and unique marine eco-system.

7. RECOMMENDATIONS

Given such potentially detrimental impacts on the environment and public health, it is recommended that the following policies be adopted. As several Mediterranean countries are exporters of phosphate and phosphate products there is potential to develop several of the recommendations at a regional level, thereby sharing experience and promoting regional integration.

Policy Level

- Programmes need to be initiated to enhance enforcement of environmental regulation.

- Foreign investors/joint ventures in large-scale industrial firms should be obligated to utilise Best Available Technology. A Euro-Med regional economic or industrial forum could draw up a list of criteria for deciding which type of industries would fall into this category.

- Environmental screening of official Euro-Med financial assistance (MEDA and EIB) should be initiated. Also any such finance to expand extraction industries and to develop other heavily polluting industries should be balanced by parallel assistance of environmental and/or social mitigation measures for these same industries.

- Policies which incorporate environmental costs for resource use (water, electricity, and land) need to be instituted and enforced.

- Monitoring public health of workers and local populations, especially regarding illnesses caused by inhalation of dust, exposure to radiation, and intake of heavy metals.

- Initiation of a forestation campaign may assist in reducing the limits of air pollution and the intensity and duration of the dust storms.

Industry Level

- Establishment of effective monitoring systems within mining, production and port facilities to indicate when environmental standards have been exceeded.

- Since more funds are anticipated to go for R&D, some of the profits should be allocated to compensate local communities for environmental and socioeconomic damages.

- Closed transportation systems should be developed and utilised.

- Environmental restoration of mines should be enforced. Returning overburden into small and medium size quarries should be mandatory. This will reduce damage to landscape as well as reduce dust pollution.. Large size quarries can be prepared to collect rain water and/or the water resulted from the cleaning process for the phosphate. The collected water can be used for agricultural purposes or for forestation campaigns. The World Conservation Union (IUCN) could be a body of technical assistance in this matter.

Implications of the Euro-Mediterranean Free Trade Zone on Agriculture & Environment in the Southeastern Mediterranean

by Dr. Abdul-Hamid Musa, on behalf of Palestinian Agricultural Relief Committees (PARC)

1. INTRODUCTION

Agriculture plays important social and economic role in the Southeast Mediterranean (SEM) economies of Jordan, Egypt, Palestine and Israel. Collectively these countries have several comparative advantages, which allow higher degrees of competence and thus a potential to exploit marketing opportunities opened to the region through the liberalization of trade, especially with European markets. The strengths include:

- Cost effective off-season production of vegetables and fruits, especially in the Jordan Valley, a natural greenhouse.
- Abundance of production technology, know-how and accumulated experience.
- Comparatively low labor costs

Some major limitations for the sector include its lack of water and arable land, poor infrastructure and marketing services, and vis-a-vis the European Union, very restricted market access.

The long-term objective of this research endeavor is to contribute to the optimization of socio-economic and environmental impacts of establishing a Mediterranean Free Trade Zone (MFTZ), as called for under the Euro-Mediterranean Partnership. The immediate objective of the study is to shed light on the possible environmental and environment-related socio-economic consequences with respect to agriculture of freeing trade in the region, and in turn, to develop practical recommendations for policy measures to emphasise projected positive impacts and mitigate negative ones.

In order to predict impacts, there was initially an interest in developing a simulation model, which would quantify impacts of different possible trade scenarios. Such models, however, demand accurate and compatible time series data and require a priori information on behavioral relations. Current state of data collection in the region, significant variation among EU-SEM association agreements in terms of the actual treatment of agriculture, and the wide scope of the research all presented difficulties in building accurate models of such a type. Instead, a simple systematic analysis of various possible outcomes of trade association was followed to shed light on possible implications of establishing an MFTZ, focusing on the EU-SEM trade dynamic, especially the effect on SEM agricultural export sector.

The study faced several methodological constraints, given differences within the area studied, including:

1. Diversified agricultural production bases in the four countries. Mainly dry farming in Jordan, irrigated agriculture in Egypt, capital intensive, high-tech, well organized agricultural production in Israel, and finally an agriculture sector with very restricted access to resources and outside markets in PALESTINE.
2. Different political systems, sectoral policies and levels of transparency in terms of availability of resources and information.
3. Different standards of levels and technical capacity within the field of agriculture, and hence varied responses to new changes and challenges.
4. Varying factor productivity, especially for labor and water.

Other problems encountered in conducting the study included:

1. Obtaining consistent and comparable data on the economy and the environment over an extended period.
2. Isolating the impacts of MFTZ on the agricultural system from other driving forces, such as structural reforms, establishment of Arab Free Trade Area, membership in World Trade Organisation, and others.

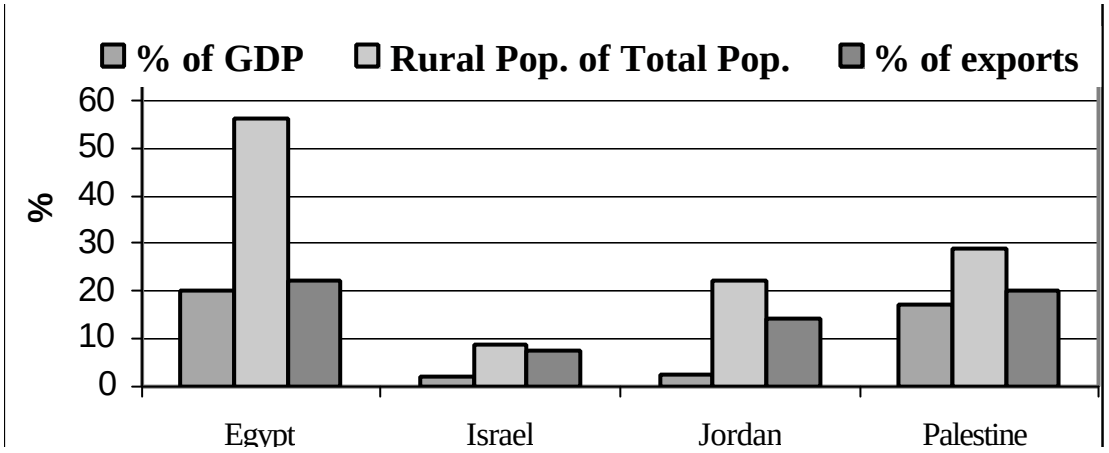
2. ROLE OF AGRICULTURE IN THE REGION

The total population of the SEM countries Egypt, Israel, Palestine, and Jordan is estimated at 77 million for the year 2000 and is projected to grow to 92 million by 2010, with an average annual increase rate of roughly 2.0%. Economically, agriculture's contribution to Gross Domestic Product (GDP) is moderately

high, especially in Egypt (figure 1) where it accounted for 20% in 1996, as compared to 17% in Palestine, 7% in Jordan and a comparably lower 2.5% in Israel. The agricultural sector also comprises an integral part of export earnings. Agriculture exports constitute 22% of total exports for Egypt, 20-25% for Palestine, 14% for Jordan, and 7.5% for Israel (see figure 1 below).

