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**THE LIBERALIZATION OF TRADE IN ENVIRONMENTAL GOODS
AND SERVICES IN THE ESCWA AND ARAB REGIONS**



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Preface

This study was prepared by the Sustainable Development and Productivity Division of the United Nations Economic and Social Commission for Western Asia (ESCWA). This output is among the activities conducted within the framework of the inter-regional United Nations Development Account project entitled “Capacity-Building in Trade and the Environment.”

ESCWA would like to acknowledge the substantive contribution of Cen2Eco in preparing this study and their contribution to regional and national consultations organized with representatives from ESCWA Member States and Arab countries during its preparation.

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ABBREVIATIONS

APEC	Asia-Pacific Economic Cooperation
ARL	Arab Reference List on Environmental Goods
AR list	Arab Reference List on Environmental Goods
b	billion
BOT	Build-Operate-Transfer
CAMRE	Council of Arab Ministers Responsible for the Environment
CPC	Central Product Classification
DSM	demand-side management
EBI	Environmental Business International Inc.
EG	environmental goods
EGS	environmental goods and services
EPP	environmentally preferable products
ESCWA	Economic and Social Commission for Western Asia
EU	European Union
FDI	foreign direct investment
GATS	General Agreement on Trade in Services
GDP	gross domestic product
HS	Harmonized Commodity Description and Coding System
kg	kilogram
LAS	League of Arab States
LCA	Lifecycle assessment
LDC	Least Developed Country
m	million
m ³	cubic meter
MDG	Millennium Development Goals
MEA	multilateral environmental agreement
MENA	Middle East and North Africa
NOX	non-oil exporting
O+A list	Combined OECD and APEC lists of environmental goods
OECD	Organization for Economic Cooperation and Development
OX	oil exporting
UAE	United Arab Emirates
U-CET	Countries with Economies in Transition in Eastern Europe and Central Asia
U-DdC	Developed Countries
U-DgAFR	Developing Africa
U-DgASO	Developing Asia and Oceania
U-DgC	Developing Countries
U-DgLAC	Developing Latin America and the Caribbean
UFW	unaccounted for water
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
US\$	United States dollar
WITS	World Integrated Trade Solution
WSSD	World Summit on Sustainable Development
WTO	World Trade Organization

Introduction

This study was prepared by the United Nations Economic and Social Commission for Western Asia (ESCWA) within the framework of the inter-regional United Nations Development Account project on Capacity Building in Trade and the Environment. The ESCWA component of the project contributed to the implementation of the Regional Program on Trade and Environment Capacity Building in the Arab Region, which is a regional initiative adopted by resolution of the League of Arab States Council for Arab Ministers Responsible for the Environment (CAMRE) in 2003.¹

The topic of this study was identified through a consultative process with ESCWA Member States² and members of the League of Arab States (LAS)³ through a series of regional and national meetings. The study examines trade in environmental goods and services in the ESCWA and Arab regions and the implications of liberalising trade in environmental goods based on several proposals suggesting how to define and classify different types of environmental goods.

During the first phase of study preparation (2005-2006), ESCWA Member States requested assistance in better understanding the state of negotiations before the World Trade Organization (WTO) on the liberalisation of environmental goods and services, which was included among the items for negotiation by WTO Member States in Doha, Qatar in 2001. The first part of the study thus considers the relevance of examining the liberalisation of environmental goods and services in the region and the potential market that could be generated by liberalising trade in these areas. Following a review of some of the proposals submitted to the WTO Committee on Trade and Environment Special Session on ways that environmental goods might be defined, an assessment is provided of ESCWA Member States' trade in environmental goods over time and the potential changes in tariff revenue associated with some of the proposed approaches towards liberalising trade in environmental goods. Some analysis related to the Arab region as a whole is also provided to respond to the interest expressed by members of the Joint Committee for Environment and Development in the Arab Region (JCEDAR), which serves as an advisory body to CAMRE. The draft of the study was discussed with JCEDAR representatives during a regional seminar held at the League of Arab States in Cairo, Egypt in November 2006.

During the second phase of the study (2006-2007), JCEDAR requested ESCWA to further elaborate the study by including an economic assessment of Arab Reference List on Environmental Goods, which had been developed by the CAMRE Technical Secretariat and adopted as guidance for Arab countries during the 18th Session of CAMRE in December 2006. The Arab Reference List was prepared in order to advise LAS Member States about various types of environmental goods and to propose a system for grouping environmental goods into categories that are relevant to the Arab region. In doing so, the list offers guidance to LAS Member States that are also WTO Member States (or in the process of acceding to the WTO) on a common regional approach for formulating national lists of environmental goods that could be proposed for liberalisation. The trade and tariff analysis conducted by ESCWA on the Arab Reference List is thus provided in the second part of the study in order to contribute to regional understanding about the potential effects of liberalising trade in environmental goods, and to support regional coordination on this trade and environment topic.

The study closes with some concluding remarks and recommendations. This final report is submitted for consideration by LAS Member States during the Expert Group Meeting on Trade and Environment Priorities in the Arab Region, which will be convened at the League of Arab States in November 2007.

¹ The regional program is coordinated by a secretariat comprised of the CAMRE Technical Secretariat, ESCWA and the United Nations Environmental Program's Regional Office for Western Asia (UNEP/ROWA).

² The ESCWA region is comprised of 13 Member States, namely: Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates and Yemen.

³ The League of Arab States is a regional organization comprised of all Arab countries, including all ESCWA Member States, and has 22 members namely: Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Somalia, Syrian Arab Republic, Tunisia, United Arab Emirates (UAE) and Yemen.

I. GROWING DEMAND FOR ENVIRONMENTAL GOODS AND SERVICES

In the ESCWA region, as in other developing regions in the world, increasing economic and demographic pressures are substantially increasing the demand for environmental services and the goods needed to perform these services. The region has experienced significant economic growth over the past decade with economic output nearly doubling. However, as productive capacities have grown in the agricultural, industrial and mining sectors, so have negative environmental impacts associated with larger scale production including air pollution, water pollution and pressures on land and coastal resources. Consumption has also risen alongside population growth, leading to increased waste generation and strains on non-renewable natural resources. Countries in the region are thus increasingly turning to environmental goods and services and new environmental technologies in order to mitigate these impacts and improve the quality of life of their citizens.

In 2006, the population of the ESCWA region was estimated at 196 million, while the annual population growth rate was estimated at 2.8 percent over the 2000 to 2005 period. The latest available censuses data indicate that the proportion of the region's population living in urban areas has exceeded 50 percent.⁴ Population growth and increased population density in urban areas have introduced new pressures and challenges for water treatment and distribution, electricity provision and solid waste disposal. Meanwhile, rural and remote areas throughout the region often remain outside of service networks or do not receive regular or reliable access to energy and environmental services. In other parts of the ESCWA region, per capita incomes have grown, with increasingly affluent and educated populations demanding improved environmental conditions and services at home and in the workplace. Consumers are also becoming increasingly sophisticated and aware of market trends and global challenges and are thus seeking to purchase goods of a higher quality and better environmental performance based on newer technologies. This is requiring producers to adhere to more stringent environmental, health and safety standards, as well as more rigorous efficiency requirements in order to maintain market share.

There has also been increased recognition among policymakers of the need to sustainably address environmental issues associated with economic and population growth, not only in the ESCWA region, but throughout the world. This has been reflected in global fora over the past few years – such as the World Summit on Sustainable Development, the International Conference on Financing for Development and the Millennium Summit – wherein universal consensus has been achieved on national and international actions to more effectively address emerging environmental problems. Moreover, WTO Member States at their ministerial meeting in Doha in 2001 agreed to launch negotiations to liberalise trade in environmental goods and services “with a view to enhancing the mutual supportiveness of trade and environment.”

A. WHAT ARE ENVIRONMENTAL GOODS AND SERVICES?

Environmental services comprise a wide range of activities aimed at managing environmental and natural resources. The United Nations Central Product Classification (CPC) – which provides a comprehensive classification of all goods and services that is agreed upon internationally – does not characterise environmental services. Rather, it refers to them within the category of “sewage and refuse disposal, sanitation and other environmental protection services” without further elaboration.

Although there is no agreed classification of environmental services at the global level, the Organization for Economic Cooperation and Development (OECD) has broadly defined them as “services capable of measuring, preventing, limiting or correcting environmental damage such as pollution of water, air soil as well as waste and noise-related problems.”⁵ This definition captures a wide set of activities generally recognised to be within the ambit of environmental services, including:

- water and wastewater treatment, purification and distribution;
- solid waste collection, recycling and disposal;
- air quality improvement;
- sustainable energy production and end-use;

⁴ ESCWA, 2006, *Statistical Abstract of the ESCWA Region*, Twenty-sixth Issue.

⁵ OECD, 1996, *The Global Environmental Goods and Services Industry*. (<http://www.oecd.org/dataoecd/11/10/2090577.pdf>).

- noise reduction;
- land remediation;
- hazardous waste management;
- environmental monitoring and assessment; and
- sustainable agricultural and industrial production.

Each of these main activities can be interpreted to comprise numerous subsidiary activities, directly and indirectly related to realising each main activity's objective. Considerable subjectivity is involved in delineating which subsidiary activities should be considered as environmental services. For instance, while many would agree that environmental services should include the provision of electricity generated from a renewable resource such as wind or solar energy, the inclusion of electricity generated from natural gas – which is significantly more efficient and less polluting than electricity generated from coal or oil – may not find agreement as easily as it is a fossil fuel whose combustion contributes to climate change.

Environmental goods (EG) may encompass a wide array of products and technologies required to successfully perform the above environmental services. These vary from chemicals and monitoring equipment to waste containers and bags made from natural fibres. As such, environmental goods include numerous products, technologies and components thereof. However, a challenge associated with liberalisation such goods is that aside from their role in providing environmental services, many environmental goods also have additional non-environmental uses. For example, pipes and valves used in a water treatment facility are also used in a variety of industrial production processes, some of which may be polluting.

The all-inclusive nature of concepts of environmental services and the goods needed to perform them has presented difficulties in WTO negotiations aimed at liberalising trade in environmental goods and services (EGS). Specifically, negotiators have encountered difficulty in agreeing on a boundary for EGS. Some WTO member countries seeking to liberalise a wide set of services and goods prefer a broad EGS definition, while others seeking to limit the scope of liberalisation prefer more narrow EGS definitions. Due to the nature of negotiations and agreements governing the liberalisation of trade in goods and services within the WTO, countries have the flexibility to decide which environmental services should be targeted for liberalisation at the national level in a country's schedule of commitments, as allowed under the General Agreement on Trade in Services (GATS). However, this is not the case for environmental goods where tariff reductions would need to be applied to a common set of environmental goods agreed to by all WTO members.

Several issues complicate the negotiations on environmental goods. As noted above, one such issue involves the *multiple-use* of most environmental goods. Many members seek to limit trade liberalisation only to environmental goods when such goods are demonstrably destined for environmental use, which is a feature that cannot be easily verified when goods are imported at international borders. Another issue raised in negotiations concerns the *relativity* of environmental goods. While members may agree upon the classification of specific products and technologies as environmental goods today, such classification may be subject to change in the future due to obsolescence and the commercial availability of new products and technologies with better environmental performance. These and other major EGS negotiating issues will be examined further later in the study.

B. REGIONAL TRENDS RELATED TO WATER, ENERGY AND SOLID WASTE MANAGEMENT

Among the world's regions, the ESCWA region is confronted by an unparalleled set of environment and development challenges. On the one hand, it is endowed with some of the world's richest oil and gas reserves, yet on the other, it has the most limited freshwater resources on a per capital basis. Meeting the need to sustain modern economic and population growth in the context of the region's unbalanced resource endowments requires a careful approach to environmental and natural resource management.

1. Water

Limited surface water and groundwater resources, low annual rainfall and frequent droughts, and increasing demands on agricultural production to maintain food security continue to reduce the region's limited water supply for domestic use and industrial production. In 2003, the agricultural sector alone

accounted for 80 percent of the region's water consumption.⁶ As population and economic growth has accelerated in recent years, water allocation has become a major preoccupation for all governments in the region. Poor water quality further aggravates water resource management objectives. Agricultural fertilisers and pesticides, industrial and municipal wastewater, and landfill runoff contaminate limited freshwater resources. The agro-food, textile, chemical, paper and pulp, and metal industries are principal sources of untreated, or inadequately treated, industrial effluents in the region. Reducing agricultural runoff and industrial effluent discharges would have a positive effect on reducing the degradation of agricultural land and water resources in coastal areas where populations are increasingly concentrated.

With a renewable water resource level under 800 m³/capita/year, the region has the most pronounced water scarcity problem in the world, and this figure is projected to fall to under 400 m³/capita/year by 2025. In the Arabian Peninsula, the region's most arid area, current levels are already less than 200 m³/capita/year. By comparison, the world average renewable water resource level exceeds 7,000 m³/capita/year.⁷ More efficient irrigation practices and water distribution networks, better monitoring and sustainable exploitation of groundwater reservoirs, and improved wastewater treatment are thus needed to improve the supply and reuse of limited freshwater supplies so as to increase water resource levels. Considerable scope also exists to encourage greater conservation of limited water resources by reducing state subsidies that create artificially low water tariffs for consumers. Applied in service areas where consumers have an ability to pay, tariff schedules based on full cost recovery could also provide a much needed source of funds for future infrastructure investment in environmental services.

From a technological perspective and in view of declining capital costs, future investment in desalination plants is now a durable cost-effective option to boost freshwater supplies. This is evident not only in the Gulf countries, but also in other parts of the region. Experience in Saudi Arabia over the past thirty years has demonstrated the economic feasibility of water and power cogeneration using desalination technologies, which now supply 70 percent of the country's water and 20 percent of the country's electricity. Already in 2000, the Gulf countries had a collective water desalination capacity of over 10 million m³/day, and accounted for about one half of total world capacity.⁸

While supply capacity for water in the region is constrained, water distribution is extensive. In 2003, nearly 90 percent of the population in the ESCWA region had access to clean drinking water,⁹ a level significantly higher than the world average of 83 percent and the developing country average of 79 percent.¹⁰ Although access rates are high, in some service areas availability rates are low, with water available only in limited quantities and/or for limited periods of time during the day. In many cities in the region, drinking water supply is intermittent, contributing to a higher incidence of pipe breaks, losses due to leakage, and drinking water contamination from seepage into pipes. Moreover, in addition to these physical losses, commercial losses due to pilage are also high. As a result, unaccounted for water (UFW) reaches levels of 30 to 50 percent of supplied water levels in many municipal networks in the ESCWA region.¹¹ High UFW levels combined with low water tariffs mean that revenue streams to water authorities remain far below supply and distribution costs, further complicating the ability of water authorities to fund investments in new water infrastructure and encourage private participation in the sector.

2. Energy

Most ESCWA countries are rich in oil and gas reserves. Despite this abundance, many countries in the region are experiencing difficulties converting these fuels into usable electricity fast enough to meet growing domestic and industrial demand. Economic and population growth coupled with rapid urbanization have driven electricity demand levels to the limits of existing supply infrastructure in the region, with demand growing at an annual rate of over 3 percent. As a result, investment needs in the region's energy

⁶ ESCWA, 2007, *Compendium of Environment Statistics in the ESCWA Region*, E/ESCWA/SCU/2007/2.

⁷ FAO, 2007, AQUASTAT Global Information System on Water and Agriculture (<http://www.fao.org/nr/water/aquastat/main/index.stm>).

⁸ ESCWA, 2001, *Water Desalination Technologies in the ESCWA Member Countries*, E/ESCWA/TECH/2001/3.

⁹ ESCWA, 2007, *Compendium of Environment Statistics in the ESCWA Region*, E/ESCWA/SCU/2007/2.

¹⁰ WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, 2005, *Water for life: making it happen* (http://www.unicef.org/wes/files/JMP_2005.pdf).

¹¹ ESCWA, 2007, *Compendium of Environment Statistics in the ESCWA Region*, E/ESCWA/SCU/2007/2.

sector are estimated at over \$20 billion annually.¹² At over 3 percent of regional GDP, this level is three times higher than the world average. Industry reports indicate that over \$50 billion will be spent over the next six years in the Middle East and North Africa (MENA) region on the installation of new capacity alone, and that about half of this will be spent solely in the Gulf countries, and will be provided primarily by the private sector.¹³

With limited availability of hydropower, and underutilised incineration options, the ESCWA region relies almost exclusively on natural gas and oil for electricity generation. The region's energy sector is thus dominated by an electric power sector relying on thermal power generation for over 90 percent of its power output. With recent investments in gas turbine power plants, nearly two-thirds of the region's electricity is now generated from natural gas; a relatively clean source. However, Jordan, Lebanon, Iraq, Saudi Arabia and the Syrian Arab Republic continue to rely on oil for most of their electricity supply, which generates harmful particulate emissions and sulphur oxides as well as significantly higher levels of nitrogen oxides and carbon dioxide relative to natural gas. Air quality in the region is also negatively affected by particulate emissions from the transportation sector. Emission levels remain high due to the continued use of leaded gasoline in some ESCWA countries and the continued presence of older fleets of less energy efficient motor vehicles lacking catalytic converters operating throughout the region. Compounded by arid climatic conditions, emissions from the electricity, transportation and oil production sectors contribute to the region's high particulate concentrations levels, which rank among the highest in the world. Similar challenges are being faced by the Arab region as a whole.

Despite these challenges, ESCWA countries score reasonably well in providing their populations with access to electricity. The regional electrification rate of 77 percent matches the world average of about 76 percent and exceeds the developing country average of 68 percent.¹⁴ However, over 20 percent of the region's population, mostly inhabiting rural and poor urban areas, continue to lack access to electricity. Without access to electricity grids, this group relies on biomass to meet their primary energy needs.

For the Arab region as a whole, the residential and industrial sectors are the major users of electricity, consuming about 56 and 26 percent respectively of generated capacity. The regional average annual electricity consumption is approximately 1,500 kilowatt-hours per capita, compared with the world average of 2,300 kilowatt-hours per capita. However, due to the region's strong reliance on oil and gas for power, it has a very high energy intensity of 0.51 kg oil equivalent per US dollar of GDP compared with a world average of 0.27 kg oil equivalent per US dollar of GDP, indicating that considerable scope remains for improving energy efficiency in the region.¹⁵

As with water, the availability of electricity in the region is often constrained by supply capacity limitations. Several approaches can be pursued to increase electricity supply capacity. These include greater diversification of power generation resources, demand side management and improved supply side efficiencies. Considerable scope remains to explore power generation by incineration of solid waste, an option that would also relieve pressures on landfill sites in peri-urban areas, and by increased promotion of renewable energy options such as wind and solar energy, areas where Egypt is making notable progress. Energy savings can be attained by improved demand side management, particularly by reducing high energy subsidies which encourage excessive electricity use, and by scaling-up building codes. Supply side efficiency improvements can be realised in electricity generation and distribution. Combined-cycle technologies, such as heat and power co-generation in industrial applications, and water and power co-generation in water desalination plants, can also provide support sustainable energy goals. Distribution losses, which stand at some 15 percent for the Arab region,¹⁶ could also be reduced through the upgrading of older transmission facilities, and, in some instances, reducing pilferage. With the exception of demand side management, all approaches to increasing electricity supply capacity in the region are associated with significant capital costs.

¹² International Energy Agency, 2005, *World Energy Outlook 2005* (<http://www.iea.org/textbase/nppdf/free/2005/weo2005.pdf>).

¹³ Institute for International Research, 2007, *Middle East Electricity* (<http://www.middleeastelectricity.com/Power/PowerGeneration.html>).

¹⁴ International Energy Agency, 2006, *World Energy Outlook 2006* (Annex B - Electricity Access available at: <http://www.iea.org/textbase/weo/electricity.pdf>)

¹⁵ Economic and Social Council, 2006, Report of the Regional Implementation Meeting of the Economic and Social Commission for Western Asia, presented to the 14th Session of the Commission on Sustainable Development (1-12 May 2006), E/CN.17/2006/4/Add.2.

¹⁶ International Energy Agency, 2005, *World Energy Outlook 2005* (<http://www.iea.org/textbase/nppdf/free/2005/weo2005.pdf>).

However, as in the water sector, low electricity tariffs complicate the ability of the sector to fund investments in new power generation and distribution infrastructure.

3. Solid waste

With urbanisation rising rapidly throughout the ESCWA region, nearly 50 percent of the population currently lives in urban areas. Excluding Egypt and Yemen, which have high rural populations, this figure stands at 63 percent.¹⁷ Rapid urbanisation and changes in household consumption patterns in the region have contributed to increased waste generation. The regional rate of solid waste generation has climbed to 0.8 kg/capita/day, or some 40 million tons of solid waste per year. Yet there are sub-regional differences; in the Mashreq countries solid waste generation stands at 0.4 kg/capita/day, and in the Gulf countries the figure is three times higher at 1.2 kg/capita/day.¹⁸

Inadequate capacities and management systems for solid waste over the past two decades have resulted in serious urban pollution problems. Indeed, a stock of 500 million tons of solid waste generated over this period¹⁹ continues to negatively affect the environment, particularly local air quality and groundwater reservoirs. Leachate generated by improperly drained dumpsites and landfills contain high organic contaminant concentrations and high ammonia nitrogen levels directly affect groundwater resources. Uncontrolled burning of solid wastes releases atmospheric pollutants including particulates and dioxins that significantly reduce local air quality.

Although waste collection has advanced significantly throughout the region, with an average collection rate approaching 90 percent for the region's urban centres,²⁰ subsequent long-term disposal of wastes remains problematic. Traditional practices of transporting waste to open dumpsites, generally located close to urban centres, continue in the region. In addition, small illegal dumpsites can be found in poorer urban neighbourhoods and emerging peri-urban areas where collection services are not provided. Burning of wastes is often a problem in areas where dumpsites have become full and urban areas without access to collection services.

Sanitary landfills can be properly designed and engineered landfill sites constructed on geologically impermeable ground or using impermeable liners, with leachate draining systems. In the Gulf countries, waste collection and disposal are highly efficient, and modern sanitary landfills are widely used. In the Mashreq countries, however, sanitary landfills are generally found only in the largest cities. Other facilities are relatively old, and the closure of old dumpsites and construction of environmentally sound sanitary landfill sites remains a priority for the improved long-term stockage of solid wastes. Options to incinerate urban waste and co-generate electricity are also being explored.

Over the past decade, legislation has been introduced in many of the Mashreq countries to improve solid waste management practices and new construction of sanitary landfills to serve secondary cities is on the rise. While legal frameworks continue to define solid waste management as a municipal responsibility, new financing mechanisms are being provided to support improved waste management facilities and operations.

Financing for waste management infrastructure and equipment often occurs in the region through a direct transfer of funds from the central government or through a government-managed municipal fund. International development assistance programmes also provide financing for waste management infrastructure and equipment through grants and concessional loans. To cover operational cost, many countries in the region have introduced environmental taxes paid by industry and households. Where tax collection rates are low, some countries collect environmental taxes as a surcharge on electricity bills. In areas here funds available to finance operations have increased, the private sector has increased its role in the waste management sector. The entry of the private sector and the establishment of public-private

¹⁷ ESCWA, 2006, *Statistical Abstract of the ESCWA Region*, Twenty-sixth Issue.

¹⁸ UNEP-ROWA, 2003, *Sound Environmental Management of Solid Waste*.

¹⁹ Ibid.

²⁰ Mediterranean Environmental Technical Assistance Program, Regional Solid Waste Management Project, Bi-Annual Newsletter, October 2003, Number 1 (<http://www.metap.org/files/SW/RSWMP-Newsletter1.pdf>).

partnerships have created jobs and new business opportunities in material recovery, recycling and composting. In Lebanon and Yemen, for example, exports of recovered materials for recycling in modern facilities abroad, mainly in South-East Asia, is an emerging and increasingly profitable business.

