

*Africa Review Report on Chemicals*



United Nations  
Economic Commission for Africa



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## Acronyms

AMCEN	African Ministerial Conference on the Environment
AMCOW	African Ministerial Council on Water
AMU	Arab Maghreb Union
ASP -	African Stockpiles Programme
AU-	Africa Union
BCRCs	Basel Convention Regional Centres
CEN-SAD	Community of Sahel-Saharan States
CIEN	Chemical Information Exchange Network
COMESA	Common Market for Eastern and Southern Africa
CSD	Commission on Sustainable Development
DGD	Decision Guidance Document
EAC	East African Community
ECA	Economic Commission for Africa
ECCAS	Economic Community of Central African States
ECOWAS	Economic Community of West African States
ENSO	El Niño-Southern Oscillation
FAO	Food and Agriculture Organization of the United Nations
FEPA	Federal Environmental Protection Agency
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHS	Globally Harmonized System
GMP	Global Mercury Project
GNI	Gross National Income
HCH	Hexachlorocyclohexane
ICCM	International Conference on Chemicals Management
ITCZ	The inter-tropical convergence zone
JPOI	Johannesburg Plan of Implementation
LDCs	Least Developed Countries
MDGs	Millennium Development Goals
MEAs	Multilateral Environmental Agreements
NCPCs	National Cleaner Production Centres
NEPAD	New Partnership for Africa's Development
NIPs	National Implementation Plans

NOA	North Atlantic Oscillation
OAU	Organization of African Unity
PAN	Pesticide Action Network
PCBs	Polychlorinated biphenyls
PCDD/Fs	Polychlorinated dibenzo-p-dioxins and furans
PCFV	Partnership for Clean Fuels and Vehicles
PIC	Prior Informed Consent
POPs	Persistent Organic Pollutants
QSP	Quick Start Programme
RIM	Regional Implementation Meeting
SADC	Southern African Development Cooperation
SAICM	Strategic Approach to International Chemicals Management
SSA	Sub-Saharan Africa
SSTs	Sea surface temperatures
TEQ	Toxic Equivalent
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
WHO	World Health Organization
WSSD	World Summit on Sustainable Development
WWF	World Wide Fund for Nature

## Acknowledgements

This Africa Review Report on Chemicals was produced under the overall supervision of Josué Dioné, Director of ECA's Food Security and Sustainable Development Division (FSSD), and guidance of Isatou Gaye, Chief of the Environment and Sustainable Development Section of FSSD. This publication is based on a draft report prepared by the United Nations Industrial Development Organization (UNIDO). ECA would therefore like to express its profound gratitude to UNIDO for this important contribution. ECA would also like to recognize the valuable contributions of the United Nations Environment Programme (UNEP), Secretariat of the Strategic Approach to International Chemicals Management (SAICM) and the Secretariat and Members of the Africa Roundtable on Sustainable Consumption and Production, in the production of this report.

This report was significantly shaped by the constructive inputs and comments provided by experts that attended the Ad Hoc Expert Group Meeting jointly organized by ECA, UNEP and UNIDO in June 2009, to review the draft regional review reports on mining, transport, chemicals, waste management and sustainable consumption and production. The final version of the report was enriched by substantive contributions of member States and participants at the Sixth Session of the Committee on Food Security and Sustainable Development (CFSSD-6), which also served as the platform for the Africa regional implementation meeting (RIM) in preparation for the 18<sup>th</sup> session of the UN Commission on Sustainable Development (CSD-18). The RIM, held in October 2009, was jointly organised by ECA, UNEP, UNIDO and UN Department of Economic and Social Affairs (UNDESA), with the active participation of the African Union Commission (AUC). ECA therefore wishes to extend its immense appreciation to member States, experts and other participants that attended these meetings.

The staff of the ECA Publications and Conference Management Section (PCMS) are also acknowledged for efficiently handling the editing, text processing, proofreading, design and printing of the report.



# 1.0 Introduction

## 1.1 Background information

Under Agenda 21 of the United Nations Conference on Environment and Development (UNCED, 1992), African countries committed themselves to implement 11 priority action points (Agenda 21 chapters 2, 3, 4, 6, 9, 14, 17, 18, 19, 20, and 21 ) in order to achieve environmentally sound management of chemicals on the continent. The commitment was further reinforced by resolutions made at the World Summit on Sustainable Development (WSSD) in its Johannesburg Plan of Implementation (JPOI), and the Millennium Development Goals (MDGs). Progress towards realization of these aims and objectives was reviewed as part of the 2010-2011 cycle of the Commission on Sustainable Development (CSD). This report assesses the status of environmentally sound management of chemicals in Africa against these international commitments.

Chemicals are important determinants for sustainable development, sound environmental health and quality of life. While the use of chemicals in all human activities (e.g. agriculture, health, mining, energy production, manufacture, services and residential) contributes to improving the quality of life, it also raises concerns about its harmful effects on workers, consumers, the environment and society at large through exposure. Furthermore, accidental releases from the distribution, consumption and disposal of chemicals may permanently damage soil, water and air. While the overarching issues in chemical management are relatively well known, the detailed status of specific developing countries, particularly in Africa, has not been assessed and reported in sufficient depth for effective management policies and practices to be designed and implemented.

The importance of chemicals management for achieving sustainable development and the Millennium Development Goals is clearly reflected in their prioritisation as thematic foci for the 2010-2011 cycle of the Commission for Sustainable Development (CSD18 and CSD19) (2). The 2010 Session reviewed progress at national, regional and global levels, of implementation of the commitments in Agenda 21, adopted at UNCED, Rio de Janeiro, 1992 and subsequently endorsed in the JPOI adopted at the World Summit on Sustainable Development (WSSD, Johannesburg, 2002).

Considering the findings of the 2010 session, the 19<sup>th</sup> Session of the CSD (CSD-19) in 2011 will focus on recommendations and implementation plans for addressing policy and implementation gaps identified from the global status review. Each of the United Nations Regional Commissions, including the Economic Commission for Africa (ECA) is expected to provide inputs to the United Nations Secretary-General's reports to both the review and policy sessions of the CSD.

This Africa Review Report on Chemicals was prepared as background document to the Africa Regional Implementation Meeting (RIM) held in October 2009 in preparation

for CSD-18 which deliberated on the thematic cluster of issues consisting of chemicals, waste management, transport, mining and sustainable consumption and production (SCP) including a ten-year Framework of Programmes on SCP.

This review was prepared in response to the need for insight into best practice methods and policies for environmentally sound management of chemicals in Africa. The review format is adapted from WHO (2005) and WHO/UNEP (2009) existing guidelines. They outline a global framework with a comprehensive and flexible approach, which permits individual countries to tailor the assessment to the existing stage of national situations and frameworks. The review combines classical evaluation methodologies with well-tested field procedures to accommodate the multi-sectoral nature of chemicals and environment issues.

## 1.2 Objectives

The objectives of this regional review are as follows:

1. Review international agreements and specific commitments made for environmentally sound management of chemicals in Africa;
2. Review the status, effectiveness, efficiency and sustainability of international policy and best practice initiatives in regard to environmentally sound management of chemicals in Africa;
3. Make a comparative assessment of the present status of environmentally sound management of chemicals in four African countries on the basis of national review reports provided by national experts.

The review is structured to cover international, regional and subregional initiatives. It highlights the differences within the African region, with a selection of four country reviews for Morocco, Nigeria, South Africa and Tanzania, to ensure coverage of the North, West, Southern and Eastern African sub-regions respectively.

The draft national reviews and a draft of this regional report on chemical management have been discussed and reviewed at the Ad Hoc Expert Group Meeting on Sustainable Development Report for Africa, jointly organised by the United Nations Economic Commission for Africa (ECA), the United Nations Industrial and Development Organization (UNIDO) and the United Nations Environment Programme (UNEP), 23-26 June 2009 in Addis Ababa.

Being a regional report, its focus is on developing a framework for action across the African region for improvements in the environmentally sound management of chemicals. The report could therefore not consider issues that are highly specific or even exclusive for one country in the region. It was therefore to be expected that upon completion of this regional project, further assistance would be needed to translate the review findings into specific action and implementation programmes for individual African countries.

## 2.0 Regional description

### 2.1 Regional background

The African continent has an area of 30.2 million square kilometers (including the Indian Ocean and Atlantic Ocean Island States) and a total population of 922.1 million (table 1). The region is divided into Northern Africa, Southern Africa, Eastern Africa, Western Africa, Central Africa and the Island States (UNEP, 2002b).

**Table 1: Current socioeconomic characteristics of the African continent**

Year	2006
Population, total (millions)	922.1
Population growth (annual %)	2.4
Surface area (sq. km) (thousands)	24241.9
Life expectancy at birth, total (years)	50.3
Mortality rate, infant (per 1,000 live births)	90.8
Literacy rate, youth female (% of females ages 15-24)	64.9
GNI (current US\$) (billions)	706.1
GNI per capita, Atlas method (current US\$)	862.3
Prevalence of HIV, total (% of population ages 15-49)	5.0

Source: World Development Indicators (adapted from the World Bank website) and World Population Prospects, 2006 Revision, of the Economic and Social Affairs Department of the United Nations Secretariat

In the 21<sup>st</sup> century, Africa is characterized by rising poverty levels and deepening environmental degradation. Globally, it has the largest percentage of people living on less than a dollar a day. Indeed, two-thirds of the 48 countries on the list of least developed countries (LDCs) are in Africa. Most of the efforts are therefore geared towards the achievement of food security and poverty reduction. Environmental issues thus focus more on desertification and climate change which lead to diminishing food resources and reduced capacity to enhance food security. The overuse and misuse of chemicals to control pests and boost agricultural productivity could also be attributed to efforts to enhance food security.

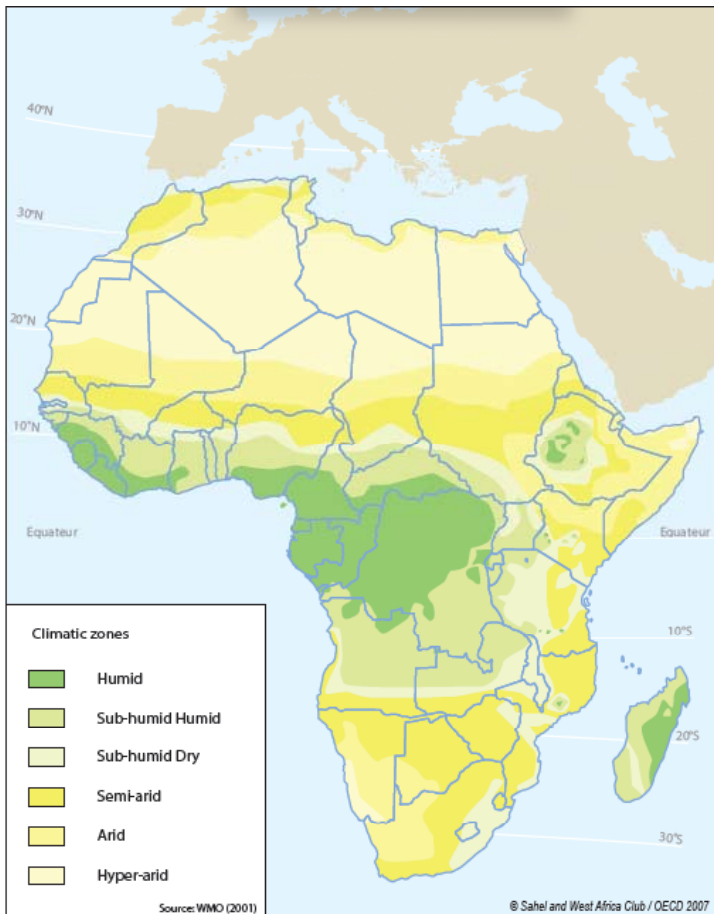
### 2.2 Political structures

The process of uniting Africa started in the 1950s leading to the formation of the Organization of African Unity (OAU) in 1963. The objective of establishing the OAU was to achieve greater unity and solidarity and promote political and socio-economic development in Africa. OAU was dissolved in July 2002, and the African Union (AU) was established the same year to capture the Organization's goal of establishing a common economic market and political union across the continent, thereby ensuring Africa's ability to play a more meaningful role in the global economy. The

AU is a Pan-African body responsible for spearheading Africa's rapid integration and sustainable development by promoting unity, cohesion, peace and cooperation within African states as well as developing new partnerships worldwide. It has a mandate to promote regional cooperation on environmental management and conservation. Regional groupings, particularly economic communities such as the Southern African Development Cooperation (SADC), the Economic Community of Central African States (ECCAS), the Economic Community of West African States (ECOWAS), the Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC), the Community of Sahel-Saharan States (CEN-SAD) and the Arab Maghreb Union (AMU) now form part of the AU.

### 2.3. Climatic and geographical characteristics of the Africa Region

Africa experiences highly variable climatic conditions. In the past, periods of drought and flood, warmth and cold have occurred interchangeably (Ropelewski and Halpert, 1987; Ogallo, 1988; Nicholson and Kim, 1997; Tyson et al., 2002). Most countries in Africa are already vulnerable to extreme climate events such as tropical cyclones, droughts and floods. Daily variability in climate over Africa occurs through diurnal effects such as land-sea breezes, and local topographic and coastal effects on airflow into lower latitudes (Tyson and Preston-Whyte, 2001). Sea surface temperatures (SSTs) in the Atlantic and Indian Oceans are the primary influence of African inter-annual rainfall fluctuations and are linked to the El Niño-Southern Oscillation (ENSO) phase shifts (Rocha and Simmonds, 1997; Nicholson and Selato, 2000; Reasons et al., 2000). There is an association between the wet (dry) conditions on the African continent and cold (warm) sea surface temperature conditions in the Atlantic and Indian Oceans (Nicholson and Kim, 1997; Reason et al., 2000). At irregular intervals, the North Atlantic Oscillation (NOA) and ENSO events have major impacts on inter-annual climate fluctuations on the continent (Tyson, 1986; Ward, 1998; Reason et al., 2000). Figure 2.1 summarizes climatic zones across the Africa region.