Agriculture in the region plays an even more significant social role in securing jobs and generating income for rural people, which constitute a relatively high proportion of the population, especially in Egypt (56%), but also for Palestine (29%), and Jordan (22%), while less so for Israel (8.8%). The economically active population in agriculture in these countries is diminishing, however, and this trend is expected to continue (FAO; PCBS, 1998), which means fewer farmers to secure food for more people.

Figure (1): Selected indicators of agricultural social and economic role.



2.1. Climate and Comparative Advantages

The region is characterized by long dry summers and by frequent and serious drought years. Its terrain is diverse however, containing four major eco-geographical climatic zones: Mediterranean, Irano-Turasian (Steppe), Saharo-Sindic and Sudanese. In terms of agriculture, the comparative edge of this region lies mostly with early production of vegetables, fruits and flowers. Another advantage of the agricultural products lies in their quality. Theoretically, under conditions of free trade the region would have comparative advantage in producing winter (early) vegetables, tomatoes, melons, potatoes, onions, early grapes and citrus. The competitiveness of these products would be expected to improve under free trade conditions, due to reduction of subsidies (export and production) and relaxation of other trade distorting production incentives.

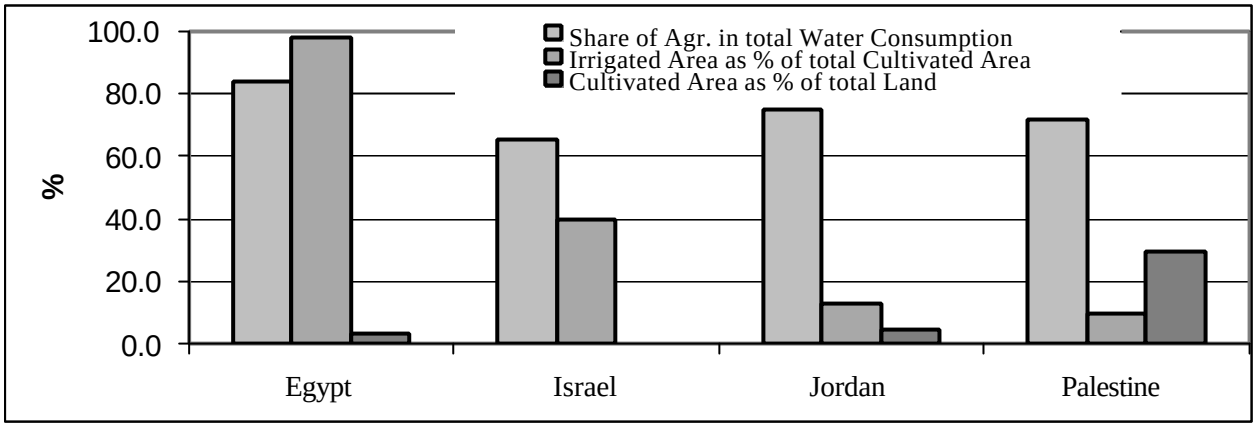
Exploitation of the region's comparative advantage is constrained by several factors, among which is clearly limited natural resources, above all water. In addition, there is a perceived pressing need to attain a certain level of food security, on national and household levels, especially with high prices for strategic agriculture products. Another important problem for Egypt, Jordan and Palestine is a less developed technical base for the agricultural sector, especially in terms of biotechnology. The technical gap will play an increasingly crucial economic role. In addition, insufficient and inefficient infrastructure, institutional and regulatory gaps, and limited financial resources also prevent the region from realizing its agricultural market potential.

2.2. Agricultural Production System

Most of Egyptian and Jordanian cultivated areas are allocated to perennial crops (vegetables and field crops) unlike in Palestine, where most of the area is allocated for fruit trees, due, *inter allia*, to the prevalence of semi-humid (rain-fed) farming. In Egypt, almost all cultivated areas are under irrigation (98%), with over 40% in Israel, 13% in Jordan and 10% in Palestine (See figure 2). There is a general trend towards cultivating more lands, with specific interest in irrigated agriculture, since rainfall is inadequate for most vegetables, fruit trees and many other crops. In Israel, with a large export-oriented production system, cultivated area increased by 265% during the previous 50 years, while irrigated area increased by 800% (MOEI, 1998). In spite of application of water saving irrigation techniques, especially under vegetable production, there is evidence of excessive and inefficient use of irrigation water in all four countries.

Agricultural development in these countries is based on vertical development and failed to some extent in the horizontal development, which requires techniques and technologies designed for these countries, and assumes dedication, innovation and above all utilization of indigenous knowledge and participation of local population. On the policy level, subsidies of inputs and price supports were heavily adopted to pursue certain social and political development objectives such as import substitution and increased equity in income distribution. Agricultural subsidies were the primary driving force for production, resulting in surpluses of fruits and vegetables with high production costs, and uneconomic and inefficient use of scarce resources, especially water and arable land.

Figure (2): Selected agricultural indicators of environmental importance.



Agriculture production affects the environment in several different ways, determined largely by production site, cropping patterns, technical levels, and agro-chemical use.

Location: Production site plays a major role in determining choice of crops, exploitation of natural resources and rates of chemical application. Most of the Jordanian vegetable production, for example, occurs in the Jordan Valley, a small portion of the country's total land area. Even within this area, there is a significant difference between its northern and southern parts. Technology level has only a limited effect on the production distribution.

Cropping Patterns: Shifts in the cropping pattern mean changes in pressures on resource bases, such as soil erosion and water extraction, as well as fertiliser and pesticide use. Rain fed farming is the most environmentally friendly agriculture production system followed by open farming. Irrigated farming, in addition to its drain on water use, also generally involves higher applications of chemical inputs. In addition, the quality of water used in irrigation affects long-term soil quality and productivity.

Technology level: Numerous examples show that shifts in supply curves, due to introduction of higher technology levels has a direct relation to changes in environmental pressures. Generally, higher technology brings with it additional use of agricultural chemicals. Barring internalization of environmental costs, something not common to the agricultural systems of the region, an economically rational farmer, who can afford to adopt high producing, capital intensive farming systems, will be more inclined to increase chemical application, as expected profits generally justify the high capital investment and any additional costs. Technologies for water conservation and direct fertilizer application have been developed and are in place in some of the region, especially, Israel and Jordan. New water pricing policies if implemented, would promote additional use of such technologies.