C. IMPLICATIONS OF MULTILATERAL EGS NEGOTIATIONS FOR REGIONAL MARKETS

At a time of growing demand for environmental services in the ESCWA region, many countries in the region are considering whether to more significantly open their domestic markets for goods and services multilaterally under the WTO. These include WTO members (Jordan, Saudi Arabia, Bahrain, Egypt, Qatar, Kuwait, Oman, UAE) as well as countries currently in WTO accession proceedings (Lebanon, Yemen, Iraq). It is thus important to assess the implications of EGS trade liberalisation for the region as such assessments can help guide national and regional positions in face of the ongoing EGS negotiations before the WTO.

Recent case study based research by the OECD suggests that development gains from EGS liberalisation of both environmental goods and services are likely to be much greater than liberalising trade in only one or the other.²¹ The OECD research is unique in that, unlike the vast majority of other studies focussing on projecting the static impacts of trade liberalisation in environmental goods or in environmental services in developing countries, it examines the simultaneous liberalisation of both environmental goods and services and thus a wide range of potential dynamic gains are revealed. These include increasing a population's access to basic water and sanitation services, improving the environmental performance of local industries, increasing a country's attractiveness for foreign direct investment, reducing production costs, and promoting local employment and innovation. They also include increasing local capacity to produce goods and provide environmental services as well as improving related export opportunities, particularly in other developing country markets.

However, aside from the potential benefits of EGS liberalisation, there are undeniably several potential losses that can be anticipated. Most clear among these is the loss of monopoly positions for many incumbent environmental services providers – which are often state-run enterprises in ESCWA countries – as well as the loss of tariff revenue caused by the reduction of tariffs levied on imported environmental goods. However, if sufficient regulatory structures and competition policies are put in place, these losses can be more than offset by lower market prices in domestic markets for environmental goods, increased demand, improved efficiency of local service provision, and opportunities for local providers of related services and producers of locally sourced environmental goods used in environmental service sectors.

Several ESCWA countries have already undertaken efforts to assess the impacts of EGS trade liberalisation. In 2003, assessments in Qatar pointed to the positive economic and environmental impacts of including low-emission fossil fuels such as natural gas in an eventual WTO list of EGs for which trade may be liberalised. A formal proposal was made by Qatar in WTO negotiations in this regard – the first such proposal to be made by a developing country.²² Besides Qatar, Egypt has been active in WTO EGS negotiations. In 2005, Jordan initiated studies to develop a national list of EGs to propose in negotiations.

To support ESCWA countries in their analyses of environmental goods and services, ESCWA, the CAMRE Technical Secretariat and UNEP/ROWA organised a regional seminar in November 2006 for LAS Member States and JCEDAR institutions. A key focus of the meeting centred on environmental goods and services. This included a presentation of the initial draft of this study and a discussion of a draft report on environmental goods prepared by the LAS.²³ The LAS report detailed the various definitions of environmental goods proposed to date before the WTO,²⁴ and provided JCEDAR members with improved understanding of the role each good can play in advancing – or in some cases undermining – national

²¹ Steenblik, R., Drouet D. and Stubbs, G., 2005, "Synergies between Trade in Environmental Services and Trade in Environmental Goods," OECD Trade and Environment Working Paper 2005/1, OECD Paris.

²² WTO, "Environmental Goods - Submission by the State of Qatar on Paragraph 31 (iii)" to the WTO Committee on Trade and Environment Special Session, TN/TE/W/14, 9 October 2002; and WTO, "Harmonized System (HS) Classification Codes of Gas-Related Goods – Submission by the State of Qatar on Paragraph 31 (iii)" to the WTO Committee on Trade and Environment Special Session and Negotiating Group on Market Access, TN/TE/W/27 and TN/MA/W/33, 25 April 2003.

²³ LAS, CAMRE Technical Secretariat, 2006, "Arab Reference List on Environmental Goods," Draft Report, November 2006.

²⁴ For a list of relevant submissions by WTO Member States that have been reviewed in the LAS study, see Annex II.

environmental policies through the presentation of a reference list that provided guidelines on ways to classify environmental goods into five distinct categories.

D. ASSESSING LIBERALISATION OPTIONS

In order to define both national and regional strategies for the WTO negotiations on environmental goods and services, Arab countries need to qualitatively and quantitatively assess the status of current and projected demand of environmental services and corresponding supply capacities for services provision and the production of environmental goods.

Such an assessment should be conducted through stakeholder consultations at the national and regional levels. These interested parties include representatives from government, parastatals, the private sector, labour groups, academia and civil society, who should seek to cooperatively consider the following questions (which constitutes only an illustrative list of issues to consider).

- Is there too much, or not enough, opening in the national environmental services markets?
- To what extent may potential opportunities arise for attracting inward foreign investment and technology transfer to improve supply-side capacities and infrastructure in the environmental services sectors?
- Are regulatory frameworks for the environmental services markets sufficiently robust, mature and experienced with privatisation to open up these markets through the GATS?
- To what extent is additional regulation needed and how quickly can it be developed and implemented?
- What do stakeholders perceive as development advantages and disadvantages of liberalising the environmental services sectors? What are their perceived risks?
- What limitations on market access and national treatment, horizontally and by sub-sector, can be devised to maximise development gains from the environmental services sectors?
- Can national sectoral actors develop and pursue export strategies and successfully compete in foreign environmental services markets?
- What positive linkages with increased environmental goods production, domestic sales and exports are anticipated?
- For which environmental goods do export strengths exist?
- What are the potential threats of trade liberalisation in environmental goods to domestic firms producing some of these goods?
- What is the estimated national tariff revenue loss of trade liberalisation in environmental goods?
- Are positive linkages anticipated between improved performance of the environmental services sectors and improved competitiveness and export potential of national producers of environmental commodities?
- Can government sponsored mechanisms be developed to provide start-up financing on attractive and easily accessible terms to firms to facilitate entry into the environmental services sectors, such as small and medium sized enterprises (SMEs)?

Once the positions of government, parastatals, the private sector and civil society are known and support a set of national trade liberalisation objectives, agreement should be achieved on the best way to advance the liberalisation process. Whether, how and with whom environmental services and goods trade liberalisation should be pursued are thus decisions that need to be taken carefully, in consultation with stakeholders, and on the basis of national economic, social, environmental and developmental objectives and circumstances.

II. LIBERALISING ENVIRONMENTAL GOODS AND SERVICES

Trade liberalisation is expected to provide economic, environmental and development gains to trading countries and firms within them. Based on this premise, WTO members agreed at the Doha Ministerial Conference in 2001 to negotiations on the “reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services” with a view to enhancing the mutual supportiveness of trade and environment.²⁵

A. LIBERALISING ENVIRONMENTAL SERVICES

Until the 1990s, most countries throughout the world relied on public sector utilities to manage their environmental services infrastructure and operations. Since then, many countries have initiated privatisation programmes that permit the private sector to participate in the operation of existing infrastructure and to finance new infrastructure development projects. In many cases, private sector participation in infrastructure has attracted capital investments, expanded and improved service offerings, boosted sector efficiencies, and increased financial resources available to governments for other purposes.

Analytical and empirical research undertaken by United Nations Conference on Trade and Development (UNCTAD)²⁶ demonstrates that trade and investment liberalisation in the services sectors can provide developing countries with significant economic, social and environmental benefits when:

- accompanied by complementary national measures needed to ensure that local content, local employment and universal access objectives are met;
- the sequencing of privatisation and trade liberalisation is sufficiently gradual to reduce the impact of economic adjustment; and when
- an adequate regulatory framework to govern competition in liberalised sectors is established.

If carefully prepared and implemented by national authorities within a supportive national policy framework, the liberalisation process (i.e., privatisation and trade liberalisation) can deliver development gains. Contrarily, evidence from countries where complementary policies were lacking indicates that privatisation and trade liberalisation can negatively impact the poor: jobs may be lost, prices for basic services often rise; and aggressive collection of fees hurt the poor. It is therefore critical for policymakers and national stakeholders to assess what degree of privatisation is best and which complementary policies are needed prior to privatising basic services sectors.

1. *Private participation in the delivery of environmental services*

With liberalisation, a new array of options is available for the management and operation of environmental services sectors.²⁷ As shown in Table 1, these range from simpler options such as service contracts on one side of the spectrum, and progress to partial privatisation and complete divestiture on the other. Some degree of private participation in the delivery of the environmental service is necessary, however, if benefits from liberalising trade in environmental services are to be achieved.

Each form of private participation offers a distinct set of benefits as well as economic and social implications. For instance, service contracts may be used to improve efficiency using existing assets, while public-private partnerships in the form of BOTs (build-operate-transfer) may be used when private funds are sought for investments in new capital. Governments are free to set the degree of liberalisation desired according to the form of private participation that they seek to attract.

²⁵ WTO, Ministerial Declaration, para. 31(iii), Ministerial Conference, Fourth Session, Doha, Qatar, WT/MIN(01)/DEC/W/1, 14 November 2001.

²⁶ UNCTAD, 2005, *Trade in Services and Development Implications*, TD/B/COM.1/71.

²⁷ OECD, 2000, *Environmental Services: The ‘Win-Win’ Role of Trade Liberalisation in Promoting Environmental Protection and Economic Development*, COM/TD/ENV(99)93/FINAL.

Following liberalisation of environmental services sectors, and a discontinuation of government subsidisation, fees-for-service generally rise. Higher fees result in full-cost recovery for services provided. On the positive side, higher fees encourage consumers to conserve water and energy by reducing usage and improving efficiencies of end-use appliances. In the solid waste sector, they provide important incentives for material recovery and recycling. However, poorer residential service areas may lack the ability to pay for higher services costs, and to invest in efficiency improvements. Flanking policies, such as performance requirements and either direct or cross-payment subsidy schemes, may be used to offset these effects and ensure that universal access objectives are met.²⁸

TABLE 1. LIBERALISATION OPTIONS IN THE ENVIRONMENTAL SERVICES SECTORS

Option	Privatisation	Trade Liberalisation	Ownership	Operations & Maintenance	Capital Investment	Commercial Risk	Typical Duration
Service contract		✓	Public	Public & private	Public	Public	1-2 years
Public management contract		✓	Public	Private	Public	Public	3-5 years
Private lease		✓	Public	Private	Public	Shared	8-15 years
Build-Operate-Transfer (BOT) contract	✓	✓	Public & private	Private	Private	Private	20-30 years
Concession		✓	Public	Private	Private	Private	25-30 years
Privatisation/Divestiture (full and partial)	✓	✓	Private or private & public	Private	Private	Private	Indefinite

Source: Adapted from OECD, 2000, Environmental Services: the 'Win-Win' Role of Trade Liberalisation in Promoting Environmental Protection and Economic Development, Doc. No. COM/TD/ENV(99)93/FINAL.

2. Trade liberalisation in the environmental service sectors

There is growing experience in the ESCWA region with privatisation and trade liberalisation in various sectors including telecommunications, financial services, and transportation infrastructure. However, in the environmental services sectors, the Gulf countries have been at the forefront of such initiatives. To varying degrees, these countries have deregulated and privatised their water, energy and solid waste management sectors. While trade liberalisation has thus far been effected on a unilateral basis, several Gulf countries (Qatar, Oman, Saudi Arabia and UAE) have opened up their water and solid waste management sectors to foreign investment multilaterally under the GATS. These developments have attracted significant investments from domestic and foreign investors.

One of the reasons that trade liberalisation in environmental services is successful in the Gulf countries is their consumers' ability to pay for services and continued government subsidization of tariffs and fees, effectively guaranteeing investors the ability to meet cost recovery requirements. Similarly favourable

²⁸ UNCTAD, 2006, *Universal Access to Services*, (TD/B/COM.1/EM.30/2).

investment conditions are not present in the lower income ESCWA countries, specifically the Mashreq countries and Yemen. Trade liberalisation in these latter countries may thus not attract investment as readily as in the Gulf countries unless government subsidies or guarantees are provided to investment consortia to ensure full cost recovery for services. Without such, investments might only be attracted to specific service areas where consumers have a demonstrated ability to pay for services.

Although not yet proceeding with full privatisation in the environmental services sectors, several Mashreq countries have unilaterally liberalised trade in these sectors through service and management contracts with foreign firms, and through BOT contracts with multinational joint-ventures twinning foreign and national firms. Mashreq countries' activity in these areas is particularly strong in Egypt and Jordan. Maghreb countries in the Arab region are also active in this area, particularly Morocco and Tunisia.

Trade liberalisation in the environmental services sectors can deliver the following benefits:

- importing foreign technical and managerial expertise;
- supporting technology transfer;
- improving operating efficiencies and reducing the costs of services provision;
- raising operating capacities;
- attracting foreign investment needed to rehabilitate and replace existing capital, as well as to acquire new capital;
- expanding service areas;
- generating new business opportunities for local support firms (e.g., construction, parts, repair, billing, collection, consumer service);
- raising competitiveness levels of domestic environmental service providers through increasing competition in these sectors; and
- increasing responsiveness to consumer needs and preferences.

However, trade liberalisation in the environmental services sectors may also have negative impacts on the economy, whereby:

- parts and supplies traditionally sourced from local companies may be imported from abroad;
- enterprise restructuring may result in job losses (although job gains in outsourced business activities may partially offset these); and
- local, less competitive environmental services firms that exist may be forced to close unless they raise their level of competitiveness.

The challenge for policymakers and other national stakeholders is to achieve net economic and development gains through the liberalisation process. Regional dialogue should be encouraged to facilitate the exchange of lessons learned and success stories among officials and other professionals involved in the environmental services sectors. Based on insights gained, countries can design liberalisation schemes and complementary policies that can help ensure optimal results.

B. LIBERALISING ENVIRONMENT GOODS

1. *Definition of environmental goods*

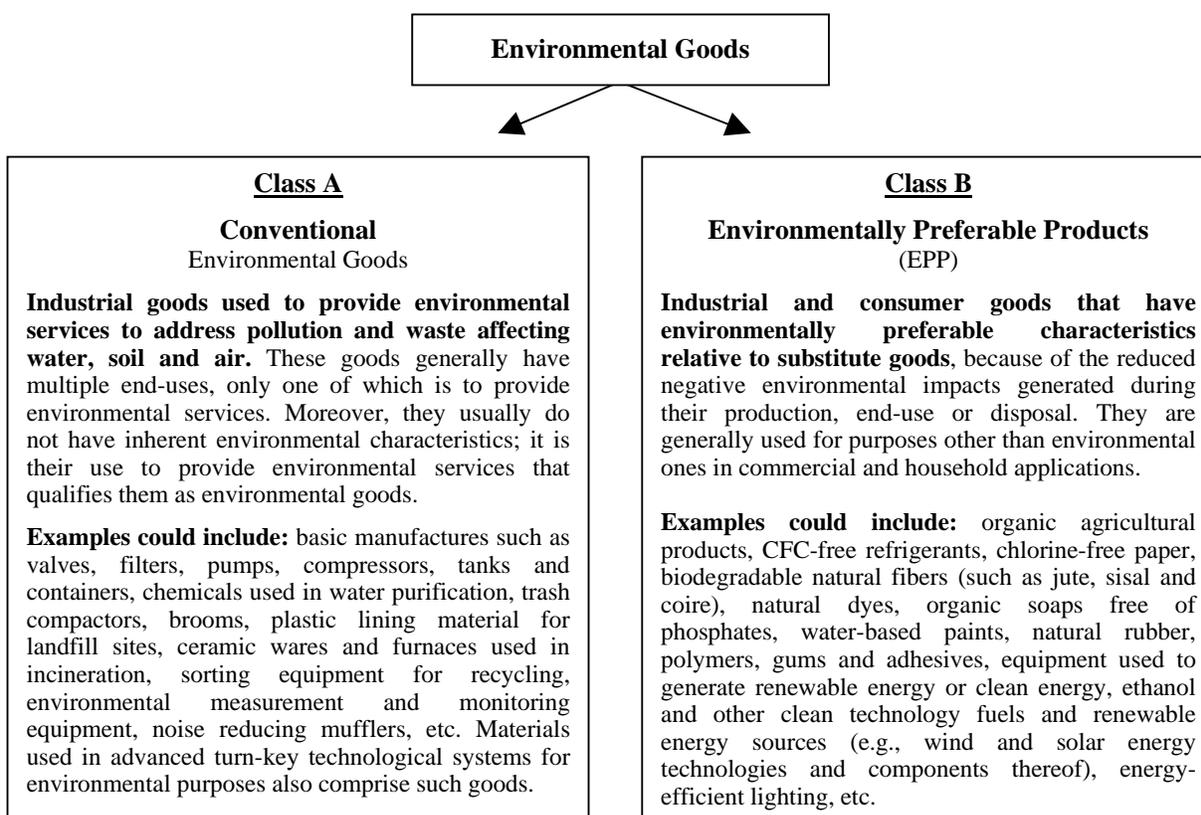
There is no agreed definition of environmental goods. Traditionally, environmental goods are considered to be the set of all manufactured products and technologies, and chemicals, used directly in the provision of environmental services. They are used to provide services such as wastewater treatment, solid waste management, air pollution control, etc. These goods, which include a wide variety of basic industrial products that can be specifically employed for environmental purposes.

Recently, discussions on trade liberalisation of environmental goods in the WTO negotiations have introduced a second class of environmental goods, commonly referred to as environmentally preferable products (EPPs). EPPs are fundamentally different from goods traditionally classified as environmental goods because they are not necessarily used for environmental purposes. They include industrial and

consumer goods whose production, end-use and/or disposal have positive environmental characteristics relative to similar substitute goods. In addition to energy-efficient and renewable energy technologies, EPPs include many raw and processed natural resource based commodities consumed as food, health and cosmetic products, clothing, furniture, home products and building materials. Many EPPs are of considerable export interest to developing countries.

These two broad classes of environmental goods (EGs), both under discussion in WTO negotiations, are summarised in Figure 1.

Figure 1. Two classes of environmental goods



Comprehensive lists of environmental goods have been formulated by the OECD and the Asia-Pacific Economic Cooperation (APEC) countries, generally comprising conventional environmental goods. At the start of negotiations, these lists were circulated during WTO negotiations by developed countries with the aim of providing a starting point for negotiations on trade liberalisation of environmental goods. For the purpose of this study, Class A goods thus encompass the conventional environmental goods included in the OECD and APEC lists. More recently, many developing countries have proposed EPPs to be also considered as environmental goods.

The OECD classifies the environmental sector as the set of “firms producing goods and services capable of measuring, preventing, limiting or correcting environmental damage such as pollution of water, air soil as well as waste and noise-related problems.” Based on this definition, the OECD categorized environmental management functions, and defined a corresponding list of 164 environmental goods providing these functions. As a preliminary effort subject to revision, the OECD emphasizes that its list of environmental goods is non-exhaustive and illustrative rather than definitive.²⁹ The OECD list contains those goods needed to support environmental services including sewage and water treatment services, waste disposal services, cleaning and maintenance of public property, and sanitation services, as well as other

²⁹ OECD, 2001, Environmental Goods and Services: The Benefits of Further Global Trade Liberalisation.

environment-related services such as eco-tourism and services to enhance resource-efficiency in industrial and natural resource based production activities. The list includes goods spanning 132 six-digit codes of the Harmonized Commodity Description and Coding System (HS). Of these, 25 relate to minerals and chemicals used in water and waste treatment and in renewable energy systems, and 97 are manufactures that serve as components of the systems and infrastructure used to provide environmental services.

To advance voluntary liberalisation of environmental goods by its Member States, APEC assembled and published a list of 109 environmental goods in 1998.³⁰ The APEC list of environmental goods spans 104 HS codes, with 44 goods on the APEC list qualified by ex-heading specifications (i.e., providing descriptive product details at a higher level of desegregation than the international or common six-digit HS level). The APEC list is based on identifying products that are needed for a set of environmental functions similar to those used by the OECD.

While there are 54 common goods in the OECD and APEC lists (i.e., goods that are found on both lists), differences in the two lists are significant. For instance, minerals and chemicals for water and waste treatment are exclusive to the OECD list, while the APEC list includes a relatively more extensive set of goods needed for environmental monitoring and assessment.

Definitions of environmental goods may also include EPPs supplied to industrial and consumer markets. The market potential of EPPs has grown significantly in response to increased environmental awareness and concern among consumers. Some EPPs, such as organic agricultural products or recycled paper, are attractive to certain consumers because they have been produced in an environmentally preferable way, while others, such as natural soaps and detergents, are sought for their environmentally preferable use and disposal characteristics. Clean technologies and renewable energies are also considered to be EPPs.

In 2005, UNCTAD sought to classify different types of environmental goods and assembled a preliminary list of core EPPs.³¹ The EPP-Core list contains a limited list of products that may qualify as EPPs within the framework of the WTO negotiations since they are identified based on the environmental impacts associated with their consumption or disposal characteristics, but not based on their process and production methods.³² This “core” list contains natural fibres, dyes, soaps, and other natural products including non-timber forest products and natural rubber. Natural gas and other clean fuels are not included in the EPP-Core list, but are instead included in separate clean technology (CT) list and a clean technology fuels (CT-fuels) list that constitute a separate grouping of environmental goods under UNCTAD’s classification scheme.

The challenge in developing an EPP list is that there is an indefinite number of products that could be included on such as list as the sector is constantly evolving. Furthermore, it is not possible to conduct an authoritative lifecycle analysis (LCA) for each proposed EPP good as LCA methods vary and are not internationally standardized. As such, the 2005 paper prepared by UNCTAD proposes a core list of environmentally preferred products that exclude EPPs that may be defined as such to due their production or process methods in view of ensuring that trade in environmental goods included on the core list is WTO-compliant. Other goods that may be ‘environmentally preferable’ to substitute goods are also not included in the UNCTAD EPP-Core list of environmental goods, although many of these may be important for developing countries. However, it should be noted that the EPP-Core list is not definitive, nor in any way agreed upon by WTO members. However, it has provided a framework for stimulating discussion on how such goods could be classified and has provide a clear list of core products that can facilitate the conduct of trade analysis to inform negotiations how trade in EPPs might be liberalised.

³⁰ APEC, 2001, *Survey of Environmental Markets in APEC*.

³¹ UNCTAD, 2005, “Environmental Goods: Identifying Items of Export Interest to Developing Countries,” CBTF Briefing Note (<http://www.unep-unctad.org/CBTF/events/briefing.asp>). For a list of the O+A and EPP-Core EGs see also: www.cen2eco.org/escwa-c2e-egs.htm

³² WTO rules that seek to avoid technical barriers to trade do not currently permit members to differentiate among ‘like products’ based solely on differences in the way they are produced; i.e., according to their process and production methods.

2. Considerations affecting the adoption of WTO criteria for environmental goods

Agreement on a WTO list of environmental goods or criteria for their designation is a negotiating process. Given this reality, it is instructive to outline which factors bare on WTO criteria that may be used to designate products as EGs. Specifically, it is important to understand how these factors might be classified according to politico-economic and technical/operational motivations and constraints. The main issues arising in WTO negotiations are summarised here.³³

a. *Trade, environment and development policies should be mutually supportive*

The European Union (EU) has expressed the view that EGs be defined within the WTO context to contribute to the fulfilment of internationally agreed environmental priorities, such as those described in multilateral environmental agreements (MEAs), the Millennium Development Goals, and the World Summit on Sustainable Development Plan of Implementation. The EU has also stated its position that EGs may be classified into two categories: a) goods used in pollution control and resource management (which includes equipment used for water supply and sanitation, solid and hazardous waste management, protection of air and climate, protection and clean-up of soil and water, noise abatement, and environmental monitoring, as well as renewable energies); and b) goods that exhibit a high environmental performance or result in low environmental impact as manifested by their physical characteristics (such as vegetable fibres, natural products, energy efficient goods, goods that support sustainable transport and eco-labelled products). While not exactly the same, these categories are generally similar to Class A and Class B goods respectively.³⁴

b. *Equity and balanced benefits for all WTO members*

Developing countries want to secure an appropriate share of gains from trade liberalisation of EGs. They are cognizant of their substantial negative trade balance in the Class A EGs that have been discussed to date in the WTO. For their part, developed countries and some rapidly industrializing East-Asian developing countries, support the inclusion of OECD and APEC listed goods in an eventual WTO list since these goods provide them with attractive trade balances. Several developing countries are currently preparing their own national or regional EG lists for proposal to the WTO. Many are exploring the potential of including Class B EGs of export interest in their lists.

c. *High adjustment costs in developing countries*

Two major impacts of trade liberalisation of EGs can be expected to affect developing countries. First they will experience a loss of tariff revenue. Goods on the OECD and APEC lists span a broad range of developing country imports. Broad-based tariff reduction could thus result in significant loss of tariff revenue. Second, broad-based tariff reduction would expose key national industries to increase international competition and may result in substantial import surges affected sectors. Both of these concerns may be positively addressed by a development list approach to EG liberalisation proposed by China, a two-list approach proposed by the United States, or variants of these.