**Figure 1: Climatic zones across the African continent**

The regional climate is dominated by the intertropical convergence zone (ITCZ) or monsoon trough (Lewis and Berry, 1988; Waliser and Gautier, 1993). This ITCZ shifts over the land from one hemisphere to another in sympathy with the shift in areas of maximum solar heating. Significant latitudinal differences in climate exist across the continent in response to differences in land sea distribution, topography and geographical location in relation to subsidence associated with the subtropical high pressure cells. Rainfall across the continent varies from about 1,500 mm yr<sup>-1</sup> in the equatorial tropical forest regions to <50 mm yr<sup>-1</sup> over Northern Africa (Sahara desert region) and to <300 mm yr<sup>-1</sup> in Southern Africa (see figure 1 below). In Southern Africa, there is also an east-west gradient with rainfall varying from about 900 mm yr<sup>-1</sup> to <50 yr<sup>-1</sup> in the western regions (Kalahari Desert region).

In general, most of the African continent is tropical, except for the Mediterranean region and South Africa. There are significant variations in rainfall with gradient of +1 mm/year in some Saharan regions to +5,000 mm/year at the equator. Temperature

variations are minimal with most areas experiencing high temperatures throughout the year. However, day-night temperature variations are greater – as much as 10-15°C (and more so in the deserts), whereas inter-annual variations South of the Sahara remain between 6 and 10°C

### 2.3.1. Vegetation characteristics

Vegetation distribution in Africa is mainly controlled by total annual rainfall and the timing, duration and intensity of the dry seasons (Street-Perrott & Perrott, 1993). It has been noted that, according to the partly floristic and partly physiognomic vegetation classification of White (1983), the vegetation of Africa bears a close relationship to the large-scale climate of the continent (Street-Perrott & Perrott, 1993).

The sub-tropical and temperate seasonal climates are characterized by vegetation that is fire prone, comprising unique fire-dependent ecosystems that have evolved with fire as integral to biodiversity persistence and ecosystem functions. Fire is also widely used by people to manage such systems for human benefits, especially for improving grazing potential. In most of these ecosystems grazing by livestock is itself an important influence on vegetation structure and may limit fuel accumulation, leading to the potential for quite rapid human-induced changes in fire regime, and resulting switches in vegetation structure such as bush encroachment. Figure 2 summaries vegetation categories in Africa.

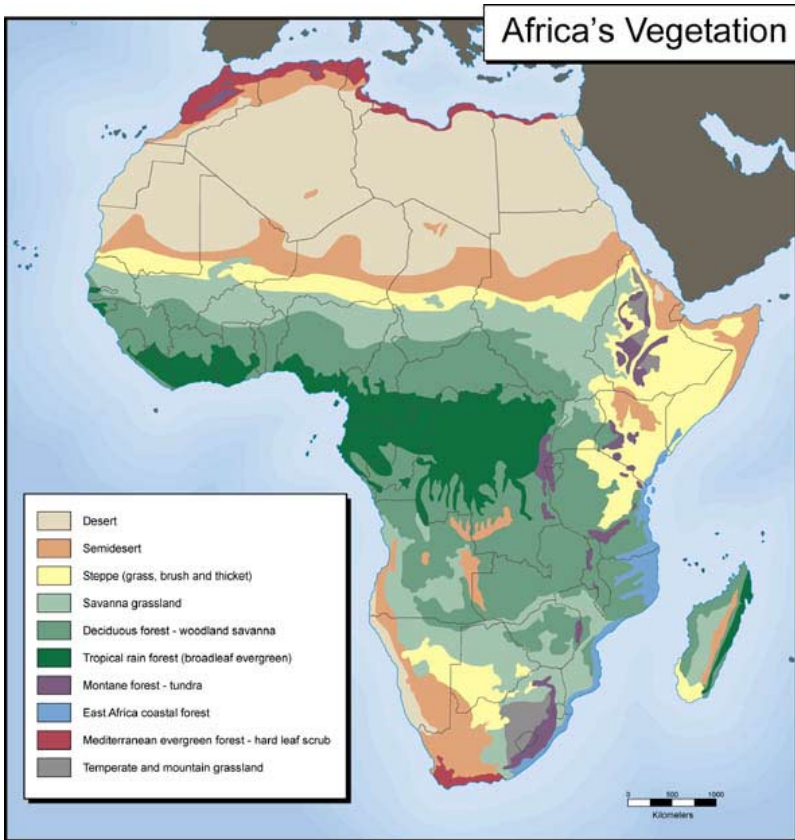


Figure 2: Vegetation classes of Africa

### 2.3.2. Biodiversity characteristics

Sub-Saharan Africa (SSA) is home to a significant portion of global faunal and floral biodiversity. . It is estimated that one-fifth of all known species of plants, mammals and birds, and about one-sixth of the amphibians and reptiles are in Africa. The rich biodiversity is partly due to the fact that SSA covers a vast climatic and topographic range, from the equatorial rainforest to the temperate regions of Southern Africa, with limited representation of alpine climates at mountain tops, and rainfall seasonality ranging from all-season, summer-season to winter-season, incorporating some of the driest regions of the world, namely the Namib Desert.

Africa has four biodiversity hotspots that together host 3.5% of the world's endemic plant species and 1.8% of endemic vertebrate species in areas that are reduced from their original extent by between 73.2% and 93.3% (Myers et al., 2001) - statistics that indicate a potentially high level of threat to Africa's endemic biodiversity. There

appears to be an increasing exposure of natural ecosystems to human impacts in SSA, despite the generally low population densities outside of the major urban centers.

Despite the varied threats, many sub-Saharan ecosystems retain substantial proportions of the biodiversity that occurred prior to the expansion of humans and during the late Pleistocene. The region has retained almost a full suite of its mega-herbivores and large carnivores, in sharp contrast to all other continents of the world, although these have suffered significant reduction in areas over which they potentially range in the wild. The Congo Basin has retained a substantial proportion of its primary tropical forest and thus represents a globally important carbon store; also, much of the tropical and sub-tropical savannah and woodland ecosystems are relatively intact. In South Africa, Scholes and Biggs (2005) found that biodiversity can be classified as more than 80% intact, according to an index which assesses the persistence of species richness across all land-use types.

The uniqueness of the African continent, in terms of geographical location, climate variability and diverse socio-economic activities, is significant in determining the environmental fate of various chemicals used on the continent. These conditions can influence the behaviour of chemicals. For example, air monitoring data in Zimbabwe and Malawi showed that hot temperatures volatilise sprayed dichlorodiphenyltrichloroethane (DDT) into pockets of hot air and could drift down stream. The distillation and condensation of persistent toxic substances (PTS) on top of cold mountains, like the Kilimanjaro, could also take place, although no data from Africa exists to confirm this. In addition, studies on the assessment of PTS also indicate that DDT and polychlorinated biphenyl (PCBs) compounds have been the most encountered persistent organic pollutants (POPs) in fish and marine environment since 1970s. The same studies also indicate widespread PTS contamination of foodstuffs of both plant and animal origin, including fish and fish products, breast milk and dairy products. Fish constitutes the major source of animal protein for coastal, lacustrine and riparian populations of some African countries, and is thus an indirect source of exposure to chemicals for these populations.

## 2.4 Agricultural and industrial activities in Africa

### 2.4.1 Agriculture

Most African economies are based on agriculture, which contributes largely to the GDP and exports. Several seasonal and cash crops are grown. The agricultural sector employs a large percentage of the population in the region. The sector is sometimes plagued by periodic drought, and persistently by land degradation caused by inappropriate agricultural practices and overgrazing, deforestation, population pressure, undeveloped water resources, and poor transport infrastructure. However,

irrigation and other methods such as agricultural diversification strategies are being increasingly used to boost agricultural productivity.

The maritime fisheries sector and livestock production also occupy prominent places in the national economy of some African countries. Horticulture has expanded rapidly in the last two decades to become one of the largest contributors to GDP. As a result, fruit and vegetable conservation and processing form an important part of the agro-food industry. In response to the need to boost agricultural productivity and attain food sufficiency, there is a tendency towards the use of chemicals such as fertilizers, veterinary chemicals, and plant protection substances. Pesticides constitute one of the major sources of PTS and POPs in sub-Saharan Africa. Pesticides are generally imported and not produced. However, pesticide formulation plants exist in many countries of the region. Sub-Saharan Africa accounts for less than 5% in terms of value of total global pesticide imports. The most widely used PTS pesticides including organochlorines are DDT, Endosulfan, Chlordane, Lindane (HCH), Heptachlor, Toxaphene, HCB and Aldrin (UNEP, 2002a).

Key features of the agricultural sector in Africa:

- a. Agriculture contributes 20-40% to the GDP of most countries in Africa
- b. Agriculture contributes to food security and is the main source of foreign exchange earnings in most African countries
- c. The fisheries sector occupies an important place in agriculture in most countries
- d. Industry contributes 4 - 32% the GDP in most countries
- e. Main constraints include, inappropriate agricultural practices, lack of modern technology and techniques, disastrous climatic conditions, lack of awareness on the use of harmful products, inadequate laws and monitoring schemes on chemicals used in agriculture and industry.

## 2.4.2 Industry

Despite its small contribution to GDP, the industrial sector supplies significant amounts of consumer goods to both the domestic and international markets. The main manufacturing products are textiles, foodstuffs, beverages, leather and non-metallic products. The industrial sector is progressively gaining ground in many African countries. It now represents 4 to 32 percent of the national GDPs in most African countries. Having been dominated by food industries for a long time, the sector has rapidly diversified due to the growth of strategic chemical sectors such as petroleum, pesticide and pharmaceuticals. Other sectors that contribute significantly to the GDP are the services sector and tourism (which includes the hotel industry). Mining is also an important activity in some countries.

To meet its developmental needs, Africa imports large amounts of various types of chemicals for industrial, domestic and agricultural purposes, as well as for cosmetics,

food, plastics, laboratory and petroleum. On the other hand, some countries have successfully diversified their economic activities by carving out special niches in textiles, financial services, and information & communication technologies.

## 2.5 Environmental health links to chemicals in Africa

The Africa region offers significant potential for human, social and economic development. However, it is facing enormous challenges such as rapid population growth, rising levels of poverty, diseases, and inappropriate development practices, which are also the main factors that affect the regional state of the environment. Exacerbated by rapid population growth, poverty remains the primary cause of sub-Saharan Africa's environmental health problems. Malaria remains a regional health priority and a major concern to African governments. In addition, plant pests pose threats to farmers. These threats are likely to increase with climate change, which is already showing some impacts around the continent.

One of the greatest challenges facing malaria control worldwide is the spread and intensification of parasite resistance to antimalarial drugs. The limited number of such drugs has led to increasing difficulties in the development of antimalarial drug policies and adequate disease management. The Roll-back Malaria Programmes championed and implemented by several African governments have still not achieved significant impacts. Greater use of chemicals will be expected in order to control insects that transmit diseases to humans, plants and animals.

Half of Africa's population has no access to health services and two-thirds lack safe drinking water. Of particular concern is the impact of the discharge of chemicals into water bodies, which poses risks to communities that rely on untreated water. While there is an urgent need to resolve this problem, it will undoubtedly lead to increased demand for water treatment chemicals.

The energy sector is also another area of concern in terms of the safe handling of chemicals in Africa. Access to energy is still low in most parts of the continent, but is expected to increase with economic growth. Power generation is still dependent largely on fossil fuels, complemented by generally inefficient diesel generators. These are major sources of chemical discharge into the environment. In addition, energy use in the transport sector and in many households generates air pollutants, which are responsible for many respiratory tract infections.

Due to lack of knowledge on environmentally sustainable alternatives and proper quality control of agricultural products, African farmers have greatly increased their use of chemical-based insecticides, herbicides, and fungicides. Persistent Organic Pollutants are still being used or stocked in make-shift **stores where the dangers and risks due to exposure are enormous**. The stock is sometimes comprised of packages of substandard, deteriorated pesticides and other hazardous chemicals. At least 20,000

tons of obsolete pesticides and tens of thousands of tons of contaminated soils have accumulated in most African countries over long periods (FAO, 1998). The Africa Stockpile Programme estimates that there might be more than 50,000 tons and perhaps even considerably more, of these chemicals stocked or discarded over many parts of Africa (Andreas B. and Kevin S., 2000). These pesticides pose a serious threat to the health of both rural and urban populations and contribute to land and water degradation.

Contamination of the environment can also occur through industrial processes (e.g. PCBs and heavy metals), agriculture (pesticides), or accidental industrial by-products (e.g. polychlorinated dibenzo-p-dioxins and furans-PCDD/Fs). Mining can also have a variety of detrimental environmental effects, including contamination of groundwater with heavy metals, and silting and sedimentation of riparian ecosystems. Medical and cosmetics waste, lack of shredder plants, incineration of hazardous wastes, steel fabrication with welders having limited protective guards, and burning of scraps and domestic waste all potentially contribute to dioxin and furan contamination.

Rampant accidental and deliberate combustion includes burning of rubber tyres and stripping insulation of copper wires and cables. Waste combustion could potentially be the largest source of dioxins and furans in Africa. Another danger is the burning of sugar cane fields, a common practice in sugar producing countries, which could also contribute to the formation of dioxins. A daily toxicity equivalent (TEQ) production of around 60g (21360 g TEQ/year) for dioxins and furans for Sub-Saharan Africa has been estimated based only on uncontrolled domestic waste combustion (UNEP Chemicals, 2002). This equates to 0.0003 g TEQ/year per capita, but does not include industrial or any other anthropogenic or natural sources as these were not taken into consideration in the assessment (UNEP Chemicals, 2002). Uncontrolled and widespread combustion of materials in households and industrial processes present a serious threat to human health due to release of POPs and particularly dioxins and furans.

## 2.6 Production, use, storage and disposal of chemicals in Africa

Although Africa's contribution to value-added production of chemicals is small, current trends suggest that its contribution to global production will continue to grow. Given that projections indicate that manufacturing in general, not just chemical manufacturing only, could be relocated from the Organization for Economic Cooperation and Development (OECD) countries to developing countries in the medium term, this sector can be expected to grow further.