Agro-chemical use: Type and frequency of chemical applications in agriculture has clear environmental impacts, including effect on soil quality, surface and ground water quality, public health both of workers and consumers, and the state of the marine environment, due to agricultural run-off. Use of agro-chemicals is widespread in the region. In Egypt alone 16,000 - 35,000 tons of pesticides have been used annually over the past 40 years (Ahmad A/Jawad, 1997), of which 75% are specific for cotton protection, while in Israel, there are 878 registered pesticides. There is evidence that farmers are over fertilizing, especially under irrigated and intensive farming. Fertilizer use for Egypt and Israel has shown constant increase for the

period 1980-1995, while Jordan's fertiliser use has remained relatively constant (FAO, website). As a result of high fertiliser use, a high concentration of nitrogen and other chemicals is expected in the leachate affecting the region's limited, but critical groundwater supplies.

Application of pesticides also generally increases as production intensifies. In greenhouses in the region, for instance, pesticides are applied 40-50 times during the same season. In Palestine almost two-thirds of the pesticides are soil fumigants, mainly methyl bromide a chemical known to damage the ozone layer. Application rates vary according to crop type and production intensity from 30-500 kg per hectare. In some cases, such as carnations grown for export to the EU, rates climb as high as 1000 kg/hectare.

3. STATE OF ENVIRONMENT IN THE REGION

Water is scarce throughout most of the region. In all SEM countries, renewable fresh water is less than current withdrawal rates, an inherently unsustainable practice. Water sources in the region (the Nile and Jordan river systems and various aquifer systems) are subject to high contamination risks. The lower stretches of the Nile, for instance, are at risk from upstream agricultural runoff, while several of the aquifer systems are at risk of salinisation, especially from seawater intrusion due to over pumping. Such an occurrence has already seriously degraded groundwater in the Gaza Strip, for instance. Agriculture consumes the majority of the region's freshwater, accounting for 81% of water use in Egypt, 74% in Jordan, 70% in Palestine and 64% in Israel. Thus, it is the most important factor in terms of diminishment and degradation of water resources (see figure 2).

Limited amounts of arable land, and soil quality are also important issues for the region. Mismanagement and improper farming systems contribute to soil erosion and reductions in soil quality. Mountains and other marginal lands are often cultivated with cereal crops, either to take advantage of certain profits (subsidies) or due to higher costs and/or lower returns for alternative crops and locations, i.e. fruit trees production. Ambiguous laws and lack of enforcement fuel such mismanagement of high lands. Nutrient mining is serious in semi-arid areas and under rain-fed farming in particular, where use of mineral fertilizer is seldom economical.

4. TRADE RELATIONS & PERSPECTIVES

The EU is an important trade partner for the region. EU exports constitute 30% of the total trade volume of the SEM countries. Of this, 65% is with Israel, 30% with Egypt, and only 5% with Jordan. The EU market is also an important destination for much of the region's production, absorbing 49% of Egyptian exports and 31.3% of Israel's exports, but is more limited for Jordan, where it claims only 6% of total exports (STEMINA, 1997). Agriculture trade is limited, however, do to trade restrictions on both ends, especially the EU's Common Agricultural Policy (CAP) which effectively protects its EU Mediterranean members from competition by non-EU members in the region with comparative advantages in similar crops. [1]

The Barcelona Declaration establishing the Euro-Mediterranean Partnership and laying out its plan for regional trade relations, calls for free trade in manufactured goods with agricultural trade to "be progressively liberalised through reciprocal preferential access among the parties." The work programme laid out in the Barcelona Declaration addresses agriculture, calling for policies promoting such goals as "diversification of production," "reduction of food dependency," "promotion of environmentally friendly agriculture," and "technical assistance and training." Such programmes are to be addressed at a regional level, while actual trade relations, which have the greatest effect of all Euro-Med initiatives in terms of impact on agricultural production in the region, are dealt with at a bilateral level – an obvious policy gap. In looking at the actual association agreements between the EU and the SEM countries, little in terms of measures which would promote such goals is actually evident.

[1] In looking at the example of Jordanian fruits and vegetables, for instance - a sector, in which Jordan should have a comparable advantage vis-a-vis the EU - only 0.5% - 1% of exports go to the EU (although this accounts for about 50% of exports to non-Arabian countries). Since 1994, Jordanian agricultural exports to EU showed a slight improvement, although experiencing much fluctuation. Thus, it appears that the EU is not interested in Jordanian agricultural production. Around 75% of the EU's imported tomatoes are off-season (Nov. to March), and thus differ greatly from the distribution of Jordanian tomato exports in general, 80% of which are exported over the period May to November (AMC, Annual reports).

4.1. EU-Association Agreements

Agricultural production in the SEM are victims of the EU's CAP, the principal relevant features of which are:

1. Guaranteeing higher prices for EU producers, which amounts up to 75% of the production costs
2. Levying taxes, which vary in order to compensate for lower international prices.
3. Putting non-tariff barriers, such as quotas on imports of agricultural products, which vary according to the European agricultural production season.

Under association agreements with the EU, provisions accorded to the SEM countries remained within narrow limits and were frequently only granted for off-season production, which, *inter allia*, involves higher investment, economic risk, and environmental impacts. From the viewpoint of SEM countries, bilateral association agreements with the EU within the Euro-Med framework are seen as urgent for several reasons:

1. The imminent expansion of the European Union to include Eastern Europe, which will diminish opportunities for SEMs to penetrate the EU market without an agreement,
2. Corrosion of existing trade protocols and preferential treaties following the establishment of WTO,
3. Challenges of structural reform in light of changing technical assistance policies of the EU and other donor countries,
4. The overall need for upgrade and reform of economically productive sectors and for socio-economic development programmes.
5. The need to create an environment conducive to trade, investment, and technical and financial support
6. Strengthening of political stability and regional integration and cooperation.

Due to the lack of competitiveness of their respective industrial sectors and the poor natural resource base, SEM countries can expect several negative economic and social shocks in opening up their markets to competition to free trade with Europe, at least in the short and medium term. This, along with the assumed competitiveness of SEM agricultural production, were behind attempts by SEM country negotiators to "free" agricultural trade with the EU in the bilateral agreements. These efforts were not very fruitful.

The association agreements treat differently two major types of products relevant to agriculture sector. The first group is manufactured agricultural products and the second is fresh agricultural products.

1. The first group includes the manufactured agricultural raw and products, for example feather, plant products for manufacturing baskets, cacao butter and ground cacao, and chips of vegetables and fruits. According to the agreements they will be subject to free trade. The SEM region has little comparative advantage in producing such products, at least in the short or medium run. Therefore, trade liberalization in these products will benefit consumers since market prices are expected to decrease due to the drop in customs and increased competition. At the same time, it will not harm the local agricultural production sector, since only a fraction of agriculture produce is manufactured locally.

2. The second group includes fresh agriculture products, of great importance to the SEM countries. The different association agreements of the SEMs all differ. The five major categorizations exhibited in the EU-Palestinian association agreement include:

One. Agricultural products with reduced customs tariff and no trade quotas (quantity or time), for example, grapefruits (80% reduction from maximum tariff).

