

STUMBLING INTO THE 21ST CENTURY THE ECOLOGICAL CRISIS IN THE FORMER “SWISS OF THE ORIENT”

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**Paper presented at the seminar “Lebanon in the 21st Century”
Villanova University, USA, 2-3 October 1998**

1. INTRODUCTION

2. LEBANON’S MAIN ENVIRONMENTAL PROBLEMS

2.1. Household waste:

2.2. Hazardous hospital waste

2.3. Toxic industrial waste

2.3.1. Chekka – a case of major industrial pollution:

2.3.2. Asbestos in Lebanon

2.3.3. Industrial pollution

3. TOXIC WASTE IMPORTS

4. CLIMATE CHANGE AND THE MEDITERRANEAN

5. REGIONAL ANTI-POLLUTION ACCORDS

6. GREENPEACE ROLE IN LEBANON

7. CONCLUSION – HOW TO SURVIVE THE 21ST CENTURY

8. MAIN SOURCES

1. INTRODUCTION

The situation of the environment in Lebanon is alarming. Decades of uncontrolled urban and industrial development as well as more than 15 years of war led to an ecological crisis. The main problems facing the ex-“Switzerland of the Orient” are:

a) Forests are shrinking rapidly because of fires, quarries, urban development and illegal logging.

b) Lebanon's biodiversity - its fauna and flora - is threatened by illegal hunting, quarries, uncontrolled urbanization, chemicals in the agricultural sector and hazardous wastes from the industry, hospitals and even from households.

c) Clean drinking water is becoming a rarity:

- Sewage leaks into the soils and ground waters because no sewage pipe system exists in most rural areas. The discharge of sewage and industrial effluent in rivers and groundwater resources suggest very broadly that over 50 percent of Lebanon's drinking water sources are bacterially contaminated and fail World Health Organization (WHO) standards.

- Industrial waste is pumped into leaking sewage systems, into rivers or directly into groundwater reservoirs and into the Mediterranean Sea.

- The agricultural sector uses synthetic pesticides and fertilizers without any control.

- Thousands of garages and factories dump used oils and other petrochemicals into the ground or the sea. Ships along the coastline or leaks from port installations pump similar substances into the environment.

d) The air is polluted in industrial regions like Chekka/Selaata and Sibline or in urban concentrations like the Greater Beirut area where hundreds of thousands of vehicles blast toxic emissions into the atmosphere. Smog has become normality.

e) The amount of waste produced is rapidly growing. An additional growth is expected after an overall peace and a subsequent economical boom in the region. Landfills threaten the coastline and ground waters inland. The authorities are envisaging setting up polluting waste incinerators.

In a 1996 a report about the environmental situation in Lebanon, the World Bank said that two-thirds of the Lebanese population is concentrated in the cities along the narrow, one to eight kilometers wide coastal plains and slopes. The Greater Beirut Area has an estimated 1.2 million inhabitants. Its continuing growth is a result of the heavy rural to urban migration, particularly from the South where a war against the Israeli occupation forces and their local allies has been taking place. Other major coastal cities are Tripoli/EI-Mina with about 500,000 inhabitants, Sidon (about 300.000 inhabitants) and Tyre (about 150.000 inhabitants). The World Bank said that in all these cities, “rapid growth has been accompanied by inadequate housing, infrastructure, and urban services” causing the following major problems:

- “The coastal zone is subject to uncontrolled urban sprawl over most of its length, with notable encroachment over open spaces, agricultural and forest lands. Waves of rural-urban migration as well as the influx of foreign migrants in search of work have lead to the development of camps and squatter settlements, many of which have encroached on limited agricultural and forest lands and open spaces around cities. There is an inadequate supply of affordable and safe housing in urban areas, creating overcrowded conditions that pose severe health risks and lead to the occupation of fragile or hazard-prone areas. In Beirut City, for example, it is estimated that the average number of occupants per dwelling is about 6.5, up from 2.1 in 1970.”

- "Approximately 80 percent of Lebanese industry is located in the coastal zone, clustered in and around Beirut, Tripoli and Saida. The increase of industrial activity and lack of planning controls means that industry has located in inappropriate areas, such as in the middle of residential areas, close to schools, etc. Since these industries generate various types of wastes, they contribute to air, water and soil pollution."

This paper focuses on the main environmental problem of a country known for its amazing nature, its rich biodiversity and diverse climate zones. It will also offer the broad lines of solutions to the problems and explain the role of Greenpeace in a society still struggling to recover from a devastating 15-year long war from 1975-90. The paper also analyses why the authorities are unable and unwilling to tackle the growing environmental problems. The aim is to convince the reader that the first decade of the 21st century must be for Lebanon the years of environmental protection and rehabilitation.

2. LEBANON'S MAIN ENVIRONMENTAL PROBLEMS

2.1. Household waste:

Today in Lebanon we are in the phase of drowning in our own household and other wastes. Come over and visit the dozens of waste dumps all over the Lebanese coastline, in the mountains and in the Beqaa Valley. More than 4,000 tons of household waste are generated every day in Lebanon, most of these wastes end up in nature or in the sea..

After the end of the civil war, the Council for Development and Reconstruction (CDR) signed a contract with the private company Sukkar Group to deal with the waste generated in the Greater Beirut Area. The move was aimed to end the situation of chaos: waste piling up all over the city, people burning it in the belief that this would solve the problem. The situation was unbearable. Health hazards and the effects on the environment were rising. This is when the government of Premier Rafic Hariri allowed the contract between the CDR and Sukkar Group to be signed in 1993. The CDR is a sort of super ministry financing and controlling all major reconstruction projects in Lebanon, and the Mr. Hariri directly controls it. Greenpeace cannot and will not take a stand against and for privatizing the waste management sector in Lebanon. We deal with the responsible institution - be it private or public.

Sukkar Group, which is owned by Mr. Maysara Sukkar, has relatively succeeded in cleaning up Beirut's streets. It set up an infrastructure to collect, dump and incinerate waste. It has inherited two polluting waste incinerators, one in Amrusieh in Beirut's southern suburbs and one in Karantina, and an outdated waste separation plant in Karantina. Sukkar Group's sub-firm Sukleen has been collecting the 1,700 tons waste generated every day in Greater Beirut. It used to dump most of the waste in the huge coastal dump in the capitals' Borj-Hammud district, which is also a heritage of the war. The dump was shut down in July 1997 following a Greenpeace campaign supported by other groups and the local population.

The drama began when the two incinerators had been reactivated and the pollution in the surrounding residential area rose dramatically. Hazardous hospital waste, hazardous plastic waste like PVC bottles, toxic waste from households like batteries and paints as well as industrial toxic waste were incinerated there. This meant toxic emissions like dioxins and furans that cause cancer. The toxic ash from the incinerators, which is regarded scientifically as toxic waste, had been dumped in Borj-Hammud.

When the residents around the waste incinerator in Amrusieh were protesting against the pollution from the plant in the spring of 1997, Mr. Maysarra Sukkar and Environment Minister Akram Shuhayeb said that the waste of the district would remain in the streets if the protests continue. Days later, the waste started piling up in the streets of Amrusieh and

the adjacent district of Hay all-Sellom. Clearly, the decision to mass punish the people was not a lone one of Mr. Sukkar and Mr. Shuhayeb. The CDR was also behind it.

On 26 June 1997, hundreds of angry residents attacked and torched the Amrusieh incinerator. They were protesting against the government policy of mass punishment. The attack came minutes after Minister Shuhayeb said in a live television interview on LBCI that the incinerator will have to be operated again despite protests against it during the past three months. People would have to accept it because there is no other solution or their waste will remain on the street, he said.