The most advanced chemical industries in Africa are found in the Northern, Western and Southern regions. Chemical and petroleum industries currently account for 3 to 42% of the GDP in African countries. In general however, apart from the major oil

exporting countries (Angola, Nigeria, Libya, Egypt and Sudan, and the emerging ones, Ghana and Uganda), the chemical industry still relatively forms a small share of GDP in many African countries. The development of chemical industries in these sub-regions has been facilitated by access to larger markets and the presence of natural resources that support growth in this sector, notably natural gas and oil, and the presence of well-developed infrastructure that supports industrial growth in general. The latter factor is especially true for South Africa, Africa's largest economy and largest chemical industry. Although South Africa's chemical industry is small compared to that of OECD, still, it plays a significant role in the country's economy, accounting for about 5 percent of its GDP and providing over 150,000 direct employments annually.

More African countries are importing chemicals and products containing chemicals, due to trade liberalization and creation of free trade industrial zones. Of particular concern is the inability of many African countries to assess and monitor the risks associated with the trade in chemicals and chemicals contained in products. These risks have led to concerns about Africa importing chemicals that have been rejected by the industrialized countries.

There is a trend towards urbanization across Africa that is predicted to continue into the future. Urbanization is generally associated with increased consumption of industrial products. This scenario will therefore, lead to increased consumption of household chemicals across many expanding and upcoming urban centres in Africa.

Cheap labour and resources and weak environmental management capacities, provide an economic opportunity for relocation of some industries from industrialized countries to Africa (e.g. tanneries, lead acid battery recycling plants etc.). While the contribution to economic development and employment generation is welcome, there are concerns about the environmental and human health impacts of such relocated industries, especially in situations where the primary reason behind their relocation is to avoid compliance with stringent environmental regulations in the countries of origin.

With its growing population, Africa will be compelled to boost agricultural production (for food and in some cases biofuels, fibre and pharmaceuticals) and industry. This will undoubtedly call for increased use of chemicals, in particular fertilizers and pesticides for the agricultural sector.

Some of the key highlights of the chemical industry in Africa are as follows:

1. The production of agrochemicals is a key focus of the sector, especially since agriculture still forms the backbone of many African economies. For example, in 2002, Africa contributed 5 percent to total world pesticide production
2. In 2002, Africa contributed only 3 percent to the total world nitrogenous fertilizers production. The highest contributions from Africa were from Egypt and South Africa

3. Mining chemicals produced in Africa include explosives and accessories such as fuses and detonators, mineral processing agents like leaching agents, floatation agents, smelting fluxes and refining chemicals
4. Africa can tap into its rich biological diversity to develop pharmaceutical chemicals
5. Chemical-related soil degradation in Africa affects 51 million hectares of land, about 40 million of which is nutrient deficient, while salinity affects 6 million hectares. Inappropriate fertilization and irrigation practices result in salinization and acidification
6. Despite the environmental threats posed by DDT, it has proved to be the most effective method of controlling malaria, and therefore continues to be used in Africa. This is also the main justification for its exclusion from chemicals banned under the Stockholm Convention, until such time that equally effective environmentally friendly substitutes are available
7. Recycling can be an important environmental management strategy. However, where wastes contain POPs, other toxic chemicals and/or heavy metals, recycling can lead to accumulation of these pollutants and increased human exposure through food and water
8. Inorganic chemical compounds and POPs present in water and food present risks to humans. In small quantities, fluoride is good for teeth. However, in excess quantities, it destroys teeth and accumulates in bones, resulting in crippling skeletal damage. This is especially a problem in growing children. In 2004, cases of dental damage were reported in Kenya, South Africa, Niger, Ethiopia, Sudan, Tanzania and Uganda
9. Toxic substances such as cadmium, lead, arsenic and sulphuric acid contaminate water and soil, and affect human health. More than 50,000 tonnes of obsolete pesticides have been accumulated in Africa, contaminating tens of thousands of tonnes of soil.
10. In many mining centres, average atmospheric lead concentrations reach 0.3-0.5  $\mu\text{g}/\text{m}^3$  and exceed 1000  $\mu\text{g}/\text{g}$  in soils and dusts. The people of Kabwe in Zambia face a serious threat from zinc and lead mining activities. The vegetation, soil and water are contaminated and about 90,000 children are at risk of lead poisoning.

In order to capture opportunities for trade with industrialized countries, African countries will have to harmonize their trade and environmental policies, as overseas buyers increasingly demand evidence of environmental responsibility, including sound management of chemicals. This follows for instance, the introduction of, REACH, the European Union law on chemicals- and their safe use. A particular opportunity could exist for supplying environmentally sound goods and services (e.g. organic produce) to such international niche markets.

Around the continent, there is a trend towards sub-regional and regional integration, which demands increasing harmonisation of policies and strategies for environmentally sound management of chemicals. Institutions such as the the African Union (AU), the AU/NEPAD Planning and Coordinating Agency (NPCA), the African Ministerial Conference on the Environment (AMCEN) and the African Ministerial Council on Water (AMCOW) could potentially contribute to strengthening policies and strategies for the implementation and enforcement of environmentally sound management of chemicals.

As chemical production and use increase in Africa, the already limited resources of the continent's chemical management institutions will be over-stretched and unable to cope. Measures and systems need to be developed to help decrease exposure to the negative effects of chemical use and human vulnerability. This review sought to find out what is currently being done by these institutions and what still needs to be done to foster sustainable management of chemicals across the continent.

The review covers multilateral environmental agreements (MEAs) or conventions relating to chemicals, their adoption and domestication (by way of legislation and presidential and/or ministerial decrees) by African countries. In addition, the review highlights some of the key challenges African countries face in implementing the conventions, and propose ways to navigate around them.

## 3.0 Multilateral Environmental Agreements on Chemicals

The United Nations Environment Programme, Division of Technology, Industry and Economy, Chemicals Branch, lists four main international conventions pertaining to chemicals management: the Basel Convention; the Montreal Convention; the Rotterdam Convention; and the Stockholm Convention. This review focuses on these four conventions. A number of African countries have acceded to and ratified these four international conventions. In addition to these four, the Bamako Convention, an African- owned initiative and the Strategic Approach to International Chemicals Management (SAICM) were also reviewed for the preparation of this report. SAICM, however, is not a convention, but a policy framework to foster environmentally sound management of chemicals.

Domestication of the conventions and/or development of National Implementation Plans (NIPs) remain slow for these conventions, except for the Stockholm Convention where a number of parties have submitted their NIPs to the Stockholm Convention Secretariat in Geneva, Switzerland. A contributing factor to this slow pace of domestication of MEAs on chemicals is their diversity and scope, which is beyond the immediate absorption and implementation capacity of many African countries. Countries would thus benefit from harmonization and integration of the MEAs and provision of a process for risk-based prioritization of commitments at the national level.

Without actual domestication of an international convention and political will however, mere accession to a convention cannot prevent issues such as illegal trafficking of chemicals in the continent. Nigeria experienced illegal dumping and trading in toxic wastes when in 1988 about 3,880 tons of toxic and hazardous wastes were dumped in Koko, Bendel State (now Delta State) by an Italian Company. Similar incidents occurred sporadically in 1997, when 2,150 barrels of toxic fuels were distributed and sold in petrol stations, mainly in the south-west States of Nigeria. In 2005, 530 tonnes of toxic waste was transferred from the vessel Probo Koala, a Panama-owned ship and dumped in Cote d'Ivoire, resulting in serious damage to human health and the environment. These incidents were committed despite the fact that Nigeria and Côte d'Ivoire are parties to the Basel and Bamako Conventions, both of which restrict transboundary movements of hazardous and other wastes.

These incidences demonstrate a clear need for active cooperation and investment in facilities and institutions for monitoring and evaluation of key chemicals in the environment as a basis for national, sub-regional and regional priority setting for chemicals management. This needs to be accompanied by proper mechanisms for information exchange among African countries, building upon existing initiatives like the Pesticide Action Network (PAN) and Chemical Information Exchange Network

(CIEN). The positive contribution of the UNEP African regional centres for chemical analysis and data generation is acknowledged in this regard.

## 3.1 The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

### 3.1.1 Origins of the Convention

In the late 1980s, a tightening of environmental regulations in industrialized countries led to a dramatic rise in the cost of hazardous waste disposal. Searching for cheaper ways to get rid of the wastes, “toxic traders” began shipping hazardous waste to developing countries and Eastern Europe. When this activity was revealed, international outrage led to the adoption of the Basel Convention.

In its first decade (1989-1999), the Convention was principally devoted to setting up a framework for controlling the “transboundary” movements of hazardous wastes, that is, the movement of hazardous wastes across international frontiers. It also developed the criteria for “environmentally sound management”. A control system, based on prior written notification, was also put into place. The Convention entered into force on 5 May 1992.

### 3.1.2 About the Present Decade

During the Present Decade (2000-2010), the Convention will build on this framework by emphasizing full implementation and enforcement of treaty commitments. The other area of focus will be the minimization of hazardous waste generation. Recognizing that the long-term solution to the stockpiling of hazardous wastes is a reduction in the generation of those wastes - both in terms of quantity and hazardousness - Ministers meeting in December of 1999 set out guidelines for the Convention’s activities during the Next Decade, including:

- Active promotion and use of cleaner technologies and production methods
- Further reduction of the movement of hazardous and other wastes
- The prevention and monitoring of illegal traffic
- Improvement of institutional and technical capabilities - through technology when appropriate - especially for developing countries and countries with economies in transition (EITs)
- Further development of regional and sub-regional centers for training and technology transfer

As of March 2009, there were a total of 172 parties and signatories to the convention. Out of these, 46 are African States. A list of African countries that are signatories to

or have accepted, ratified or acceded to the Basel Convention is given in Annex Table A1.

### 3.1.3 The Basel Convention Regional Centres in Africa

The Basel Convention Regional Centres (BCRC)s were established in accordance with Article 14 of the Basel Convention, stipulating that , the Parties to the Convention agree to establish regional or sub-regional centres for training and technology transfer regarding the management of hazardous and other wastes and the minimization of their generation. The BCRCs were created to address specific regional or sub-regional needs.

The BCRCs are established under two types of agreement: (a) They are hosted in an intergovernmental institution or (b) A national institution is vested with a regional role to support countries within a region in their implementation of the Convention.

In Africa, BCRCs have been set up in the following countries or sub-regions:

1. The Basel Convention Regional Centre for the Arab States (Cairo, Egypt)
2. The Basel Convention Coordinating Regional Centre for the African Region (Ibadan, Nigeria)
3. Basel Convention Regional Centre for French-Speaking Countries in Africa (Dakar, Senegal)
4. Basel Convention Regional Centre for English-Speaking African Countries (Pretoria, South Africa)

In addition, there is the Africa Stockpiles Programme (ASP) under the POPs Convention, but in which the Basel Convention is a partner. The objective of the ASP is to clean up and safely dispose of all obsolete pesticide stocks from Africa and establish preventive measures to avoid future accumulation.

Also recently created (2009) to foster activities of both the Basel and Bamako Conventions in Africa is the Africa Institute for the Environmentally Sound Management of Hazardous and Other Wastes. It is based in Pretoria, South Africa, where the Basel Convention Regional Centre for English-Speaking African Countries is currently located.

This institute is part of an Africa-wide network of regional centres, and aims to provide a service to 21 English-speaking African countries on the management of hazardous and other wastes. The objective of the Africa Institute is to strengthen the capacity of its Members in the area of environmentally sound management of hazardous and other wastes, including the minimization of their generation, in accordance with the provisions of the Basel and Bamako Conventions. The functions of the institute shall be to provide training, technology transfer, information exchange, consulting,

awareness raising, research, and guidance on management of hazardous and other wastes for members.

### 3.1.4 The Bamako Convention

The Bamako Convention or in full, the Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes Within Africa, is a treaty of African nations prohibiting the import of any type of hazardous (including radioactive) waste. The Convention was negotiated by twelve nations of the Organization of African Unity in Bamako, Mali in January 1991 and came into force in 1998.

Impetus for the Bamako Convention arose from the failure of the Basel Convention to prohibit trade of hazardous waste to less developed countries (LDCs), and from the realization that many developed nations were exporting toxic wastes to Africa. This impression was strengthened by several prominent cases. One important case, which occurred in 1987, concerned the importation into Nigeria of 18,000 barrels of hazardous waste from the Italian companies Ecomar and Jelly Wax, which had agreed to pay local farmer Sunday Nana \$100 per month for storage. The barrels, found in storage in the port of Lagos, contained toxic waste including polychlorinated biphenyls, and their eventual shipment back to Italy led to protests closing three Italian ports.

The Bamako Convention uses a format and language similar to that of the Basel Convention, but is much stronger in prohibiting all imports of hazardous waste. Additionally, it does not make exceptions on certain hazardous wastes (like those for radioactive materials) made by the Basel Convention.

### 3.1.5 African Regional Activities/Projects under the Basel Convention

An effective way to monitor the implementation of the agreement is through follow-up projects and/or activities. In Africa, several activities have been organized by the BCRCs under the Strategic Plan for the implementation of the Basel Convention (Table 3.1).