Two. Agricultural products with reduced customs tariff and no quantity quota but within a limited time period (time quota), for example onions (15/2-15/5, 60% tariff reduction after quota).

Three. Customs exemption of some agricultural products limited to a quantity quota, but with no time quota, and with or without tariff reduction after the quota. Examples include cut-flowers (1,500 tons without tariff reduction after the quota), and paprika (1,000 tons, with 40% tariff reduction after the quota).

Four. Free trade of limited quantity of certain products within limited time period and no tariff reduction after the quota, for example strawberries (1,200 tons, 1 Nov.-31 March).

Five. Free trade of limited quantity of certain products within limited time period with or without tariff reduction after the quota, for example tomatoes (1,000 Tons between 1 Jan. to 31 March and 60% tariff after that quota).

It is difficult to generalise regarding the treatment of agriculture under the association agreements, since concessions granted differs widely between nations, despite the high degree of similarity of their production portfolios. Production efficiency was not behind these decisions. In general, it can be said about the association agreements that:

1. There is a big difference between the request of SEM countries and what have been granted to them, both in terms of quantities and time quotas. Concessions granted by the EU to SEM countries comprise only a fraction of quotas requested during the negotiations.
2. Preferential treatment has largely failed also to cover the assumed comparative advantage of the SEM agricultural production sectors.
3. Several crops, especially fruits but also some vegetables, which show seasonal overproduction and could compete in the EU markets, are not considered for preferential treatment. These products include cucumber, grapes, and figs among others.
4. Some agricultural products, typical to the area and which can be produced cost effectively were not included in the partnership agreement, for example figs, pomegranates, and cactus plants.
5. Time quotas are short for several commodities and are inconsistent with production peaks (see table 1 below).

Opinion in the region as to potential benefits of joining an MFTZ is largely skeptical. Reasons include:

1. Penetration of EU markets and beneficial utilization of the agreements' potential require dedicated institutional efforts and coordination among stakeholders, which is still in its infant stages in SEMs,
2. Penetrating EU markets requires developing institutional capacity and rehabilitation and upgrading of infrastructure in terms of research, production and marketing.
3. Limited water availability and other factors restrict utilisation of resources,
4. Small scale farmers are likely to be marginalised.
5. The private sector is not organised sufficiently in terms of a marketing role.

Table (1): Production distribution of selected crops and the EU-preferential treatment granted to them.

Crop	JAN	FEB	MAR	APR	MAY	JUNE	JULY	NOV	DEC
Tomato	P	P	PS	S	S				P
Eggplant	P	P	P	PS	S	S	S		
Zucchini	P	P	S	S	S	S		S	PS
Melon	P	P	P	P	P	S	S	P	P
Onion	S	PS	PS						S

P - Months with preferential treatment S - Expected production surplus

Implications

Benefits expected by the SEM countries include some expansion of agricultural exports, attaining development loans, in-flow of foreign capital and increased foreign investments. Preferential tariff-quotas were tailored to suit the local European producers and were given mostly to off-season production, especially in winter vegetables and fruits. These concessions granted to the SEM countries may induce certain structural adjustment of the farming sector, which should improve its competitiveness especially in the medium and long run. The adjustment process will affect the structure of the overall farming sectors as well as that of individual farming units in the region, which implies therefore far-reaching social, economic and environmental implications, both positive and negative.

4.2. Possible Structural Adjustments due the MFTZ

Regional integration: The Euro-Med Partnership is based on both bilateral and regional free trade agreements. Bilateral trade agreements between neighboring countries will have a big role in optimizing trade with third countries, in sharpening comparative advantage on the national level and in reducing the trade losses on the regional level. Example of such evolvements is the establishment of Arabian Free Trade Area and the several bilateral free trade agreements. Concessions granted by the EU to the seemingly customs free export of tomato paste from some countries in the region may strengthen these trends.

Policy reforms: Agricultural subsidies, especially for fertilizers, pesticides, irrigation water, and floor pricing for products encourages farmers to overproduce at unnecessary environmental cost. Dropping subsidies is a win-win policy reform,as higher efficiency means less burden on the treasury and on the environment. By removing price supports for pesticides, for instance, Egypt reduced the use of agricultural pesticides from 34,000 tons in the 1980s, to 4,000 tons in the late 1990s (according to Agriculture Minister Youssef Wali, as quoted in Essam El-Din, 2000). Removal of subsidies, however, can bring social costs which also will have to be addressed. The extent to which the Euro-Med agreements will promote such pricing reforms is still not clear.

Supporting industry: The region is a net importer of manufactured agricultural products. Optimal use of the rules of origin necessitates the development of sectors in intermediate products so far receiving little attention which are likely to face stronger competition from the EU on the medium and long runs. In general, one may expect more investment in food processing of locally produced agricultural products, e.g. production of tomato paste.

Vertical and Horizontal expansion: Certainly, the establishment of an MFTZ will induce expansion of firms and sectors that fulfill efficiency requirements to benefit from the expansion of the market and trade creation opportunities. Some farms, mainly large and medium size commercial farms, are expected to respond efficiently to the new export opportunities. Small farms will be negatively affected unless restructured, which may encourage consolidation of fragmented agriculture holdings or increased cooperation. Alternatively, it may mean being swallowed by big farms. Under trade liberalization, horizontal expansion is expected (Munasinghe and Cruz, 1995), especially in areas such as the West Bank, where 53% of total area receives enough rainfall to be cost effectively cultivated. Small farms generally use less intensive farming methods, which is environmentally positive, however, they are also less likely to apply environmentally friendly technologies such as drip irrigation, and thus, are generally less efficient in terms of resource use.

Higher technology levels: Generally, sub-sectors with potential comparative advantage will witness a process of intensification of production of export crops. This may encourage adoption of new technologies and equipment, especially for water conservation. Israel and Jordan already make wide-spread use of drip-irrigation, for instance, and use in the SEMs could increase if proper pricing of water is instituted.

Production site and cropping patterns: Possible consequences include intensification of vegetable and fruit production programmes, especially in the Jordan Valley, to increase off-season production in response to tariff-quotas. Due to this inconsistency for customs exemption vis-à-vis production-possibilities and surplus, more areas will be allocated to winter production under protected agriculture systems. A shift in cropping patterns and the stress of off-season production is more likely as a consequence of the new agreements rather than improvements in cost and technical efficiency.

4.3. Agricultural Implications

Export Opportunities: On the export opportunity level, introduction of the tariff-quotas may improve the situation but not significantly. On the other hand, expansion of the European Union to include Eastern Europe will negatively affect export opportunities for SEM agricultural commodities since these countries will have better access and benefit from more abundant arable land and water resources. Therefore, SEM agricultural exports are expected to suffer, particularly in the short run. In the long run, trade liberalization is expected to increase agriculture exports of core countries.