China proposed an approach to liberalisation based on two lists: a common list of EGs including goods of export interest to both developed and developing countries for which consensus can be achieved; and a development list providing safeguards through special and differential treatment to developing countries. Developing countries would not be required to eliminate or reduce tariffs on goods they placed on the development list. Similarly, the US proposed a dual-list approach including a core, and a complementary, list. All countries would be required to reduce tariffs over a specified time period for all items comprising the core list, but only for a limited percentage of goods on the complementary list. The core list would include all items for which there is consensus that they qualify as environmental goods, whereas the complementary list would contain goods for which consensus cannot be achieved. In principal, both the China and US approaches could allow developing countries to maintain current levels of tariff protection on specific goods

³³ Annex II provides references to all of the country positions outlined herein.

³⁴ For the full list of environmental goods submitted for consideration by the EC to the WTO Committee on Trade and Environment Special Session, see WTO, "EC Submission on Environmental Goods – Submission by the European Commission on Paragraph 31 (iii)," TN/TE/W/56, 5 July 2005.

produced by national industries and thereby reduce the adjustment impacts resulting from an all inclusive singular negotiated list in which opt-outs are prohibited.

d. *Limitations in the HS nomenclature for the classification of environmental goods*

The Harmonized System used to classify internationally traded goods does not, in most cases, identify EGs at the six-digit level (many EGs are an ex-heading item). As such, multiple products may be classified under a common six-digit code, of which only one, or a subset, are considered as EGs. This poses an administrative difficulty for tariff liberalisation. However, there is broad agreement that members' own HS schedules extending beyond the HS six-digit level could be effectively used to identify EG imports and provide them with preferential treatment under any eventual WTO agreement on environmental goods. Furthermore, in the longer term, it will be possible to establish new HS product classifications to facilitate EG trade liberalisation for specific goods that may require them. However, establishing new international product codes would take several years.

e. *Many environmental goods have multiple end-uses, only one of which may be environmental*

Nearly all Class A EGs are intermediate products – such as chemicals, filters, pumps, valves, turbines, chemicals, meters, lasers, spectrometers, etc – that have multiple end-uses. Class A EGs therefore include a wide range of multiple-use products for which there are various non-environmental end-uses. Multiple-use is an important issue for countries interested in providing preferential treatment to goods only when they are used for environmental purposes.

India proposed to overcome the issue of multiple-use by pursuing a project approach to trade liberalisation of environmental goods. Under this approach, imported goods needed to realise environmental objectives in an industrial or public works project would be approved by a designated national authority as qualifying for preferential tariff treatment for the duration of the project when agreed environmental criteria are met by the project. One of the benefits of such a project-based approach is that it would provide a mechanism to tie environmental goods and services together.

f. *The problem of relativism for many environmental goods*

Just as Class A EGs are affected by multiple-use, designations of Class B EGs suffer from the need to identify an appropriate substitute good against which the former's superior environmental performance can be assessed and objectively agreed upon. Several problems can arise. First, it is difficult to make a complete lifecycle assessment (LCA) for many products and for a wide range of consumer EPPs and the various ways in which they may be used. This makes a clear and unambiguous designation of consumer EPPs difficult. Moreover, reliable LCAs are not available for many EPPs.

Another aspect of relativism affecting Class B EGs concerns changing technology frontiers. For example, although certain energy technologies may be viewed as a clean, or cleanest available technology today, technological progress may lead to the development of cleaner technologies in the future. New Zealand has thus proposed that a 'living list' approach be followed in designating EGs. Through regular updates, goods would move on-to and off-of the list as the status of commercially available technologies evolves.

C. THE SIZE OF THE REGIONAL MARKET FOR ENVIRONMENTAL GOODS AND SERVICES

An assessment of the implications of trade liberalisation in environmental goods and services on the regional EGS markets requires an appreciation of the size and projected growth of the market as well as its composition. There have been few estimates of the size of regional markets for environmental goods and services. Most countries do not have adequate data on their EGS markets making the task of estimating market size difficult. However, according to the leading industry reporting service, Environmental Business International Inc. (EBI), in 1990 the global EGS industry generated revenues of about US\$360 billion

worldwide growing to US\$550 billion in 2001 and subsequently to US\$630 billion in 2004.³⁵ The global market is comprised of roughly equal values for environmental goods and environmental services, although at the regional level their relative values can vary considerably. Accounting for about 1.6 percent of the global market, the 2004 Middle East³⁶ EGS market (see Table 2) was estimated by EBI to be valued at US\$9.7 billion (i.e., about 1 percent of regional GDP), with US\$4.4 billion spent on environmental goods and US\$5.3 billion on environmental services.³⁷

TABLE 2. THE ESTIMATED SIZE AND COMPOSITION OF THE MIDDLE EAST MARKET FOR ENVIRONMENTAL GOODS AND SERVICES IN 2004

Market Segment		Annual Value (US\$ million)	Percent of Total Regional Market
Environmental Goods	Water equipment and chemicals	800	8
	Air pollution control	600	6
	Instruments and information systems	200	2
	Waste management equipment	300	3
	Process and prevention technology	100	1
	Water resource development	2,000	21
	Resource recovery	200	2
	Clean energy systems	200	2
	Total environmental goods	4,400	45
Environmental Services	Water treatment	600	6
	Solid waste management	1,400	14
	Remediation and industrial services	2,400	25
	Hazardous waste management	400	4
	Analytical services	100	1
	Engineering and consulting services	400	4
	Total environmental services	5,300	55
Regional Total		9,700	100

Source: Environmental Business International Inc., 2006, Global Environmental Market: Overview of Trade Flows, available at: <http://www.ictsd.org/dlogue/2006-10-12/2006-10-12-Hight.ppt>.

Note: Data reported here is based on industry surveys, and due to limitations in reported data, the quoted values of market segments may be under-estimated.

Most of the EGS demand in the Middle East is for water and solid waste services, as well as for environmental remediation and clean-up services for the oil and gas industry. EBI estimates the share of the Middle East EGS market demand met by domestic supply to be slightly greater than 70 percent. This translates into some 30 percent of EG demand, or about US\$1.3 billion, being met through imports. As will be shown in the next chapter, this figure is much smaller than US\$7.25 billion reported as imports of conventional environmental goods by Arab Countries (see Chapter III, Figure 3). This observation demonstrates that the figure based on those lists likely grossly overestimates the value of EG imports due to the problems of: (a) multiple-use; and (b) the inability of the HS classification system to accurately delimit environmental goods from other goods, even at the six-digit level.

Many countries in the Middle East region are meeting increased EGS demand through foreign supply options. This is particularly true in many of the Gulf countries which have opened their environmental services markets in nearly all sub-sectors to foreign participation through the WTO GATS agreement. These countries include Bahrain, Kuwait, Qatar, Oman, Saudi Arabia and the United Arab Emirates. To a more limited extent, Jordan has partially opened its environmental services market, although not yet in the areas of water treatment and solid waste management.

³⁵ See OECD, 2005, *Trade that Benefits the Environment and Development*; and, Environmental Business International, Inc., 2005, "The U.S. Environmental Industry and Global Market" (<http://www.ebiusa.com>).

³⁶ Included in the EBI Middle East region are the ESCWA countries less Egypt, with the addition of Israel, Turkey and Iran.

³⁷ Developing countries as a group account for US\$ 82 billion or some 13 percent of the world market.

There is now growing anecdotal evidence that environmental services trade liberalisation in the Gulf countries has been a largely positive experience. In most cases, foreign participation has occurred in their environmental services sectors through joint-venture and BOT approaches, attracting both foreign and domestic investment and allowing for technology and knowledge transfer in the water and solid waste sectors. Already in Saudi Arabia and the UAE, large domestic firms have been successfully established in environmental services sectors with plans for developing export capacity. In other ESCWA countries, where foreign participation in the water and solid waste sectors has been allowed – unilaterally on a case-by-case basis; not through the GATS – service and management contracts have been the approach taken, with the state maintaining ownership and control of these sectors. Experiences with these latter approaches have been mixed; anecdotal evidence from Egypt, Jordan and Lebanon suggests that while these approaches have helped ensure adequate provision of environmental services they have not generated significant investment, technology and knowledge transfer.

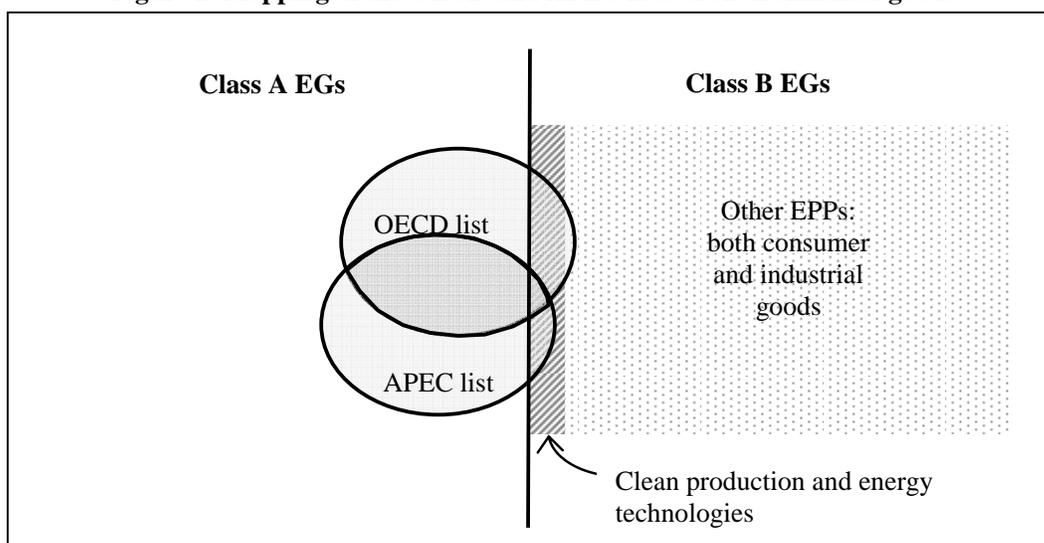
III. WORLD TRADE PATTERNS IN ENVIRONMENTAL GOODS

Analyses were performed to ascertain patterns of trade in environmental goods in order to provide insights to countries on the implications of trade liberalisation in environmental goods. Trade flow data were derived from the United Nations Comtrade database, and national tariff data from the World Bank/UNCTAD World Integrated Trade Solution (WITS) database.³⁸ The following definitions and abbreviations are used to elaborate the analysis:

- Class A EGs or ‘conventional environmental goods’ are simulated by the combined set of goods on the OECD and APEC lists; referred to here as the O+A list.
- Class B EGs or ‘environmentally preferable products’ are simulated by the core set of EPPs defined by UNCTAD and referred to here as the EPP-Core list.
- Country grouping used to conduct the analysis are classified according to those commonly used by the United Nations, with regional groupings for ESCWA and LAS countries also provided:³⁹
 - U-DdC = Developed Countries
 - U-DgC = Developing Countries
 - U-DgAFR = Developing Africa
 - U-DgASO = Developing Asia and Oceania
 - U-DgLAC = Developing Latin America and the Caribbean
 - U-CET = Countries with Economies in Transition in Eastern Europe and Central Asia
 - Arab League = Countries that are members of the LAS, which comprise the Arab region

It is important to emphasise that trade flow data track total imports and exports of Class A and Class B EGs without distinction for how they are ultimately be used. Because many of these goods have multiple-uses, data presented here necessarily overestimate the value of trade in goods used for environmental purposes.

Figure 2. Mapping of the OECD and APEC lists of environmental goods



Source: Hamwey, R., 2005, Environmental Goods: Dynamic Gains for Developing Countries, Working Paper, Cen2eco, Geneva (<http://www.cen2eco.org/C2E-Documents/Cen2eco-EG-DynGains-W.pdf>).

Note: Class A EGs dominate both lists, which define goods that share a common set of environmental functions. Some Class B EGs are present in the OECD and APED lists.

³⁸ See <http://comtrade.un.org> and <http://wits.worldbank.org> respectively.

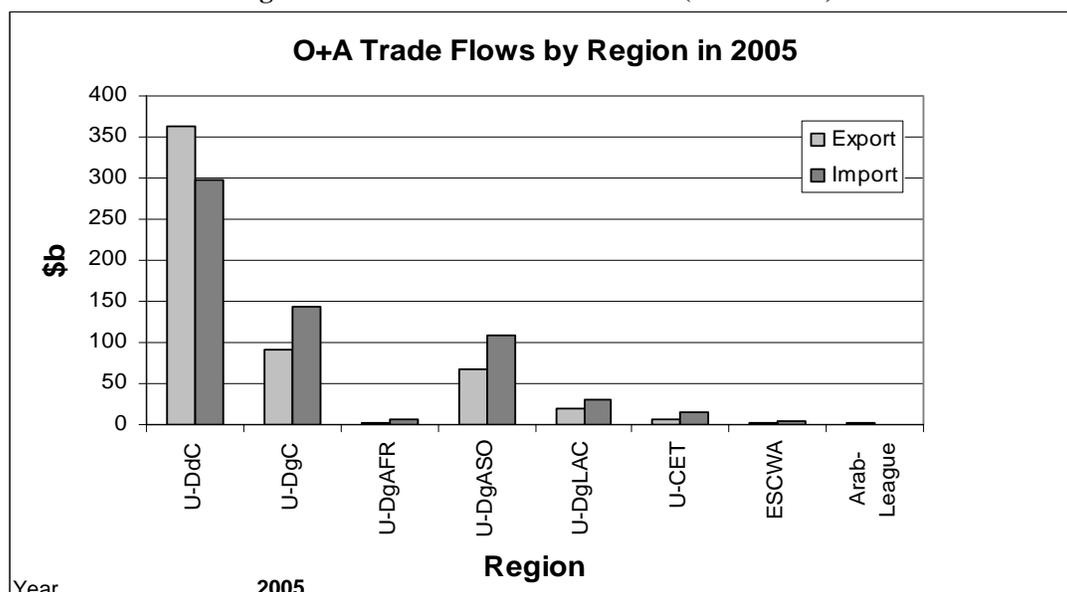
³⁹ For a listing of countries associated with each grouping, see Annex I, noting that countries belong to more than one of the groups analyzed.

As shown in Figure 2, the OECD and APEC lists of EGs comprise mostly Class A EGs, since members of these groups are the main producers of these types of environmental goods. While the OECD and APEC lists do include some Class B EGs, these are predominantly related to clean production and resource efficient production and energy technologies. They also include only a few 'green' industrial goods and consumer EPPs, such as fluorescent lamps, water based paints and recycled paper.

A. TRADE FLOWS AND TARIFF RATES OF REGIONAL AND COUNTRY GROUPINGS

O+A list trade flows are illustrated in Figure 3, which shows that developed countries are the main exporters of environmental goods on the O+A list. Interestingly, however, they are also the main importers of these goods as well. Developing countries, however, import more goods from the O+A list than export. ESCWA countries make little contribution to developing country O+A exports, and played a minor role in world trade of O+A goods. In 2005, they accounted for 0.3 percent of world exports (1.5 percent of developing country exports) and 1.1 percent of world imports (3.4 percent of developing country imports). Moreover, ESCWA's trade balance in O+A goods is negative, with imports outweighing exports by a factor of four. Data from figure also indicate that the Arab region and its ESCWA countries have similar trade profiles for O+A goods, with all members of the LAS contributing only 0.4 percent of world exports, albeit the Arab region as a whole tends to import more environmental goods than ESCWA countries.

Figure 3. O+A list trade flows in 2005 (with World)



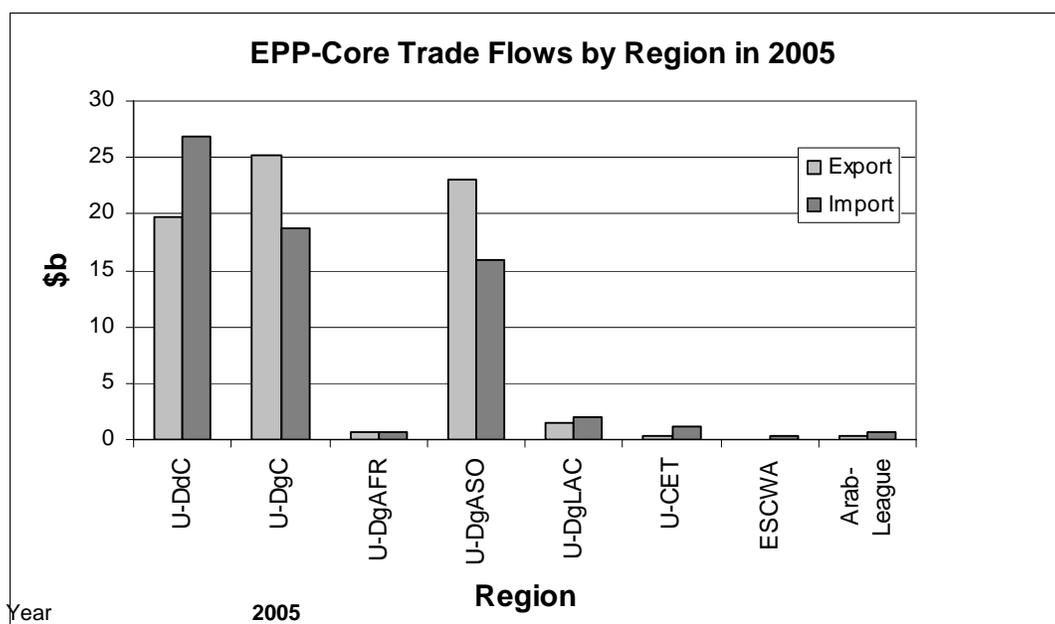
Year **2005**
 EG Group **O+A**
 Partner **World**
 Trade Value (\$ '000)

Reporter	Export	Import	% World Exports	% World Imports
U-DdC	362,043,225	297,252,673	79	65
U-DgC	91,220,870	144,068,787	20	32
U-DgAFR	3,144,970	6,389,380	1	1
U-DgASO	67,797,043	108,052,322	15	24
U-DgLAC	20,278,856	29,627,085	4	7
U-CET	5,850,509	14,237,984	1	3
World	459,114,604	455,559,443		
ESCWA	1,335,053	4,960,679	0.3	1.1
Arab League	1,622,137	7,255,448	0.4	1.6

Note: Data for DgC are the sum of data for regions U-DgAFR, U-DgASO and U-DgLAC. ESCWA and LAS regional trade is also shown separately at the right of the graph.

Data for regional trade of Class B EGs presented in Figure 4 indicate a significant trade surplus for developing countries as a group for the EPP-Core goods. However, when breaking this surplus down among the various regional groups of developing countries, developing countries in the Americas show a slight trade deficit for EPP-Core goods. It is developing countries in Asia that dominate developing country trade in Class B EGs. They supply 51 percent of the world EPP-Core export market, and account for 92 percent of developing country EPP-Core exports. Moreover, Asian developing countries possess a sizable trade surplus in Class B EGs, with a trade surplus of some US\$7 billion in 2005. However, ESCWA countries do not participate in this Asian trend, contributing less than 1 percent to Asian EPP-Core exports (including Egypt) and less than 1 percent to EPP exports from developing countries as a whole. As with O+A listed goods, ESCWA countries have a trade deficit in EPP-Core goods with imports outweighing exports by a factor of 4.6. Data from Figure 4 also indicate that the League of Arab States group of countries has significantly better export performance than its ESCWA sub-region for EPP-Core goods.

Figure 4. EPP-Core trade flows in 2005 (with World)



Year **2005**
 EG Group **EPP-Core**
 Partner **World**
 Trade Value (\$ '000)

Reporter	Export	Import	% World Exports	% World Imports
U-DdC	19,773,456	26,833,709	44	57
U-DgC	25,228,875	18,675,660	56	40
U-DgAFR	720,579	641,205	2	1
U-DgASO	23,094,403	15,978,672	51	34
U-DgLAC	1,413,893	2,055,783	3	4
U-CET	370,861	1,202,666	1	3
World	45,373,192	46,712,036		
ESCWA	77,262	357,046	0.2	0.8
Arab League	269,905	601,254	0.6	1.3

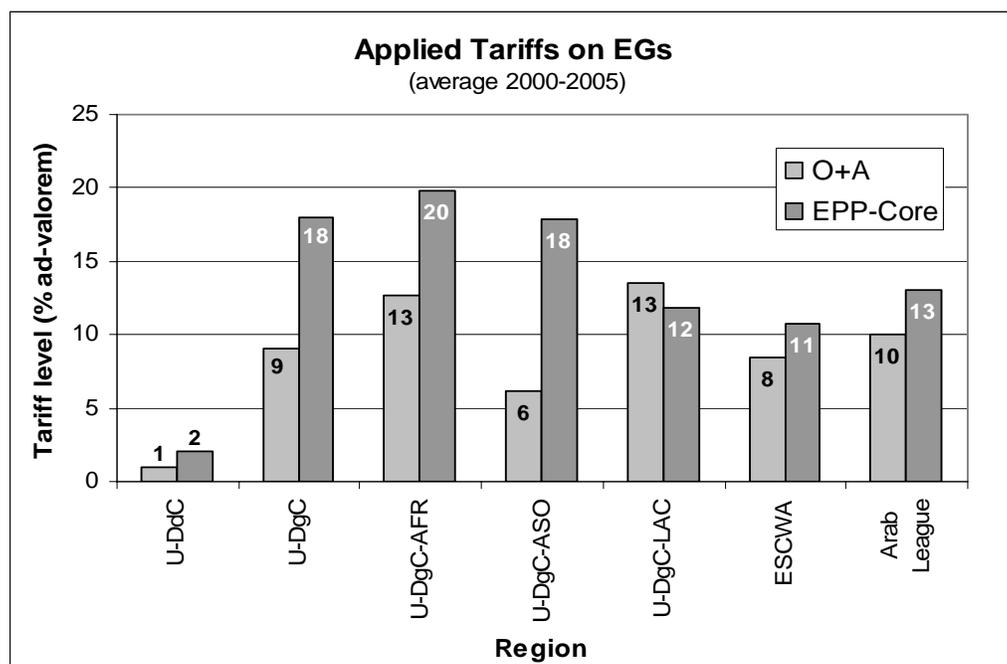
Note: Data for DgC are the sum of data for regions U-DgAFR, U-DgASO and U-DgLAC. ESCWA and League of Arab States trade is also shown separately at the right of the graph.

1. Tariffs

When trade liberalisation is being considered for environmental goods, it is important to examine not only trade flows, but also the coverage and extent of tariff protection affecting trade in these goods so as to better inform trade, economic and environmental policymakers about the implications of liberalising trade in this sector. As shown in Figure 5, tariff protection on both Class A and Class B EGs is surprisingly low. For

developed countries, the trade-weighted average of applied tariff rates range from nuisance levels of 1 percent ad-valorem for Class A EGs, to 2 percent for Class B EGs. Average rates applied by developing countries are roughly ten times more than the developed country rate at 9 percent for the Class A EGs, and climbing to 18 percent for Class B EGs. Examined at the regional level, Figure 5 also shows that applied tariffs are high in all developing country regions. Lowering the tariff rate applied by developing countries on EG imports from other developing countries could encourage increased South-South trade.

Figure 5. Regional tariff levels on environmental goods (2000-2005)



Note: Values are trade weighted average of applied tariffs on O+A and EPP-Core product imports; the partner is World.