**Table 3.1 Activities that have been carried out by the BCRCs**

Focus Area and Other Domains	BCRC	Location, Year	Project	Documents (Reports, Publications)
POPs	South Africa	South Africa, Oct. 2005	Regional Workshop for the Africa Region "Assessment of Existing Capacity and Capacity Building Needs to Analyse POPs in Developing Countries"	Final Report
POPs	South Africa	Tanzania, Oct. 2005	3rd Sub-Regional Workshop, Conclusion of the PCBs Inventory Project for SADC Countries and Training on Action Plans for PCBs	Final Report
POPs	South Africa	Mozambique, Nov. 2004	2nd Sub-Regional Workshop, Conclusion of the PCBs Inventory Project for SADC Countries and Training on Action Plans for PCBs and Dioxins/Furans	Final Report
Cooperation among the chemicals and hazardous wastes conventions	Egypt	Oman, Dec. 2005	Sub-Regional Workshop on the Coordinated Implementation of Chemicals and Hazardous Wastes Conventions	Mission Report
Cooperation among the chemicals and hazardous wastes conventions	Egypt	Egypt, Feb. 2005	Regional Workshop on the Implementation of the Stockholm Convention and Synergies with Others Related Agreements	Final Report
Legislation	Cameroon (Party)	Cameroon, May 2005	Regional Workshop on Compliance with and Enforcement of Multilateral Environmental Agreements	Final Report
SAICM, chemicals and hazardous waste conventions	South Africa	2006-2008	Towards a non-toxic environment in Africa (KemI project)	Project Agreement with KemI Agreement on the first phase of the project Kenya Baseline report Mauritius Baseline report Nigeria Baseline report Zambia Baseline report Proceedings of the Regional Workshop Lusaka, Republic of Zambia, 8-12th October 2007
POPs	Egypt	Jordan, August 2005	Regional Workshop for Arab States on the Environmentally Sound Destruction of POP and Decontamination of POP Containing Wastes in the Context of the Basel Convention and the Stockholm Convention	Final Report/ Publication

## 3.2 The Rotterdam Convention

### 3.2.1 Overview

The text of the Rotterdam Convention was adopted on 10 September 1998 by a Conference of Plenipotentiaries in Rotterdam, the Netherlands. The Convention entered into force on 24 February 2004.

### 3.2.2 Objectives

The objectives of the Rotterdam convention are:

- To promote shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm;
- To contribute to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, providing for a national decision-making process on their import and export and disseminating these decisions to Parties.

The Convention creates legally binding obligations for the implementation of the Prior Informed Consent (PIC) procedure. It built on the voluntary PIC procedure, initiated by UNEP and FAO in 1989 and ceased on 24 February 2006.

### 3.2.2 Major Provisions

The Convention covers pesticides and industrial chemicals that have been banned or severely restricted for health or environmental reasons and notified by Parties for inclusion in the PIC procedure. One notification from each of two specified regions triggers consideration of addition of a chemical to Annex III of the Convention. Severely hazardous pesticide formulations that present a hazard under conditions of use in developing countries or countries with economies in transition may also be selected for inclusion in Annex III. There are 39 chemicals listed in Annex III of the Convention, subject to the PIC procedure, comprising 24 pesticides, four severely hazardous pesticide formulations and 11 industrial chemicals. Many more chemicals are expected to be added in the future. The Conference of the Parties (COP) decides on the inclusion of new chemicals. Once a chemical is included in Annex III, a “decision guidance document” (DGD) containing information concerning the chemical and the regulatory decisions to ban or severely restrict the chemical for health or environmental reasons, is circulated to all Parties.

Parties have nine months to prepare a response concerning the future import of the chemical. The response can consist of either a final decision (to allow import of the chemical, not to allow import, or to allow import subject to specified conditions) or an interim response. Decisions by an importing country must be trade neutral (i.e.,

apply equally to domestic production for domestic use as well as to imports from any source).

The import decisions are circulated and exporting country parties are obligated, under the Convention, to take appropriate measures to ensure that exporters within its jurisdiction comply with the decisions.

The Convention promotes the exchange of information on a very broad range of chemicals by:

- Requiring /a party to inform other parties of each national ban or severe restriction of a chemical
- Making it possible for a party, which is a developing country or a country in transition, to inform other parties that it is experiencing problems caused by a severely hazardous pesticide formulation under conditions of use in its territory
- Requiring a party that plans to export a chemical that is banned or severely restricted for use within its territory, to inform the importing Party that such export will take place, before the first shipment and annually thereafter;
- Requiring an exporting party to ensure that an up-to-date safety data sheet is sent to the importer, when exporting chemicals that are to be used for occupational purposes
- Requiring labeling for exports of chemicals included in the PIC procedure, as well as for other chemicals that are banned or severely restricted in the exporting country

### 3.2.3 How to become a party to the Rotterdam Convention

A country becomes a party when it lodges, with the depositary its instrument of ratification, acceptance, approval or accession to the Convention.

### 3.2.4 Prior Informed Consent Regions

Prior Informed Consent (PIC) regions are used only for the determination of requirements stated in paragraph 5, article 5 of the Convention, as was adopted by the first meeting of the Conference of the Parties. At its first meeting, in decision RC 1/2, the Conference of the Parties, adopted regions and listing of countries as the PIC Regions, only for the purposes of paragraph 5, article 5 of the Convention.

Article 5, paragraph 5, of the Convention stipulates: “When the Secretariat has received at least one notification from each of two Prior Informed Consent regions regarding a particular chemical that it has verified meets the requirements of Annex I, it shall forward them to the Chemical Review Committee.” The list of African countries party to the Rotterdam Convention is given in Annex Table A2.

## 3.3 Stockholm Convention

### 3.3.1 Introduction

The Stockholm Convention on Persistent Organic Pollutants is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically and accumulate in the fatty tissue of humans and wildlife. Exposure to POPs can lead to serious health effects including certain cancers, birth defects, dysfunctional immune and reproductive systems, greater susceptibility to disease and even diminished intelligence. Given the long range transport of POPs, no one governing country acting alone can protect its citizens or environment from them. In response, the Stockholm Convention, which was adopted in 2001 and entered into force in 2004, requires Parties to take measures to eliminate or reduce the release of POPs into the environment. The Convention is administered by the United Nations Environment Programme and based in Geneva, Switzerland.

Persistent organic pollutants are a group of chemicals that are widely used in agricultural and industrial practices, and which are unintentionally released from many anthropogenic activities around the globe. POPs are characterized by: (i) *persistence* – the ability to resist degradation in various media (air, water, sediments, and organisms) for months and even decades; (ii) *bio-accumulation* - the ability to accumulate in living tissues at levels higher than those in the surrounding environment and (iii) *potential for long range transport* – the potential to travel great distances from the source of release through various media (air, water, and migratory species). Specific effects of POPs may include cancer, allergies and hypersensitivity, damage to the central and peripheral nervous systems, reproductive disorders, and disruption of the immune system. Some POPs are also considered to be endocrine disrupters, which, by altering the hormonal system, can damage the reproductive and immune systems of exposed individuals as well as their offspring. The ability of these toxic compounds to be transported to isolated areas of the globe, such as the Arctic, and to bioaccumulate in food webs, has raised concerns for the health of humans and the environment, particularly for indigenous people that rely on traditional diets of marine mammals and fish. The African continent is not spared from the toxic effects of these POPs. Human and wildlife alike are exposed to POPs previously applied in agriculture and industrial activities.

The transboundary movement of the compounds, the international scope of their manufacture, use and unintentional releases, and their long distance transport to impacted populations led to the adoption of the Stockholm Convention on Persistent Organic Pollutants in May 2001 to “*protect human health and the environment from persistent organic pollutants by reducing or eliminating releases to the environment*”. Substances currently being addressed under the Convention are aldrin, chlordane,

DDT, dieldrin, endrin, heptachlor, hexachlorobenzene, mirex, PCBs PCDDs/PCDFs and toxaphene. The Convention includes a procedure to add further substances to it.

One of the requirements of the Convention is that Parties should prepare and implement a phase out plan of action of POPs through a GEF Funded Project. The implementation plan outlines all aspects of POP management, including general sensitisation mechanisms and strategies to dispose of waste. The overall objective of the NIP is to develop a national framework with a view to protecting human health and the environment from the effects of POPs by preparing the ground for effective implementation of the Convention and strengthening of the country's national capacity to manage chemicals in general, and POPs in particular.

The Convention calls for the reduction or elimination of releases of persistent organic pollutants, which should translate into reduced environment levels over time.

### 3.3.2 Participation of African countries in the Stockholm Convention

Over 50 African countries have already conducted inventories of POPs within their territories. A full list of African countries that are parties to the Stockholm Convention is available in Annex Table A3.

### 3.3.3 Current projects and activities in African countries related to the Stockholm Convention

#### *3.3.3.1 Regional Centres*

Paragraph 4, Article 12 of the Stockholm Convention, calls for the establishment, as appropriate, of arrangements for the purpose of providing technical assistance and promoting the transfer of technology to developing country Parties and Parties with economies in transition relating to the implementation of the Convention. These arrangements are to include regional and sub-regional centres for capacity building and transfer of technology to assist developing country parties and parties with economies in transition to fulfil their obligations under this Convention. To minimize duplication of efforts and ensure timely delivery of adequate capacity building and technology transfer, the regional centres should operate within their areas of expertise and comparative advantage; synergies should be identified and promoted between regional and sub-regional centres serving the Convention, and also with other relevant centres. The nominated centres in Africa are the National Centre for Cleaner Technologies Production in Algeria and the Basel Convention Regional Centre for French African countries (BCRC-FA).

### ***3.3.3.2 Activities on unintentional POPs***

During many anthropogenic activities, unintentional production of persistent organic pollutants takes place, causing undesired side effects. Measures to reduce or eliminate releases from unintentional production are the subject of Article 5 of the Stockholm Convention. The chemicals of concern, listed in Annex C, Part I, are: Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF), hexachlorobenzene (HCB) and PCBs. The objective is to reduce the total releases of POPs derived from anthropogenic sources by use of the best available techniques and environmental practices for new sources.

### ***3.3.3.3 Best available technologies and best environmental practices***

To facilitate implementation of Article 5, Parties recognized the need for a harmonized framework for the elaboration of comparable release inventories of Annex C chemicals, and for detailed state-of-the-art guidelines on best available techniques and guidance on best environmental practices. UNEP Chemicals developed the harmonized framework and guidelines in broad collaboration with experts from developed and developing countries, before the Convention entered into force. Currently, this process continues under the Convention with the goal of keeping all relevant documents and procedures up-to date and developing them further as necessary and appropriate. Guidelines on the best available techniques and best environmental practices provide the necessary guidance called for in paragraph (c), Article 5 (Toolkit).

### ***3.3.3.4 Effectiveness evaluation***

The Stockholm Convention is a legally binding international instrument, designed to lead to gradual decrease of the presence of persistent organic pollutants in the environment. Article 16 of the Convention requires that effectiveness of the measures adopted by the Convention be evaluated at regular intervals.

The objective is to assess whether the Stockholm Convention is an effective tool for protecting human health and the environment from persistent organic pollutants. In practice, this happens through evaluating whether: releases from intentional production and use are eliminated or reduced; releases from unintentional production are eliminated or reduced; releases from stockpiles and wastes are eliminated or reduced; and environmental levels of POPs are decreasing over time or reduced

### ***3.3.3.5 The global monitoring plan***

The global monitoring plan is an important component of effectiveness evaluation providing a harmonized organizational framework for the collection of comparable monitoring data or information on the presence of the persistent organic pollutants from all regions, in order to identify changes in levels over time, as well as to provide information on their regional and global environmental transport.

The first monitoring report for the effectiveness evaluation was presented at the fourth meeting of the Conference of the Parties in May 2009 and will serve as baseline for further evaluations. At its third meeting in May 2007, the Conference of the Parties, by decision SC-3/19 on effectiveness evaluation, adopted the amended global monitoring plan for persistent organic pollutants (UNEP/POPS/COP.3/22/Rev.1, annex II) and the amended implementation plan for the global monitoring plan (UNEP/POPS/COP.3/23/Rev.1). It also adopted the Guidance on the Global Monitoring Plan for Persistent organic Pollutants, which had

been prepared by the technical working group mandated by the Conference of the Parties per decision SC-2/13. This guidance document provides the overall technical guidelines for the implementation of the global monitoring plan in all United Nations Regions.

These decisions outlined a programme to begin the evaluation of the effectiveness of the Convention through the use of regional monitoring reports that use existing national and international programmes, in combination with strategic capacity building in regions where major data gaps have been identified, to provide information on the concentrations of priority POPs.

#### ***3.3.3.6 National implementation plan (NIP)***

A national implementation plan (NIP) is a plan for implementing the obligations under the Convention at the national level. Article 7 of the Convention requires parties to develop and endeavour to implement a plan for implementing their obligations under the Convention, and to submit it to the Conference of the Parties within two years of the entry into force of the Convention for the Party.

#### ***3.3.3.7 Dichloro-diphenyl-trichloroethane***

DDT continues to be the most produced and used POP of the twelve substances initially listed in the Stockholm Convention. The COP continues to allow the use of DDT in public health for disease vector control, as recommended by and under the guidance of the World Health Organization (WHO). The WHO recommends the use of DDT for indoor residue spraying to control the anopheles mosquito that carries the malaria parasite.

Currently, 14 parties to the Convention on the DDT register have notified the secretariat of the production or use of DDT or the intention to use DDT for disease vector control. Every three years, parties that produce or use DDT are obliged to report the conditions of such use to the secretariat, using a DDT questionnaire that was adopted by the COP. At each COP, an assessment of the continued need for DDT is undertaken. This is supported by an evaluation report presented by a DDT expert group that meets six months prior to each COP. The DDT expert group reviews the available data and provides recommendations to the COP on the continued need

of DDT for disease vector control and other issues pertaining to the introduction of alternatives and the progress being made to reduce reliance on DDT for disease vector control.

At the third meeting of the Conference of the Parties, a decision was taken to prepare a business plan to enhance global partnerships for the development and deployment of alternative products, methods and strategies to DDT for disease vector control. The secretariat worked toward preparation of the business plan for submission to the COP at its fourth meeting in 2009.

#### ***3.3.3.8 Wastes and stockpiles***

According to Article 6, once POPs become wastes, parties to the Stockholm Convention are required to:

- a. Develop and implement appropriate strategies for identifying stockpiles, products and articles in use that contain or are contaminated with POPs;
- b. Manage stockpiles and wastes in an environmentally sound manner;
- c. Dispose of waste so that the POPs content is destroyed or irreversibly transformed;
- d. Not permit the recycling, recovery, reclamation, direct reuse or alternative use of POPs;
- e. Endeavour to develop strategies for identifying contaminated sites and perform eventual remediation in an environmentally sound manner.

The Stockholm Convention and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal have a joint mandate on POPs wastes and have agreed to cooperate closely on establishing levels of destruction and irreversible transformation necessary to ensure that POPs characteristics are not exhibited. Additionally, the Conferences of the Parties of the two Conventions determine cooperatively what methods should constitute environmentally sound disposal. The Basel Convention has developed technical guidelines on the Environmentally Sound Management of POPs wastes. Parties to the Stockholm Convention are invited to take these guidelines into account when implementing their obligations under Article 6 of the Convention.