Public expenditure and investment: Low productivity of agricultural sectors in the region is due partially to the lack of investment and public expenditures in the agricultural infrastructure and services (production and marketing). The expected rise in the import bill and other financial burdens on national treasuries will further diminish governments' ability to invest in infrastructure and develop extension services.

Food Gap: The SEM is experiencing a trend is towards a wider food gap. Recently, prices of cereals, of which the EU is a large exporter to SEMs, have been increasing, as have the prices of red meat, while prices of crops produced and exported by the SEMs, mainly vegetables, have generally been decreasing (and those that are increasing are doing so at much lower rates than those for cereals). For Egypt, for instance, food imports doubled in the 1990s, while exports remained largely static. For the Arab countries in general, the ability to cover import bills with exports dropped from 48% in 1979 to 32% in 1993 to 21.4% in 1996 (El-

Imam, 1999). Tools, such as Emergency Food Assistance Programmes, developed to compensate developing countries for these losses, may fulfill some requirements during the interim period, but certainly not all and not for the long term.

Input prices and technical gaps: Prices of manufactured agricultural inputs, especially those with lower industrial and technical components are subject to decrease under the Euro-Med agreements. Costs of high-tech agricultural inputs, i.e. inputs resulting from prolonged research and trials and with higher proportion of know-how will remain beyond the reach of much of those active in the agricultural sector. Thus, the gap between the EU and SEMs in the acquisition of agricultural technologies may promote a trend of shifting competitive advantages away from indigenous private and public companies towards the foreign-owned companies that specialize in research and development based production.

Farm income: Studies showed probability of higher and less fluctuating prices for agriculture products within local market and in the export markets. If farming sectors respond properly, and if technical requirements are tailored to the needs of the farming units and resources allocated to satisfy market needs, the agriculture sector would be strengthened and so its contribution to GDP. Such as scenario is more applicable Israel and Egypt, than to Jordan and Palestine, which are more likely to suffer losses, due to their more limited resources bases. For countries with poor resource-bases, further opening of domestic markets is likely to reduce the income of many small farmers, even threatening their chances of staying in production (WWF, 1995).

If one looks at the case of Jordan, as an example, recent figures from Jordan (MOA/JO, 1999) showed that earnings of livestock enterprises are negatively affected by current trends in agricultural consolidation. The profits dropped for the different husbandry/feeding systems. All animal farms had generated profits in 1995. By 1998, however, only few farms in specific regions were able to make profit, while most had to operate with losses. The figures show almost similar level of revenue loss for nomadic and pastoral agriculture, indicating, most probably, more pressure of this type on range lands. Furthermore, being almost totally dependent on imported feed, environmental friendly animal husbandry systems suffered even higher than average losses.

Citrus and vegetable farms in Jordan Valley fared better than animal husbandry farming units, although, citrus and vegetable farms did have decreasing profits over the period 1995 to 1997. There was however, quite a difference from one region to another, with farms in regions with earlier production (off-season) suffering lower rates of losses and with some even managing to increase profits.

4.4. Social Implications

Free trade with notably insufficient considerations given to the actual needs of the involved parties and disadvantaged areas, especially areas with low agricultural productivity, will fail to draw investors. Rural people will be increasingly eager to work of marginal lands and/or migrate to cities, adding additional burdens to urban infrastructure and social services. Other likely outcomes include: further loss of job opportunities as ultimate result of closing down of certain noncompetitive agricultural industries and introduction of high technology, less expenditures on social services and slower rehabilitation and development of the social infrastructure and services due to tighter governmental budgets, and possible health impacts of intensive use of agro-chemicals and chemical residues in edible fruits and vegetables despite the probability of higher quality standards and enforcement of these standards on the export oriented production. According to studies, unless the EU opens its markets to non-EU Mediterranean products, the potential market opportunities will be insufficient to balance the expected drop in welfare (Handoussa and Reiffers, 1999).

4.5. Environmental Implications

The pressures on natural resource bases will vary, especially according to location, and it is difficult to generalise, although certain general trends are likely.

4.5.1. Potential environmental gains

1. Higher environmental standards among SEMs countries as they gear towards the EU market.

2. Transfer of environmental technologies and increase of technical assistance and financial aid in environmental fields, especially in water conservation field.
3. Opening markets for environmentally friendly good such as organic agriculture or products receiving eco-label certification. EU markets for organic products have show steady growth, and thus, afford a potential win-win opportunity for SEMs. SEMs have largely been slow to capitalise on such opportunities, however, due to insufficient services for attaining certification recognised in the EU, insufficient marketing support systems for producers in identifying and capturing potential markets, and high operational costs (including the costs of actual certification).
4. Enhancing relief of certain areas put under artificial agriculture production from such pressures in favor of other areas with a comparative advantage.
5. More efficient use of natural resources, due to changes in cropping patterns dictated by the new market prices, and hence, higher production per unit factor input. Furthermore, increased input prices could encourage the use of substitute inputs such as animal manure instead of fertilisers, leading to more environmental friendly farming systems including organic farming, integrated pest-management systems, and bio agricultural production.

4.5.2. Possible negative impacts on environment

Resource Use: If environmental costs are not internalised and pricing remains with the status quo, increased production may lead to additional inefficient factor use (e.g. of water, minerals, land), with serious consequences for already overburdened natural resource bases. Furthermore, expansion of export oriented cultivation without proper pricing will lead to further waste of resources, resulting in export of resources, rather than profitable crops.

Threat to range and marginal lands: Increased market prices for livestock products and other substantial food crops, decreases in prices for fruits and vegetables, drops in farm incomes, and urban unemployment may accelerate risks of encroachment on environmentally sensitive areas, and may encourage farmers to plant food crops in marginal lands and/or to overstock range lands with herds exceeding the carrying capacities.

Expanded use of agro-chemicals: Despite possible reduction of price supports, and thus potentially more efficient use of agro-chemicals per unit of production, a trend towards intensive export agriculture is likely to increase overall chemical use in agriculture production in SEMs, unless comprehensive programmes are established to encourage alternative production methods.

Regulatory Failures: Natural resources protection legislation and enforcement of environmental standards are not sufficiently stressed and central governments with public deficits may not be able to afford to properly implement environmental policies. Whatever regulatory standards will be in place, however, further exploitation of natural capital should be expected, either to finance balance of trade distortions by the central governments or simply because of expanded production of subsistence agriculture.

Market Responses: Irrigated agriculture, particularly vegetable production is more responsive to the market pulses. Given this, the need to keep constant level of consumption for growing populations will mean that the SEMs will seek to export more to prevent a widening food gap, which of course, means further exploitation of the limited resources, especially water. Thus, governments will likely be willing to trade deficit in treasury with deficit in their natural resources reserves. An increase in both deficits is possible.