Greenpeace had started the campaign in Amrusieh and supported the inhabitants in their cause. We took part in several peaceful protests in front of the plant. We urged the residents not to use any form of violence. As a non-violent organization Greenpeace cannot but condemn the destruction of the plant. Luckily, no one was killed during the attack, which was to my knowledge the first violent ecological "Intifada" (uprising) in the Arab world. Greenpeace blames the authorities for pushing the residents of the area towards violence.

Greenpeace then focussed on the last remaining waste incinerator in Lebanon, the one in Karantina near Beirut Port. In October 1997, the Lebanese authorities shut it down after a Greenpeace attempt to sample the toxic ash of the plant. The Karantina incinerator had been rehabilitated for about seven million dollars early that year, and the money was wasted. Shortly before, in July 1997, the Borj-Hammud coastal dump was closed.

Today, Beirut's daily household waste of more than 1,700 tons are being separated in two new waste separation plants in Karantina and Amrusieh. 50 per cent of the waste is being composted for agriculture purpose and ten per cent recycled. The rest is dumped in a so-called "sanitary landfill" in the Naameh valley south of Beirut. The authorities plan to build similar "sanitary landfills" all over the country, including in Zahle, Baalbek and in the south. The World Bank and other international institutions want to finance these projects.

Greenpeace is concerned about the fact that an unknown amount of hazardous hospital waste and industrial toxic waste is dumped in Naameh. The lining and other engineering measures in landfills will not be a protection forever. They will eventually crack and the toxic leachate will poison ground water reservoirs. The British company "Fairhurst International", which helped build the Naameh landfill, told Greenpeace that the isolation materials would not last more than 10 years. Toxic substances in landfills strike back in the form of leachate, or toxic fluid, leaking into ground water reservoirs. So-called sanitary landfills, if they contain toxic and hazardous waste, are ecological time bombs.

Outside the Greater Beirut Area, all sorts of wastes are either dumped in nature or treated in the worst possible way, open air incineration. The most famous dumpsites are the coastal dumps in Tripoli, Sidon and Tyre, as well as the inland dumps of Balamad, Baalbek, Zahle, Uyun al-Siman and Siblino. Greenpeace opposes the dumping of hazardous and toxic waste. Only non-recyclable, non-compostable and non-toxic wastes can be landfilled, especially in Lebanon where the geology is mainly made of sand and fractured rocks like limestone.

One recent environmental scandal involved the illegal transfer of a hazardous waste dump to a mountainous area. Greenpeace uncovered that two Spanish construction companies, Entracanales and Cubiertas, as well as on the Lebanese firm "Samir Cheddad SAL" illegally transferred contaminated waste from Beirut Port to the Monteverde area in spring 1998. The three firms had been paid by the Council of Development and Reconstruction (CDR) 102 million dollars to "rehabilitate" on site the dump and expand Beirut Port - and not to transfer it in a cheap way to the mountains. The waste from Beirut Port consisted of household waste and hazardous waste from hospitals and industries dumped there during the civil war as well as toxic ash from the nearby Karantina waste incinerator. It also

includes toxic waste imported illegally from Italy in 1987. The dump was closed in 1991 to make room for the Beirut Port expansion.

All the waste was returned to Beirut Port for on-site treatment by January 1998, but leaking toxic substances may have contaminated nearby underground water reservoirs. More than 20,000 tons of waste and 10,000 tons of contaminated soil were removed. Some 1,000 trucks were needed to carry out the return to sender operation. However, Greenpeace fears that leaking toxic substances may have contaminated the Beirut River and the Dayshunieh well underneath the Monteverde dumpsite. About 600,000 people in the Lebanese capital receive drinking water from Dayshunieh.

Greenpeace sample test results showed that the leachate and sediments from the dump contain high levels of toxic heavy metals like chromium, nickel, cadmium, mercury and lead. Some metals were found at levels ten times greater than one would expect in uncontaminated sediments. These heavy metals are known to be toxic to the aquatic environment even at very low concentrations. Cadmium damages the kidney and bones, and it may cause cancer. Lead severely damages the brain, especially of children. Mercury hits the kidneys and the brain, while nickel and chromium have a negative effect on the kidney and liver.

We also found a wide range of organic contaminants, many of which are chronically toxic, in particular PAHs, phthalate esters, phenols and dichlorobenze which damages the kidney and liver and which may cause cancer.

Unfortunately, the authorities have started the Monteverde rehabilitation operation five months after Greenpeace uncovered this scandal. The rainy season started shortly afterwards. Therefore, regular tests of pumped drinking water from Dayshunieh should be carried out and published. Nevertheless, the return to sender operation from Monteverde to Beirut Port is a precedent in Lebanon. The Lebanese government sent a clear warning to all: Anyone committing an ecological crime will not get away with it like during the war.

Solution

Greenpeace has published a report with detailed steps to help solve Lebanon's waste crisis. It focuses on waste reduction, separation at source and recycling, and it proposes involving the people in public awareness campaigns. The report "Waste Management Alternatives in the Mediterranean - A case study for the Spanish Island of Mallorca" proposes an alternative to waste incineration and opposes dumping toxic and hazardous wastes in any sort of landfill.

The report, carried out by a private company for Greenpeace, has selected Mallorca as an example of how the waste crisis can be solved in a Mediterranean state. The case study is of relevance to Lebanon because of the similarities between Mallorcan and Lebanese societies, both of which depend heavily on tourism for their income. The ideas developed in the report can be easily adapted in Lebanon.

All what the CDR and the Environment Ministry need to do is include data on the quality of wastes in Lebanon, the recycling and composting industry and the needed investments.

The report suggests an infrastructure for selective collection, classification, recycling and composting of waste. Ideas are given to estimate the necessary investment to implement such an infrastructure and to estimate the operating costs implied by the development of this recycling plan. The report evaluates the compost requirements for the agriculture sector and the requirement for the dumping of non-compostable, non-recyclable and non-toxic wastes.

It proposes to involve the public in all phases of the development of this alternative program. Participation by members of the public in all phases of the development of this alternative program would be fundamental to its success and, to achieve success, Greenpeace proposed that all necessary measures be taken to secure such participation.

Public awareness campaigns should put emphasis on the consumption of local products, on buying from small shops or markets, eliminating toxic products like batteries and solvents, avoiding products that make excessive use of packaging materials and refusing plastic bags. One should also avoid the use of throwaway products like one way plastic bottles and aluminium cans, use returnable glass bottles and refuse beverages packaged in cartons, tins and plastic (especially PVC) containers.

A good awareness campaign is fundamental to achieving a high percentage success in selective collection. Selective collection in two fractions, organic and inorganic, can accept approximately 20% incorrect selection at the point of origin, but not more. Any higher percentage means that the subsequent classification stage is inefficient and therefore costly. For this reason, public awareness campaigns should not skimp on resources: what seems cheap at the beginning will end up costing more.

Many positive examples of waste management are visible in several villages today. In the town of Bsharre (Kisrwan), the local Association for the Protection of the Environment is cooperating with the municipality to separate waste at source and then recycle as much as possible. Batteries are stored in containers. 80 per cent of the 10,000 inhabitants are taking part in the project, which funded by the UNDP/LIFE program.

Local groups in the southern villages of Arab Salim and Maghdushe are successfully implementing similar projects.