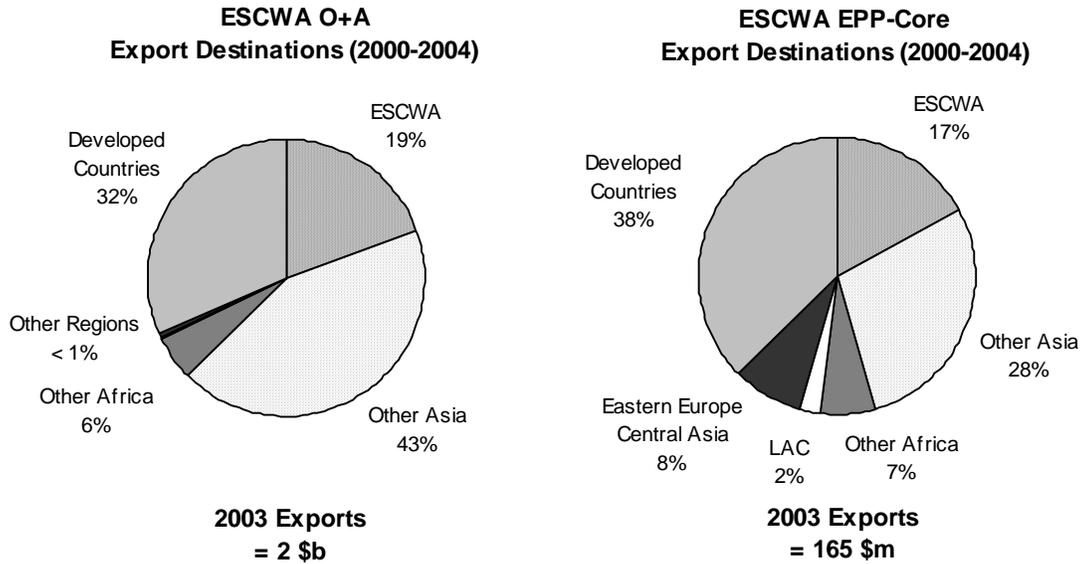
B. INTRA-REGIONAL AND INTER-REGIONAL TRADE FLOWS

When trade flow data are analysed to uncover intra- and inter-regional Class A (O+A) and Class B (EPP-Core) EG trade patterns, the importance of intra-regional exports and inter-regional exports (to Other Asian and Other African Countries) is revealed. For example, ESCWA O+A exports to other ESCWA countries account for about 20 percent of both total O+A and EPP-Core exports, and the shares of exports to other Asian and African countries are substantial. Exports to developed countries, although significant, account for only about one-third of ESCWA inter-regional O+A and EPP-Core exports. These data are shown in Figure 6.

Since some two-thirds of ESCWA EG exports are to other developing countries, tariff reductions by developing countries from relatively high levels following trade liberalisation could result in significant increased demand for ESCWA exports in these countries. As noted above, this could in turn help to strengthen intra-regional trade of these goods among ESCWA countries as well as South-South trade flows involving countries in the ESCWA region.

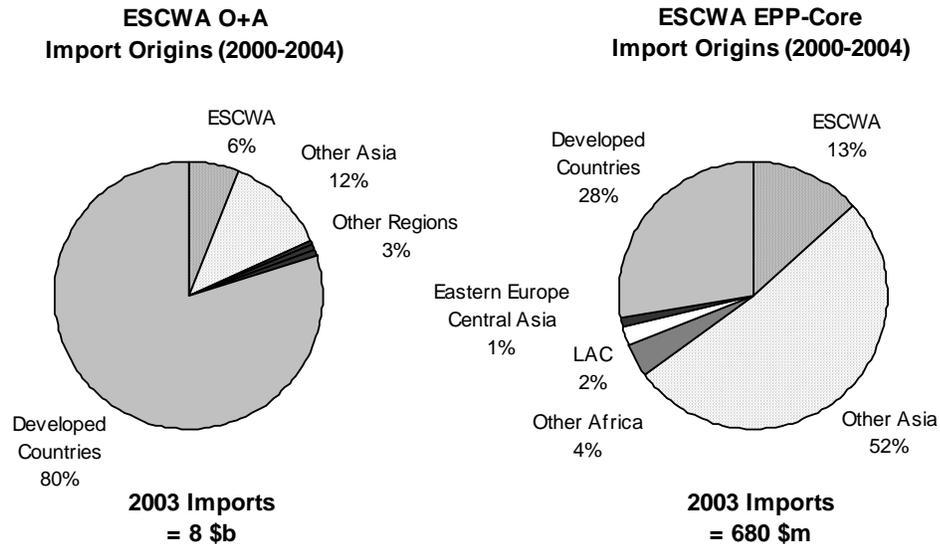
Conversely, the origins of ESCWA countries' EG imports shows less regional balance. Figure 7 shows that imports from other Asian countries and developed countries account for the vast majority of total imports for both O+A and EPP-Core listed goods. Between 2000 and 2004, 80 percent of O+A listed environmental goods entering the ESCWA market originated from developed countries, while 52 percent of EPP-Core list imports came from non-ESCWA Asian countries.

Figure 6. Environmental goods export destinations for the ESCWA region



Note: Based on average reported annual export data for the period 2000 to 2004.

Figure 7. Environmental goods import origins for the ESCWA region



Note: Based on average reported annual import data for the period 2000 to 2004.

C. COUNTRY-LEVEL ANALYSIS

Although a regionally aggregated analyses of trade flows for the aggregated sets of Class A (O+A) and Class B (EPP-Core) EGs indicate trade deficits, disaggregated trade flows of individual EGs for individual countries in the ESCWA region reveal export strengths for some goods. While each country has strong export performance for several EGs, for most other EGs they have substantial import dependencies.

Assessments of the top five exports and imports of Class A EGs was conducted for each ESCWA country and is provided in Annex II. The findings show that O+A listed exports from the Gulf countries are highly concentrated in chemicals, such as methyl alcohol and ammonia by-products of petroleum refining. Exports from the Mashreq countries are more diversified, and include simple manufactures.

Regional exports of Class B EGs are presented in Annex III. The table shows exports of EPP-Core products from the Gulf and Mashreq countries include many natural fibre products and related manufactures, as well as natural pharmaceutical, perfumery and insecticide products.

Nevertheless, while Annex II and Annex III reveal these general characteristics, care must be taken in assessing the total 'environmental good' content of the six-digit HS trade flows used as the basis for the analysis due to the inherent problems associated with multiple-use of goods and the fact that environmental goods may represent only a limited portion of trade flows at the six-digit level of product disaggregation. In addition, reported exports may include re-exports of goods imported from other countries. Such complications continue to make analyses of EG trade data difficult, particularly for Class A EGs where they are more significant.⁴⁰ Each country seeking to accurately assess its trade balance, export strengths and import dependencies must therefore invest significant time to perform a detailed examination of its national trade flows in EGs taking into account the complications associated with monitoring EG trade and making estimates of their impact on national trade data.

1. Implications for consideration

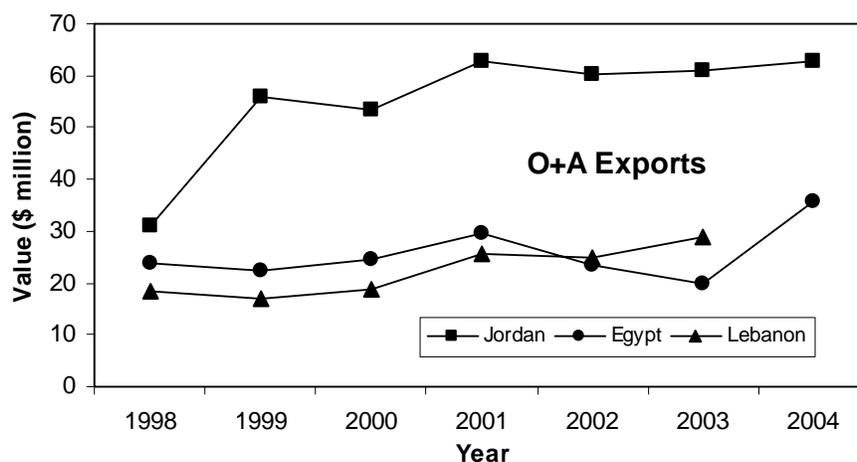
Individually and as a group, the ESCWA countries have relatively large trade deficits in both O+A and EPP-Core listed EGs. However, a focus on trade balances alone fails to take into account many dynamic gains that can be augmented through trade liberalisation of some EGs for which developing countries, including the ESCWA countries, which currently exhibit trade deficits.

The analyses of several recent studies indicate that developing countries have significant export strength and potential, not only in Class B EGs (i.e., environmentally preferable products), but in many Class A EGs used in the provision of environmental services as well.⁴¹ Yet the ESCWA countries participate in this dynamism to a rather limited extent. For them, O+A EGs account for 4 percent of total imports, but only 2 percent of ESCWA non-fuel exports (2003). Chemicals account for the major share of ESCWA O+A exports. Data for Bahrain, Kuwait, Qatar and Saudi Arabia shown in Annex II indicate that they are major world exporters of two O+A chemical goods (methyl alcohol and anhydrous ammonia). Yet for manufactured O+A goods, only Egypt, Jordan and Lebanon report significant exports. Time series data suggests their exports of O+A listed EGs are increasing year-on-year at a moderate rate and at annual rates of 4, 7 and 11 percent respectively (see Figure 8). For selected EGs, ESCWA countries' export growth rates may be higher than 10 percent, growing faster than world trade, and thus representing dynamic products. More detailed analyses of trade flows at the national level are needed to identify dynamic EG exports and opportunities for expansion in certain product areas.

⁴⁰ For a discussion of these issues see: UNCTAD, 2003, *Environmental Goods and Services in Trade and Sustainable Development*, TD/B/COM.1/EM.21/2.

⁴¹ For example: Hamwey, R., 2005, "Environmental Goods: Dynamic Gains for Developing Countries," Working Paper, Cen2eco, Geneva (<http://www.cen2eco.org/C2E-Documents/Cen2eco-EG-DynGains-W.pdf>); Howse, R. and van Bork, P. B., 2006, "Options for Liberalising Trade in Environmental Goods in the Doha Round." Issue Paper N° 2, ICTSD, Geneva.

Figure 8. Evolution of O+A exports from Egypt, Jordan and Lebanon from 1998 to 2004



Appropriately designed, trade liberalisation could allow the ESCWA countries to significantly expand their production and export of dynamic Class A EGs and thus promote increased industrial diversification of their economies. For others with limited export potential in dynamic Class A EGs, trade liberalisation of Class B environmentally preferable industrial and consumer goods may provide gains needed to support rural economies, facilitate the integration of their small and medium sized enterprises into related global supply chains, and thereby increase employment and contribute to poverty reduction. As shown in Annex III, this may be particularly relevant for natural fibres and plant derivatives.

These considerations suggest that different ESCWA countries, and for different developing countries more generally, different approaches to EG trade liberalisation is likely needed. The scope and spectrum of EGs targeted for liberalisation must be wide in order to generate immediate gains for all developing countries while providing for their continued export growth of many dynamic products. However, it must also be selective in order to permit developing countries to exclude from liberalisation those goods for which they have strong production and export interests, and which continue to require some tariff protection, while liberalising others in which they have clear import interests.

Such a selective liberalisation process may be globally more economically efficient than a common EG list approach being pursued under the WTO because of its ability to exploit the diverse production and export specialisations of different countries. Data on export similarity examined in this study show many areas of export complementarity between the world's major regions, and certainly more complementarity may be present at the country-to-country level. Although countries compete with each other in domestic and foreign markets, their export profiles are sufficiently dissimilar so that export competition under liberalisation may be less intense than initially anticipated. This indicates that liberalised trade in environmental goods can provide win-win results for all developing country regions, particularly under a selective liberalisation process which would allow each country to select unique and different goods for liberalisation. There is sufficient production and export specialisation in the world to ensure that all countries will inevitably find significant new export destinations in liberalised markets. But developing country tariffs remain prohibitively high, and therefore, to secure these gains, tariff reductions are essential to facilitate expanded South-South trade. Although liberalisation limited to South-South trade can provide immediate static gains, many dynamic gains can only be realized through increased trade with developed countries through global liberalisation.

IV. THE LAS STUDY ON THE LIBERALISATION OF ENVIRONMENTAL GOODS

The CAMRE Technical Secretariat at the LAS prepared a study between 2005 and 2006 that supports the view that properly designed liberalisation of trade in environmental goods can lower the cost of environmental services thereby leading to more efficient use of government resources and funds to achieve sustainable development goals. It also stresses that with trade liberalisation, environmental objectives can be achieved without significant negative economic effects, but rather, with positive economic effects through the creation of new investment opportunities in the production of environmental goods and the development of the environmental services sector. Improved access to environmental goods and services could also reduce costs for private sector actors as they seek to achieve compliance with environmental laws and regulations.

The study also emphasises that for trade liberalisation in environmental goods to deliver these benefits in the region, Arab countries need to adopt a package of complementary measures that would include the:

- adoption of flexible policy instruments and integrated environmental protection policies that encourage the use of modern environmental goods and environmentally preferable products;
- strengthening of legal mechanisms to protect the environment and encourage private investment in environmental goods and services;
- establishment of national lists of environmental goods that are consistent with national and regional sustainable development objectives;
- implementation of a phased program for the liberalisation of trade in environmental goods, which allows developing countries to benefit from special and differential treatment provisions;
- promotion of policy incentives to encourage the flow of foreign direct investments in the production of environmental goods;
- formulation of policies to retain local employment in the delivery of environmental services;
- adoption of effective competition policies to ensure fair competition between local and foreign suppliers of environmental goods and services; and
- support for greater use of international systems of environmental management, standard-setting, and accreditation to accelerate the introduction of modern tools and techniques into the planning, operation and monitoring of national environmental services.⁴²

Expansion of the environmental goods and services sectors in the Arab region can be triggered by environmental regulation, but is also influenced by the effective application, monitoring and enforcement of relevant requirements. Without compliance mechanisms, legislation to protect water, air and soil resources in the region will have a minimal positive effect. The LAS thus emphasises the need for member countries to ensure environmental protection policies are effectively applied so that the desirable benefits of trade liberalisation in environmental goods and services can be realised. It further underscores that creating the proper climate for the liberalisation of trade in environmental goods can encourage partnerships with foreign companies specialised in the area of clean technology; build human and institutional absorptive capacities for modern technologies; foster the development of environmental regulation; and reduce investment risks associated with environmental liability as well as mitigate concerns related to the need to protect intellectual property rights.

Notwithstanding these positive aspects of trade liberalisation in environmental goods, the LAS study also clearly states that developing countries, including Arab countries, must carefully negotiate an eventual list of environmental goods targeted for liberalisation by the WTO to ensure that the export prospects for goods of interest to developing countries are not compromised by WTO agreements on EG liberalisation. For instance, a list of environmental goods whose production requires advanced manufacturing techniques available only in developed nations may damage the interests of developing countries. Or a list of environmental goods including state-of-the-art energy-efficient appliances, produced mainly in developed

⁴² The LAS study notes that the multiplicity of specifications and differing environmental pollution control procedures that are encountered across countries hinders the efficiency of trade liberalisation.

countries could close the door to an expansion of trade in less energy-efficient appliances produced by developing countries. The LAS study also raises concerns about the trade liberalisation of green products manufactured from recycled waste materials because recycling collection networks and recycling technologies are significantly more advanced in developed countries than in developing countries.

A. THE ARAB REFERENCE LIST ON ENVIRONMENTAL GOODS

The LAS study is largely comprised of a comprehensive reference list of environmental goods, hereafter referred to as the Arab Reference List on Environmental Goods or the AR list (ARL). Indicative and non-binding for LAS Member States, the AR list has been designed to cover all environmental goods used in the region, and it is thus similar to guidance and lists prepared by other regional economic groups and members of the WTO. The AR list aims to serve Arab countries in their preparation of national lists of environmental goods. The LAS notes that the AR list is a baseline document subject to periodic update and review in the light of technological developments and changes in economic, commercial and industrial conditions in the region.

In order to develop the AR list, a critical review was conducted of each environmental good proposed for consideration by the WTO Committee on Trade and Environment Special Session (see Annex IV for the list of WTO submissions on environmental goods considered by the LAS study). This was done by examining each good against a set of positive and negative criteria for determining whether the good should be proposed for liberalisation by Arab countries. These criteria are listed in Table 3 and are based on a set of environmental, economic and developmental indicators related to the needs and interests of the Arab region in achieving sustainable development.

The AR list (ARL) then classifies EGs into five distinct sub-categories, with each sub-list comprised of the following goods:

- ARL I Includes primary environmental goods of high commercial and developmental priority in the Arab countries that should be introduced into the WTO negotiations. [List contains 145 EGs.]
- ARL II Includes primary environmental goods for which custom tariffs should be gradually reduced according to the needs of developmental programs and the economic situation in Arab countries. [List contains 234 EGs.]
- ARL III Includes supplementary environmental goods in the Arab countries which are of limited environmental use in comparison with other uses. [List contains 55 EGs.]
- ARL IV Includes supplementary environmental goods of importance in least developed Arab countries, the use of which takes into account the compliance with international health and environment standards. [List contains 16 EGs.]
- ARL V Includes environmental goods in the Arab countries that should not be opened to trade liberalisation commitments due to inherent environmental, health, safety, economic and technical concerns associated with their use and management. ARL V includes goods in which trade between the Arab countries is prohibited under the Greater Arab Free Trade Agreement (GAFTA) for environmental, health and safety reasons. [List contains 387 goods.]

In contrast to ARL I, II, III and IV, which are ‘positive EG lists’ – i.e., lists of goods for which trade liberalisation can be considered – ARL V is a ‘negative EG list’ – i.e., a list of goods for which trade should be restricted in order to meet regional environmental and sustainable development objectives. The introduction of a negative list is significant, as no such list has been introduced in the WTO negotiations thus far. It may be argued, however, that although there is a mandate within Paragraph 31 of the Doha Declaration to reduce or eliminate tariffs and non-tariff barriers on (a positive list of) environmental goods, no negotiations mandate exists for the establishment of a negative list of goods in which trade should be restricted or banned. Rather, the General Agreement on Tariffs and Trade (GATT) and WTO agreements on

TABLE 3. CRITERIA USED FOR THE CLASSIFICATION OF ENVIRONMENTAL GOODS IN THE ARAB LIST

Positive criteria justifying for the retention of proposed environmental goods	
A	Support for development programs (especially those involving environmental services) and for the provision of imported environmental goods needed for such programs.
B	Increased export opportunities for Arab countries in international markets.
C	Use of modern technologies for the production of environmental goods in the Arab countries.
D	Opportunity to transfer international experience and knowledge into production processes of the Arab countries.
E	Encourage investment in R&D for goods produced in Arab countries that have high export potential.
F	Encourage Arab countries' exporters to use clean technologies to satisfy environmental requirements of importers.
G	Achieve environmental commitment by national production facilities to produce environmental goods at low prices.
H	Achieve the objective of preserving resources and the environment as a result of the increased production of environmental goods.
I	Supply the needs of Arab countries in imported environmental goods at adequate prices.
J	Supply information technology and environmentally sound production technologies in the areas of renewable energy and genetic engineering.
K	Increase public environmental awareness by expanding eco-labelling and improving the product lifecycle of environmental goods.
L	Unify and use internationally-adopted standards for environmental products and environmentally sound production methods.
M	Liberalise trade in environmental goods of priority to developmental activities in the developing Arab countries.
N	Liberalise trade in environmental goods of priority to developmental activities in the least developed Arab countries.
Negative criteria justifying for the exclusion of proposed environmental goods	
O	Possible harmful impact on health and the environment in the Arab countries as a result of liberalisation of trade in harmful materials.
P	Pressure on local industries as a result of competition by imported environmental goods having lower price and better quality.
Q	Decrease in customs resources as a result of the increase in exemptions provided to imported environmental goods.
R	Expansion of customs exemptions for multi-use products that do not serve the direct objectives of environmental protection.
S	Use environmental priority as an argument to limit export of Arab goods to external markets.
T	Give preference to imported low-price environmental goods that are unsuitable for the local environment in least developed countries.
U	Conflict between the requirements of free trade in environmental goods with trade commitments of multi-lateral agreements.
V	Goods with no environmental or economic importance for Arab countries.

Source: CAMRE Technical Secretariat of the League of Arab States, "Arab Reference List on Environmental Goods," Final Report, March 2007.

technical barriers to trade (TBT) and sanitary and phytosanitary (SPS) measures already allow WTO members to independently restrict trade in goods that can be shown to pose a danger to human, animal or plant life. Moreover, criteria justifying the classification of goods in the ARL V may also discriminate against otherwise valid EGs for purely economic reasons, even though such goods have no adverse impact on health or environment. For instance, some goods with environmental merits may be placed in ARL V in order to protect national industries from import competition or to maintain tariff revenue streams, per the criteria outlined in Table 3. There are, however, few such goods on the ARL V, and most goods included in the list are goods with potentially harmful impacts on human health and the environment.

The AR list also provides decision-makers with a wide range of data related to each of the EGs submitted to the WTO to date. Specifically, for each item on the AR list, the following information is provided in tabular form, namely the:

- AR list number;
- Harmonised System (HS) number;
- item description;
- list of countries and/or regional groups that have proposed the item in WTO negotiations;
- item characteristics and the environmental benefits that its use can provide;
- item's environmental uses;
- classification of the item in one of five groupings (i.e., ARL I through ARL V); and
- justification of the choice of classification based on a set of numbered criteria (with more than one criteria able to be applied to justify the placement of a good in a certain ARL group).

The above information available from the AR list provides basic inputs into analyses to assess the economic impact of liberalising trade in environmental goods in the Arab region.

It should be noted that the Arab Reference List on Environmental Goods has not been submitted to the WTO for consideration, and can not be submitted by the LAS since the LAS does not have standing before the WTO or its constituent committees. The Arab Reference List is thus regionally generated guidance for assisting Arab countries to formulate national lists with a view to facilitating the formulation of a regional approach to liberalizing environmental goods. The assessment thus serves to inform LAS members on the trade flows and reduction of tariff revenues associated with liberalising trade in environmental goods in accordance with the categories of environmental goods proposed in the Arab Reference List.

B. ASSESSING THE IMPACT OF TRADE LIBERALISATION IN ARL LISTED ENVIRONMENTAL GOODS

The LAS study stresses the need to assess the impact of liberalising trade in environmental goods by examining the liberalisation scenarios proposed by the ARL lists. The LAS recommends that each scenario take into consideration the following:

- the large and diverse number of environmental goods on each list;
- import and export volumes of environmental goods;
- implications for foreign direct investment (FDI);
- the extent of the expected expansion in the market of environmental goods;
- the contribution of the private sector in financing and managing projects in the production of environmental goods;
- the complementary relationship between the market for environmental goods and liberalisation of trade in goods in other sectors.

Moreover, the assessment should provide an indication of the positive impacts that liberalisation may have on regional and national development objectives. These encompass:

- Economic objectives, including:
 - increased opportunities for competition in relevant markets
 - enhanced enabling environment for production and consumption choices
 - balanced regional development.
 - advancement towards sustainable development
- Social objectives, including:
 - promotion of human development
 - improved living conditions
 - enhanced human capacity, knowledge and skills
 - improved social justice and equality
 - greater synergy in human development with social and environmental objectives
 - strengthened governmental response to expressed public needs
- Environmental protection objectives, including:
 - elimination or effective treatment of pollution affecting human settlements
 - protection and conservation of natural resources
 - preservation of ecosystems and biodiversity
 - support for national programs to protect the quality of water, air and soil resources

An assessment along the lines proposed by the League of Arab States is necessarily a complex exercise that must be undertaken based on a thorough review of relevant economic sectors and taking into account: sectoral objectives; economic trends; analyses of sectoral trade and investment patterns; identification of constraints to sectoral development; existing and planned sectoral policies and regulations; institutional capacities; and stakeholder needs. Moreover, national assessments would need to be completed in order to provide inputs into a regional assessment. Although sectoral assessments are beyond the scope of the present study, trade flow analysis is presented here in order to support future assessments that may be undertaken in the region.