#### ***3.3.3.9 Technical assistance***

Article 12 of the Stockholm Convention states that "... timely and appropriate technical assistance in response to requests from developing country Parties and Parties with economies in transition is essential to the successful implementation of the Convention". Paragraph 3 of Article 12 of the Convention states that "In this regard, technical assistance to be provided by developed country Parties, and other Parties in accordance with their capabilities, shall include, as appropriate and as mutually agreed, technical assistance for capacity-building relating to implementation of the obligations

under this Convention”. The first meeting of the Conference of the Parties in its decision SC-1/15 adopted guidance on technical assistance

Paragraph 4 of Article 12 of the Stockholm Convention, calls for the establishment, as appropriate, of arrangements for the purpose of providing technical assistance and promoting the transfer of technology to developing country Parties and Parties with economies in transition relating to the implementation of the Convention. These arrangements are to include regional and sub-regional centres for capacity building and technology transfer to assist developing country parties and parties with economies in transition to fulfil their obligations under this Convention.

The objectives of technical assistance are:

1. To render timely and appropriate technical assistance in response to requests from developing country parties and parties with economies in transition with the objective of enabling them to implement their obligations under the Convention
2. To facilitate the implementation of Convention obligations, in particular the priorities set out in the national implementation plans of the developing country parties and parties with economies in transition. To minimize duplication of efforts and ensure timely delivery of adequate capacity building and technology transfer, the regional centres should operate within their areas of expertise and comparative advantage; synergies should be identified and promoted between regional and sub regional centres serving the Convention, and also with other relevant centres

### ***3.3.3.10 Elimination of PCBs***

Polychlorinated Biphenyls are a class of synthetic organic chemicals. Since 1930, PCBs have been used for a variety of industrial purposes (mainly as dielectric fluids in capacitors and transformers and flame retardants, ink solvents, plasticizers, etc.) because of their chemical stability. PCBs are fire resistant, have a low electrical conductivity, high resistance to thermal breakdown, oxidants and other chemicals. When 1970s research findings showed that these characteristics that made them a popular additive were a serious threat to human health and the environment, their production was phased out. PCBs are considered to be immunotoxic and affect reproduction. The adverse effect of exposure to PCBs is damage to the immune system, liver, skin, reproductive system, gastrointestinal tract and thyroid gland.

Around 1.7 million tonnes of PCBs were produced from 1929 to 1989 and some of the equipment containing PCBs is still in use somewhere or stocked, awaiting final disposal. Once released into the environment, PCBs do not break down but rather travel over long distances and continue to pose health risks to humans. It is therefore important to remove them from use and destroy existing stockpiles. Existing PCBs can be destroyed by breaking their molecular bonds by inputting chemical or thermal

energy. The most common method is high temperature incineration, though other non-combustion methods like dechlorination also exist.

## 3.4 The Montreal Protocol on Substances that Deplete the Ozone Layer

### 3.4.1 Introduction

The Montreal Protocol on Substances that Deplete the Ozone Layer is an international treaty designed to protect the ozone layer by phasing out the production of a number of substances believed to be responsible for ozone depletion. The treaty was opened for signature on 16 September 1987 and entered into force on 1 January 1989, followed by a first meeting in Helsinki in May 1989. Since then, it has undergone seven revisions, in 1990 (London), 1991 (Nairobi), 1992 (Copenhagen), 1993 (Bangkok), 1995 (Vienna), 1997 (Montreal), and 1999 (Beijing). It is believed that if the international agreement is adhered to, the ozone layer should recover by 2050. Due to its widespread adoption and implementation, it has been hailed as an example of exceptional international cooperation.

### 3.4.2 Assessment Panels under the Montreal Protocol

The Assessment Panels have been the pillars of the ozone protection regime from the implementation of the Montreal Protocol. Through provision of independent, technical and scientific assessments and information, the Panels have helped the Parties to make informed decisions that have made the Montreal Protocol a world-recognized success.

UNEP initiated the assessment panel process in 1988 pursuant to Article 6 of the Montreal Protocol. Four Panels—Scientific, Environmental, Technology and Economic Assessments - were established. The first meeting of the parties to the Montreal Protocol in 1989 approved the panels and their first set of terms of reference. Shortly after the second meeting of the Parties in 1990, the panels for technology assessment and economic assessment were merged into one Panel called the Technology and Economic Assessment Panel.

In accordance with Article 6 of the Montreal Protocol and subsequent decisions of the parties, the three panels carry out periodic assessments on the scientific issues of ozone depletion; environmental effects of ozone depletion; status of alternative substances and technologies as well as their economic implications. The first report was published in 1989 and since then major periodic assessments have been published in 1991, 1994, 1998 and 2002. In addition, the Technology and Economic Assessment Panel produces a progress report every year to review the status of alternatives and technologies, and to address the various requests given to them by the Parties including

evaluation of nominations for essential use exemptions for Annex A and B substances, and nominations for critical use exemptions for methyl bromide.

The Technology and Economic Assessment Panel operates with 6 Technical Options Committees on:

- Chemicals
- Flexible and rigid foams
- Halons
- Medical
- Methyl bromide
- Refrigeration, air conditioning and heat pumps.

Other temporary subsidiary bodies are established and dissolved according to the needs for specialized assessments as required by the Parties.” The Ozone Secretariat of the UNEP website hosts a database of information pertaining to ozone depleting substances for different regions including Africa.

## 3.5 Strategic Approach to International Chemicals Management

### 3.5.1 Introduction

The Strategic Approach to International Chemicals Management (SAICM) was adopted by the International Conference on Chemicals Management (ICCM) on 6<sup>th</sup> February 2006 in Dubai, United Arab Emirates as a policy framework to foster the sound management of chemicals throughout the world.

Voluntary in nature, SAICM is notable for its (i) broad scope; (ii) ambitious goal of sound chemicals management by 2020 in line with the target of the Johannesburg Plan of Implementation; (iii) multi-stakeholder and multi-sector approach; (iv) endorsement at the highest political levels; (v) close involvement of civil society, including the private sector; (vi) emphasis on sound management of chemicals as a sustainable development issue; (vii) efforts toward resource mobilization to build developing country capacity and (viii) formal endorsement or recognition by the governing bodies of intergovernmental organizations. SAICM comprises the Dubai Declaration on International Chemicals Management, which expresses high-level political commitment to the Strategic Approach and the Overarching Policy Strategy, which sets out its scope, needs, objectives, financial considerations, underlying principles, approaches, implementation and review arrangements. The Declaration and Strategy are accompanied by a Global Plan of Action that serves as a working tool and guidance document to support implementation of the Strategic Approach and other relevant instruments and initiatives by suggesting specific activities and targets.

The overall objective of the Strategic Approach is to achieve the JPOI goal that, by 2020, chemicals should be produced and used in ways that minimize significant adverse impacts on human health and the environment. Individual objectives are grouped under five themes: risk reduction; knowledge and information; governance; capacity-building and technical cooperation and illegal international trafficking.

The International Conference on Chemicals Management (ICCM) is the governing body of the Strategic Approach. Having adopted the Strategic Approach in Dubai at its first session in 2006, the Conference's main function is to undertake periodic reviews of the implementation of the Strategic Approach. The Conference reflects the multi-stakeholder nature of the Strategic Approach, and comprises representatives of governments and intergovernmental and non-governmental organizations. The Conference will convene triennially until 2015. Its second session was held in Geneva from 11 to 15 May 2009 and its last meeting will take place in 2020.

The Strategic Approach foresees a series of arrangements, including financial arrangements for the implementation of Strategic Approach objectives. Initial enabling capacity building activities for the implementation of the Strategic Approach objectives are supported by the Strategic Approach's only dedicated financial mechanism, the Quick Start Programme (QSP). QSP includes a voluntary, time-limited trust fund, administered by the United Nations Environment Programme, and multilateral, bilateral or other forms of cooperation. It should be noted, however, that the Quick Start Programme constitutes only a fraction of Strategic Approach implementation activities at national, regional and international levels.

### 3.5.2 African regional activities under SAICM

Some of the regional activities conducted under SAICM are:

- African Core Group gathering, Cairo, Egypt, 13-15 June 2006
- African regional meeting on SAICM, Cairo, Egypt, 11-14 September 2006
- Arab Core Group meeting on SAICM, 29 October 2006
- Arab sub-regional meeting, Cairo, Egypt, 1-2 April 2007
- 2nd African regional meeting, Dar es Salaam, United Republic of Tanzania, 14-19 July 2008

### 3.5.3 Regional coordination arrangements

The Strategic Approach puts considerable emphasis on regional activities and meetings for its implementation. Based on the Strategic Approach's Overarching Policy Strategy regional meetings facilitate input on Strategic Approach activities, preparation for future meetings of the Conference and exchange of regional expertise and information. The functions of regional meetings, as generally provided for in the Strategic Approach, include the review of progress on implementation of the Strategic Approach within the

regions; providing guidance on implementation to all stakeholders at the regional level and the enabling of technical and strategic discussions and exchange of information.

The African region has also been active in the Strategic Approach Quick Start Programme and its Trust Fund. Seventy-six out of 140 project proposals that have been submitted from governments and 17 out of 45 project proposals from civil society organizations originate from the African region. The Quick Start Programme is providing funding to 29 government-led and four civil society projects in Africa. The approved projects have to do with initial enabling activities on developing or updating national chemicals management profiles and establishing integrated national programmes for sound chemicals management; strengthening capacities to control the transboundary movements of hazardous wastes and chemicals in the context of the Basel Convention to develop Globally Harmonized System of Classification and Labelling of Chemicals (GHS), to implement the Stockholm Convention, enhance safe management of public health pesticides along with other activities. The majority of the projects have an executing agency. The region received approximately US\$6.7 million out of a total funding of US\$16 million, after the 6th round of the Quick Start Programme trust fund in April 2009.

The SAICM regional focal point for Africa is in Zambia. The region is represented by the Governments of Burundi and Nigeria on the Executive Board of the SAICM Quick Start Programme. The terms of reference for the regional focal point and representatives on the QSP Executive Board were agreed at the region's first meeting held in Cairo from 11 to 14 September 2006.

The African Core Group, which had previously operated during the development of SAICM was reconvened in Cairo from 13-15 June 2006 in advance of the first African regional meeting on SAICM, where it was formalized with an agreed membership structure and terms of reference. The Group has developed a work plan, held a series of teleconferences and met for the second time in Dar-es-Salaam on 13 July 2008.

In addition, the Arab countries, which span the African and the Asia-Pacific regions, established an Arab Core Group at a meeting of the *Arab Technical Team for Multilateral Environment Agreements Relevant to the Management of Hazardous Chemicals and Wastes* held in Cairo from 16 to 18 September 2006. The members of the Group met in Alexandria, Egypt, on 29 October 2006. The terms of reference for the Group were endorsed at the meeting of Arab countries held in Cairo, Egypt, on 1 and 2 April 2007, where the Group was renamed the Arab Coordination Unit.

#### 3.5.4 Projects funded by the Quick Start Programme) SAICM trust fund

The International Conference on Chemicals Management decided in resolution I/4 to invite UNEP to establish a voluntary, time-limited trust fund to provide seed money to support the objective and strategic priorities of the QSP. The objective of the

QSP is to “support initial enabling capacity building and implementation activities in developing countries, least developed countries, Small Island Developing States and countries with economies in transition.”

Under the ICCM strategic priorities, the QSP will mobilize resources for national priority initial enabling activities in keeping with the work areas set out in the strategic objectives of section IV of the Overarching Policy Strategy, in particular:

- a. Development or updating of national chemical profiles and the identification of capacity needs for sound chemicals management
- b. Development and strengthening of national chemicals management institutions, plans, programmes and activities to implement SAICM, building upon work conducted to implement international chemicals-related agreements and initiatives
- c. Undertaking analysis, interagency coordination, and public participation activities directed at enabling the implementation of SAICM by integrating – i.e., mainstreaming – the sound management of chemicals in national strategies, and thereby informing development assistance cooperation priorities.

Developing countries and countries with economies in transition are eligible for support from the trust fund. Proposals may be presented by SAICM participating governments that have given appropriate formal recognition to SAICM, at least, by having designated an official SAICM national focal point. On an exceptional basis, and having regard to resources and administrative capacity available, representatives of civil society networks participating in SAICM may also present project proposals.

### 3.5.5 Summary of application rounds

For five rounds of applications to the QSP trust fund, held between May 2006 and October 2008, the secretariat received 166 project proposals. The QSP Trust Fund Implementation Committee<sup>1</sup> approved 74 projects for a total funding of US\$14,020,252. The projects will be implemented by 60 governments and seven civil society organizations and involve activities in 73 countries, including 34 Least Developed Countries and/or Small Island Developing States (Annex Tables A4 and A5).

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<sup>1</sup> The ICCM invited representatives of the participating organizations of the Inter-Organization Programme on the Sound Management of Chemicals (IOMC) and the United Nations Development Programme to form a Trust Fund Implementation Committee. This Committee meets twice a year, and is responsible for appraising and approving projects to be financed by the QSP Trust Fund. .

## 4.0 Status of implementation of sound management of chemicals in Tanzania, Nigeria, South Africa and Morocco

Assessment of the national review reports showed that the four selected African countries are at different levels of **domestication of the MEAs into their** national development agenda. With the exception of Morocco, which has not ratified the Rotterdam Convention, all the four countries have ratified other conventions such as the Montreal Protocol, the Stockholm Convention and the Basel Convention. . South Africa is in the process of strengthening the national legislation pertaining to the Stockholm Convention and minimise fragmentation. Guidelines have been developed for the management of hazardous waste materials.