2.2. Hazardous hospital waste

Greenpeace revealed on 6 August 1998 that the Ministry of Environment and the CDR are proposing to set up a polluting hospital waste incinerator in the country, probably in Selaata in the North. A hospital waste management study commissioned by the CDR and financed by a World Bank loan was completed recently. The study, which authorities refuse to publish, listed the expensive and polluting incineration as a "solution" and environmentally friendly technologies that cost much less.

The CDR-commissioned study was conducted by the Lebanese company J.A. Issa Consulting and its partner the British firm Environmental Resources Management (ERM). It cost 382,000 USD and was financed by a World Bank loan. The study suggested two classes of solutions (incineration and non-incineration strategies). J.A. Issa Consulting is pushing for the incineration part. The CDR and the Ministry of the Environment are more inclined toward the incineration proposal while the Ministry of Health prefers installing sterilization machines in hospitals.

Greenpeace has been appealing to CDR President Nabil el-Jisr and Minister of Environment Akram Shuhayeb to opt for the alternatives to incineration, which are both safer and more economical. But until today, these two have been avoiding to discuss the issue publicly. Greenpeace fears that the authorities would set up a huge incinerator so that it becomes economically viable. This will only open up the door for excessive waste-generation, encourage waste trade and divert public as well as private capital away from waste prevention and recycling activities.

Building a single central incinerator for all the hazardous hospital waste of the country defies both environmental and economic logic. Emissions from incinerators are toxic even if the allegedly best technology will be imported. Centralizing incineration imposes the

additional cost and accident hazard of transporting the hazardous and contaminated hospital wastes from all around the country to the incineration site. Hospitals are the best place where waste management can be perfectly organised after a training of staff.

Furthermore, it is a myth that incineration is a final and definitive elimination of the hazardous waste, because the "cleaner" the smoke and fly-ash from incineration, the more toxic the residual ash in the kiln. The ash would be landfilled and contaminate groundwater reservoirs and soils.

Currently, total daily hospital waste production is approximately 46,000 kg, about 9,000 kg of which are hazardous. Of the 9,000 kg of the daily hazardous waste, 14% are incinerated in the hospitals, a quarter are treated in the worst possible fashion, that is open-air incineration. Municipalities collect nearly half of the hazardous. This information is based on a presentation given by Dr. Rita Karam at a Medical Waste Management Workshop held in Beirut in October of 1997.

These findings show the urgency of a solution to the hospital waste crisis. Normally, hospitals are places where people are treated and cured. It is ironic that in Lebanon hospitals have become a source of pollution and disease. There are 109 private hospitals in Lebanon, as certified by the Ministry of Health. About 7 of these are substantial in size and in the amount of waste that they produce.

Here are some more hard facts about the hospital waste crisis in Lebanon (all based on Dr. Karam's study):

a) Only 18% of the hospitals surveyed claimed to know the quantity of waste that they produce, and 75% admitted they did not.

b) On average, a bed is estimated to produce 5.4 kg of waste per day, about 1.05 kg of which is a mix of contaminated waste and sharp objects (19.5% of total waste pool). We can thus obtain a ballpark estimate of the total daily hospital waste production of 45,846 kg, about 9,000 of which are hazardous.

c) Only 73% of the hospitals claimed that they separate their infected waste, but the study reveals that separation rules are often unclear and lead to defective separation in half the cases. 19% of the hospitals do not separate their contaminated waste, and 8% gave no answer, as they had never even considered the issue. Only 67% of the hospitals care to separate the sharp objects from the rest of their waste, while only 36% separate expired medicines from their waste.

d) About 14% of the hazardous wastes are burnt in hospital incinerators. 14 of the surveyed hospitals (19%) have their own outdated and polluting incinerators. Only one knows the quantity of waste treated by its incinerator. 12 of the 14 incinerators date at least 15 years back. Only 2 know the make of their incinerators, and 6 claim they know the temperature of combustion (although two of the answers given were unrealistically high).

e) Finally the findings do point to a particularly worrying fact: a quarter of hazardous hospital waste (infected waste, sharp objects and expired medicines) are treated in the worst possible fashion, i.e. open-air incineration.

Solution

Given the relatively low infectious content (about 10%) and high cost of its treatment, the first logical step in managing hospital waste involves separating out infectious from non-infectious waste. The body parts and testing animals constitute no more than 1% of the

total hospital waste pool and careful cremation or burial are environmentally sound techniques of disposing of them.

Radioactive waste should be sealed in special isolating containers and stored above ground, to avoid leakage. For the remaining waste, hospitals should implement waste separation systems, substituting reusable and durable products for disposables, and introducing recycling programs for plastics, paper and metal.

PVC, which is currently among the most widely used plastic in the health care field, must be phased out in all products. Alternatives to PVC exist for use in medical equipment. A hospital is an easy place to implement waste separation because almost everything in such a facility is regulated, and can be regulated in a much better way.

The alternatives to incineration, such as sterilization and microwaving, are cheaper, more efficient and environmentally safe. They destroy only the infectious pathogens and produce safe residuals that can be reused, recycled or safely landfilled if they are biodegradable (not PVC).

2.3. Toxic industrial waste

Lebanon's industrial effluents are pumped today via rivers, pipes or the normal sewage system into groundwater reservoirs and the Mediterranean Sea. Solid hazardous waste is dumped in wild dumps or the "sanitary landfill" in Naameh and in the nature.

A 1995 report by the Mediterranean Environmental Technical Assistance Program (METAP), estimated total solid waste arising from Lebanese industry to be about 326,000 tons per year. A small and unknown amount of it is toxic. Given the concentration of industry in the Mount Lebanon, it follows that most industrial waste is generated in these areas. Assuming that industrial output will grow at 8% per year, the METAP report projected that by the year 2010 industrial waste arising could be over 1 Million tons per year.

Official reports with Greenpeace that were not published showed that industrial solid waste all over Lebanon is expected to increase from 1,051 tons/day (383,615 tons/year) in 1994 to 4,090 tons/day (1.49 million tons/year) in the year 2020.

The quantity of solid toxic waste is projected to increase from 51 tons/day (18,615 tons/year) to 177 tons/day (64,605 tons/year) in the same period. In addition to the solid toxic waste, industrial wastewater is expected to increase all over Lebanon from 61,120 cubicmetres/day in 1994 to 191,625 cubicmetres/day in 2020.

In 1992, a United Nations Environment Program (UNEP) report said: "Most industrial firms on the coast discharge their wastewaters into the sea without any treatment. Most inland industries discharge their wastewaters generally into the nearest stream without treatment. Some industries let their wastewaters into deep bore-holes, thus risking contamination of underground waters and springs that issue somewhere else... Industrial solid wastes, and some are toxic, are generally mixed with municipal refuse without any particular measures taken."

By the end of 1998 the situation has worsened because the number of industries has been growing without any environmental control. And there is still no nationwide strategy to solve this problem.

2.3.1. Chekka – a case of major industrial pollution:

A 1996 Greenpeace scientific report proved that cement, cement pipes with asbestos and chemical industries in Chekka and Selaata are a major source of marine, soil and air pollution in the Kura, North Lebanon. Sample tests carried out by our research laboratory at Exeter University in England showed that groundwater in Chekka is polluted by a wide range of toxic chemicals, while emissions from the cement factories pollute the air and the Mediterranean Sea.

The "Association for the Protection of the Environment in the Kura Region" had asked Greenpeace for help. Its activists in September 1995 assisted Greenpeace to sample groundwater, petro-coke used as fuel in the cement plants, wastewater from industrial discharge pipes and nearby sediments, waste from cement factory filters, surface sediment from the Asfur River in Chekka and dust from the cement factories.