Responses of sustainable farming systems (rain-fed, integrated farming, organic farming) are expected to be much weaker. Under such systems, production practices are not expected to respond to sustainability. Lack of incentives, economic returns and lack of enforced sustainable development programmes, farmers will abuse their resources, through either overstocking, overgrazing, or soil mining.

5. RECOMMENDATIONS

In light of the possible implications resulting from the trade liberalisation process with the EU, the following policies are recommended:

5.1. Amendments to Association Agreements

- There should be a transitional period for countries to upgrade their capabilities and to adjust their agricultural sectors to absorb shocks. These should be based on in-depth research assessments of projected social and environmental impacts, taken by each country at the national level. Lessons from each nation could be shared at a regional level via Euro-Med agriculture sector work programme.
- Democratization of the association arrangements and eventual regional MFTZ to allow for progressive elimination of quotas (quantity and time) granted to Mediterranean partners, in order to allow production exports which more closely match natural (and thus, less resource intensive) production patterns in the SEM countries.
- Preferential market access for organic agricultural produce and other environmentally friendly certified agriculture could be incorporated into the Euro-Med association agreements, whereby such items would receive separate, beneficial quotas.
- Development of a set of sustainability indicators and criteria for use in negotiation of trade agreement clauses in the field of agriculture.

5.2. Structural Adjustment

- Incorporation of real value pricing, including internalisation of environmental costs for agricultural inputs in SEMs.
- Emphasis linking price support to ecologically sensitive forms of agriculture.
- Reorienting research and developmental support to production of high value quality products, e.g. figs, cactus, pomegranates. This would include support for marketing and export promotion initiatives.
- Development of investment promotion programmes in technical development, including adaptive research and capacity building in the technical fields such as crop diversity, less water-consumptive varieties, selection, breeding, biotechnology.

5.3. Institutional Capacity Development Programmes

- Develop a comparable data and information base to allow the tracking changes and developments on prices, incomes, and resources use levels. (According to Medstat, a Euro-Med supported statistical co-operation programme, agriculture is not among the priority areas for cooperation, although the environment is.)
- Develop country and commodity specific decision-support models with emphasis on environmentally sensitive production locations.
- Design and implement Integrated Rural Development Programmes and Income Diversification Programmes simultaneously with the establishment of the free trade zone to mitigate and dilute unavoidable social problems, such as rural exodus and rise in unemployment. Such work should be undertaken at local, national, bilateral, and regional levels.
- Improve production, certification, and marketing systems in the SEM countries to enable producers to capture expected export opportunities for environmentally friendly agriculture and provide access to small-scale capital for such purposes.
- Develop programmes for training of farmers safe-use of agro-chemicals, in order to avoid worker risks.
- Develop tools and techniques to monitor and avoid cases of EU members misusing environmental concerns, quality standards and specifications in order to protect their producers

While some of the above-mentioned recommendations, especially in terms of institutional capacity development, are already suggested, in one form or another by declarations of the Euro-Med agricultural forum, commitments remain at a very general level. Further incorporation into regional level programming at the intergovernmental as well as research institute levels. Several worthy projects in this field are supported under the Euro-Med research, technology and development (RTD) framework, however, they remain piecemeal and lack central coordination necessary to realise such goals at national and regional levels.

Environmental Impacts of a Euro-Mediterranean Free Trade Zone: Conclusions and Recommendations

1. SUMMARY AND CONCLUSIONS

Exact economic and environmental impacts of the Euro-Mediterranean Partnership are difficult to measure with any degree of accuracy due to the overlapping of its policy prescriptions with those of other bodies and initiatives, such as those of the World Trade Organisation, the Bretton-Woods organisations. All of the studies presented herein, however, indicate that the Euro-Med's trade liberalisation programme is likely to exacerbate current environmental trends in the region, both positive and negative. Because of the imbalance in terms of the scale of economies and trade relations between the EU and the non-EU partners and because of the relative lack of institutional and infrastructural capacity, environmental and social impacts are much more likely to effect the southern Mediterranean partner countries (MPCs).

In terms of the environmental implications, it is likely that the Euro-Med's economic programme will lead to additional pressures in terms of consumption of resources, especially fresh water, coastal resources, mineral resources and open land. In addition, it is likely to increase the amount of pollution, including that to fresh water, marine resources, air, and soil, as well as the amount of solid wastes. In some cases, such as water consumption, the increases may contribute to exploitation of natural resources beyond the carrying capacity of the local environment, while in others, such as solid and hazardous waste production, the increases will serve as additional burdens to already overwhelmed infrastructure in many of the MPCs.

Increased manufacturing production in the MPCs, resulting from both reductions in customs duties on industrial inputs as well as from increased European investment, will mean higher overall rates of energy and water consumption, and increased production of industrial wastes, although efficiency rates may increase. MPCs are especially likely to intensify production in heavily polluting extractive industries, such as those in petrochemicals and minerals, due both to already existing infrastructure and the increased need for foreign currency. The trend of refining and processing of the natural resources in the Mediterranean countries themselves will continue, as MPCs attempt to benefit from the additional value-added. This will translate into corresponding rise in demands on energy, water, and open land for storage facilities.

Changes in consumer habits due to reduced prices on European luxury goods such as cars, electrical appliances, and other manufactured goods, will contribute to higher energy consumption (and therefore air pollution), solid waste production and possibly also water consumption. The trade-oriented economic policies will augment existing trends towards urbanisation, which mean additional burdens on urban infrastructure, both in the MPCs and possibly in Europe due to migration. Increases in transport of goods will lead to additional use of already over-burdened ports and to construction of new ports. This will mean further pressures on both land-based and marine resources and an increased risk of marine accidents. Depending on the outcome of the eventual regional Euro-Med free trade zone, some countries in the region which may serve as sub-regional economic "hubs" could witness additional pressures on road transportation systems, if efficient alternative transport (e.g. rail) is not established.

The Euro-Med programme will reinforce trends in privatisation of government-owned compaies in MPCs, which is likely to increase efficiency in resource use. Privatisation of utilities will also reduce national control over resources and could threaten provision of basic needs to poorer segments of the population. New investment in MPCs may bring with it more modern technologies which would generally have a positive environmental effect, however, such an outcome is not a given. There is a potential that the Euro-Med agreements will merely facilitate the transfer of outdated equipment and technologies from the EU to MPCs. Such a scenario would ensure that these countries' remain noncompetitive. In terms of environmental impact, while the older European equipment might be more efficient than that currently in use in many of the MPCs, if it comes in addition to, instead of in place of current technologies, it will only add to environmental stress. Currently much of the environmentally friendly technology is too expensive for wide-spread use among most small and medium sized enterprises, which represent significant shares of total

production capacity in many MPCs. In the words of a World Bank study on the Middle East and North Africa region, "investments will yield few returns if the right incentives and institutions are not in place." (World Bank, 1994b).