### 4.1 Legislative framework

All the four countries are at different stages of putting in place relevant environmental legislation to support implementation of the MEAs. Implementing agencies have been instituted in each country to this effect. In Nigeria, the National Environmental Standards and Regulations Enforcement Agency (NESREA) is responsible for enforcing all environmental laws, guidelines, standards and regulations established in the country. In South Africa, the Department of Environment Affairs (DEA) has been proactive in ensuring legislation for the sound environmental management of chemicals.. In Tanzania, the Division of Environment (DOE) is responsible, among other functions, for policy articulation, advocacy and implementation, monitoring and evaluation, environmental planning, environmental legislation and international cooperation. It is also the national focal point for MEAs including the Stockholm Convention, Basel Convention, Montreal Protocol and Bamako Convention. On the other hand, the National Environment Management Council (NEMC) is the regulatory body, which oversees the implementation of the Environmental Management Act, 2004.

Formulation and enforcement of the regulations and policies for protection of the environment and human health are at different levels. In Tanzania, while there is no specific policy developed to address MEA implementation, a number of policies do exist for protection of the environment and human health. These include the National Development Vision 2025; National Strategy for Growth and Reduction of Poverty (NSGRP – 2005; National Environment Policy, 1997; Agricultural and Livestock Policy, 1997; Sustainable Industrial and Development Policy (1996 – 2020) of 1996; National Energy Policy (2003); Trade Policy (2003); National Water Policy (2002); the National Health Policy (2003); and the Small and Medium Enterprise (SME) Development Policy (2003). There is also legislative framework for controlling and regulating chemicals management throughout the life cycle in place. These

include the Environment Management Act No. 20 of 2004; Industrial and Consumer Chemicals (Management and Control) Act No. 3 of 2003; Plant Protection Act No. 13 of 1997; Occupational Safety and Health Act No 5 of 2003; Tanzania Food, Drugs and Cosmetics Act No. 1 of 2003; Tropical Pesticides Research Institute (TPRI) Act (1979); Atomic Energy Act (2002) and Mining Act (1998).

In Nigeria, the principal regulatory agencies with the mandate for chemicals control in the country are the Federal Ministry of Environment (FMENV), the National Agency for Food and Drug Administration and Control (NAFDAC) and the Department of Petroleum Resources [DPR]. In 2000, FMENV produced a publication called *A National Chemical Profile in Nigeria*, with the cooperation of sector ministries, non-governmental organizations (NGOs) and academia. However, the low level of environmental awareness and near non-existence of environmental protection laws contributed to the illegal dumping of toxic wastes in Nigeria in the past. Review of the regulatory framework on chemical management in Morocco is similarly weak.

## 4.2 Sources of chemicals

Chemical production and formulation industries vary from one country to another depending on the socio-economic activities and the existing natural resources. Except for South Africa, most chemical industries in African countries, are relatively new compared to those of developed countries. Hence the region is heavily dependent on imported chemicals. In Nigeria, only very few chemicals such as sulphuric acid and alum, linear Alkyl benzene solvents, carbon black and propylene are produced in the country. Others include fertilizers and some pesticide formulations packaged locally. In South Africa, the chemical industry is divided into four categories namely, base chemicals, intermediate chemicals, chemical end products and speciality chemical end products. The base chemicals include petrochemical building blocks, ethylene, propylene, butadiene, benzene, toluene, xylenes, and methanol, which are sourced from the petrochemical industry. The liquid fuels, olefins, organic solvents and industrial mineral derivatives together account for around 31% of chemicals production in the country. Inorganic chemicals such as ammonia, caustic soda, sulphuric acid, chlorine, sulphur, soda ash, bromine, fluorine and phosphorus, are also base chemicals. The intermediate chemicals consist of ammonia, waxes, solvents, phenols, tars, plastics, and rubbers and major organic secondary products such as polyethylene (LDPE, LLDPE, HDPE), polypropylene and polyvinyl chloride together with polyester, nylon, and acrylic fibres. Additional chemicals to this group include hydrochloric and nitric acids, ammonium nitrate, sodium and calcium cyanides, sodium sulphate, calcium hypochlorite, aluminium sulphate and chrome chemicals are relatively large tonnage inorganic secondary products. Chemical end-product groups include plastics, paints, explosives, and fertilisers, whereas the speciality chemical end-products are higher added-value chemical products such as fertilizers, explosives, paints, agrochemicals

among others. Tanzania and Morocco have fewer chemical industries than Nigeria and South Africa and the contribution of this sector to their national GDPs is lower.

In addition to industrial activities, agricultural activities, drugs and healthcare products and biological poisons are also documented sources of chemicals in the pilot countries. The majority of agricultural chemicals are pesticides used to control pests and enhance agricultural productivity. Pesticides are classified according to the pests they control - insecticides, herbicides, fungicides, fumigants and rodenticides.

### 4.3 National chemical profiles

In South Africa, DEA has initiated an integrated safety, health and environment approach for the management of chemicals in South Africa. It has also started employing risk-based methods for the management of chemicals through the National Chemicals Profile, which involves a comprehensive and systematic assessment of the country's existing infrastructure and capabilities that are in place for the sound management of chemicals.

National and regional initiatives such as the Africa Stockpile Programme (ASP) have been at the forefront in the destruction of obsolete pesticide stockpiles. In Nigeria, the Nigeria-ASPs has been strengthening the national capacity for proper pesticide management, to ensure the safe destruction of obsolete pesticides and to implement preventive measures as regards accumulation of obsolete pesticides. Tanzania is also participating in Project 1 of the ASP with the objective of disposing the obsolete pesticide and veterinary stocks of about 1200 tonnes identified during the inventory conducted in 1997/1998.

There are National Cleaner Production Centres (NCPCs) in three of these countries. The National Cleaner Production Centre South Africa (NCPC-SA) was launched during the World Summit for Sustainable Development in Johannesburg 2002 under a cooperation programme between South Africa and UNIDO, with financial assistance from the Department of Trade and Industry (DTI), the Council for Scientific and Industrial Research (CSIR) and the Governments of Austria and Switzerland. The NCPC-SA aims to enhance the competitiveness and productive capacity of national industry, focusing on SMEs through Cleaner Production (CP) techniques. CP is an integrated preventive strategy applied to processes, products and services to eliminate or minimise the production of waste and pollution and optimise the utilisation of resources.

The Cleaner Production Centre of Tanzania (CPCT), established in October 1995, is part of the worldwide UNEP/ UNIDO NCPCs project. The main objective of CPCT is to facilitate the transfer of technical information, know-how, and cleaner technology from developed and developing countries to industrial enterprises and environmental management agencies in Tanzania, in order to incorporate cleaner

production techniques and technologies in industrial pollution reduction programmes. CPCT serves a coordinating and catalytic role for cleaner production in the country through four major activities: (i) collection and dissemination of information on cleaner production to its stakeholders which include industry, government agencies, NGOs, R&D institutions, and academia; (ii) supporting the demonstration of cleaner production techniques and technologies in industry; (iii) training industry personnel and government officials on this new area of environmental management; and (iv) advising policy makers on the promotion of cleaner production.

## 4.4 Globally Harmonized System activities

The implementation of Globally Harmonized System (GHS) is at different stages in the countries. Nigeria hosted a GHS Workshop for ECOWAS countries from 13 to 15 May 2008 in Abuja. Further training took place from 28 to 29 July 2008, under the execution of United Nations Institute for Training and Research (UNITAR), under the UNITAR/ILO Global GHS Capacity Building Programme with the support of the Basel Convention Secretariat and the Swedish Chemicals Agency (KemI). Capacity building and awareness raising were the key needs raised to facilitate implementation of the GHS.

South Africa participated as pilot country in the UNITAR/ILO GHS Capacity Building Programme, with support from the Government of The Netherlands. A study on the implications of implementing the GHS and the development of an implementation strategy was concluded in December 2003, leading to the preparation of an implementation plan under the auspices of the National Economic Development and Labour Council (NEDLAC). It was co-funded and supported by UNITAR. A review of legislation and policy instruments to ensure alignment with the GHS requirements was conducted and Safety Data Sheets distributed. An inter-departmental committee was established by the Department of Labour to develop a coordinated legislative implementation strategy to ensure elimination of overlap of jurisdictional mandates.

The South Africa Bureau of Standards (SABS) has developed a national standard (SANS 10234:2008) and a list of chemicals classified in terms of the GHS, to facilitate implementation. SANS 10234:2008: Globally Harmonized System of classification and labelling of chemicals was approved on 28 November 2008. The standard covers the harmonised criteria for the classification of hazardous substances and mixtures, including waste, for their safe transport, use at the workplace or in the home according to their health, environmental and physical hazards. The standard gives the harmonized communication elements for labelling and safety data sheets but does not cover pharmaceuticals, food additives, cosmetics and pesticide residues in food in terms of labelling at the point of intentional intake. These types of chemicals are covered for transport and the workplace.

There are plans to use the South African national standard for GHS as the basis for the development of a harmonized SADC standard by the Southern African Community Standardization body. There have also been discussions on the Code of Practice on Safe Use of Chemical in the SADC.

## 4.5 Policy framework for implementation of SAICM

SAICM activities in the pilot countries are aimed at improving the implementation of the Basel, Rotterdam and Stockholm Conventions. One of the major initiatives is the SBC project 'Towards a non-toxic environment in Africa' which focuses on the 20 English speaking countries in Africa: Botswana, Eritrea, Ethiopia, The Gambia, Ghana, Kenya, Lesotho, Liberia, Malawi, Mauritius, Mozambique, Namibia, Nigeria, Seychelles, Sierra Leone, South Africa, Tanzania, Uganda, Zambia and Zimbabwe. The project activities will involve identifying the status of chemicals and waste management, development of awareness and training materials, the strengthening of institutions, and the development of pilot projects and activities to ensure the sustainability in the chemicals and waste management. The work programme combines a flexible approach with long-term commitment to promote a non-toxic environment in Africa through awareness, institutional capacity building and formulation of regulatory frameworks.

In South Africa, the national initiatives on SAICM are implemented by the Chemicals and Allied Industries Association (CAIA) and include regulations banning lead in paint; regulations banning the mining or new uses of asbestos, and the phase-out of current uses; and reviews of regulations on hazardous chemical substances and the pesticide management policy. South Africa also played a key role in the development of SAICM prior to its adoption at ICCM in 2006.

Under SAICM projects, Tanzania is among the four countries participating in the pilot project on "Strengthening Governance, Civil Society Participation and Public-Private Partnerships within an Integrated National Chemicals and Waste Management Programme"

that aim at developing an Integrated National Programme for the sound management of chemicals and waste with a focus on governance, stakeholder participation, and partnerships, in order to support implementation of the national SAICM. The three-year project (2006 – 2009) is supported by UNITAR in cooperation with the Inter-Organization Programme for the Sound Management of Chemicals (IOMC), and is financed by the Government of Switzerland. Other participating countries are Belarus, Pakistan and Panama. The implementation of the project in Tanzania is coordinated by the Government Chemist Laboratory Agency (GCLA), and aims to improve generation, access and dissemination of information related to chemicals management by 50 percent; raise awareness on the sound management of chemicals and wastes; enhance protection of human health and the environment; improve the capacity of sound management of chemicals; improve the regulatory regime of

chemicals management and strengthen coordination of chemicals management and stakeholder participation.

There are also three quick start projects being implemented in Tanzania: (i) Strengthening the capacity of agricultural workers and workers' organizations in the implementation of SAICM at enterprise and community levels by an NGO called TPAWU; (ii) Capacity enhancement for the implementation of the Stockholm Convention in the United Republic of Tanzania, by the Vice President's Office, Division of Environment and (iii) Law reform and capacity building for sound management, by NGOs from Uganda, Kenya and Tanzania. The three projects under the Quick Start Scheme aim at minimizing the hazardous effects of chemicals and pesticides to human health and the environment.

#### 4.6 Awareness raising initiatives in various countries

Awareness raising and advocacy activities for environmentally sound chemical management are still weak among the African countries. Activities are mostly limited to national levels and mainly focus on the promotion of chemical products. In South Africa, there are about 30 industry associations and professional representative bodies within the sector, in the areas of paints, plastics, flavours and fragrances and coatings. Each has its own constituency and most operate in silos of sectoral interest. The diversity of the sector makes it difficult for the role players to speak with a common voice. Among the important bodies are the Chemical and Allied Industry Association, the Plastics Federation of South Africa (PFSA), the Chemical, Energy, Paper, Printing, Wood and Allied Workers Union (CEPPWAU), and the South African Chemical Workers Union (SACWU). In Tanzania, the mechanisms and tools used for dissemination of information on chemicals management include workshops, seminars, meetings and publicity materials such as brochures and newsletters. In addition, some of the institutions collecting and maintaining information related to the management of chemicals have started creating new databases as well as using existing ones. Some of the locally generated information has also been computerized for web access. Recently, a web site on chemicals management ([www.saicmtz.or.tz](http://www.saicmtz.or.tz)) was set up under the SAICM pilot project, which provides information on chemicals management in Tanzania. This has improved the dissemination of information on chemicals management. However, the available information on the website and in the different institutions needs to be improved to serve different categories in chemicals management. Moreover, most of the available information is in English, which hinders efficient transfer of knowledge and information to the majority of the community. Tanzania also participated in the UNEP/Chemicals information exchange project on Chemicals Management on the Internet in September 2000.

## 4.7 Impediments to chemicals management

Legislation on chemicals management is still new in most of the countries, and proper coordination of the National Action Plans is lacking in various government departments. This is further constrained by lack of adequate information to chemical users and poor enforcement.

Weak legislative frameworks and enforcement capabilities of regulations and policies are contributing to contamination of water, air, soil and food. Also, air-borne particulate emissions are distributed basically from pesticides sprayed in the fields, industrial processes, volcanic emissions, combustion of fossil fuels and open air burning practices

There are no specific policies on chemicals management to ensure recognition of chemicals management as a national priority, and mainstreaming into national development plans and strategies such as National Strategies for Growth and Reduction of Poverty (NSGRP).

Similarly, there is low awareness on the health and environmental effects of chemicals, particularly the long-term effects.

Subsequently, there are limited institutional capacities and capabilities such as poison centres, a reporting system on chemical incidences and a comprehensive inventory of obsolete pesticides and other chemical wastes, to reduce the environmental and health effects of hazardous chemicals and wastes.