Groundwater samples in Chekka showed contamination by several toxic chemicals. A petro-coke sample used in the "Cimenterie Nationale" (CN) showed a wide range of polycyclic aromatic hydrocarbons (PAH) and dibenzothiofurans. PAHs cause cancer. CN and the "Societe du Ciment Libanais" (SCL) discharged their toxic effluents directly into beaches or near beaches where people swim. The effluents also contained toxic substances.

In the meantime, CN and SCL have introduced "cleaner" production methods. SCL even scrapped its old factory and set up a new one with the latest available technologies. These new plants have radically reduced air emissions. But there is still a lot to do in Chekka. The smallest cement factory, "Societe des Ciments Blancs", and the asbestos cement pipes producer Eternit are still major polluters.

The strong winds in Chekka blow toxic substances from the petro-coke mountains used by CN and from the coal mountains of SCL into Chekka. According to our scientific tests, the petro-coke included aliphatic hydrocarbons and several alkylated PAH's. Chronicle exposure to the PAHs as vapors or attached to dust particles can cause lung and respiratory tumors.

In nearby Selaata, the "Lebanese Chemical Company" that produces chemical fertilizers pumps its toxic effluents directly into the Mediterranean. Our test showed that it contained substances that among other things poison the nervous system.

2.3.2. Asbestos in Lebanon

Unbelievable but true, the authorities in Lebanon are not only allowing but also even promoting the use of the deadly fibre asbestos in the production of cement pipes and roof tiles. On 21 May 1998, Greenpeace activists staged a peaceful protest in front of a hotel where a team of lobbyists of the Canadian asbestos industry promoted the killer fibre in developing countries.

The activists stood silently in front of the hotel in Beit-Mery in the mountains east of Beirut and held banners reading in Arabic and English: "Ban asbestos in Lebanon" and "Canadian Industry: Stop Exporting Asbestos". The activists distributed leaflets to passers-by. And they gave documents on the danger of asbestos to two Lebanese ministers attending the seminar. Environment Minister Akram Shuhayeb and Health Minister and Suleiman Franjeh spoke during the seminar in favor of using chrysotile asbestos in "a safe and responsible way".

One of the speakers at the seminar entitled "Responsible and Safe Use of Chrysotile Asbestos" was Denis Hamel, Director of the pro-industry "Asbestos Institute" in Montreal,

Canada. The seminar was organised by the Canadian Embassy in Beirut with the active support of the Lebanese factory Eternit, which manufactures asbestos-cement products like pipes and roof panels.

The Canadian industry was clearly desperate to export the killer fibre asbestos to developing nations because their sales in industrial nations have dropped. The pro-asbestos lobbyists from Canada know that safety measures in factories in developing nations are extremely difficult to finance, implement and control. Instead of promoting asbestos they should help Eternit and other factories switch to alternatives such as steel pipes, vitrified clay pipes and high-density polyethylene (HDPE) plastic pipes. The seminar was a shameful propaganda show organised as a reaction to the Greenpeace Mediterranean campaign against asbestos in Lebanon.

Due to increasing public concern, objections by workers, government regulations and mounting liabilities, the use of asbestos in industrial nations has declined precipitously. As an example, US asbestos use peaked at around 780,000 metric tons in 1974 and has declined steadily to around 21,000 metric tons in 1997. World asbestos production (consumption) was from 4.2-4.8 million metric tons in 1976-1986, then went down every year after that to 2.07 million metric tons (estimated) in 1997. According to the US Geological Survey, domestic A/C pipe production ceased in 1993 and A/C sheets production ended in 1992 (Source: "US Mineral Industry Surveys", 1997 and Table 2 NIS report).

The World Health Organisation (WHO) and scientists all over the world agree that inhaling asbestos is extremely dangerous when inhaled and causes lethal lung diseases like cancer, especially among workers dealing with asbestos. The WHO advised in a statement on 10 September 1986 that, "When available, substitute materials evaluated safer than chrysotile (asbestos fibre) should be used." Eternit uses only this kind of asbestos fibre.

The US Environmental Protection Agency (EPA) said in a report: "After weighting the available information, EPA believes that there is evidence of a strong casual relationship between asbestos exposure and gastrointestinal cancer excess... Evidence suggests that cancers in the esophagus, larynx, oral cavity, stomach, colon and kidney may be caused by ingesting asbestos." (Source: EPA Background Information for Promulgated Asbestos. NESHAP Revisions, Emissions Standards Division, Office of Air and Radiation, Office of Air Quality Planning and Standards, October 1990)

The British "Health and Safety Commission" (HSC) published on 18 August 1998 a proposal to restrict further the importation, supply and use of chrysotile asbestos. Greenpeace welcomed the move as a positive step towards a full ban of the killer fibre asbestos. The governmental institution HSC said that it proposes "prohibiting all uses of chrysotile, apart from a few essential uses where adequate substitute materials have not yet been developed". The HSC decision followed an earlier position of the "Department of Health's Committee on Carcinogenicity", which said, "the most commonly used asbestos substitutes are safer than chrysotile".

The HSC said that, together with the proposals for tightening the Control of Asbestos at Work Regulations 1987 and the Asbestos (Licensing) Regulations 1983, the new proposal will "significantly reduce future potential for asbestos related diseases". Information for British employers, manufacturers and suppliers on asbestos substitutes and their appropriate uses will be available in the autumn of 1998, it added.

Greenpeace has been campaigning for a ban on the use of asbestos in all other applications like sewage pipes, roof panels and braking pads. But one major stumbling block in banning asbestos in Lebanon is the protocol signed between the Ministry of Environment and Eternit in March 1997 which allows the company to use asbestos for

ever. The protocol is an official "license to kill workers at Eternit" because it gives the illusion that asbestos can be dealt with in a safe way.

Asbestos has been banned or its use severely restricted in many European and Arab countries. Lebanon must apply similar precautionary measures and act according to the philosophy: ban a dangerous product, especially when alternatives are available. In the meantime, the authorities in Lebanon plan to use asbestos-cement pipes in many areas as part of the country's reconstruction program.

The CDR and the Ministry for Water and Electricity Resources in March 1998 completed the installation of asbestos cement pipes for drinking water in the Tripoli district of "Damm wa Farez" near al-Salam Hospital. The installation of sewage systems with asbestos cement pipes began in the northern town of Miniah in Akkar in June 1998. The CDR and the Ministry of Environment have until now refused to inform the general public what sort of pipes they want to use in new water drinking systems in the southern towns of Nabatieh and Tyre.

Meanwhile, our campaign against asbestos use is bearing fruits: In June 1998 we learnt that the CDR and the Ministry of Hydraulic and Electricity choose asbestos-free pipes in the Kisrwan coast and in the town of Batrun. The Overseas Economic Cooperation Fund (OECF) of Japan financed the Kisrwan project, which avoids the hazards of producing, cutting and later disposing of asbestos pipes. The OECF obviously refused to finance any project including asbestos pipes. The work to be done includes 118.8 kilometres of ductile iron pipes, 4 kilometres of GRP (fiberglass) pipes and polyethylene (PE) plastic pipes.

In the town of Batrun, iron pipes with a layer of asbestos-free cement were visible in two open-air storage sites in June 1998. The authorities previously wanted to use asbestos-cement pipes for the "Batroun Water Supply Project", but local opposition have made them change their minds.