Agriculture, although not yet directly addressed in Euro-Med's regional trade liberalisation programme, is likely to be affected by it. Firstly, expanded access to European markets is being included into most of the bilateral association agreements. Secondly, a general shift towards export economies within the MPCs due to the Euro-Med process, combined with the possibility of cheaper prices for agricultural inputs (e.g. machinery, pesticides, etc.) will likely bring about a shift towards the cultivation of cash-crops and thus an intensification of agricultural production. Environmental impacts of such a shift in MPCs may include increases in water consumption, water and soil contamination from increased use of agro-chemicals, and marine pollution from runoff. Social effects may include increased financial insecurity for rural populations due to reliance on commodity market fluctuations (especially for vegetables), increasing use of marginal land by rural populations, and increased rural exodus. The framework of Euro-Med association agreements thus far, has offered limited opportunities for agricultural exports from MPCs to the EU, with the majority in off-season production, which demands more intense cultivation methods.

As agriculture still plays a significant role in many of the southern Mediterranean economies, niche markets such as organic crops could be both economically and environmentally beneficial. The Euro-Med Partnership specifically calls for promotion of "environmentally-friendly agriculture." Currently both organic agriculture and other specialty premium markets in Europe, such as certified eco-labeled goods, are growing but are not currently exploited by MPCs, due to lack of production and marketing support systems and high premiums for the certification, which serve as market entry barriers in these countries.

The loss in state revenues in MPCs due to the removal of customs duties under Euro-Med trade agreements may affect governmental budgets dedicated to social and environmental projects, as governments are forced to tighten the national belt. Programmes such as value-added tax (VAT) which are supposed to compensate for the lost revenues may take years to reach levels of revenues currently garnered by customs. Thus a gap may develop in which government ability to monitor and enforce environmental regulation and to invest in social support and pollution mitigation measures is reduced exactly at a time when social and environmental pressures are mounting.

Pricing of goods to include their environmental costs is necessary if economic development in the region is to be sustainable. In this regard, efforts to remove subsidies, such as those for water, fossil fuels, fertilisers and pesticides are one step in this direction which would encourage more efficient use of such inputs. Several Euro-Med partners have initiated some such steps, however, in general costs are still far from reflective of real costs. Many people in MPCs are directly dependent on subsidies for provision of basic needs, and past attempts to remove subsidies have often resulted in social suffering, and at times in rioting and other violent protest. In order to avoid such occurrences, governments will need to develop policy measures to compensate the poor, especially in rural areas, who would be negatively affected by subsidy removal and to assure them access to basic resources.

Environmental regulation in MPCs is incomplete. Even in cases when it is technically sufficient, it is largely inadequately enforced, if at all. The Euro-Med partnership will mean more direct impacts of EU regulation on MPC markets. Stricter environmental regulation in the EU was seen to have untended effects in production in MPCs, limiting market access and even increasing resource consumption in some cases.

The financial instruments currently in place to address environmental issues within the Euro-Med Partnership include funding for environmental projects through the MEDA programme, including the Small and Medium-term Action Plan for the Environment (SMAP), and European Investment Bank (EIB) loans. All are important in terms of advancing sustainability objectives. Despite the significant environmental impacts of the Euro-Med process, however, overall environmental issues are given a relatively low priority in Euro-Med programming and the funds currently offered, while essential, are substantially less than are necessary to address the most basic environmental problems facing the region.

The SMAP programme, while undoubtably a positive attempt to address some of the most critical issues, suffers from severe budgetary constraints and an apparent lack of political support, which severely cripples its activities. In addition, programmes which address the environment but which are not integrated into the various economic programmes are unlikely to be effective. Perhaps the most important method of addressing environmental issues, that of mainstreaming environmental concerns into other policy spheres is still not implemented very much within the Euro-Med process.

The MEDA programme has significant resources which could be dedicated towards promoting sustainability. Until now it has not made much progress in integrating environmental considerations into its overall planning. The EIB funds a number of necessary infrastructure projects, especially those related to water resources in MPCs, however, it also provides funding to various other undertakings which have questionable or even obvious negative environmental impacts. Moreover, the Bank itself is inadequately staffed to perform basic social and environmental assessment of its lending, and outside monitoring of its loans is nearly impossible, due to difficulties accessing relevant information.

In sum, while the Euro-Mediterranean Partnership's economic liberalisation programme has potential to increase environmental protection in a number of ways, in the short and medium term at least, it is likely to add to environmental pressures, especially for the southern partners. The majority of these countries are unable to cope with even present environmental burdens, and are in need of significant additional policy and institutional measures, infrastructure, and technical and financial assistance to adequately do so. In order to assist in the promotion of the sustainable development of the region within the context of the aforementioned conclusions, the study offers the following recommendations:

2. RECOMMENDATIONS

2.1. GENERAL

- ***Bilateral Agreements***. As most of the impacts of the Euro-Med economic policy will result from the EU non-EU relations, and less so from the south-south dynamic, it is essential that environmental concerns be considered in the negotiation and implementation of the bilateral association agreements between the EU and the southern Mediterranean partners as well. Efforts to address the environmental concerns should be incorporated immediately into the bilateral agreements, and not left until the final stages leading up to the establishment of the regional trade zone in 2010. In addition, revision of the bilateral agreements should be allowed if significant environmental impacts are discovered.

- ***Sustainability Impact Assessments***. The European Commission has committed to undertake a sustainability assessment of the Euro-Mediterranean free trade zone programme, however, actual work on such a project has yet to begin. Such an officially sponsored sustainability assessment should be carried out immediately and its recommendations incorporated into Euro-Med policies. The studies must include both European and MPC perspectives. In addition to forward looking studies, retrospective assessments of Euro-Med agreements already in effect should also be undertaken to examine actual impacts.

- ***Sustainability Indicators.*** A system of national and regional indicators reflecting progress in terms of sustainability which is specific to issues raised by trade liberalisation (e.g. waste transport, resource use per sector, regional fish populations, etc.) should be developed and monitored, so that member countries can evaluate and respond to social and environmental impacts.

- ***Specific Targets***. While the Euro-Med's trade programme designates specific targets and schedules for achieving them, the environmental and social objectives generally exist only at a level of general aims. Schedules for attaining specific environmental targets (e.g. target levels for renewable energy use, water quality, phase-out of various chemicals in industrial processes, etc.) could be agreed upon by member states, and appropriate levels of resources dedicated to achieving them.

- ***Environmental Screening of Official Euro-Med Finance.*** All significant financing undertaken within the framework of Euro-Med institutions (e.g. MEDA and EIB) should undergo sustainability screening, especially that promoting industrial and/or infrastructure expansion. For such projects which receive funding despite expected environmental damage, matching funds should be made available for necessary mitigation and/or compensation measures.