C. ANALYSIS OF REGIONAL TRADE IN ARL LISTED ENVIRONMENTAL GOODS

Further to recommendations issuing from the Eighth Session of the Joint Committee on Environment and Development in the Arab Region (JCEAR) in November 2006, ESCWA undertook an assessment of the region's trade in ARL listed environmental goods. Analyses of trade flows and tariff levels for the region as a whole and for individual countries in the region were performed for the ARL I, II, III and IV lists of environmental goods using trade flow data available from the United Nations Comtrade Database.⁴³ All trade data is for trade with the world, in other words, regional imports from (and exports to) the world include regional imports from (and exports to) the region.⁴⁴ In addition, ESCWA analyses examined tariffs applied to AR list imports by the ESCWA, LAS countries and other world regions using national tariff data from the World Bank/UNCTAD WITS database. All analyses were completed for the 2000 to 2005 period.

1. *Difficulties encountered in analysing ARL trade flows*

A major challenge in analysing trade flows in environmental goods lies in the fact that, in some cases, environmental goods represent only a limited portion of trade flows at the level of product disaggregation given in the AR list. This problem is more pronounced for the AR list in which some EG product codes are only specified at the four- or two-digit level, compared to the OECD and APEC lists which provide six-digit HS codes for all listed EGs. In such cases, the general HS heading under which an ARL EG is classified will contain other related products which have not been classified as EGs, and thus it is impossible to isolate the EG component of trade flows from other non-EG components falling within the

⁴³ Only regional trade flows are reported on in this study in Annex V, with national level data provided to countries on an individual basis.

⁴⁴ Analyses included all AR listed goods for which HS numbers were provided in the LAS study. Due to incompleteness in data reported by LAS countries, mirrored data from all world partners were used to infer all regional and country level trade flows presented here.

same HS heading. As a result, all goods falling under the HS heading get ‘counted’ in any analysis and a unknown amount of contamination (by non-EGs) is introduced into the EG trade flow data.

During the course of the ESCWA analyses of the AR list, numerous instances of contamination were identified. Most were assessed to be minor, not having a significant effect on the trade flow values. However, for several EGs on the AR list, contamination effects were substantial. As just one illustrative example, the ARL I list includes the two-digit HS heading ‘48’ to account for recycled paper and paperboard, an EPP item first proposed by Japan in the WTO. However, it is not possible to distinguish within HS heading ‘48’ which paper and paperboard products are manufactured from recycled materials and which are not. Accordingly, when counting all products under the HS heading ‘48’ when analysing ARL I trade flows, the magnitude of the EG component of ARL I trade is overestimated since trade in all paper and paperboard products is measured, rather than just the recycled EG component. Alternatively, contamination could have been eliminated for this product on ARL I if the HS heading ‘4707’ ‘Recovered (waste and scrap) paper or paperboard’ had been specified instead of the broad product group HS heading ‘48’.

In order to account for contamination effects in the ESCWA analysis, a correction factor⁴⁵ was estimated based on a thorough examination of the ARL groupings. This multiplicative factor was applied to gross AR list trade volumes to estimate their EG-related component. The correction factor used is noted below each of the following graph detailing trade flows for each ARL grouping. However, data presented in tables have not been corrected. It must be cautioned, however, that because the specification of a correction factor is a subjective exercise, EG trade flow volumes derived here must be regarded as an approximation.

Another problem encountered during the ESCWA trade flow analysis concerned ARL V trade. Trade flow analyses of this list were not possible due to data limitations. This is because Comtrade data extends only to six-digit HS codes, while the inherent nature of goods included the ARL V lead the vast majority of listed goods to be only discernable at the HS eight- or ten-digit level. The problem of contamination for ARL V based on calculations at the HS six-digit level was therefore too high to allow reliable trade flow estimates to be made.

Nevertheless, data on some ARL V goods are not subject to contamination effects. Waste products on the ARL V are one example. In 2005, LAS countries exported more than four times as much of these goods than they imported (see Table 4) and benefited from a trade surplus of over US\$150 million. Such goods include waste and scraps of metals, plastics and primary cells (i.e., batteries). While the LAS study note that there are dangers associated with importing these goods, particularly since appropriate recycling facilities are not currently available in the Arab region, such goods remain of export interest to the region as many countries with recycling facilities seek to import metal, plastic and other recyclable waste products from Arab countries. Moreover, exporting waste products – considered too dangerous to import – to countries with recycling capacities reduces regional waste management requirements and generates a net positive impact on the regional environment. Indeed, there are already many waste products on ARL V for which significant export interests are evident among LAS countries. More detailed analysis of the ARL V could reveal other goods for which the region has sizable export interests that are in line with the region’s sustainable development goals.

⁴⁵ The correction factor was calculated by estimating the percentage (E) of each list’s top ten most traded items potentially destined for an environmental end-use. Because the volume of total trade of these items (V) accounted generally for more than 80 percent of total AR list trade, the factor E was assumed to represent a good approximation for a multiplicative constant used to estimate the environmental content of total trade flows for an entire list of goods. The correction factor, E, thus derived was used to correct each list’s aggregate trade flow volumes so that its environmental component could be inferred.

TABLE 4. ARAB TRADE IN WASTE PRODUCTS INCLUDED IN ARL V

ARL V Waste Imports (2005)			ARL V Waste Exports (2005)		
HS Code	Description	Import (\$m)	HS Code	Description	Export (\$m)
711290	Waste/scrap, precious metals except pure gold/platinum	35	3915	Waste, parings and scrap, of plastics	54
3915	Waste, parings and scrap, of plastics	6	711210	Waste or scrap containing gold	52
711210	Waste or scrap containing gold	3	711220	Waste/scrap containing platinum	49
720441	Waste from the mechanical working of iron or steel nes	2	720441	Waste from the mechanical working of iron or steel nes	29
854810	Waste & scrap of primary cells	2	711290	Waste/scrap, precious metals except pure gold/platinum	13
2619	Waste from the iron or steel industry	1	854810	Waste & scrap of primary cells	5
711220	Waste/scrap containing platinum	0	2619	Waste from the iron or steel industry	3
Total		50	Total		206

Note: Raw trade flows; no corrections applied.

2. Framework for the ARL trade analysis

In order to provide an understanding of the regional trade in the ARL listed goods from various perspectives, trade data were aggregated, as well as disaggregated in several ways to reflect:

- trade in the aggregate ARL product groups for the LAS and ESCWA regions;
- individual countries' trade in the aggregate ARL product groups;
- individual countries' applied tariffs on the aggregate ARL product groups;
- trade for the group of oil exporting LAS countries and the group of non-oil exporting LAS countries in the aggregate ARL product groups;⁴⁶
- individual countries' top ten product exports for the products listed in each of the ARL product groups, with each countries' total merchandise exports also provided as a point for comparison.

Data generated for world trade in the five ARL product groups it is provided in Annex V. Data for two countries in the region was not included in the regional analysis due to a lack of data availability (i.e., Iraq and Palestine).

D. THE SHARE OF EG TRADE IN TOTAL TRADE

In order to gauge the relative importance of EG trade within each Arab state's total trade profile it is useful to estimate the share of EG trade in total trade. Table 5 and 6 respectively show the share of EG imports in countries' total merchandise imports, and the share of EG exports in countries' total merchandise exports in the year 2005 for goods included in the ARL sub-lists as well as for the combined OECD and APEC list of environmental goods discussed in the previous chapter. It should be recalled here that a large number of EGs have multiple uses, many of which may not be for environmental purposes, and so the shares of trade presented here are necessarily higher than the shares of trade related to goods only used to support environmental activities.

⁴⁶ For the purposes of the analyses presented here, the group of oil exporting League of Arab States countries includes Algeria, Bahrain, Kuwait, Libya, Oman, Qatar, Saudi Arabia and UAE. All other members of the League of Arab States are included in the group of non-oil exporting LAS countries.

TABLE 5. THE SHARE OF EG IMPORTS IN THE TOTAL IMPORTS OF ARAB COUNTRIES IN 2005

EG imports as a percent of total imports					
Country \ EG List	ARL I	ARL II	ARL III	ARL IV	O+A
Algeria	5	9	1	0	6
Bahrain	5	7	1	0	6
Djibouti	5	3	4	1	3
Egypt	5	5	1	0	6
Jordan	5	8	1	0	5
Kuwait	4	8	1	0	5
Lebanon	4	4	7	0	3
Mauritania	4	7	4	0	8
Morocco	4	6	3	0	4
Oman	4	11	1	0	7
Qatar	9	11	1	0	12
Saudi Arabia	5	7	1	0	5
Sudan	8	11	2	0	10
Syria	4	7	5	0	4
Tunisia	4	7	4	1	5
UAE	3	5	2	0	3
Yemen	4	5	1	0	4

Note: A value of zero indicates a share of less than 1 percent.

TABLE 6. THE SHARE OF EG EXPORTS IN THE TOTAL EXPORTS OF ARAB COUNTRIES IN 2005

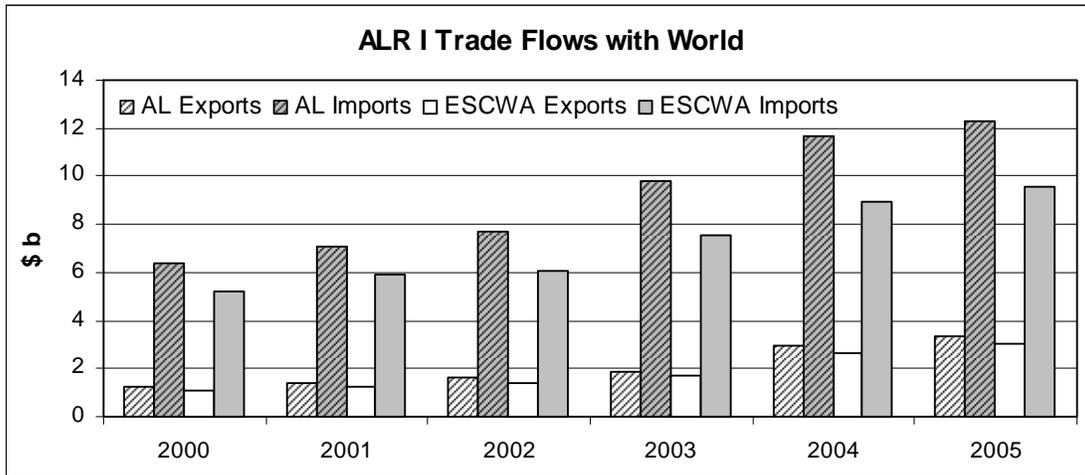
EG exports as a percent of total exports					
Country \ EG List	ARL I	ARL II	ARL III	ARL IV	O+A
Algeria	0	1	12	0	0
Bahrain	2	1	16	0	3
Djibouti	3	3	0	0	1
Egypt	1	2	12	0	1
Jordan	3	2	0	0	1
Kuwait	0	0	12	0	0
Lebanon	6	3	0	0	2
Mauritania	0	0	0	0	0
Morocco	1	5	2	0	0
Oman	0	1	7	0	0
Qatar	0	0	13	0	1
Saudi Arabia	0	0	5	0	1
Sudan	0	0	0	0	0
Syria	1	0	4	0	0
Tunisia	1	8	2	0	2
UAE	1	1	7	0	1
Yemen	0	0	1	0	0

Note: A value of zero indicates a share of less than 1 percent.

1. ARL I trade flows

For the ARL I list of primary environmental goods of high commercial and developmental priority in Arab countries, import volumes significantly exceed export volumes in both the ESCWA and the larger LAS region. The trade data, presented in Figure 8, show that both regions exhibit a rising trade deficit in recent years. Between 2000 and 2005 the ARL I trade deficit rose from US\$5 billion to US\$9 billion and from US\$4 billion to US\$7 billion for the LAS and ESCWA regions respectively. Interestingly, however, ARL I export capacity for both regions more than doubled over this period.

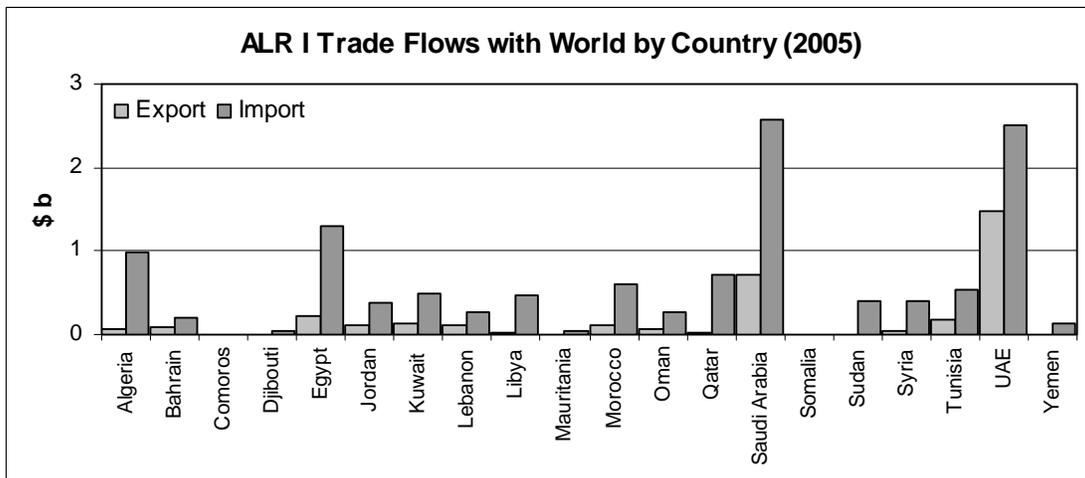
Figure 8. Recent evolution of ARL I trade for the Arab and ESCWA regions



Note: A correction factor of 0.7 was applied to imports and a correction factor of 0.9 was applied to exports.

ARL I trade data of individual countries, presented in Figure 9, show that Saudi Arabia, UAE, Egypt and Algeria are the main ARL I importers in the region. UAE and Saudi Arabia are also the region's largest exporters of ARL I goods.⁴⁷

Figure 9. ARL I trade for Arab countries in 2005



Note: Data not available for all countries; A correction factor of 0.7 was applied to imports and a correction factor of 0.9 was applied to exports.

⁴⁷ Export data include re-exports. Re-exports may make important contributions to the exports of countries with major transport and trade hubs (e.g., Dubai in the UAE).

The evolution of trade flows and the trade deficit for the ARL I list are similar to those that both the LAS and ESCWA regions exhibit for the combined list of OECD and APEC environmental goods. This is expected since an inspection shows a significant overlap in the composition of the ARL I and O+A lists. Indeed, this similarity is also noted in the LAS study. Almost half of the ARL I listed goods are on the O+A list, and these include many of the ARL I items with the highest trade volume, including items such as turbines, pumps, compressors, fans, centrifuges and chemicals. The primary environmental use of most of these goods is in wastewater management. The top ARL I imports of the Arab region in 2005 include many items used in the provision of water distribution, collection and treatment, as well as turbine engines which can be used in clean natural gas power generation. Table 7 provides a list of top ARL I imports and exports of the Arab region.

TABLE 7. THE ARAB REGION'S TOP TRADED GOODS INCLUDED IN ARL I

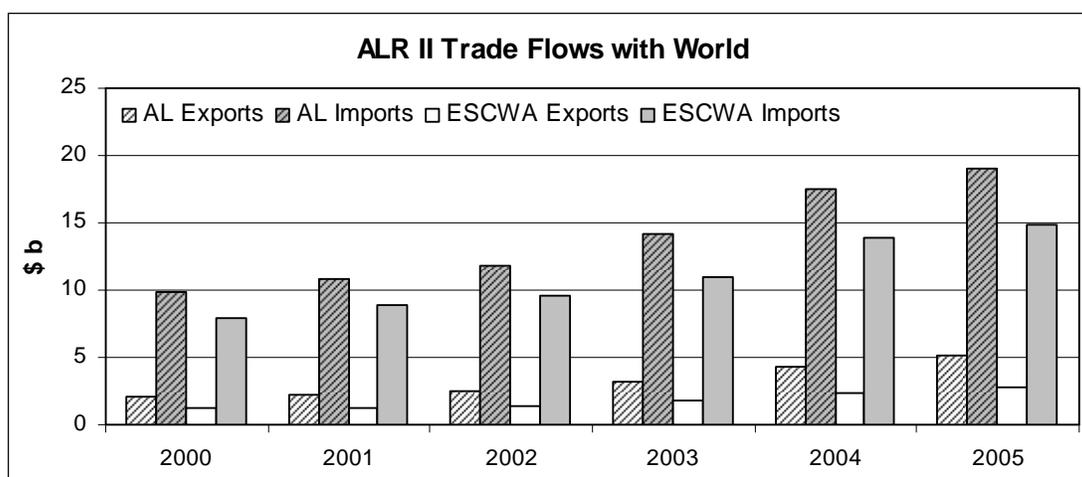
Top ARL I Imports (2005)			Top ARL I Exports (2005)		
HS Code	Description	Import (\$m)	HS Code	Description	Export (\$m)
48	Paper & paperboard, articles of pulp, paper and board	3,469	48	Paper & paperboard, articles of pulp, paper and board	786
8413	Pumps for liquids	1,817	740400	Copper/copper alloy waste or scrap	391
8421	Liquid, gas centrifuges, filtering, purifying machines	1,120	760200	Waste or scrap, aluminium	301
841199	Parts of gas turbine engines except turbo-jet/prop	1,025	3920	Plastic plate, sheet, film not cellular, reinforced	208
841182	Gas turbine engines nes of a power > 5000 kW	618	841199	Parts of gas turbine engines except turbo-jet/prop	198
841480	Air or gas compressors, hoods	591	841182	Gas turbine engines nes of a power > 5000 kW	163
841370	Centrifugal pumps nes	559	8421	Liquid, gas centrifuges, filtering, purifying machines	123
392690	Plastic articles nes	547	8413	Pumps for liquids	105
3920	Plastic plate, sheet, film not cellular, reinforced	510	841430	Compressors for refrigerating equipment	101
382490	Chemical preparations including natural products	487	382490	Chemical preparations including natural products	98
730410	Pipes, line, iron or steel, for oil or gas pipelines	470	392690	Plastic articles nes	93

Note: Represents raw trade flows; no corrections applied.

2. ARL II trade flows

For the ARL II grouping of primary environmental goods for which custom tariffs should be gradually reduced, import volumes significantly exceed export volumes in both the ESCWA region and the larger LAS region. ARL II trade data, presented in Figure 10, show that both regions exhibit a rising trade deficit in recent years. Between 2000 and 2005 the ARL II trade deficit rose from US\$ 8 billion to US\$14 billion for the Arab region and from US\$ 7 billion to US\$ 12 billion for the ESCWA region. At the same time, ARL II export capacity for both regions more than doubled over this period, exposing a similar dynamic nature for regional exports manifested by ARL I environmental goods. Top imports in 2005 include various energy efficient motor vehicles and appliances. Table 8 identifies of the top ARL II imports and exports for the Arab region.

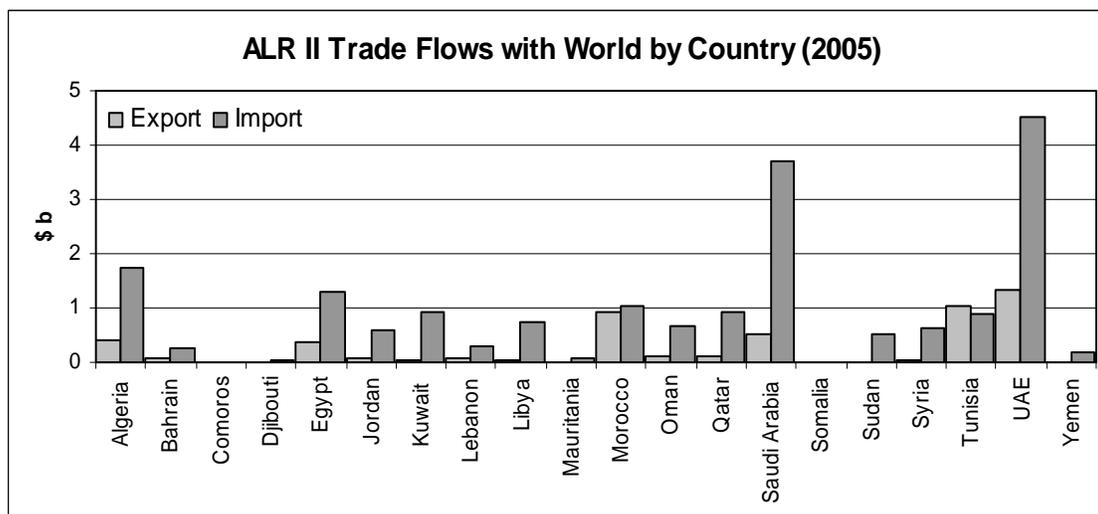
Figure 10. Recent evolution of ARL II trade for the LAS and ESCWA regions



Note: A correction factor of 0.6 was applied to imports and a correction factor of 0.8 was applied to exports.

ARL II trade data of individual countries, presented in Figure 11, show that Saudi Arabia, UAE and Algeria are the main ARL II importers in the region. However, while UAE, Morocco and Tunisia are the region's major ARL II exporters, the latter two countries show strong trade performance; Tunisia has a trade surplus and Morocco nearly balances its trade.

Figure 11. ARL II trade flows for Arab countries in 2005



Note: A correction factor of 0.6 was applied to imports and a correction factor of 0.8 was applied to exports.

An examination of Table 8 shows significant imports of product HS 8704, for which the targeted environmental goods are vehicles used to collect trash and garbage. It is important to note, however, that since this four-digit code is used to classify all motor vehicles used for the transport of goods, this product group is contaminated as it also includes a much more significant volume of trade in trucks used in transportation more generally that are not associated with waste collection.

Import levels are also high for product HS 870322, which includes a wide range of passenger vehicles of which the EG component in ARL II is zero emission electric vehicles, a component which represents a very small portion of trade in this product group. There are also many home appliances included in ARL II, and the EG components of these flows are the energy-efficient appliances in these product groups,

which can also be expected to account for only a fraction of trade in their respective product groups. The correction factors seek to correct for these effects in the graphical data presented in Figures 10 and 11. The applied correction factor for imports is smaller than that for exports since contamination is higher in the top imported products than in the top exported products.

TABLE 8. THE ARAB REGION'S TOP TRADED GOODS INCLUDED IN ARL II

Top ARL II Imports (2005)			Top ARL II Exports (2005)		
HS Code	Description	Import (\$m)	HS Code	Description	Export (\$m)
8704	Motor vehicles for the transport of goods	4,290	8544	Insulated wire and cable, optical fibre cable	1,943
870322	Automobiles, spark ignition engine of 1000-1500 cc	2,199	281410	Anhydrous ammonia	599
8544	Insulated wire and cable, optical fibre cable	1,623	8536	Electrical switches, connectors, etc, for < 1kV	537
8536	Electrical switches, connectors, etc, for < 1kV	1,546	890190	Cargo vessels other than tanker or refrigerated	415
8415	Air conditioning equipment, machinery	1,542	8415	Air conditioning equipment, machinery	227
848180	Taps, cocks, valves and similar appliances, nes	1,442	8704	Motor vehicles for the transport of goods	167
852812	Colour television receivers	1,438	852812	Colour television receivers	154
8418	Refrigerators, freezers and heat pumps nes	1,198	6910	Ceramic bathroom, kitchen and other sanitary fixtures	149
8702	Public-transport type passenger motor vehicles	1,143	8418	Refrigerators, freezers and heat pumps nes	148
8535	Electrical apparatus for voltage over 1 kV	743	847170	Storage units	112
8450	Household, laundry-type washing machine, washer-drier	458	281512	Sodium hydroxide (caustic soda) in aqueous solution	78

Note: Represents raw trade flows; no corrections applied.