We are still condemning the authorities' double standards politics in infrastructure work. The question we must ask is: Why did the CDR insist on using asbestos cement pipes in sewage projects in Al-Miniah in Akkar, Jiyeh south of Beirut and in the Damm Wa Farez district in Tripoli, while they have opted for the safer alternatives in other areas?

Meanwhile, Eternit openly claims that it uses only the "good" chrysotile asbestos to produce cement pipes, and not the "bad" blue asbestos. Fact is that both asbestos fibres cause lung cancer when inhaled. But the most distressing argument put forward by Eternit is that the alternatives to asbestos pipes would be too expensive and would lead to the factory's closure and the dismissal of hundreds of workers. This is not true: Eternit has production lines for cement pipes reinforced with steel and fiberglass (GRP) pipes under license from the French company Hobas.

Unfortunately, the owners and the management of Eternit seem to be driven by greed because profits from asbestos pipe sales are higher than the alternatives. The health of their workers and of people dealing with asbestos panels and pipes all over the country do not seem to be of their concern

Saudi Arabia banned on 19 January 1998 the import of asbestos and all asbestos-containing products. France banned the use of asbestos in 1996, in line with previous decisions in other European Union states. Greenpeace demands that Lebanon apply similar precautionary measures and act according to the philosophy: ban a dangerous product, especially when alternatives are available.

2.3.3. Industrial pollution

Many areas along the Lebanese coast and several rivers leading to the Mediterranean Sea are polluted by a toxic cocktail of industrial outflows, leachate from waste dumps and untreated sewage. This is the result of a scientific report carried out by the Greenpeace International laboratory at Exeter University in England and published in July 1998.

"Waste from tanneries, plastic, pesticide and chemical manufactures, textile, dye and cement factories all contribute heavily to a widespread and complex pollution," the report read. "In addition, untreated sewage discharges and domestic waste dumps are all responsible for widespread contamination of the coastal areas. Over two thirds of the collected marine and river sediments contained elevated levels of heavy metals and organic pollutants. In some cases, levels are far in excess of background concentrations."

The Greenpeace Mediterranean Office sampled Lebanon's major industrial polluters during a six-day dingy boat tour along the coast from Tyre to Akkar in October 1997. Then samples were taken during four days in industrial zones in the Beqaa Valley, in the Greater Beirut area as well as along the rivers Bardawni, Ghazayel, Litani, Zahrani and Ibrahim. A total of 110 samples were taken.

The aim was to identify the main polluting industries in Lebanon. The scientific report proposes appropriate and effective means of waste treatment and presents potential alternatives to toxic processing chemicals used. The scientific sample test results for the first time give a general picture of the pollution along the Lebanese coast and inland.

A cocktail of untreated sewage, leachate from waste dumps and industrial outflows pollutes the sea around urban areas like Tyre, Ghazieh, Sidon, the greater Beirut area (mainly the stretches between Khaldeh and Ouzai, Beirut Port and Jounieh), Chekka, Selaata, Tripoli and Abdeh.

Sediment samples contained high levels of toxic heavy metals like lead, mercury and cadmium as well as chemical substances. Tanneries like the "Lebanese-Spanish Tannery" in Ghazieh, cement factories in Chekka and Sibline, tissue producers like Mimosa and Sanita, paint factories like Tinol and detergent producers like Oteri are major polluters. The fertilizer producer "Lebanese Chemical Company" in Selaata pumps its acidic waste directly in the sea. Factories and garages dump their used oils from machines and vehicles in the sea and rivers. The pesticide producer Adonis and the plastic company Mwannes seriously pollute the Ibrahim River. The Greenpeace report lists all the hot spots and the names of the factories.

Greenpeace handed over the test results to the President of the Lebanese Industrial Association (LIA), Jacques Sarraf, to the CDR, to all concerned authorities and to international organizations like the World Bank that is working on a strategy paper on industrial pollution. Neither the LIA nor the authorities are currently willing to cooperate with Greenpeace on that issue.

Solution:

The authorities must introduce laws inciting the industry to shift towards investing into clean production technologies in all processes. This can be done with the help of incentives, tax reduction schemes, custom tax reduction for imported raw materials and soft loans. As an example, producers of polyvinyl chloride (PVC) plastics should switch to acceptable plastics like polyethylene (PET) or polypropylene (PP). Paints should be free of toxic solvents and tanneries should phase out the use of the toxic heavy metal chromium.

In all industrial and other economical sectors, the requirements for environmentally protective management should aim at implementing "sustainable development". Under

"sustainable development" Greenpeace understands *a form of progress, which covers the needs of the present without taking away from future generations the bases for the satisfaction of their needs.*

Companies must make more than small advances in environmental protection in their operations, partly because of legal regulations and also after pressure from environmental groups. They must make more than reducing emissions into the air and water, and reducing the use of raw materials and energy.

Sewage plants and filters may retain the filth, but they do not get rid of it. The waste often remains in highly toxic sewage sludges and filters. This development is in flagrant opposition to the principle of sustainable economic management. Sooner or later it will not only break the capacity of our ecosystems to absorb pollutants, it will also lead to energy and other resources being squandered at the expense and burden of present and future generations.

The essential element of sustainable development and economic management is to avoid emissions of pollutants into the air, soil and water. The aim must be zero toxic waste production. The requirements for sustainable environmental protection management are tough. They include responsibility for the whole product cycle. This means that entrepreneurs must consider the effects of their goods during all stages of production, when they are manufactured, consumed, and when they are disposed of.

3. TOXIC WASTE IMPORTS

In May 1995, Greenpeace revealed that the Italian government did not fulfill its promise to return all 2,411 tons of toxic waste illegally exported from Italy to Lebanon in 1987. Much of the toxic waste exported from Italy to Lebanon is still in Lebanon's soil and water. The Italian company "Jelly Wax" (director Renato Pent) illegally sent the toxic waste in about 15,800 barrels and 20 containers to Lebanon. "Jelly Wax" took advantage of the civil war and the state of anarchy in Lebanon that ended after 15 years in 1990. It hammered out the deal with the Lebanese firm "Arman Nassar Shipping" that is owned by Arman Nassar. Members of the now disbanded militia "Lebanese Forces" allowed the transaction and supervised it.

When the criminal deal became known, a public outrage in Lebanon forced the Italian government to promise, in 1988, to return all the toxics involved back to Italy. But only the toxic content of 5,500 barrels was loaded in 9,500 new barrels aboard four ships at Beirut Port in 1988/89. The remaining, more than 10,000 barrels and the content of the 20 containers remained in Lebanon and were dumped in the mountains or along its shores.

Some of the remaining waste was used as fertilizer, pesticide or as so-called raw material to produce paints or foam mattresses. Many barrels were burned in the open air. Others were dumped in the Kisrwan Mountains east of Beirut. The toxic wastes endanger groundwater reservoirs because the Kisrwan Mountains are a region of aquifers. In some cases barrels were emptied and sold to people to store in them petrol, water or food.

Italian officials claimed in 1989 that all the waste was returned on board one ship, the "Jolly Rosso". Italian Ambassador in Lebanon, Mr. Carlo Calia, in February 1995 reiterated this claim. The Greenpeace report we published contradicts this and gives details about the three other ships, which never reached Italy with their deadly cargo: "Vorais Sporiades", "Cunski" and "Yvonne A". The "Yvonne A" was probably sunk in the Mediterranean. The report also names some of the sites in Lebanon where the toxic waste still lies buried.