There is limited participation of the private sector and civil society in government decision-making with regard to issues of chemicals management.

Likewise, there is no comprehensive national data on chemicals or adequate monitoring programmes of chemical residues in the environment and human health.

Above all, there is an overlap in the existing legislation, causing conflicting functions and interest, competing priorities in the different sectors, low level of awareness on issues related to chemical management among stakeholders and the general public.

Lastly, funding of chemicals management related programmes and activities is inadequate.



## 5.0 Discussion

### 5.1 Actions taken and progress made

Many countries have introduced sector policies, enacted legislation and set up institutions for environmentally sound management of chemicals. They include South Africa's National Environmental Management 1998 Act 107; Tanzania's National Environmental Management Council; Decree 58 of 30 December 1988, establishing Nigeria's Federal Environmental Protection Agency (FEPA) of; Kenya's Environmental Management and Coordination Act (1999) that created the National Environmental Management Authority, the institution that manages environmental affairs in Kenya; the National Environmental Management Authority of Uganda, the Environmental Protection Agency of Ghana and the Egyptian Environmental Affairs Agency.

So far, most of the above institutions have taken a sectoral approach to environmental management. For chemical management specifically, it has been mainly through the national secretariats of the various MEAs on chemicals, such as the Basel Convention Secretariat and the Stockholm Convention Secretariat. However, some progress is being made toward integration of sectoral policies on chemical management. One such policy is Kenya's Controlled Substances Regulations, 2007, whose Legal Notice No.73 of 2007 stipulates that controlled substances must be clearly labelled with, among other words, "Controlled Substance-Not ozone friendly" to indicate that the substance or product is harmful to the ozone layer. Imports and exports of certain hazardous chemicals used in several sectors are also controlled. When fully implemented, GHS will provide a more integrated approach to chemicals management not only in Africa, but globally. African countries that have started implementing GHS include Nigeria, Senegal and the Gambia. National Cleaner Production Centres can provide a tool for better chemicals management in the continent. The NCPC Programme is administered by UNIDO, and UNEP is closely associated with the execution. Since the inception of the programme in 1994, Cleaner Production Centres have been set up in Ethiopia, Kenya, Morocco, Mozambique, South Africa, Tanzania, Tunisia, Uganda and Zimbabwe. The level of activities and success in these centres vary. In South African, the NCPC-SA has recorded significant activity in terms of funding and clear sectoral programmes. One of its Cleaner Production focal areas is the chemical sector CP programme. In general however, CP centres still need to be upscaled in Africa and mainstreamed into national development programmes as a way of fostering sustainable development. A unique programme initiated by the South African Chemical industries and known as Responsible Care® has not yet been widely replicated in other African countries. It offers opportunities for government-industry cooperation in sound management of chemicals in the environment.

Sound management of chemicals also requires some quantification of chemical flow, especially of obsolete stocks. given that the long term effects of these are always a cause

for concern. In Africa, ASP, a global programme supported by the Global Environment Facility (GEF), is active in this area. Prominent partners of the programme include the World Bank, the Food and Agriculture Organization of the United Nations (FAO), UNEP, WWF, AU and NEPAD.

The objective of ASP is to clean up and safely dispose of all obsolete pesticide stocks in Africa, and establish preventive measures to avoid future accumulation, so as to protect human and environmental health. Implementation of the ASP is in the initial stages in seven countries: Ethiopia, Mali, Morocco, Nigeria, South Africa, Tanzania and Tunisia. In each of these countries, there is some data on stocks or estimated amounts of imports of obsolete pesticides. For instance, it is estimated that there are about 400 tonnes of obsolete pesticides at 76 sites in Mali, while the programme has been able to report that Ethiopia imports about 4,000 tonnes of pesticides annually.

Africa is also making good progress in phasing out leaded petrol. By 2004, more than half of the petrol sold and consumed in the continent was unleaded, and that figure has probably since risen. The two initiatives that have been sensitizing African governments on the need to phase out leaded petrol are the World Bank's Clean Air Initiative for Sub Saharan Africa and the UNEP Partnership for Clean Fuels and Vehicles (PCFV). This has mostly been through conferences consisting of technical discussions and ministerial sessions.

In the long run however, efforts to phase out leaded petrol might prove futile in the general fight against lead exposure, if other sources of lead are not looked into. These include leaded paints and toys that find their way into Africa from countries where such products are not banned. Studies that can inform policy to regulate such products are only beginning to emerge in Africa, and include, the work on leaded paint by Mathee et al. (2007).

Concerns of heavy metal poisoning are not only restricted to lead, but are also extended to other heavy metals like cadmium and mercury. The latter is especially of importance in Africa due to its extensive use in small-scale mining. The Global Mercury Project (GMP) is a five-country project under UNIDO, and seeks to introduce cleaner gold mining and extraction technologies to minimize or eliminate mercury releases and develop the capacity and regulatory mechanisms that will enable the sector to minimize the negative environmental and human health aspects of mercury use in gold mining. Africa's GMP implementing country is Tanzania.

## 5.2 Status of domestication of MEAs on chemicals in Africa

A treaty to which a State has expressed its consent to be bound does not become automatically applicable within that State until an appropriate national legislation has been enacted to give the treaty the force of law domestically. Domestication of

MEAs may take different forms, but the most common ones are legislation by a State's parliamentary body or a presidential/ministerial decree. In general, domestication of MEAs on chemicals is low in many African countries.

The following is a summary of the status of domestication of MEAs on chemicals in selected African countries:

1. Kenya - The pest control products act cap 346 of 1983 (laws of Kenya) to monitor and regulate the use of pesticides in Kenya
2. Burkina Faso Law 005/97/30 ADP, January 1997, which establishes an Environment Code in Burkina Faso. Decree 97-039/PRES/P.m.MCIA of 4 February 1998, which prohibits the manufacture, transformation, commercialised imports and use of construction equipment with asbestos in Burkina Faso and Law 041/96/08 ADP of November 1996, which establishes a pesticide control in Burkina Faso; law 006-98/26 AN of March 1998 on amendment to law 041/96/ADP of 8/11/96.
3. Law 005/97/ADP of 30 January 1997, on the Environment Code in Burkina Faso
4. Burundi - Several ministerial decrees including Ministerial Ordinance 710/838 of 29 October 2001 banning the use of chlordane as an agricultural pesticide; Ministerial Decree 710/81 of 9 February 2004 banning the use of methyl parathion as an agricultural pesticide
5. Cameroon - Legislations and ministerial decrees, such as Act 66/9/COR of 18 November 1966; Decree 77/171 of 3 June 1977; Decree 83-661 of 27 December 1983; Order 0002/MINAGRI/DIRAGRI/SDPV of 17 January 1989
6. Tanzania --Administrative measures: Tropical Pesticides Research Institute Act (1979) and Pesticides Registration and Control Regulation (1984), issued by the Tropical Pesticides Research Institute; The Plant Protection Act (1997), sections 16, 17 and 18
7. Togo - Law 96-007/PR of 3 July 1996 on plant protection in Togo
8. Sudan - The Pesticides and Plant Protection Materials Act, 1994 and the National Council for Pesticides. Not registered
9. Nigeria - Some hazardous pesticides controlled under national regulatory control per Act 59 of 1988, as amended by Act 59 of 1992 for the control of hazardous substances which might impact the Nigerian environment and public health; Federal Environmental Protection Act, CAPN, 131, LFN, 1990 as amended by Decree 59 of 1992; Management of Solid and Hazardous Wastes Regulation, S.1.15 of 1991

### 5.3 Encouraging partnerships, including regional coordination and cooperation

In principle, there is good potential for cooperation and coordination at the sub-regional level, but implementation support for MEAs and other technical assistance is typically directed at the national level, and therefore not conducive to achieving regional synergies. Initiatives to support regional cooperation include the Basel Convention Regional Centres, namely: Regional Centre for the Arab States (Cairo), Basel Convention Coordinating Regional Centre for the African Region (Ibadan, Nigeria), Regional Centre for French-Speaking Countries in Africa (Dakar, Senegal) and Regional Centre for English-Speaking African Countries (Pretoria, South Africa).

The Stockholm Convention is also in the process of nominating and instituting regional Centres. Paragraph 4 of Article 12 of the Convention enjoins parties to establish appropriate arrangements for the purpose of providing technical assistance and promoting the transfer of technology to developing parties and parties with economies in transition relating to the implementation of the Convention. During first effectiveness evaluation of the Stockholm Convention, a regional coordinative mechanism was established by instituting six regional organization group members in all five United Nations regions, to coordinate the implementation of the global monitoring plan of POPs in their respective regions. Other opportunities for regional cooperation include development of multi-country SAICM projects.

More support is needed to foster involvement and cooperation of the private sector, in the implementation of environmentally sound chemical management. The private sector has to accept its responsibilities, and the public sector needs to develop mechanisms and capacities to work more collaboratively with user groups in the private sector and civil society.

### 5.4 Need for coherent information on chemicals

Awareness of possible risks posed by chemicals is still low among major segments of the African population. This is further complicated by the general lack of reliable data and information on toxicity and safe use practices for chemicals. Access to such information in local languages is a key to improving environmentally sound management of chemicals. There is also need for streamlining chemical information exchange in the region to include development of National pollutant and transfer registers, GHS information exchange on toxic chemicals. Although by 1999 over 22 countries had established their National Pollutant Transfer Register globally no significant progress has been made in Africa regarding the establishment of national pollutant and transfer registers. The four African pilot countries (the Gambia, Nigeria, Senegal and South Africa) have made good progress with implementation of the global

harmonized system in particular, in the upstream production of chemicals. Challenges remain in the more informal downstream sector dominated by small and often unorganized businesses that manufacture chemicals containing consumer, industrial, agricultural and other products.

## 5.5 The role of industries in environmentally- sound management of chemicals

Industries or firms are increasingly viewed as agents for environmental improvement because (i) they are centres of technological expertise that are crucial to the execution of green business initiatives, and (ii) they are a major, but not exclusive source of environmental damage. In recognition of the important role that they can play in promoting sustainability, many firms have started to drive initiatives that are aimed at helping them improve their environmental performance, through say, knowledge sharing (e.g. Eco-Patent Commons) or setting up of industry benchmarks of environmental performance. In fact, the crucial role that industries can play in sustainable development is a huge component of a decade old and interesting discipline called Industrial Ecology.

In Africa, such green business initiatives are likely to be found in the more advanced economies, where the scale of industrial production is relatively high and advanced, and the industrial sector is a major player in the national GDP. This has been seen, for example, in South Africa, where the chemical sector makes attempts to green itself through such initiatives as the Responsible Care and Enviromark Programmes.

### a) Responsible Care Programme

Responsible Care is the global chemical industry's environmental, health and safety initiative to drive continuous improvement in performance. It achieves this objective by meeting and going beyond legislative and regulatory compliance, and by adopting cooperative and voluntary initiatives with government and other stakeholders. It is both an ethic and a commitment that seeks to build confidence and trust in an industry that is essential to improving living standards and the quality of life.

Among the important bodies of Responsible Care Programme in South Africa are the Chemical and Allied Industry Association (CAIA), the Plastics Federation of South Africa (PFSA), the Chemical, Energy, Paper, Printing, Wood and Allied Workers Union (CEPPWAU), and the South African Chemical Workers Union (SACWU). CAIA is quite proactive in the management of chemicals in South Africa, especially among the upstream or more advanced industries, in the following core areas:

- Management Commitment
- Health and Safety of Persons
- Storage, Distribution and Transportation of Chemicals

- Community Interaction
- Emergency Response
- Pollution Prevention and Resource Efficiency
- Process Safety
- Product Stewardship

In addition, CAIA members report on their energy use, water use and levels of hazardous substances, including chemicals and waste generation.

#### **b) Enviromark (the plastic industry's environmental initiative)**

South Africa has a relatively well-developed plastics industry, comprising polymer producers, polymer processors, plastic converters and plastic recyclers. The industry is extremely diverse, supplying products to almost every sector of the economy.

In 1997, the Plastics Federation of South Africa's Environmental Committee, together with key players in the industry, embarked on a campaign involving the entire plastics industry to make a meaningful contribution toward environmental responsibility. This initiative essentially entails the exclusive use of a logo by Enviromark licensees (raw material suppliers, plastics converters, certain retailers and certain plastics associations, who are contracted to support the environmental programme. The organizations subscribing to the Plastics Enviromark express their commitment to environmental responsibility by use of the logo on their stationery and products. The licensing fee is used by the Plastics Federation to fund various environmental projects and activities. About 80 percent of the plastics packaging industry are currently contributing to this programme.

Some of the important environmental programmes implemented by the Plastic Federation to educate and raise awareness are:

- Polymer identification
- Environmental publications
- Video Programmes
- A wide range of specific school and community programmes supporting environmental initiatives in these institutions
- Financial support of educational and environmental bodies
- Major sponsor of Keep South Africa Beautiful for two and a half years. Specific programmes during this time are estimated to have reached some 250,000 school children
- Programmes to encourage the re-use of plastic products
- Major current initiatives are the "Three-Bag-System", which has been commissioned at various newly launched Garden Drop-off Centres, and the Green Cage Project
- Plastic recycling.

While they are not exhaustive, these initiatives do serve as clear examples of the role industries can play in environmentally-sound management of chemicals in Africa. The chemical industry in other African countries must be encouraged to take up similar initiatives, so as to contribute to the sustainable management of chemicals and the continent's sustainable development in general.