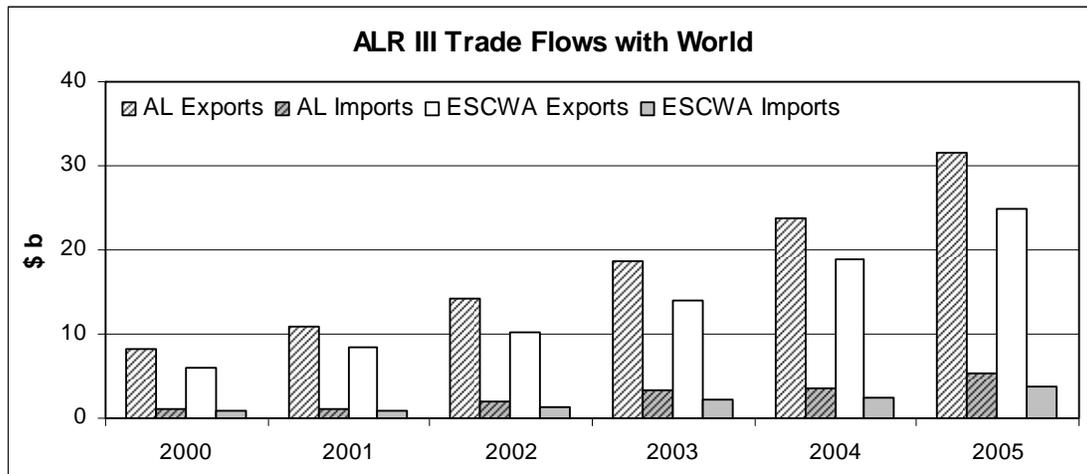
3. ARL III trade flows

For the ARL III grouping of supplementary environmental goods in the Arab countries, which are of limited environmental use in comparison with other uses, both the League of Arab States and ESCWA regions have large trade surpluses. ARL III contains two broad product groups, low emission / high efficiency fuels (i.e., clean, low carbon content fuels) and environmental monitoring, assessment and testing equipment.

The clean fuels in ARL III are those proposed by Qatar in a WTO submission and include several fuels at the HS 2710 and HS 2711 product groups. The clean fuels included in HS 2710 do not have distinct HS codes at the six-digit level, although clean fuels included in the HS 2711 category do. As a result, the entire HS 2710 product group (which includes petroleum oils other than crude) is captured in ARL III trade flows. Since the HS 2710 product group is thus the most traded product group in this list, ARL III trade flows are grossly over-estimated in the raw trade data. Detailed examination of the raw trade flow data indicated that a substantial revision (i.e., a low correction factor) was needed to approximate the EG component of ARL III trade flows. A correction factor of 0.4 was applied to both the ARL III import and export data in Figures 12 and 13 for this purpose.

Regional ARL III trade data presented in Figure 12 show very large and growing trade surpluses for the LAS and ESCWA regions, rising from US\$7 billion to US\$ 26 billion and US\$ 5 billion to US\$ 21 billion respectively between 2000 and 2005.

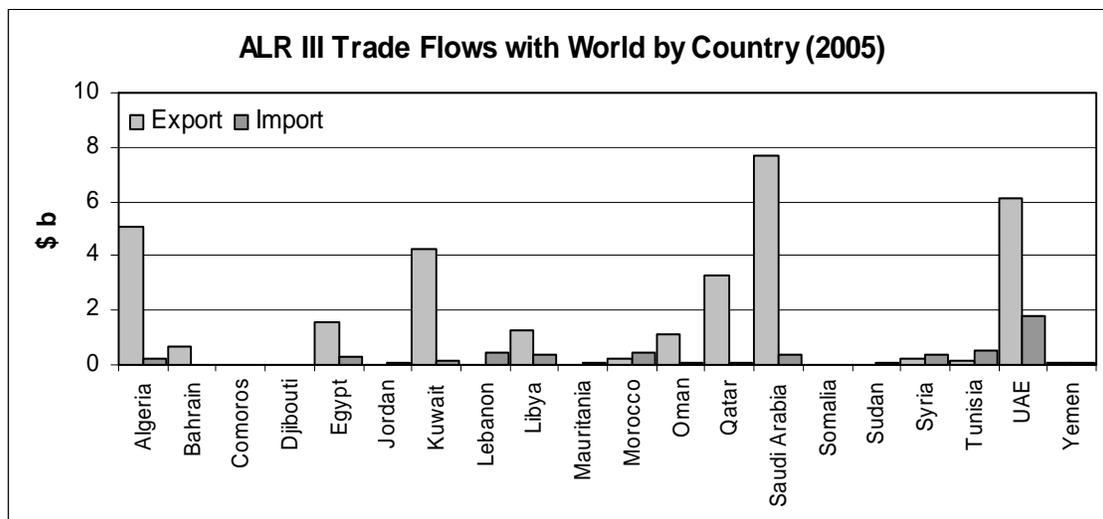
Figure 12. Recent evolution of ARL III trade for the League of Arab States and ESCWA regions



Note: A correction factor of 0.4 was applied to imports and exports.

At the country level, however, Figure 13 clearly indicates that only the oil exporting countries in the region are net exporters of goods included in ARL III, which reflects dominant exports of clean fuels in the ARL III trade of these countries. The non-oil exporting countries in the region are net fuel importers, and correspondingly, net importers of goods included in ARL III. Interestingly, Table 9 shows several important non-fuel EG also among the region's top exported goods from this list. These including iron structures and fasteners, measuring and regulating equipment, as well as medicinal plants exported by Arab countries.

Figure 13. ARL III trade for Arab countries in 2005



Note: A correction factor of 0.4 was applied to imports and exports.

TABLE 9. THE ARAB REGION'S TOP TRADED GOODS INCLUDED IN ARL III

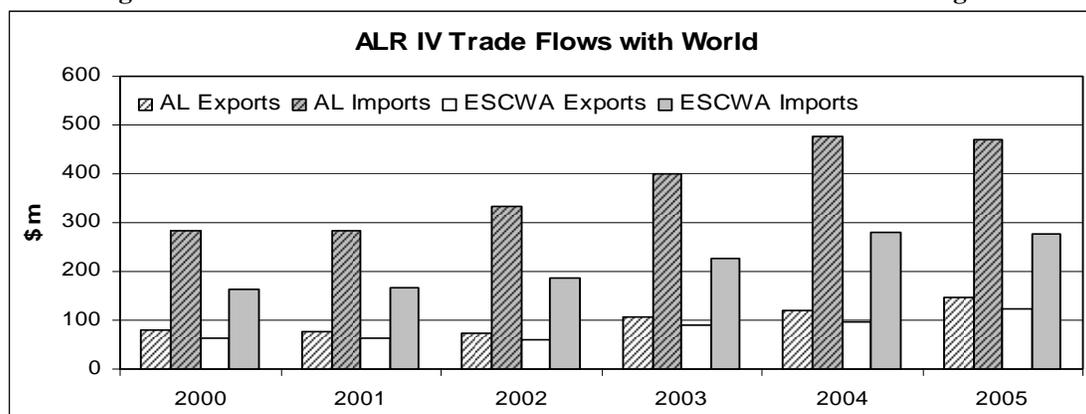
Top ARL III Imports (2005)			Top ARL III Exports (2005)		
HS Code	Description	Import (\$m)	HS Code	Description	Export (\$m)
271000	Petroleum oils other than crude	9,251	271000	Petroleum oils other than crude	45,374
7308	Structures, parts of structures of iron or steel, nes	1,097	271111	Natural gas, liquefied	16,631
271113	Butanes, liquefied	508	271112	Propane, liquefied	8,620
7318	Screws, bolts, nuts, rivets, washers, etc, iron, steel	333	271113	Butanes, liquefied	4,224
9032	Automatic regulating or controlling equipment	314	271121	Natural gas in gaseous state	2,062
903180	Measuring or checking equipment, nes	187	290511	Methyl alcohol	1,285
732111	Cooking appliances for gas fuel, etc, iron or steel	184	7308	Structures, parts of structures of iron or steel, nes	356
7312	Stranded steel wire, cable/etc, no electric insulation	181	7317	Nails, staples, etc, iron/steel, not office stationary	85
271111	Natural gas, liquefied	173	121190	Plants & parts, pharmacy, perfume, insecticide use nes	67
730820	Towers and lattice masts, iron or steel	144	903180	Measuring or checking equipment, nes	55
903289	Automatic regulating/controlling equipment nes	138	9032	Automatic regulating or controlling equipment	45

Note: Represents raw trade flows; no corrections applied.

4. ARL IV trade flows

The ARL IV category of supplementary environmental goods of importance in least developed Arab countries contains only 16 goods, none of them major products in world trade. As such, ARL IV trade volumes are much lower than those of the other ARL lists. In addition, all of the EGs on the ARL IV list have well defined HS codes and so no correction was applied to the trade flow data. Figure 14 shows that between 2000 and 2005 the ARL IV trade deficit rose from US\$ 200 million to US\$ 320 million and from US\$ 100 million to US\$ 150 million for the LAS and ESCWA regions respectively.

Figure 14. Recent evolution of ARL IV trade for the LAS and ESCWA regions

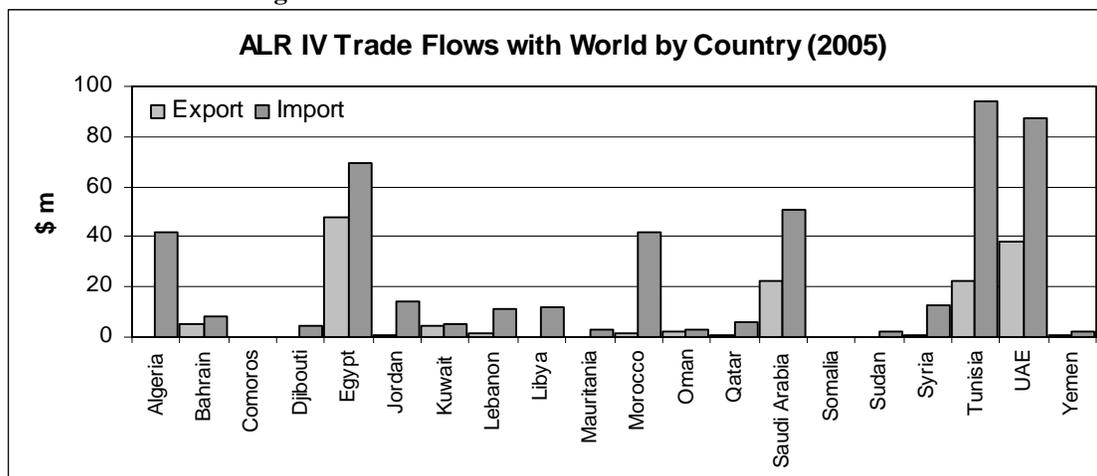


Note: No correction factor was applied.

Although the ARL IV group aims to include EGs of importance for least developed Arab countries, such as the Comoros, Sudan and Yemen, Figure 15 shows none of the former are major exporters of ARL IV

EGs. Conversely, Egypt is the region's most important exporter of ARL IV listed goods, followed by the UAE, Saudi Arabia and Tunisia. Identifying environmental goods of current or potential future export interest to least developed countries is not only difficult in the region, but also difficult to determine at the global level and remains an outstanding challenge facing the WTO negotiations.

Figure 15. ARL IV trade for Arab countries in 2005



Note: No correction factor was applied.

As detailed in Table 10, natural fibres are the top traded ARL IV product accounting for about one-third of regional imports and exports in this category. Worn clothing and bricks are the other major ARL IV imports for the region, while plastics and limestone are its other main ARL IV exports.

TABLE 10. THE ARAB REGION'S TOP TRADED GOODS INCLUDED IN ARL IV

Top ARL IV Imports (2005)			Top ARL IV Exports (2005)		
HS Code	Description	Import (\$m)	HS Code	Description	Export (\$m)
53	Vegetable textile fibres nes, paper yarn, woven fabric	130	53	Vegetable textile fibres nes, paper yarn, woven fabric	52
630900	Worn clothing and other worn articles	126	391590	Plastics waste or scrap nes	34
690210	Refractory bricks, etc with >50% Mg, Ca or Cr as oxide	77	252100	Limestone materials for manufacture of lime or cement	24
690220	Refractory bricks etc >50% alumina or silica	72	630900	Worn clothing and other worn articles	10
690290	Refractory bricks etc nes	27	391510	Polyethylene waste or scrap	9
261800	Granulated slag (slag sand) from iron, steel industry	10	391530	Polyvinyl chloride waste or scrap	9
960350	Brushes nes, as parts of machines, appliances etc	8	690220	Refractory bricks etc >50% alumina or silica	3
252220	Slaked lime	5	391520	Polystyrene waste or scrap	2
391590	Plastics waste or scrap nes	4	960310	Brooms/brushes of vegetable material	1
460120	Mats, matting and screens, vegetable plaiting material	4	252220	Slaked lime	1
960310	Brooms/brushes of vegetable material	3	690290	Refractory bricks etc nes	1

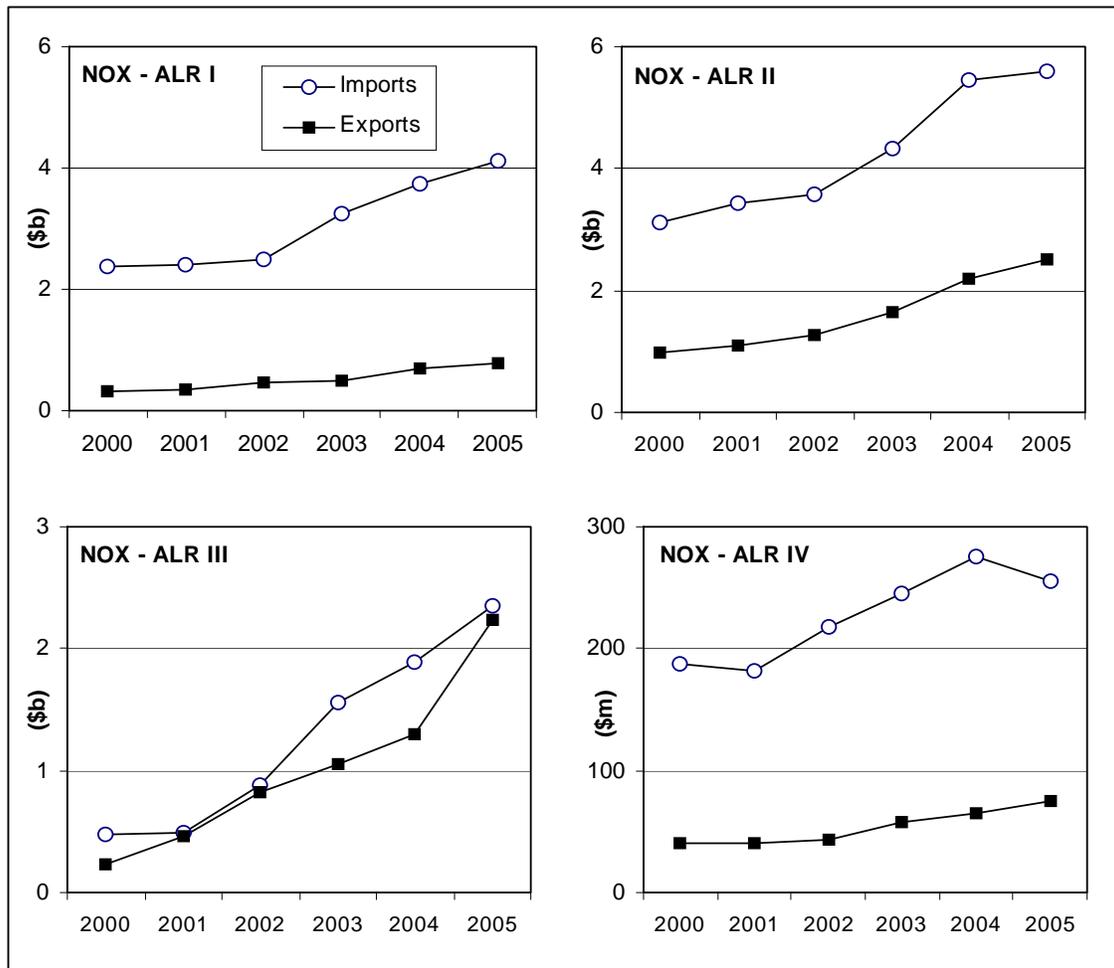
Note: Represents raw trade flows; no corrections applied.

E. DIFFERENT TRADE PATTERNS FOR OIL AND NON-OIL EXPORTING COUNTRIES IN THE REGION

Given the divergence in the economic structures of different groups of countries in the region, it is useful to ask whether trade patterns associated with the AR lists vary between oil exporting and non-oil exporting LAS countries. This is an important question, particularly as some EGs – namely, clean fuels and chemicals produced from oil refining – are major exports of the oil exporting countries in the region, while they are major imports in many non-oil exporting countries in the region.

Figures 16 and 17 show the time series trade flows⁴⁸ of the AR listed product groups from 2000 to 2005 for the non-oil exporting (NOX) and oil exporting (OX) members of the League of Arab States.⁴⁶ Trade volumes were estimated using mirrored data from all world reporters. The figures show that although exports of all selected EG groups are increasing for both country groups, so are imports. They also clearly indicate that the large trade surplus in ARL III (and ARL V) trade is enjoyed exclusively by the oil exporting countries. Nevertheless, the non-oil exporting countries nearly balance their ARL III (and ARL V) trade, presumably due to the petroleum-based exports of some countries included in this group (e.g., Egypt and Yemen).

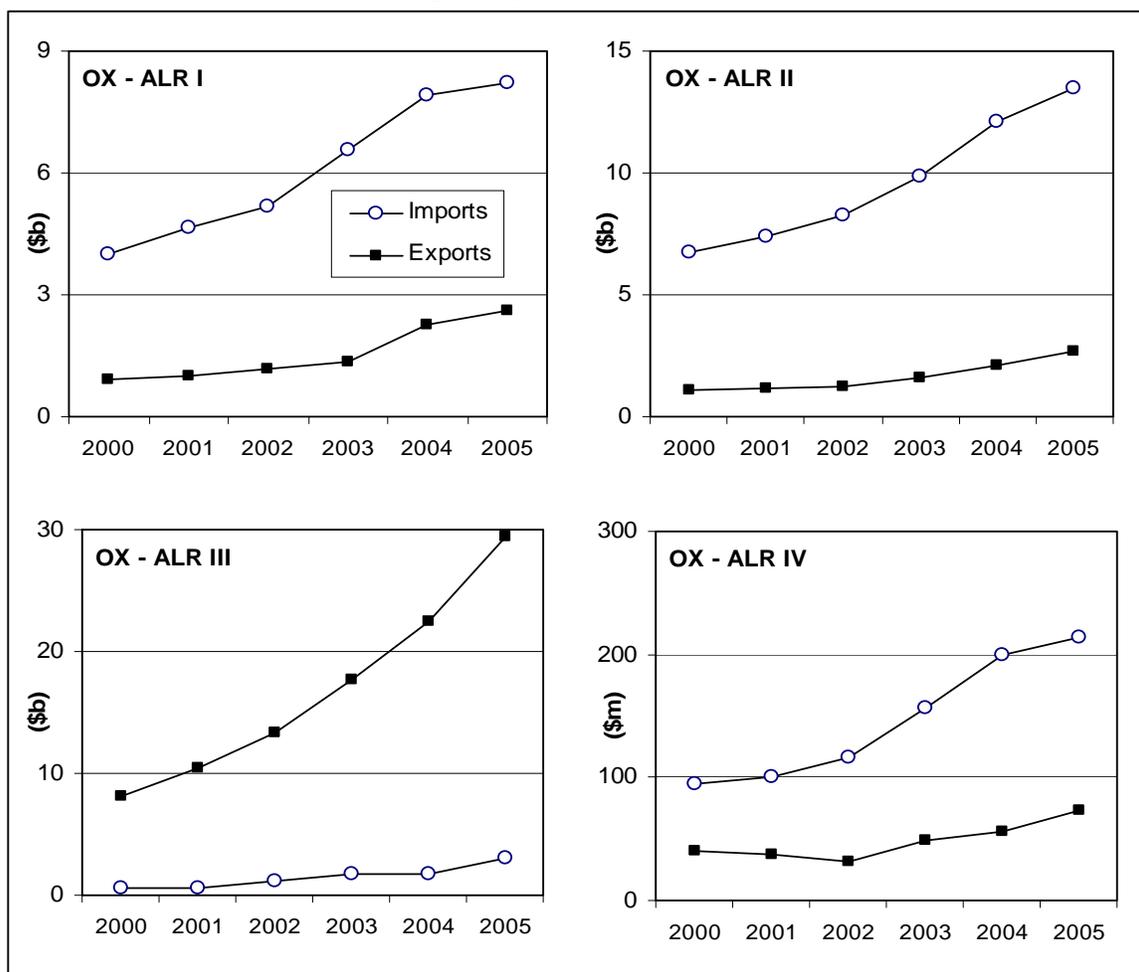
Figure 16. Recent Evolution of trade in ALR list product groups for the Non-oil exporting Arab countries (NOX)



Note: Data not available for all countries; trade with world estimated using mirrored data, with corrections applied.

⁴⁸ Trade flows presented in the Figures have been corrected using the same correction factors used in Figures 8 through 15.

Figure 17. Recent evolution of trade in ARL product groups for the Oil exporting Arab countries (OX)



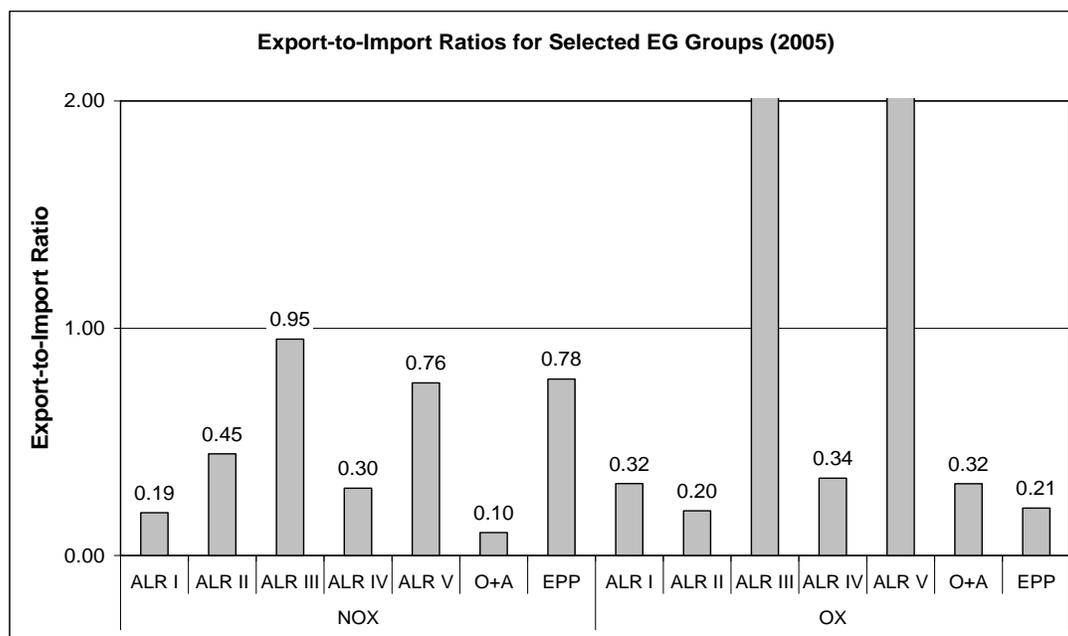
Note: Data is not available for all countries; trade with world estimated using mirrored data, with corrections applied.

Export-to-Import ratios were also examined for the NOX and OX country groups. The Export-to-Import ratio is simply the ratio of total exports to total imports for a product group. This parameter is especially useful in indicating the depth of trade surpluses or deficits, a measure which is not readily apparent from Figures 16 and 17.

Export-to-Import ratios for the AR lists and for the O+A and EPP-Core product groups are presented in Figure 18. It shows a very large trade surplus in ARL III and ARL V trade flows for the OX countries, which are beyond the scale used in the figure at 9.73 and 6.50 respectively. Contrarily, trade for NOX countries is nearly balanced for ARL III and ARL V listed goods.

Figure 18 also reveals that the NOX countries have a modestly higher Export-to-Import ratio for the ARL I list than for the O+A list, suggesting some goods on the ARL I list, yet not on the O+A list, may be of particular export interest to these countries. Additionally, Figure 18 also shows that the NOX countries have a particularly high Export-to-Import ratio for the EPP-Core product group (0.78); a level that significantly exceeds their Export-to-Import ratio for the ARL IV list (0.34). This suggests that the EPP-Core list includes a greater number of EGs of export interest to the least developed Arab countries than the ARL IV list.