The deadly shipment from Italy contained a cocktail of toxics: the explosive substance nitrocellulose; outdated adhesives, organophosphoric pesticides, solvents as well as outdated medication; oil residues and substances contaminated with highly toxic heavy metals like lead, mercury and cadmium; arsenic; chlorinated substances; PCBs; etc.

In November 1994, Greenpeace activists took samples from barrels with waste stored at Beirut Port. The barrels were found shortly before in the Kisrwan Mountains. Test results showed that solid waste contained heavy metals, hydrocarbons from oil residues and chlorinated substances like HCBD, a highly toxic chemical that causes neurological damage and damages the kidney, and is a suspected carcinogen. This solid waste could be part of the Italian deal because the toxics from Italy contained similar substances.

Months of confrontation between the Lebanese authorities and Greenpeace followed. Ministers tried to cover up the issue, and this phase culminated in open threats and two lengthy interrogations of the local Greenpeace campaigner by the state prosecutor. But Greenpeace managed to convince the authorities to reopen the case of toxic waste from Italy. The result was 77 tons of contaminated land and toxic waste returned to Europe in April 1996. But some areas are still contaminated, and Greenpeace is still following up the issue until the danger is over.

On 13 January 1998, we revealed a quarry that had been used to burn and dump in it toxic waste in 1987 was reactivated, and tons of contaminated soil could spread all over the country. Greenpeace asked two of the three owners of the Shnanir quarry near Junieh, Mr. Haikal al-Khazen and Mr. Zakhia Nasr, not to touch the two contaminated spots They pledged to inform their workers to stay away from them.

Lebanese Environment Minister Akran Shuhayeb has been promising public opinion and Greenpeace since November 1996 that he will decontaminate Shnanir and solve once and for all this problem. Greenpeace gave Mr. Shuhayeb and his staff all the information about this case, and we have been regularly reminding the minister about his promise to solve this problem. Greenpeace is disappointed to discover that he dragged his feet so long until the quarry was reactivated. Greenpeace published documents proving that at least five sites in Lebanon were still contaminated by toxic waste. The sites are in Shnanir, Zelahmaya, Halat, Uyun al-Siman and in Tripoli.

Greenpeace sampled the two spots in the Shnanir quarry in May 1995 and found out that they were contaminated by heavy metals, hydrocarbons and outdated toxic pesticides. All discovered toxics closely resemble the contents of tons of toxic waste exported from Italy. The Shnanir quarry was the main storage site of this toxic waste.

The authorities have taken in principle an excellent position on waste trade, especially when they cooperated with Greenpeace to return to Germany 36 containers full of contaminated plastic waste. The 36 containers were illegally imported to Lebanon in August 1996. Greenpeace uncovered this waste trade scandal by making it public and by providing the authorities with official documents. The Greenpeace Mediterranean Office and Greenpeace Germany have then kept the issue alive in Lebanon and Germany until all 36 containers return to sender in two batches in May and June 1997.

To close the legal door for waste imports, the Lebanese Ministry of Environment adopted in December 1996 a new regulation banning the import of all hazardous waste into Lebanon - even under guise of recycling. Greenpeace, which helped draft the strict regulation, regards this move as a success after almost three years of campaigning against waste trade in Lebanon.

Meanwhile, two containers full of Belgian plastic wastes are still waiting at Beirut Port to be returned to sender. The Belgian company that illegally exported them to Lebanon in 1996 pledged to return them.

Greenpeace cannot understand why the authorities and especially Mr. Shuhayeb have been dragging their feet so long to solve the issue of toxic waste from Italy. Greenpeace will continue pressuring the authorities to rehabilitate all known hot spots in Lebanon and return the polluted waste and any toxic waste found to Italy.

4. CLIMATE CHANGE AND THE MEDITERRANEAN

Climate change will critically undermine efforts for sustainable development in the Mediterranean region and add to existing problems of desertification, water scarcity and food production, according to the 1997 Greenpeace report "Climate Change and the Mediterranean Region". It said that rising carbon dioxide (CO₂) emissions would also introduce new threats to human health, ecosystems and national economies in the basin. The most serious impacts will be felt in North African and eastern Mediterranean countries, e.g. developing nations.

CO₂ is a natural gas responsible for overheating the earth's atmosphere and for dramatic climate changes. Human-made activities like burning fuel and coal in vehicles and power plants leads to enormous CO₂ emissions.

If current trends in emissions of greenhouse gases continue, global temperatures are expected to rise faster over the next century than over any time during the last 10,000 years. Most projections point to more rain in winter and less in summer over the Mediterranean. Even areas receiving more rain may get drier than today due to increased evaporation and changes in the seasonal distribution of rainfall and its intensity.

As a consequence, the frequency and severity of droughts could increase across the basin. Temperatures could rise by over 4 degrees Celsius by 2100 over many inland areas and by over half of this over the Mediterranean Sea. Over the same period, annual rainfall is projected to decline by 10 to 40% over much of Africa and southeastern Spain, with smaller - but potentially significant - changes elsewhere. As the world warms, global sea levels will rise as oceans expand and glaciers melt. Around much of the Mediterranean, sea levels could rise by close to 1 meter by 2100. As a consequence, some low-lying coastal areas would be lost through flooding or erosion, while rivers and coastal aquifers would become saltier, the report said.

The worst affected areas will be the Nile Delta in Egypt, Venice in Italy and Thessaloniki in Greece where sea levels could rise by at least one-and-a-half times as much as elsewhere. The first impacts of climate change will be felt in the Mediterranean water resource system. Reductions in water availability would hit southern Mediterranean countries the hardest. In Egypt, Libya, Tunisia, Algeria, Morocco, Syria, Malta and the Lebanon, water availability already falls below, or approaches 1,000m³ per person per year - the common benchmark for water scarcity.

Even relatively well-endowed countries, such as Spain, Greece and Italy, could suffer ever-more frequent regional water shortages due to the twin problems of climate change and rising demand. Crete, for example, could experience serious water shortages in five out of six years by 2010.

While much desertification is attributed to poor land use practices, hotter and drier conditions would extend the area prone to desertification northwards to encompass areas currently not at risk. In addition, the rate of desertification would increase due to increases in erosion, salinisation and fire hazard and reductions in soil quality. As a result, the process of desertification will become irreversible. The economic and human costs of an increase in desertification would be tremendous - even today, the annual costs of desertification in Tunisia and Spain are US\$100 million and US \$200 million, respectively

Livestock production would suffer due to deterioration in the quality of rangeland. Yields of grains and other crops could decrease substantially across the Mediterranean region due to increased frequency of drought. World prices for many key commodities such as wheat, maize, soybean meal and poultry could rise significantly as a result of global climate changes. Not only might Mediterranean countries loose in economic terms, but the combination of higher prices and crop losses would lead to a deterioration in levels of food security in developing nations. Reductions in food security would increase the risks of malnutrition and hunger for millions in the southern and eastern Mediterranean.

Solution:

Time is running out while industrial nations like the US refused to radically cut CO2 emissions at the Climate conference in Kyoto in December 1997. Their failure to agree on serious CO2 reductions in Kyoto seriously endangers the future of the peoples in the Mediterranean region. Urgent action to cut global emissions of greenhouse gases is required.

The inescapable conclusion and Greenpeace's immediate call for the industrialised countries adopt legally binding obligations to reduce their CO2 emissions by 20 per cent on 1990 levels by 2005. National policies to radically reduce CO2 emissions must be adopted, plans to expand the exploration for oil and gas reserves must be stopped and the phase out of coal power stations and mining should begin now.