- ***Capacity Building***. If balanced and integrated solutions are to be found, programmes to develop technical and professional capacity among both private sector and governmental actors are needed which would help identify and address trade-environment issues, especially in MPCs.

- ***Priority Action***. Lack of official studies or accurate data is a serious gap in promoting, effective policies, however, they should not be an excuse for inaction, especially when certain trends are clear.

2.2. POLICY INITIATIVES

- Customs and tax restructuring should reflect sustainable development priorities.
  - Specific environmentally friendly trade should be made a priority for trade liberalisation, even receiving special economic incentives, such as exemptions from VAT or other taxes. Such goods and services could include, *inter alia*, renewable energy technologies, pollution control equipment, and environmentally friendly agriculture.
  - In contrast, barriers which moderate the most environmentally or socially undesirable trade, including customs duties and usage taxes, should be allowed to continue, at least until proper technological, infrastructure, and institutional capacity is in place to mitigate their expected effects.

- The Polluter Pays Principle and pricing which internalises environmental costs should be integrated into national policies prior to market liberalisation, in order to prevent excessive and inefficient use of natural resource capital. Efforts to assist in the design and implementation of such acts should be part of the Euro-Med's structural adjustment programming.
  - Flat subsidies of water, electricity, fuel, pesticides should be removed or restructured into progressive subsidies, which decrease as levels of consumption rise, or which are linked to desirable environmental management.
  - Conversely, progressive tax systems which increasingly penalize for excessive use of natural resources should also be put in place.
  - Prices of water, electricity, and fuel should reflect real value, not just costs of production and transmission. Privatisation of utilities alone, will be insufficient in this respect.
  - Eco-taxes and other pricing instruments which levy fees to inhibit environmentally undesirable activities (e.g. emissions taxes, packaging fees, etc.) should also be enacted.
  - Revenues saved from the removal of subsidies for basic needs could be used to develop employment and social welfare in order to compensate poor populations who may be negatively affected by the increased prices following subsidy removal and privatisation.

- Integrated national and region-wide development plans should be developed by inter-ministerial committees, including environmental expertise, which map out specific short, medium and long-term sustainable development objectives and strategies for various economic sectors including:
  - Agricultural policy programmes which emphasises integrated pest management, water-efficient crops, and promotion of organic crop cultivation.
  - Energy promotion plans which emphasise renewable energy sources.
  - Coastal zone management, including zoning for industrial and port development, taking into consideration ecologically sensitive areas.
  - Transportation which empahsises public transport, efficient cargo transport systems, and marine transport safety precautions.

  - Marine accident prevention and region-wide emergency response programs should be strengthened.

- Euro-Med trade agreements should expand (or remove) MPC agricultural quotas to more accurately reflect peak production periods in MPC countries. Such a restructuring of the EU's agricultural policy would encourage resource efficiency in the EU while allowing economic opportunities for rural populations in MPCs, likely to otherwise suffer welfare losses from the Euro-Med agreements.

- In order to capture the market opportunities offered by eco-labeling niches and other premium markets, such as organic farming, entrepreneurs in MPCs will need assistance in terms of market specifications and contacts. They will also need technical and financial assistance in order to coordinate the necessary certification systems and to put in place necessary institutions and infrastructure (e.g. specific facilities for storage and refrigeration for organic foods).
  - Current Euro-Med programmes for assisting the private sector, especially small and medium sized enterprises, should include specific programmes to introduce and promote environmental management systems, certification schemes, and their potential market benefits.
  - Programmes to inform Mediterranean producers about proposed EU environmental regulation and methods of accommodating them should be established. Mechanisms via the WTO or other bodies are insufficient as they inform only governments, and do not attempt to offer capacity building for coping with expected regulatory changes. In addition, not all Euro-Med partners are WTO members.
  - Extension services programmes for sustainable agriculture should be introduced and promoted.

- In order to protect the Mediterranean marine environment, the Barcelona Convention and the amended forms of its associated protocols should be ratified and implemented by all Mediterranean states, as well as the European Union.

2.2.1. Private Sector Responsibility

- In order to encourage technology transfer, and to avoid the dumping of old technologies in southern Mediterranean countries, voluntary investment codes which commit to using best available technologies and maintaining European environmental standards should be encouraged among European investment within the Mediterranean region. Methods for possibly making such codes mandatory should be investigated.

- A common framework could be designed which establishes criteria of legal liability regarding environmental impacts for regional international investment. Channels and institutional mechanisms for addressing grievances would need to be put in place.

2.2.2. Public Participation

- Public rights concerning access to information, right of organisation, and access to forms of redress (courts, planning commissions, etc.) should be ensured in each of the Euro-Med partners, as experience shows that public pressure is essential in promoting effective monitoring and enforcement of environmental policies.
  - Efforts should be increased to inform the interested public about programmes and activities of the Euro-Med Partnership, as currently there is little public debate on the issues. In this respect, the role of non-governmental organisations in the Euro-Med partnership should be encouraged and facilitated.
  - A process for ensuring public participation in decision-making should be established for Euro-Med sponsored projects with significant social and/or environmental impacts.

2.3. INSTITUTIONAL AND FINANCIAL INITIATIVES

- All significant financing undertaken within the framework of Euro-Med institutions (e.g. MEDA and EIB) should undergo sustainability screening, especially that promoting industrial and/or infrastructure expansion. For such projects which receive funding despite expected environmental damage, matching funds should be made available for necessary mitigation and/or compensation measures.

- A clear strategy for financing in the region should be developed, based on national and local level needs assessments, taking into consideration environmental sustainability. Such a strategy should serve as the basis for allocation of Euro-Med funds, including MEDA grants and European Investment Bank lending.

- A strong institution within the Euro-Med Partnership is needed to coordinate environmental programmes and policies and ensure that sustainability concerns are well integrated into overall Euro-Med policy initiatives.

- Given the high costs of the environmental damage at stake and the potential savings proper environmental policies could affect, an increased portion of MEDA funding is warranted specifically for environmental protection from both its regional and bilateral budget envelopes.

- The European Investment Bank should adopt environmental lending policies and standards comparable to that of Multilateral Development Banks, as it is playing a clear and significant development role in the Mediterranean region.
    - Its capacity for conducting environmental assessment needs to be substantially increased in terms of staff and budget.
    - Information regarding project lending should be publicly accessible and released prior to lending decisions, in order to provide an opportunity for reactions from potentially affected populations.

- Technical and financial support needs to be granted to MPCs in order to develop their capacity to conduct thorough and accurate environmental impact assessments. A regional project risk assessment team could be established for regional policies and projects, or national ones with potentially large-scale impacts, but which would be beyond the capacity of some national governments to assess.

- Measures could be implemented to increase capacity of Mediterranean customs officials to identify and monitor hazardous and restricted materials.

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Friends of the Earth
Middle East
http://www.foeme.org/
info@foeme.org

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