Figure 18. Export-to-Import ratios for selected EG product groups in 2005 for the Non-Oil Exporting (NOX) and Oil Exporting (OX) Arab countries



Note: The EPP figures in this graph represent the EPP-Core list of products.

F. TARIFF REVENUE LOSS UNDER AR LIST LIBERALISATION

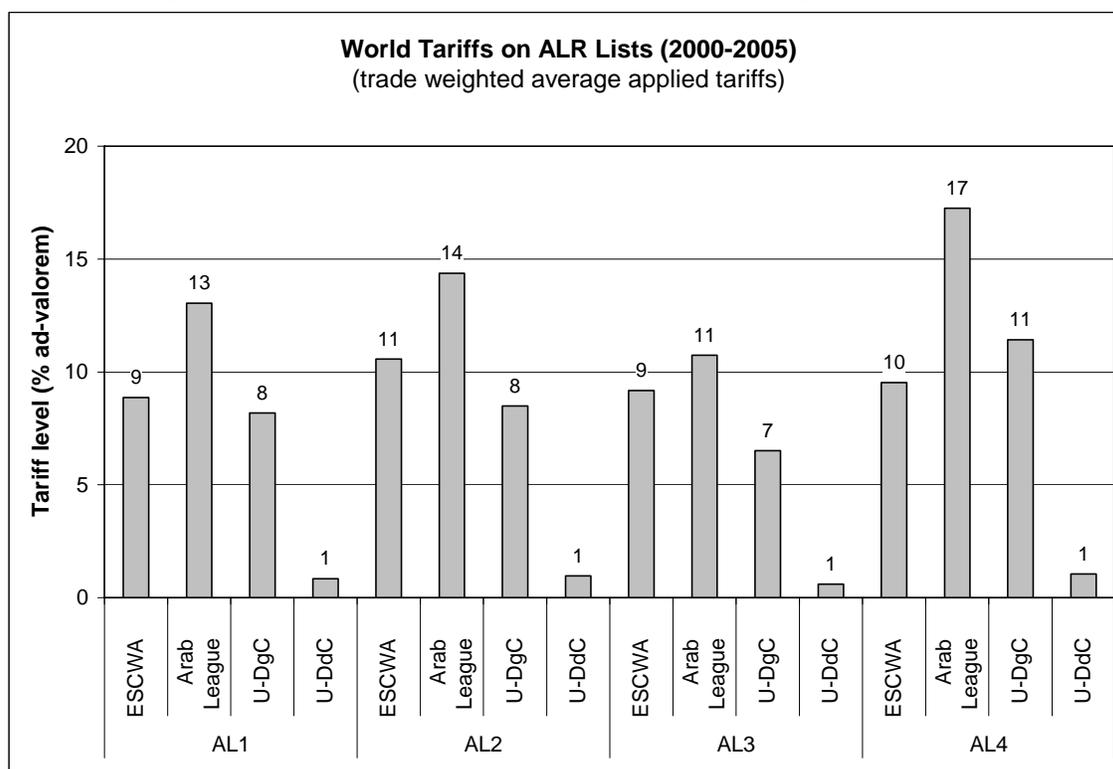
One of the major impacts that the liberalisation of trade in environmental goods will have on developing countries will be the loss of tariff revenue derived from EG imports. World tariffs on the AR lists shown in Figure 19 indicate similar features to the tariff profiles for O+A and EPP-Core goods shown in Figure 5; applied tariff rates in developing countries are roughly ten times greater than the rate applied in developed countries. Moreover, the applied rates for the ARL goods in the LAS and ESCWA regions are slightly higher than the developing country average. This demonstrates that developing countries will have less tariff revenue loss associated with improving market access for these goods than developing countries, including those in the Arab region.

For the Arab region, loss of tariff revenue collected on AR list imports varies considerably by country due to differences in import levels and large differences in the tariff rates applied by countries. ESCWA analyses examined currently applied tariff rates in each of the LAS countries for each AR list and combined this information with data on 2005 import volumes⁴⁹ to estimate various tariff revenue loss scenarios under AR list liberalisation. The scenarios illustrated in Figures 20 through 23 are based on the assumption of complete tariff elimination for ARL I, ARL II, ARL III and ARL IV listed goods.⁵⁰

⁴⁹ Country import volumes used in the tariff revenue loss scenarios are countries' corrected import flows for 2005, as presented in Figures 9, 11, 13 and 15 for AR I, AR II, AR III and AR IV imports respectively.

⁵⁰ Accordingly, for an X percent tariff reduction on a given list, rather than complete tariff elimination (i.e., 100 percent tariff reduction), the tariff revenue losses would be 100-X percent smaller than shown in the figures.

Figure 19. Tariff Levels on the AR list of environmental goods (2000-2005)



Note: Values are trade weighted average of applied tariffs on ARL product group imports; partner is World, DgC is Developing Countries and DdC is Developed Countries

Loss of tariff revenue is a major cost of EG trade liberalisation. It is an immediate and direct economic impact of liberalisation that is quantifiable. Each AR list, as well as the O+A list, is associated with a distinct country specific configuration of tariff revenue losses. While developed countries, and some newly industrialising economies such as Taiwan/Province of China and Korea, continue to support EG trade liberalisation focusing on the goods contained in the OECD and APEC lists, most developing countries, including the Arab countries, recognise that tariff revenue losses for goods spanning these lists will be significant. Developing countries further note that there are few goods of export interest on the OECD and APEC lists for which tariff revenue losses would be offset by increased export revenues arising from greater market access associated with tariff reductions in other countries.

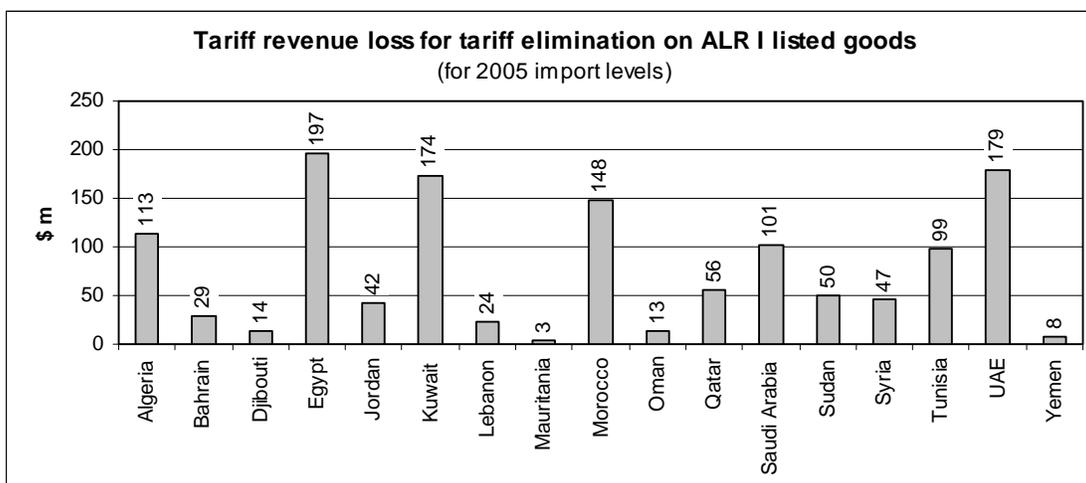
The negotiating strategy of developing countries should thus aim at:

- introducing new EGs for which they have export interests and demonstrated export capacity into an eventually negotiated WTO list of EGs that will be the basis for tariff reductions by WTO Member States in the future; and
- adapting the OECD and APEC lists to regional and/or national specificities and seek to make commitments only on a modified list of environmental goods.

The ARL I list has essentially achieved the latter objective, and in doing so has reduced loss of tariff revenue for Arab countries by some 20 percent. However, the AR lists fail to advance the first objective in that they introduce few goods of export interest to the Arab countries. And although they introduce clean fuels, which are primary exports of the oil producing Arab countries, a greater number of non-fuel related EGs of interest to the Arab countries more generally are not introduced in the AR lists suggested for liberalisation. ARL I could certainly provide guidance to Arab countries in the event that an eventual WTO agreement will allow them to select a limited subset of environmental goods on which to make tariff reduction commitments. However, care should be taken since there is the potential of significant revenue loss

associated with liberalization of ARL I environmental goods for Egypt, Kuwait, Morocco and the UAE, as shown in Figure 20. Total tariff revenue loss to the Arab region due to the elimination of tariffs on ARL I environmental goods would reach US\$ 1.3 billion.

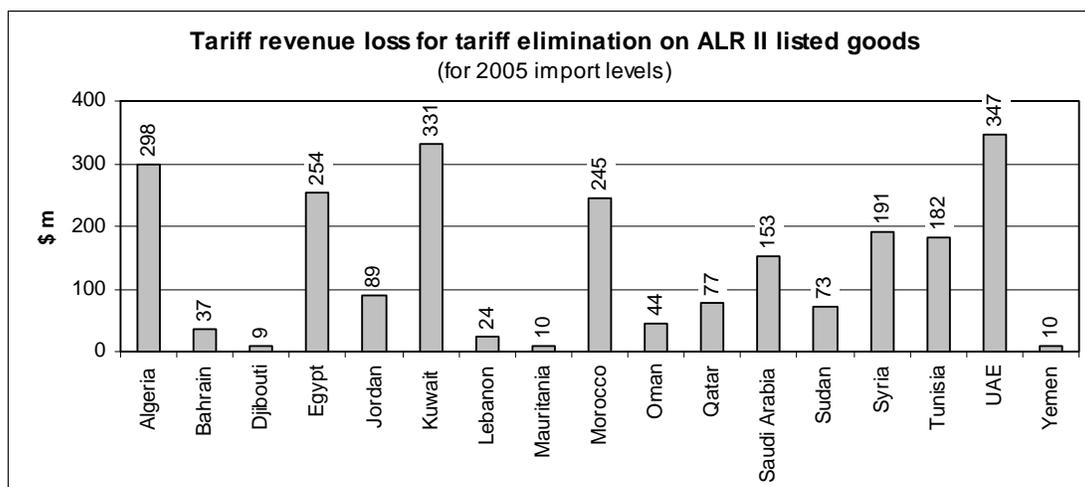
Figure 20. Tariff revenue loss for tariff elimination on ARI listed goods



As shown in Figure 21, calculations for ARL II goods show very substantial tariff revenue losses which can be expected given the fact that ARL II imports represent as much as 11 percent of total imports in some Arab countries. Total tariff revenue loss for Arab countries would reach US\$ 2.4 billion.

ARL II contains a wide variety of energy-efficient industrial and consumer appliances for which import volumes are high in the region. Arab countries produce and export many industrial and consumer appliances, although most may not qualify as being relatively energy-efficient, and hence tariff reductions in export markets on these goods under a WTO EGS agreement based on current six-digit HS code classifications may not materialise. As such, Arab countries should not undertake commitments to reduce tariffs on ARL II at the current juncture, but rather should seek only to pursue gradual tariff reductions as the LAS study proposes.

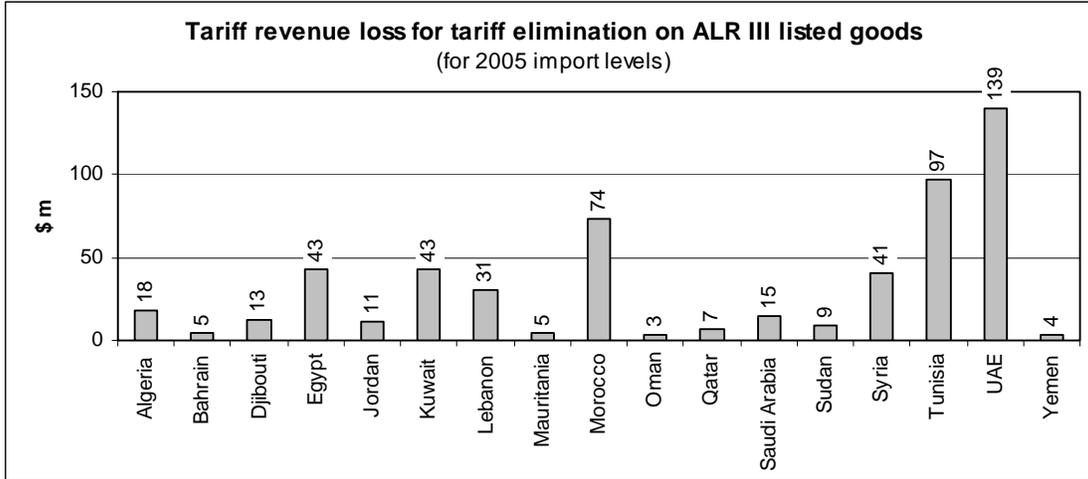
Figure 21. Arab countries' tariff revenue loss for ARL II tariff elimination



ARL III includes supplementary environmental goods in the Arab countries which are of limited environmental use in comparison with other uses. However, ARL III includes clean fuels which are of major export interest to the oil producing Arab countries. Apart from the UAE, tariff revenue losses are relatively

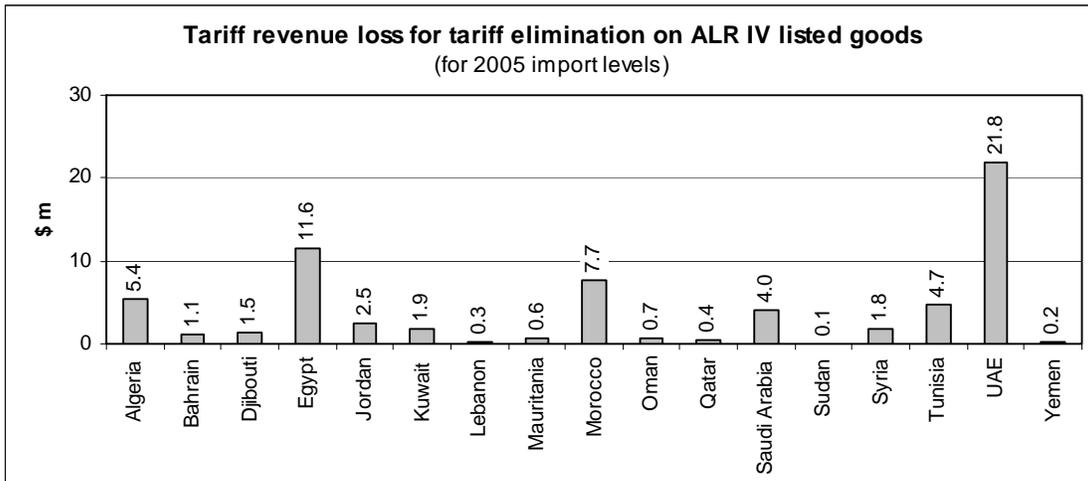
low for this list, and the benefits of increased export potential of clean fuels by including them in a WTO list may more than outweigh tariff revenue losses for oil producing countries. As such, total tariff revenue loss associated with the elimination of tariffs on ARL III listed goods would be relatively small and amount to US\$ 556 million.

Figure 22. Tariff revenue loss for tariff elimination on ARIII listed goods



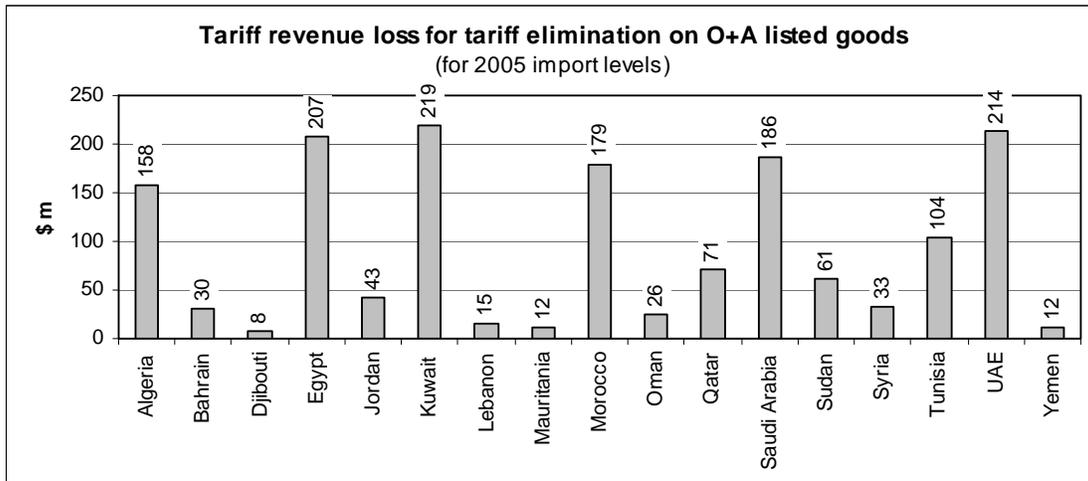
Tariff revenue losses for ARL IV are minimal as this list contains few goods and because Arab countries have low import volumes for most goods on this list. This list could be expanded to contain a wider range of goods of export interest in the region, particularly among non-oil producing countries and least developed countries in the region. Many of the EGs in the UNCTAD EPP-core list may be of potential export interest. Given the limited number of goods currently included in ARL IV, total tariff revenue loss associated with eliminating tariffs on these goods would come to only US\$ 66 million.

Figure 23. Tariff revenue loss for tariff elimination on ARL IV listed goods



The combined OECD and APEC (O+A) listed trade flows of environmental goods for Arab countries in 2005 and their associated tariff revenue loss under a full tariff elimination scenario for O+A imports are also presented for comparison in Figures 24 and 25 respectively.

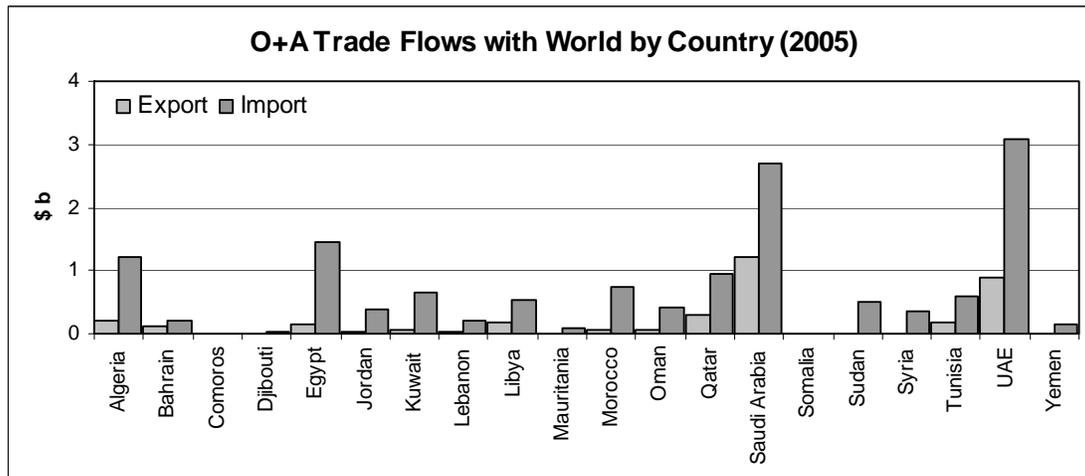
Figure 24. O+A trade flows with World by country



Note: Data not available for all countries. No correction factor was applied. Trade volumes estimated using mirrored data from all world reporters.

Based on the country-level calculations presented in Figure 25, the total loss in tariff revenues for the Arab region associated with eliminating tariffs on O+A listed environmental goods would come to US\$ 1.6 billion.

Figure 25. Tariff revenue loss for tariff elimination on O+A listed goods



V. CONCLUSIONS

The analyses presented above aims to provide Arab countries with an appreciation of the national trade and tariff revenue implications of various EGs under discussion in the WTO negotiations as well as for the proposed AR lists of EGs. These data can assist trade negotiators of Arab countries in approaching the WTO negotiations and understanding the trade-offs involved in various EG liberalisation scenarios under consideration. A successful approach to negotiations should include consolidating the AR lists into a single list that best promotes regional trade and development interests. Subsequently, Arab countries could formally introduce this list into the WTO negotiations on environmental goods.

Through active participation in the WTO negotiations, Arab countries should aim to seize opportunities to capture development gains from trade liberalisation in environmental goods and services, and importantly, to build synergies between the two.

The current round of market access negotiations in services trade under Article XIX of the GATS, launched in 2000, aims to achieve progressively higher levels of liberalisation of trade in services through the reduction or elimination of measures that adversely effects trade in service sectors. These negotiations provide developing countries with an opportunity to achieve commercially meaningful market access commitments in sectors and modes of interest to them and a progressive opening of market access consistent with their development situation. This includes the flexibility to open fewer sectors and liberalise fewer types of transactions. Key objectives for developing countries in the League of Arab States and ESCWA regions, should be not only maximise flows of services exports but also to ensure developmental gains from increased services trade. This would contribute to the building of a competitive services sector and the maximisation of developmental benefits at the national level.^{51,52} Accordingly, of the sectors where liberalisation is currently possible under the GATS, those selected for early liberalisation should contribute to the:

- strengthening of the sector itself by introducing competition, efficiency and transfer of technology;
- strengthening other goods and services sectors (producer services);
- expansion of exports of goods and services;
- building of infrastructure, such as telecommunications, transport and financial services;
- attracting FDI where no or only limited service capacity presently exists and therefore attracting FDI through the opening of commercial presence regimes flanked by appropriate regulations and performance requirements could contribute to domestic capacity building and improved delivery of services;
- developing sectors in which countries have achieved considerable capacity and competitiveness; and
- locking-in the process of domestic reform.

Each of the environmental services sub-sectors considered for liberalisation by individual Arab countries should be screened against these aforementioned benchmarks.

Trade liberalisation in environmental goods under the WTO is fundamentally different from the case of environmental services in that members do not currently have the option to independently design their liberalisation agenda. If an agreement on environmental goods trade liberalisation is ultimately reached, it will apply similarly to all developed and developing countries, with additional flexibilities likely provided to least developed countries, including those in the Arab region. Arab countries currently in WTO accession proceedings – such as Algeria, Iraq, Libya, Sudan and Yemen – should strive to receive equally favourable treatment in the area of EGS liberalisation as accorded to least developed countries that are members of the WTO.

The findings of the ESCWA analyses suggest that Arab countries can confidently pursue WTO negotiations on environmental goods with the proviso that an eventual WTO list of environmental goods be broad and contain a sufficient variety of goods to ensure that each of them can achieve immediate export

⁵¹ UNCTAD, 2006, *Trade in Services and Development Implications*, TD/B/COM.1/77.

⁵² Mashayekhi, M., 2000, "GATS 2000 Negotiations: Options for Developing Countries," Working Paper No. 9, South Centre, Geneva.

gains from selected environmental goods in which it has existing or potential export strengths. However, the analyses also demonstrate that export strengths in environmental goods are currently rather limited in the Arab countries, while at the same time, tariff revenue losses arising from liberalisation can be significant. Arab countries should thus seek to ensure that liberalisation agreements will be selective permitting each country to choose from the WTO list a 'best-fit' subset of environmental goods for its tariff reduction commitments. The Arab Reference List on Environmental Goods, and associated analyses of the trade flows and tariff levels of listed goods, can provide Arab countries with guidance in composing such a tailor-made list. Negotiating proposals for a dual list approach to liberalisation should be further developed to allow for this possibility, as proposed by the United States and China. Arab countries should strongly consider participating in negotiating proposals by developing countries for such an approach to liberalisation.

Additionally, as an integral part of all WTO agreements, special and differential treatment provisions will also need to be carefully elaborated to ensure that any eventual agreement provides developing countries with flexibility in selecting goods for liberalisation, and sufficient safeguards to protect national industries if liberalisation delivers adverse results. Such provisions may, for instance, allow developing countries' commitments to be more limited and subject to smaller tariff reductions than those of developed countries. They should also allow access to safeguard mechanisms if liberalisation delivers adverse results, and permit developing countries to provide subsidy support and other forms of government assistance to their domestic environmental goods and services industries. Finally, in connection with environmental services, performance requirements on investments in developing countries by foreign service providers should be permitted in order to ensure related national employment, technology transfer and foreign investment objectives are met, and to provide preferences for domestically and regionally produced environmental goods, where supplies are available, to be used in the operations of foreign service providers.