Delegates from about 160 nations agreed on 11 December 1997 that developed countries reduce average annual emissions of greenhouse gases much below 20 per cent on 1990 levels by the year 2010. This accord is as full of holes as a Swiss cheese. It has legal loopholes that mean increases of greenhouse gases over 1990 levels for many industrialised nations - and not a reduction. Overall greenhouse gas emissions will therefore rise at a time when the world urgently needs deep cuts in emissions. The so-called climate accord in Kyoto is a tragedy felt in Lebanon and all over the world.

5. REGIONAL ANTI-POLLUTION ACCORDS

The Greenpeace work in Lebanon is part of a regional campaign in the Mediterranean to pressure governments to ratify all protocols and amendments related to the 1976 Barcelona Convention. These accords ban all sorts of direct and indirect pollution in the basin. The 1998 Greenpeace campaigns take place during the current United Nations-declared "Year of the Oceans". But for Greenpeace every year has been a year of the Oceans since the organization was established in Vancouver, Canada, in 1971.

Land-based sources of marine pollution account for about 85 per cent of all the pollution input in the Mediterranean. Most of the toxic pollution in the Mediterranean originates from Spain, France and Italy. But developing countries are contributing rising doses of toxics into the Mediterranean Sea. Greenpeace has been appealing to all peoples in the Mediterranean to sign a petition that voices concerns about the pollution of the marine environment and the threat to the marine biological diversity in the basin. And it demands that all governments in the Mediterranean ratify all protocols and amendments related to the Barcelona Convention.

These amendments ban industrial and other toxic discharges along the coast and in rivers, waste dumping at sea, toxic and nuclear waste trade in the basin, all sorts oil pollution at sea, and protect the biodiversity of the basin. For these amendments to enter into force, three fourths of the Mediterranean states have to submit to the Convention Secretariat in Barcelona their written acceptance.

Fish stocks in the basin are threatened with extinction because of illegal driftnetting. Oil exploration and toxic pollution from industry and the agriculture sector poison marine life and the atmosphere. In addition, tourism development and uncontrolled coastal development is destroying ecosystems and the habitats of species. To gauge whether the 1998 "Year of the Ocean" will be a hollow publicity stunt, or whether it will make real achievements, governments in the region must ratify the Barcelona Convention amendments and protocols. The only states that have done so are Monaco and Tunisia. All the rest are dragging their feet.

6. GREENPEACE ROLE IN LEBANON

Since its inception in 1971, Greenpeace has operated philosophically on the principle of peaceful protest against environmental degradation and injustice. In doing so, we follow the Christian Quaker tradition of "bearing witness", the non-violent civil disobedience of the civil rights movement, and the non-violent direct action of the late Indian leader Mahatma Gandhi.

Bearing witness means that we sail or walk to the scene of the environmental crime. We document with photos and video films or we even try to prevent pollution with non-violent actions. Then we transport the images to the public opinion. The scene can be in the middle of the sea where we sample industrial outflows or prevent nuclear testing and toxic waste dumping. It can be inland to sample toxic waste dumps, the premises of a polluting company or the toxic ash of a waste incinerator.

Our efforts take many different forms, from demonstrating outside the official buildings to blocking the entrance of polluting factories or trying to take samples from inside. But, whatever the problem, and whatever the method we use to bear witness to that problem, one common thread runs through, Greenpeace is always non-violent. If Greenpeace has ever been involved in violence, it has been as a victim. In 1985, French intelligence agents, under official government orders, blew up the Greenpeace ship "Rainbow Warrior", killing Greenpeace crewmember Fernando Pereira. The ship was in Auckland, New Zealand, to protest peacefully against French nuclear testing in the South Pacific.

Greenpeace believes violence in any form is morally wrong and accomplishes nothing. On the contrary, our 27-year record of environmental successes around the world proves that non-violent direct action for just causes is mightier than any sword. For our efforts, the Nobel Commission nominated Greenpeace for the Nobel Peace prize in 1986.

Many officials, ministers and industrialists in Lebanon often criticized our spectacular and legitimate actions as a "media show". But these so-called shows provoke a reaction from polluters and a public debate. They damage the image of industrialists, companies or governments and force them to change their policies.

A fact is that no industrialist was willing to talk to us in Lebanon and elsewhere if he was not sure that Greenpeace is in a position of damaging his polluting business and image. We talk to industrialists, we cooperate with them, but quite often after having blocked their company and publicly spoiled their company's name. There were no Lebanese industrialists who spontaneously cooperated with Greenpeace after we had got in touch with them and pointed to environmental problems.

Greenpeace has been cooperating closely with local ecological and civic groups in Lebanon. Green Line was the group that invited Greenpeace to the country. When the ship "Rainbow Warrior II" visited Beirut in November 1994, this group demanded that we sample toxic waste in the port. Scientists like Dr. Pierre Malychef and Dr. Wilson Rizk

provided us with precious information and showed us sites where we sampled contaminated soil, like in the quarry of Shnanir.

On the issue of waste management Greenpeace cooperated with the "Popular Committee" in Hay al-Sellom in the southern suburbs against the polluting Amrusieh waste incinerator. Greenpeace also cooperated with 17 local groups in October 1997 when we sampled the coast from Tyre to Akkar and inland. All the mentioned activities could not have taken place without the support of courageous and integer local activists.

Greenpeace heavily relies on government officials and local groups to provide information proving that an ecological scandal is taking place. In May 1997, students in Monteverde informed us that trucks were dumping waste near their town in the Metn. Government officials, local groups and normal people give Greenpeace information because they know that we will not "sell" them, but we would do our best to solve the problem.

The supportive role of the Lebanese media was crucial in winning campaigns. Our organization never compromised on any issue and follows-up until a solution is found. Greenpeace is seen as credible and effective because of our style of work - and not because we are nice guys. We have never accepted the lies of those who say we must fill our world with poisonous chemicals. Greenpeace never considered all politicians and industrialists as opponents. We cooperate with some. But if dialogue and cooperation fail to achieve any change, then our duty is to uncover polluting activities through all available peaceful means, and we will name the culprits publicly via the media.

This style of work and the contact with people, directly or indirectly via the media, has a democratic influence in a society where public debates involving the names of culprits often from influential families are a rarity. Many warned Greenpeace to give up the Western way of campaigning in Lebanon. They argued that an oriental society would not accept naming the ecological culprits publicly and keep on the pressure for months or even years until a solution is found. They were wrong: The Greenpeace style, with an oriental touch, proved to be successful.

This style is linked to a total transparency in our work and finances. A private financial company audited the Greenpeace Mediterranean outpost in Lebanon. The financial statement was made public so that everyone knows how we spend the money we get from donors. The Greenpeace style will hopefully inspire other environmental and civic groups. Our excessive use of all non-violent and democratic tools are a must to achieve successes Lebanon badly needs to safeguard the health of its citizens and to secure our environment. The media informs the public about our work - but it also controls Greenpeace. This is democracy at its best.

7. CONCLUSION – HOW TO SURVIVE THE 21ST CENTURY

Lebanon will most probably stumble into the 21st century in a polluted state. During the next two years, all environmental problems are expected to continue growing out of control. The new government that will be formed by Premier Rafic Hariri after the presidential elections in autumn 1998 is expected to ignore any idea of nation-wide policies to save the environment.

A safe environment is not only a must to safeguard our health but also to secure Lebanon's economy in the 21st Century. Squandering natural resources and the beauty of Lebanon would affect many sectors like the agriculture and tourism ones. The World Bank said in 1996 that according to 1992 data the estimated annual costs of environmental and natural resource degradation in Lebanon is over 315 million USD.