In considering additional research in this area for ESCWA and Arab countries, the size of each country's volume of trade in environmental goods and services, the scope of its environmental services markets, and the possible tariff reductions on EGs presented in this report should be assessed against the region's growing demand for environmental services, its supply capacities for providing such services and its potential for producing and consuming additional EGs that are in line with emerging developments in new environmental technologies. Other factors, such as the ability of consumers to pay for improved environmental services, the potential of generating needed investment in environmental services infrastructure and the quality of regulatory frameworks to ensure development gains from liberalisation, are also important to consider when framing the strategy and position of the region regarding the liberalisation of trade in environmental goods and services.

ANNEX I. Composition of Country Groups Used in the Analyses

All country groups used in this study are as classified by the UN:⁵³

U-DdC = Developed Countries (33 countries)

Australia, Austria, Belgium, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States

U-DgC = Developing Countries (128 countries)

Includes countries listed in the categories U-DgAFR, U-DgASO and U-DgLAC

U-DgAFR = Developing Africa (52 countries)

Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libyan Arab Jamahiriya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, São Tome and Príncipe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Togo, Tunisia, Uganda, United Republic of Tanzania, Zambia, Zimbabwe

U-DgASO = Developing Asia and Oceania (40 countries)

Afghanistan, Bahrain, Bangladesh, Brunei Darussalam, Cambodia, China, Hong Kong SAR, Macao SAR, Taiwan Province of China, Fiji, India, Indonesia, Islamic Republic of Iran, Jordan, Kiribati, Republic of Korea, Kuwait, Lao People's Dem. Rep., Malaysia, Maldives, Mongolia, Myanmar, Nepal, Oman, Pakistan, Palestinian territory, Papua New Guinea, Philippines, Samoa, Saudi Arabia, Singapore, Solomon Islands, Sri Lanka, Syria, Thailand, Tonga, Turkey, Vanuatu, Viet Nam, Yemen

U-DgLAC = Developing Latin America and the Caribbean (36 countries)

Anguilla, Antigua and Barbuda, Argentina, Aruba, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Montserrat, Netherlands Antilles, Nicaragua, Panama, Paraguay, Peru, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela

League of Arab States (22 countries)

Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Somalia, Syria, Tunisia, United Arab Emirates, Yemen

ESCWA (13 countries)

Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestine, Qatar, Saudi Arabia, Syria, United Arab Emirates, Yemen

World includes all countries in the world.

⁵³ EG trade analyses in this study did not separately examine trade flows of countries in Eastern Europe and Central Asia.

ANNEX II. Top Five O+A List Exports and Imports of ESCWA Countries

ESCWA Country (year)	Trade Flow	HS 1996 code	Product	Value (\$US)	
Bahrain (2004)	Exports	290511	Methyl alcohol	72,331,523	
		840991	Parts for spark-ignition engines except aircraft	3,580,028	
		841950	Heat exchange units, non-domestic, non-electric	2,603,893	
		283210	Sodium sulphites	1,516,648	
		392690	Plastic articles nes	1,194,666	
	Total value of top five exports as percentage of total O+A exports				96
	Imports	841790	Parts of industrial or laboratory furnaces/ovens	48,172,673	
		842199	Parts for filter/purifying machines for liquid/gas	23,998,497	
		690290	Refractory bricks etc nes	14,311,536	
		841430	Compressors for refrigerating equipment	12,288,556	
690220		Refractory bricks etc >50% alumina or silica	10,668,546		
Total value of top five imports as percentage of total O+A imports				50	
Egypt (2004)	Exports	392690	Plastic articles nes	10,063,640	
		281410	Anhydrous ammonia	3,602,806	
		690220	Refractory bricks etc >50% alumina or silica	3,363,230	
		731029	Cans, iron or steel, capacity <50 litres nes	2,473,942	
		731021	Cans, iron/steel, capacity <50l closed by crimp/solder	2,134,429	
	Total value of top five exports as percentage of total O+A exports				62
	Imports	847989	Machines and mechanical appliances nes	182,125,597	
		848180	Taps, cocks, valves and similar appliances, nes	52,755,599	
		841490	Parts of vacuum pumps, compressors, fans, blowers, hoods	36,878,213	
		392690	Plastic articles nes	35,328,285	
841990		Parts, laboratory/industrial heating/cooling machinery	29,391,480		
Total value of top five imports as percentage of total O+A imports				56	
Jordan (2004)	Exports	392020	Sheet/film not cellular/reinf polymers of propylene	5,877,060	
		731010	Tank, cask or container, iron/steel, capacity 50-300l	4,413,410	
		854389	Other electrical machines and apparatus with one function	4,278,630	
		280110	Chlorine	3,826,058	
		392690	Plastic articles nes	3,040,381	
	Total value of top five exports as percentage of total O+A exports				38
	Imports	392690	Plastic articles nes	19,985,363	
		392020	Sheet/film not cellular/reinf polymers of propylene	14,605,699	
		847989	Machines and mechanical appliances nes	14,098,498	
		841381	Pumps nes	11,599,465	
842121		Water filtering or purifying machinery or apparatus	7,528,595		
Total value of top five imports as percentage of total O+A imports				35	
Kuwait (2001)	Exports	281410	Anhydrous ammonia	12,381,304	
		281511	Sodium hydroxide (caustic soda) solid	2,714,147	
		320990	Polymer based paints & varnishes nes, aqueous medium	1,133,354	
		280110	Chlorine	541,788	
		840999	Parts for diesel and semi-diesel engines	506,380	
	Total value of top five exports as percentage of total O+A exports				88
	Imports	848180	Taps, cocks, valves and similar appliances, nes	38,681,820	
		320990	Polymer based paints & varnishes nes, aqueous medium	25,281,624	
		841990	Parts, laboratory/industrial heating/cooling machinery	24,317,162	
		840999	Parts for diesel and semi-diesel engines	19,383,006	
841381		Pumps nes	13,379,866		
Total value of top five imports as percentage of total O+A imports				42	

Annex II: Top five O+A Listed Exports and Imports of ESCWA Countries (cont.)

ESCWA Country (year)	Trade Flow	HS 1996 code	Product	Value (\$US)
Lebanon (2003)	Exports	392020	Sheet/film not cellular/reinf polymers of propylene	7,121,786
		392690	Plastic articles nes	2,592,384
		320990	Polymer based paints & varnishes nes, aqueous medium	2,249,995
		780600	Articles of lead nes	2,040,202
		731010	Tank, cask or container, iron/steel, capacity 50-300l	1,611,588
			Total value of top five exports as percentage of total O+A exports	55
	Imports	848180	Taps, cocks, valves and similar appliances, nes	14,644,317
		392690	Plastic articles nes	10,535,324
		392020	Sheet/film not cellular/reinf polymers of propylene	10,143,390
		841381	Pumps nes	6,995,792
		842129	Filtering/purifying machinery for liquids nes	5,222,132
		Total value of top five imports as percentage of total O+A imports	36	
Oman (2004)	Exports	392690	Plastic articles nes	4,725,775
		281511	Sodium hydroxide (caustic soda) solid	2,936,069
		840999	Parts for diesel and semi-diesel engines	1,821,654
		392020	Sheet/film not cellular/reinf polymers of propylene	941,473
		252220	Slaked lime	828,921
			Total value of top five exports as percentage of total O+A exports	61
	Imports	847990	Parts of machines and mechanical appliances nes	103,331,830
		841950	Heat exchange units, non-domestic, non-electric	70,404,296
		848180	Taps, cocks, valves and similar appliances, nes	49,691,283
		840999	Parts for diesel and semi-diesel engines	37,727,552
		841430	Compressors for refrigerating equipment	28,433,844
		Total value of top five imports as percentage of total O+A imports	54	
Qatar (2004)	Exports	281410	Anhydrous ammonia	185,088,337
		281511	Sodium hydroxide (caustic soda) solid	41,998,720
		902610	Equipment to measure or check liquid flow or level	1,372,578
		392490	Plastic household, toilet articles not table, kitchen	1,229,437
		701990	Glass fibres, glass wool and articles thereof nes	996,131
			Total value of top five exports as percentage of total O+A exports	98
	Imports	847990	Parts of machines and mechanical appliances nes	19,839,976
		848110	Valves, pressure reducing	13,860,772
		392490	Plastic household, toilet articles not table, kitchen	12,823,690
		848140	Valves, safety or relief	11,326,480
		841950	Heat exchange units, non-domestic, non-electric	10,541,365
		Total value of top five imports as percentage of total O+A imports	33	
Saudi Arabia (2002)	Exports	290511	Methyl alcohol	467,375,711
		281512	Sodium hydroxide (caustic soda) in aqueous solution	87,490,657
		701990	Glass fibres, glass wool and articles thereof nes	26,551,555
		841989	Machinery for treatment by temperature change nes	13,144,191
		731021	Cans, iron/steel, capacity <50l closed by crimp/solder	10,023,662
			Total value of top five exports as percentage of total O+A exports	90
	Imports	841430	Compressors for refrigerating equipment	162,652,430
		848180	Taps, cocks, valves and similar appliances, nes	125,346,815
		840991	Parts for spark-ignition engines except aircraft	83,716,789
		841381	Pumps nes	73,088,971
		848110	Valves, pressure reducing	70,919,893
		Total value of top five imports as percentage of total O+A imports	35	

Annex II: Top five O+A Listed Exports and Imports of ESCWA Countries (cont.)

ESCWA Country (year)	Trade Flow	HS 1996 code	Product	Value (\$US)
Syria (2004)	Exports	392690	Plastic articles nes	6,085,268
		392490	Plastic household, toilet articles not table, kitchen	2,362,482
		731010	Tank, cask or container, iron/steel, capacity 50-300l	691,665
		731029	Cans, iron or steel, capacity <50 litres nes	584,397
		841381	Pumps nes	539,229
		Total value of top five exports as percentage of total O+A exports		
	Imports	392020	Sheet/film not cellular/reinf polymers of propylene	19,744,424
		841430	Compressors for refrigerating equipment	16,317,253
		848180	Taps, cocks, valves and similar appliances, nes	15,722,516
		841381	Pumps nes	12,883,008
841490		Parts of vacuum pumps, compressors, fans, blowers, hoods	11,674,729	
Total value of top five imports as percentage of total O+A imports			42	
Yemen (2004)	Exports	N/A		
	Imports	840999	Parts for diesel and semi-diesel engines	25,407,947
		847989	Machines and mechanical appliances nes	17,267,317
		848110	Valves, pressure reducing	10,251,790
		847982	Machines to mix, knead, crush, grind, etc, nes	4,814,346
		890790	Buoys, beacons, coffer-dams, pontoons, floats nes	4,693,386
		Total value of top five imports as percentage of total O+A imports		

Source: Based on nationally reported data, United Nations COMTRADE Database, UNSD, 2006.

Note: Latest available data given, totals are the sum of the top five exports and imports as a percentage of total O+A listed exports and imports.

ANNEX III. Top Ten EPP-Core Exports of the ESCWA Region

Region (year)	Trade Flow	HS 1996 code	Product	Value (\$US)
Gulf States (2002)	Exports	630510	Sacks & bags, packing, of jute or other bast fibres	5,833,797
		320910	Acrylic & vinyl polymer based paint, varnish, in water	3,250,811
		570110	Carpets of wool or fine animal hair, knotted	3,190,709
		310100	Animal or vegetable fertilizers, in packs >10 kg	3,074,114
		510111	Greasy shorn wool, not carded or combed	2,629,116
		560890	Knotted netting, nets, of natural materials	1,540,823
		510129	Degreased wool nes, not carded, combed or carbonized	1,525,770
		510119	Greasy wool (other than shorn) not carded or combed	1,481,686
		960310	Brooms/brushes of vegetable material	1,125,904
		850680	Primary cells & primary (lead-free batteries)	1,065,001
		Value of top five EPP-Core exports as percentage of total EPP-Core exports		
Mashreq countries (2003)	Exports	121190	Plants & parts, pharmacy, perfume, insecticide use nes	23,399,273
		530110	Flax fibre, raw or retted	8,138,308
		530129	Flax fibre, otherwise processed but not spun	6,913,574
		321000	Paints and varnishes nes, water pigments for leather	3,825,896
		230690	Vegetable oil-cake and other solid residues nes	2,713,637
		530121	Flax fibre, broken or scutched	2,200,893
		121110	Liquorice roots	1,949,926
		320910	Acrylic & vinyl polymer based paint, varnish, in water	1,667,645
		510129	Degreased wool nes, not carded, combed or carbonized	1,658,772
		460120	Mats, matting and screens, vegetable plaiting material	1,479,153
		Value of top five EPP-Core exports as percentage of total EPP-Core exports		

Source: Based on nationally reported data, United Nations COMTRADE Database, UNSD, 2006.

Note: Latest available data given, totals are value of top ten exports as a percentage of total EPP-Core exports.

ANNEX IV. WTO Submissions on Environmental Goods*

Submission by: Canada

Title: Canada's Revised List of Environmental Goods

Date: 4 July 2006 Document symbol: TN/TE/W/50/Rev.1

Submission by: New Zealand

Title: Market Access for Environmental Goods: Revised New Zealand List

Date: 30 June 2006 Document symbol: TN/TE/W/49/Rev.2

Submission by: Cuba

Title: La Dimensión del Desarrollo Como Parte Integrante de las Negociaciones de Bienes Ambientales: El Principio de Trato Especial y Diferenciado (TED)

Date: 30 June 2006 Document symbol: TN/TE/W/69

Submission by: India

Title: Environmental Project Approach - Compatibility and Criteria

Date: 13 June 2006 Document symbol: TN/TE/W/67

Submission by: Communication from Canada, European Communities, New Zealand, Norway, Singapore, Switzerland and the United States

Title: Market Access for Non-Agricultural Products - Market Access for Environmental Goods

Date: 9 May 2006 Document symbol: TN/TE/W/65

Submission by: United States

Title: Continued Work Under Paragraph 31 (iii) of the Doha Declaration

Date: 20 February 2006 Document symbol: TN/TE/W/64

WTO Secretariat

Title: Synthesis of Submissions on Environmental Goods

Date: 17 November 2005 Document symbol: TN/TE/W/63

Submission by: Argentina

Title: Integrated Proposal on Environmental Goods for Development

Date: 14 October 2005 Document symbol: TN/TE/W/62

Submission by: New Zealand

Title: Revised New Zealand Provisional List of Environmental Goods

Date: 12 October 2005 Document symbol: TN/TE/W/49/Rev.1

Submission by: India

Title: Procedural and Technical Aspects of the Environmental Project Approach

Date: 19 September 2005 Document symbol: TN/TE/W/60

Submission by: Switzerland

Title: Environmental Goods - Corrigendum

Date: 14 September 2005 Document symbol: TN/TE/W/57./Corr.1

Submission by: Brazil

Title: Environmental Goods For Development

Date: 7 July 2005 Document symbol: TN/TE/W/59

Submission by: Switzerland

Title: Environmental Goods

Date: 5 July 2005 Document symbol: TN/TE/W/57

* Through September 2006 (proposals up until this date are reflected in the LAS study on environmental goods).

Annex IV: WTO Submissions on Environmental Goods (cont.)

Submission by: European Communities
Title: EC Submission on Environmental Goods
Date: 4 July 2005 Document symbol: TN/TE/W/56

Submission by: Cuba
Title: Bienes Ambientales Date: 5 July 2005
Document symbol: TN/TE/W/55

Submission by: India
Title: Structural Dimensions of the Environmental Project Approach
Date: 4 July 2005 Document symbol: TN/TE/W/54

Submission by: United States
Title: Initial List of Environmental Goods
Date: 4 July 2005 Document symbol: TN/TE/W/52

Submission by: Canada
Title: Statement by Canada at the CTESS Informal Meeting of 10 June 2005
Date: 1 July 2005 Document symbol: TN/TE/W/50/Suppl.1

Submission by: European Communities
Title: Market Access for Environmental Goods
Date: 27 June 2005 Document symbol: TN/TE/W/47/Add.1

Submission by: European Communities
Title: Market Access for Environmental Goods
Date: 27 June 2005 Document symbol: TN/TE/W/47/Add.1

Submission by: New Zealand
Title: Statement by New Zealand at the CTESS Informal Meeting of 10 June 2005
Date: 16 June 2005 Document symbol: TN/TE/W/49/Suppl.1

Submission by: India
Title: An Alternative Approach For Negotiations Under Paragraph 31(iii)
Date: 3 June 2005 Document symbol: TN/TE/W/51

Submission by: Canada
Title: Canada's Initial List Of Environmental Goods
Date: 2 June 2005 Document symbol: TN/TE/W/50

Submission by: New Zealand
Title: Environmental Goods
Date: 26 May 2005 Document symbol: TN/TE/W/49

Submission by: Republic of Korea
Title: Initial List of Environmental Goods Proposed
Date: 18 February 2005 Document symbol: TN/TE/W/48

Submission by: European Communities
Title: Market Access for Environmental Goods
Date: 17 February 2005 Document symbol: TN/TE/W/47

Submission by: New Zealand
Title: Environmental Goods
Date: 10 February 2005 Document symbol: TN/TE/W/46

Annex IV: WTO Submissions on Environmental Goods (cont.)

Submission by: The Separate Customs Territory Of Taiwan, Penghu, Kinmen, And Matsu
Title: Proposed Initial List Of Environmental Goods -- Corregendum
Date: 7 October 2004 Document symbol: TN/TE/W/44/Corr.1

Submission by: The Separate Customs Territory Of Taiwan, Penghu, Kinmen, And Matsu
Title: Proposed Initial List Of Environmental Goods
Date: 7 October 2004 Document symbol: TN/TE/W/44

Submission by: China
Title: Statement by China on Environmental Goods at the Committee on Trade and Environment
Special Session (CTESS) Meeting of 22 June 2004
Date: 6 July 2004 Document symbol: TN/TE/W/42

Submission by: United States
Title: United States Contribution on an Environmental Goods Modality
Date: 7 July 2003 Document symbol: TN/TE/W/38 and TN/MA/W/18/Add.5

Submission by: United States
Title: Liberalising Environmental Goods in the WTO: Approaching the Definition Issue
Date: 19 June 2003 Document symbol: TN/TE/W/34 and TN/MA/W/18/Add.4

Submission by: OECD Secretariat
Title: OECD Joint Working Party on Trade and Environment: Environmental Goods: A Comparison
of the APEC and OECD lists- Information Note by the OECD Secretariat
Date: 21 May 2003 Document symbol: TN/TE/W/33 and WT/CTE/W/228

Submission by: State of Qatar
Title: Harmonized System (HS) Classification Codes of Gas-Related Goods
Date: 25 April 2003 Document symbol: TN/TE/W/27 and TN/MA/W/33

Submission by: State of Qatar
Title: Negotiations on Environmental Goods: Efficient, Lower-Carbon and Pollutant-Emitting Fuels
and Technologies
Date: 28 January 2003 Document symbol: TN/TE/W/19 and TN/MA/W/24

Submission by: Japan
Title: Market Access for Non-Agricultural Products
Date: 25 November 2002 Document symbol: TN/TE/W/17/Corr.1

Submission by: Japan
Title: Market Access for Non-Agricultural Products
Date: 20 November 2002 Document symbol: TN/TE/W/17

Submission by: State of Qatar
Title: Environmental Goods
Date: 9 October 2002 Document symbol: TN/TE/W/14

Submission by: United States
Title: Negotiations on Environmental Goods
Date: 9 July 2002 Document symbol: TN/TE/W/8

Submission by: New Zealand
Title: Environmental Goods
Date: 6 June 2002 Document symbol: TN/TE/W/6

ANNEX V. Top ARL Exports of the Arab Region*

Country	Product Group	Product description	HS code	Exports in 2005 (US\$)
World	ARL I	Paper & paperboard, articles of pulp, paper and board	48	136,488,747,822
		Pumps for liquids	8413	32,741,686,026
		Plastic plate, sheet, film not cellular, reinforced	3920	31,512,899,655
		Plastic articles nes	392690	30,495,518,532
		Liquid, gas centrifuges, filtering, purifying machines	8421	28,025,818,280
		Chemical prep, allied in	382490	22,262,574,055
		Plastic plate, sheet, film, foil, strip, cellular, nes	3921	14,170,969,323
		Parts of gas turbine engines except turbo-jet/prop	841199	12,451,314,201
		Composite diagnostic or laboratory reagents, nes	3822	11,956,484,545
		Motor vehicles for the transport of goods	8704	83,837,993,901
	ARL II	Storage units	847170	65,945,328,228
		Electrical switches, connectors, etc, for < 1kV	8536	59,492,763,772
		Insulated wire and cable, optical fibre cable	8544	55,784,113,177
		Automobiles, spark ignition engine of 1000-1500 cc	870322	44,380,847,984
		Colour television receive	852812	43,502,189,418
		Optical devices, appliances and instruments, nes	901380	39,049,778,942
		Static converters, nes	850440	25,177,616,868
		Refrigerators, freezers and heat pumps nes	8418	24,883,642,153
		Taps, cocks, valves and similar appliances, nes	848180	24,114,959,431
		Petroleum oils	271000	320,112,567,812
	ARL III	Natural gas in gaseous state	271121	105,848,332,156
		Natural gas, liquefied	271111	43,715,500,819
		Automatic regulating or controlling equipment	9032	21,789,012,227
		Screws, bolts, nuts, rivets, washers, etc, iron, steel	7318	21,055,548,377
		Structures, parts of structures of iron or steel, nes	7308	17,720,832,829
		Propane, liquefied	271112	16,209,353,416
		Automatic regulating/controlling equipment nes	903289	13,878,939,966
		Measuring or checking equipment, nes	903180	11,886,114,703
		Butanes, liquefied	271113	10,205,172,790
		Vegetable textile fibres nes, paper yarn, woven fabric	53	3,434,320,401

* Export volumes estimated using mirrored data from all world reporters. All exports data is for exports to the world (i.e., for each country, exports are exports to all other countries in the world, including other League of Arab States countries). The item TOTAL or ALL COMMODITIES represents a country's total exports of all merchandise to the world.

Note: For some product HS numbers and descriptions appearing in this table only a subset of the product group is included as an EG in the AR list as an ex-heading item. As such, considerable contamination may be present when the EG accounts for only a minor component of the trade volume of the larger HS code it is classified under. Detailed notes for each EG provided in the LAS study reference list should be consulted to identify the EGs associated with the HS codes noted in the table in order to assess their relative contribution to the trade volume of all products classified under their HS codes.

Annex V: Top ARL Exports of the Arab Region (cont.)

Country	Product Group	Product description	HS code	Exports in 2005 (US\$)
World	ARL IV	Plastics waste or scrap nes	391590	2,591,593,644
		Worn clothing and other worn articles	630900	1,215,787,072
		Refractory bricks, etc with >50% Mg, Ca or Cr as oxide	690210	1,046,865,301
		Polyethylene waste or scrap	391510	999,018,877
		Refractory bricks etc >50% alumina or silica	690220	968,576,618
		Refractory bricks etc nes	690290	734,755,441
		Polyvinyl chloride waste or scrap	391530	506,186,084
		Brushes nes, as parts of machines, appliances etc	960350	407,982,685
		Polystyrene waste or scrap	391520	313,802,253
	Oils petroleum, bituminous, distillates, except crude	2710	320,257,044,630	
	ARL V	Cyclic hydrocarbons	2902	30,243,413,983
		Prep binder for foundry	3824	24,214,775,839
		Heterocyclic compounds, nes	2934	17,070,556,811
		Insecticides, fungicides, herbicides etc (retail)	3808	15,579,334,259
		Radioactive elements, isotopes, compounds and mixtures	2844	10,546,275,567
		Coal-tar distillation products including oils	2707	10,170,643,893
		Ether and derivatives	2909	8,991,684,209
		Heterocyclic compounds with unfused pyridine ring, nes	293339	8,314,948,407
		Potassium chloride, in packs >10 kg	310420	7,833,879,951
TOTAL	ALL COMMODITIES	TOTAL	10,190,111,122,397	

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