The World Bank report listed the following economic losses due to pollution:

- Loss of coastal and mountain resources from over-development and/or neglect, threatening tourism (and local leisure industries); loss of tourism revenues
- Loss of soil productivity from erosion, pesticide residues and salination
- Loss of industrial competitiveness from non-compliance with international standards
- Costs of clean up/contaminated land
- Traffic congestion leading to work hour losses
- Lack of safe water/sanitation/hygiene leading to diseases and higher mortality rates and higher medical costs
- Air pollution leading to diseases, higher mortality rates and higher medical spending

The World bank said that of safe water, sanitation and hygiene costs 130 million USD, air pollution and over-crowding 100 million USD, degraded terraces 55 million USD and soil erosion with degraded rangeland 30 million USD. Due to the fact that the situation has been worsening since 1992 one can expect that these costs are now much higher.

The Hariri government has been focusing since 1992 on rebuilding the infrastructure that was almost totally destroyed during the civil war (1975-90). Funds have been almost entirely spent on repairing the electricity, road network, telecommunication and water sectors, and on an over-inflated, corrupted and inefficient public sector. The environment ministry, which was established after the war, is too small and badly equipped. It lacks the needed funds and the professional staff, and it does not have the competence required. The priorities in rebuilding the country have currently nothing to do with protecting and rehabilitating the environment.

Greenpeace has been observing a positive shift since Mr. Akram Shuhayeb took over the environment ministry in late 1996. He has played a positive role on issues like toxic waste imports and quarries. He helped establish natural reserves in several parts of Lebanon, and his blunt speeches have been contributing to a rising public awareness. The authorities are starting to take these issues seriously, but talking and small projects here and there will not help turn the tide. Much more needs to be done.

Here is an example of a poor official attempt to solve environmental problems: On 2 November 1994, Ex-Minister of Environment Pierre Pharaon signed Decision No. 20/B that established environmental standards for the protection of the environment from pollution. The standards govern air pollution and water pollution.

The United Nations analyzed in a 1995 METAP report the law and commented: "*... the law has been implemented very quickly, and is not well drafted nor well thought through. It proposes both emission standards for liquid effluent and atmospheric emissions, and some environmental (ambient) quality standards. The standards appear to have been drawn from US EPA guidelines, but at present there is no institutional capacity for the effective implementation of the standards. The emissions standards are not related to current ambient water or air quality standards (as these are not monitored and there is insufficient data available on the current air and water quality in the Lebanon to assess the appropriateness of the standards). More importantly, there is virtually no capacity within industry for measurement and control for emissions, and the fact that the majority of enterprises are extremely small makes both implementation and enforcement extremely difficult.*"

Let us not fool ourselves. The Lebanese authorities and companies can invest a lot in propaganda articles and films claiming that Lebanon has regained its pre-war beauty. They can set up Internet websites and spread via satellite TV shows that we are living again in the "Swiss of the Orient" and that our capital has become again the "Paris of the Orient". Many Lebanese expatriates and Gulf Arabs will probably want to believe this. However, after one trip the mask in front of the polluted and ravaged face would quickly crumble.

The government in Beirut, the Lebanese Industry Association (LIA) and other private sectors can no more hold to the myth that everything is not so bad, that enough is being done, and that the “Green Lebanon” is rising from its ashes. They must agree on a policy that includes channeling funds and human resources in stopping environmental decay and rehabilitating many areas.

The authorities can count on the support of non-governmental organizations (NGOs) like Greenpeace. But the involvement of NGOs can only be effective if the Environment Ministry and local politicians stop interfering in their internal affairs. In addition, the CDR and ministries must become transparent, publish their reports and deliver all needed information to help NGOs get involved on the basis of accurate data. Unfortunately, most officials in Lebanon have been trying to neutralize local NGOs by distributing financial aid and lucrative, UN-funded jobs in local projects. Lebanon is a democratic country, but most of its politicians act undemocratically and undermine all efforts leading to a civic society.

The government can be sure that international organizations like the World Bank and the United Nations Development Program (UNDP) as well as many industrialised western nations would increase their financial support to save the environment. But the support cannot materialize before the authorities show a clear political will to seriously involve NGOs in the environmental decision making process. Another stumbling block that must be removed is the large-scale corruption in public projects, something that frightens investments in environmental projects.

A research by the International Country Risk Guide said in September 1998 that Lebanon scored 4 on a corruption scale in 1995 from 8 in 1992 but jumped to around 10 this year, in line with Columbia and ahead of Indonesia (8), Morocco (5.8) and Jordan (4). World Bank economist Daniel Kaufmann said that corruption in Lebanon was rising faster than anywhere else in the world. The bank has approved 667 million USD in loans and guarantees for specific development projects in Lebanon, but only 28 per cent of that money was actually spent by June 1998 (source: Daily Star, 8 September 1998). 55 million USD for the waste management sector are still waiting to be spent in an environmental sound way.

We are not dealing with unmanageable problems, and therefore the Greenpeace arguments for clean production, waste management and treatment are not utopian but perfectly plausible. The environmental situation in Lebanon could be a lot worse, but at the same time it should be a lot better. As an example, the Lebanese industrial sector is relatively small, and often a few small factories are responsible for polluting large areas of coastline and river systems. The absence of many of the large primary manufacturing industries such as smelting, chlorine manufacture and pulp bleaching mean that the industrial waste that is generated could be managed and treated appropriately and effectively.

Greenpeace has listed urgent first steps that should be implemented by the authorities. They include among other points expanding the powers and increasing the budget of the ministry of environment, implementing an overall waste management program focussing on waste prevention, then separation at source, reuse, recycling and composting. New laws on taxes and incentives should incite the industry to shift towards investing in clean production methods in all processes. The government must start implementing a long-term environmental strategy to turn the tide. The UN and the World Bank have formulated numerous papers on that subject. Greenpeace supports most of their contents that are based on sustainable development strategies.

Here are urgent first steps that should be implemented:

1. Expand the powers and increase the budget of the ministry of environment so that it can play an active role in cooperation with other institutions like the CDR, the ministries of

industry, tourism and education. We should consider reshaping this ministry into a “Ministry of Environment and Technology”. This new body would formulate plans, coordinate and supervise their implementation. It must have a veto right.

2. An overall waste management program should focus on waste prevention, then separation at source, reuse, recycling and composting. New laws on taxes and incentives should incite the industry to shift towards investing in clean production methods in all processes.

3. Enforce the use of catalytic filters in vehicles and of lead-free petrol. Encourage people to purchase small and energy efficient cars with import taxes that favor small cars and not large one with excessive fuel consumption. The public transport sector should be expanded and modernized to make it attractive to people from all walks of life.

4. Phase-out the use of fossil fuels in power plants. Introduce energy saving programs and shift to renewable energies like solar, wind and biomass.

5. Restrict quarries to areas where no ecological damage could occur and regulate their operations according to stiff laws.

6. Starting to implement a long-term environmental strategy to turn the tide. The UN and the World Bank have formulated numerous papers on that subject. Greenpeace supports most of their contents that are based on sustainable development strategies.

The capacity of Lebanon’s environment to assimilate toxic substances is finite, and when this point is reached, rapid and probably irreversible environmental decay will result. The time has come for the authorities to use the historic opportunity of rebuilding a country from scratch on an environmental sound basis. The time has come for the authorities to seriously address all pressing environmental problems. They must acknowledge this and act.

8. MAIN SOURCES

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