## 5.6 Challenges to African countries in the implementation of multilateral environmental conventions on chemicals

The following are some challenges faced by African countries in implementing Multilateral Environment Agreements:

- a. Lack of national and regional chemical management policy and programmes
- b. Limited or complete lack of collaboration among countries in the region
- c. Lack of financial support to maintain established activities in the region
- d. Inadequate capacity of existing regional structures such as the Stockholm Convention/Basel Regional Centres
- e. Limited involvement of regional structures such as AU-NEPAD, UNECA and AfDB programmes dealing with environmental and health issues
- f. Lack of regional approaches to the management of hazardous chemicals in relation to environmental and health issues on the continent
- g. Lack of chemical management issues on the national and regional development agenda
- h. Lack of collaboration among programmes, which have similar objectives such as the Regionally Based Assessment of PTS



## 6.0 Conclusions and Recommendations

### 6.1 Conclusions, including what Africa expects from the international community

This review has identified several issues in relation to environmentally sound management of chemicals in Africa. Key conclusions are:

- a. The legislation framework, regulations and policies on environmentally sound management of Chemicals in most African countries are still young and weak and are contributing to illegal dumping of hazardous chemicals in the region as well as contamination of water, soil and air resources.
- b. Most African countries have put in place institutional framework to regulate and advise the government on matters related to chemical management and the environment in general. However, these institutions have limited human and institutional capacity to address the issue of sound management of chemicals
- c. There is general lack of information, awareness creation and advocacy on the deleterious effects of hazardous chemicals, contributing to the mismanagement of chemicals and use of some banned chemicals
- d. Most African countries neither manufacture nor export chemicals but mainly import them to support their industrial and agricultural development and public health delivery system
- e. Due to high poverty levels, most African countries have prioritized food security, basic health, primary education and other poverty reduction initiatives, and placed less emphasis on chemical management
- f. There are regional programmes and initiatives such as ASP to clean up the existing large stocks of obsolete chemicals, particularly pesticides. However, limited resources retard their pace of implementation in most African countries
- g. Endemic diseases such as malaria are still leading killers in the region and the urge to use hazardous chemicals such as DDT is high
- h. Comprehensive inventories of chemical contaminants including POPs in the environment have not been carried out in most countries in the region, making it difficult for effective decontamination efforts
- i. Both agriculture and industry can be responsible for large stocks of hazardous chemical stockpiles and environmental contamination of soil, water and air
- j. Apart from pesticide poisoning, poisoning by other hazardous chemicals such as mercury, lead, cadmium and POPs contamination in humans have not been adequately documented or reported
- k. Most African countries still do not have in place monitoring, risk assessment and evaluation schemes or even action plans on hazardous chemicals

- l. Some African countries have still not developed or submitted their National Implementation Plans on chemicals or even ratified all major chemical conventions
- m. African countries expect continuous international support for developing systems for the sustainable management of chemicals in the continent, and for the development of green economies in general. This support should also be extended to helping them achieve their commitments under the JPOI and MDGs, including through the development of their human, institutional and technical resources. This would help in achieving environmentally-sound management of chemicals. In general, Africa expects that environmentally sound management of chemicals will become an integral element of the financial, technical and other support provided by its development partners, including under such mechanisms as the Monterrey Agreement
- n. Africa stands to benefit from enhanced compliance with provisions of the chemical MEAs, in particular through developed countries banning and preventing the trade in and/or transfer of obsolete technologies and hazardous wastes and chemicals.
- o. Africa recognizes that its capacity to effectively participate and engage in negotiations on international chemicals and other environmental agreements is limited and expresses its concern that as a result thereof, the development needs and priorities of Africa may not have been addressed properly in many of the past negotiations. This is further complicated by the large number of meetings organized by the various MEAs, for which preparation and participation by African countries may be inadequate. There is therefore an urgent need for support by Africa's development partners to train African negotiators who can competently articulate its development and environmental agenda in such negotiations
- p. There is limited collaboration among governments, civil society organizations (CSOs) and NGOs in the sound management of chemicals in Africa

## 6.2 Recommendations

Given that human and environmental health in Africa is strongly linked to socio-economic factors such as population growth, economic growth and poverty, the proposed intervention measures must be implemented within the framework of sustainable development. Thus, in order to ensure the success of the proposed measures, the following issues must be taken into consideration:

- a. Strengthen the legislative framework of African countries, in order to implement environmentally-sound management of chemicals
- b. Strengthen the institutional capacities of the national and regional institutions to implement environmentally-sound management of chemicals

- c. Support awareness creation and advocacy activities in the African countries to educate the public on the deleterious effects of hazardous chemicals
- d. Promote the application of environmentally sound technologies in industrial and agricultural activities in the region as well as enhancing the application of green technologies in the region.
- e. Support mainstreaming and implementation of MEAs and environmentally-sound management of chemicals into national and regional development strategies such as poverty reduction
- f. Strengthen existing programmes and initiatives on the destruction of obsolete chemicals and decontamination of polluted sites
- g. Support the development of affordable and effective alternatives to banned chemicals such as DDT and lindane, which have been in the mainstream of public health and agricultural development in Africa
- h. Support implementation of comprehensive inventories of chemicals in African countries to facilitate planning and management of chemicals.
- i. Support application of safer chemicals in agriculture and industry in African countries as well as application of Best Available Technologies (BAT) and Best Environmental Practices (BEP).
- j. Support the implementation of national profiles and registration of chemical poisoning incidents to assess the effectiveness of the sound management of chemicals
- k. Support the implementation of the national plans of action that include monitoring, evaluation and risk assessments of chemicals used in the region
- l. Support the provision of technical and financial resources to African countries to facilitate the implementation of the MEAs and environmentally-sound management of chemicals
- m. Support environmentally-sound chemical management in the implementation of the Millennium Development Goals in African countries
- n. Support the regional approach to the implementation of MEAs in African countries
- o. Support efforts of MEAs to curb illegal dumping of banned and hazardous chemicals into African countries, particularly those without specific exemptions
- p. Support participation of the CSOs and NGOs, as well as collaboration between the private sector and the government in environmentally-sound management of chemicals



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# Annexes

## ANNEX A. Tables and charts from main document

**Annex Table A1. List of countries parties to the Basel Convention**

Country	Signature	Date (*)
Algeria		15.09.98 (a)
Benin		04.12.97 (a)
Botswana		20.05.98 (a)
Burkina Faso		04.11.99 (a)
Burundi		06.01.97 (a)
Cameroon		09.02.01 (a)
Cape Verde		02.07.99 (a)
Chad		10.03.04 (a)
Central African Republic		24.02.06 (a)
Comoros		31.10.94 (a)
Congo (Republic of the)		20.04.07 (a)
Côte d'Ivoire		01.12.94 (a)
Democratic Republic of Congo		06.10.94 (a)
Djibouti		31.05.02 (a)
Egypt		08.01.93 (a)
Equatorial Guinea		07.02.03 (a)
Eritrea		10.03.05 (a)
Ethiopia		12.04.00 (a)
Gabon		06.06.08 (a)
Gambia		15.12.97 (a)
Ghana		30.05.03 (a)
Guinea		26.04.95 (a)
Guinea-Bissau		09.02.05 (a)
Kenya		01.06.00 (a)
Lesotho		31.05.00 (a)
Liberia		22.09.04 (a)
Libyan Arab Jamahiriya		22.09.04 (a)
Madagascar		02.06.99 (a)
Malawi		21.04.94 (a)
Mali		05.12.00 (a)
Mauritania		16.08.96 (a)
Mauritius		24.11.92 (a)
Morocco		28.12.95 (a)
Mozambique		13.03.97 (a)
Namibia		15.05.95 (a)
Niger		17.06.98 (a)
Nigeria	15.03.90	13.03.91
Rwanda		07.01.04 (a)
Senegal		10.11.92 (a)
Seychelles		11.05.93 (a)
South Africa		05.05.94 (a)

Country	Signature	Date (*)
Sudan		09.01.06 (a)
Swaziland		08.08.05 (a)
Togo		02.07.04 (a)
Tunisia		11.10.95 (a)
Uganda		11.03.99 (a)
United Republic of Tanzania		07.04.93 (a)
Zambia		15.11.94 (a)

Note: \* (a) Accession; (A) Acceptance; (AA) Approval; (c) Formal confirmation; Ratification; (d) Succession

**Annex Table A2. List of African countries parties to the Rotterdam Convention**

Participant	Signature	Ratification, Acceptance (A), Approval (AA), Accession (a)
Angola	11 Sep 1998	
Benin	11 Sep 1998	5 Jan 2004
Botswana		5 Feb 2008 a
Burkina Faso	11 Sep 1998	11 Nov 2002
Burundi		23 Sep 2004 a
Cameroon	11 Sep 1998	20 May 2002
Cape Verde		01 Mar 2006 a
Chad	11 Sep 1998	10 Mar 2004
Congo	11 Sep 1998	13 Jul 2006
Côte d'Ivoire	11 Sep 1998	20 Jan 2004
Democratic Republic of the Congo	11 Sep 1998	23 Mar 2005
Djibouti		10 Nov 2004 a
Equatorial Guinea		7 Feb 2003 a
Eritrea		10 Mar 2005 a
Ethiopia		9 Jan 2003 a
Gabon		18 Dec 2003 a
Gambia		26 Feb 2002 a
Ghana	11 Sep 1998	30 May 2003
Guinea		7 Sep 2000 a
Guinea-Bissau	10 Sep 1999	12 June 2008
Kenya	11 Sep 1998	3 Feb 2005
Liberia		22 Sep 2004 a
Lesotho		30 May 2008 a
Libyan Arab Jamahiriya		9 Jul 2002 a
Madagascar	8 Dec 1998	22 Sep 2004
Malawi		27 Feb 2009 a
Mali	11 Sep 1998	5 Jun 2003
Mauritania	1 Sep 1999	22 Jul 2005 A
Mauritius		5 August 2005 a
Namibia	11 Sep 1998	24 Jun 2005
Niger		16 Feb 2006 a
Nigeria		28 Jun 2001 a
Rwanda		7 Jan 2004 a
Senegal	11 Sep 1998	20 Jul 2001
Seychelles	11 Sep 1998	
South Africa		4 Sep 2002 a
Sudan		17 Feb 2005 a
Togo	9 Sep 1999	23 Jun 2004
Tunisia	11 Sep 1998	
Uganda		18 Aug 2008 a
United Republic of Tanzania	11 Sep 1998	26 Aug 2002

**Annex Table A3. African countries signatories to Stockholm Convention**

Participant	Signature, Succession to Signature (d)	Ratification, Acceptance (A), Approval (AA), Accession (a)
Algeria	05/09/2001	22/09/2006
Angola		23/10/2006 (a)
Benin	23/05/2001	05/01/2004
Burkina Faso	23/05/2001	31/12/2004
Burundi	02/04/2002	02/08/2005
Cameroon	05/10/2001	19/05/2009
Central African Republic	09/05/2002	12/02/2008
Chad	16/05/2002	10/03/2004
Comoros	23/05/2001	23/02/2007
Congo, Democratic Republic of the		23/03/2005 (a)
Congo, Republic of the	04/12/2001	12/02/2007
Côte d'Ivoire	23/05/2001	20/01/2004
Djibouti	15/11/2001	11/03/2004
Egypt	17/05/2002	02/05/2003
Eritrea		10/03/2005 (a)
Ethiopia	17/05/2002	09/01/2003
Gabon	21/05/2002	07/05/2007
Gambia	23/05/2001	28/04/2006
Ghana	23/05/2001	30/05/2003
Guinea	23/05/2001	11/12/2007
Guinea-Bissau	24/04/2002	06/08/2008
Kenya	23/05/2001	24/09/2004
Lesotho	23/01/2002	23/01/2002
Liberia		23/05/2002 (a)
Libyan Arab Jamahiriya		14/06/2005 (a)
Madagascar	24/09/2001	18/11/2005
Malawi	22/05/2002	27/02/2009
Mali	23/05/2001	05/09/2003
Mauritania	08/08/2001	22/07/2005
Mauritius	23/05/2001	13/07/2004
Morocco	23/05/2001	15/06/2004
Mozambique	23/05/2001	31/10/2005
Namibia		24/06/2005 (a)
Niger	12/10/2001	12/04/2006
Nigeria	23/05/2001	24/05/2004
Rwanda		05/06/2002 (a)
Samoa	23/05/2001	04/02/2002
Sao Tome and Principe	03/04/2002	12/04/2006
Senegal	23/05/2001	08/10/2003
Seychelles	25/03/2002	03/06/2008 (a)
Sierra Leone		26/09/2003 (a)
South Africa	23/05/2001	04/09/2002
Sudan	23/05/2001	29/08/2006
Swaziland		13/01/2006 (a)
Tanzania, United Republic of	23/05/2001	30/04/2004

Participant	Signature, Succession to Signature (d)	Ratification, Acceptance (A), Approval (AA), Accession (a)
Togo	23/05/2001	22/07/2004
Tunisia	23/05/2001	17/06/2004
Uganda		20/07/2004 (a)
Zambia	23/05/2001	07/07/2006
Zimbabwe	23/05/2001	

**Annex Table A4: Governments (33) and projects (29) supported through the Quick Start Programme trust fund in Africa**

Country	LDC-SIDS	Project title	Executing agency	Funding	Round	Project type
Burkina Faso	LDC	Updating the national chemicals management profile, development of a national SAICM capacity assessment and holding a national SAICM priority setting workshop	UNITAR	\$49,946	1st	multi-country
Burundi	LDC	Updating the National Chemicals Management Profile and developing a national chemicals database in Burundi	UNITAR	\$99,250	2nd	individual
Chad	LDC	Strengthening integrated chemicals management for effective SAICM implementation in Chad	UNITAR	\$119,900	2nd	individual
Comoros	LDC-SIDS	Developing a national SAICM capacity assessment, Holding a national SAICM priority setting workshop and Updating a National Chemicals Management Profile in Comoros	UNITAR	\$52,900	2nd	individual
Congo (Republic of)		Updating the national chemicals management profile, development of a national SAICM capacity assessment and holding a national SAICM priority setting workshop	UNITAR	\$49,659	1st	multi-country
Côte d'Ivoire		Updating the national chemicals management profile, development of a national SAICM capacity assessment and holding a national SAICM priority setting workshop	UNITAR	\$49,659	1st	multi-country

Country	LDC-SIDS	Project title	Executing agency	Funding	Round	Project type
		Strengthening the capacity of Côte d'Ivoire to control the trans-boundary movements of hazardous wastes and chemicals in the context of the Basel Convention, the International Health Regulations (WHO, 2005) and other relevant MEAs as per necessary, and ensure their environmentally sound management	Basel Convention Secretariat	\$249,930	4th	individual
Djibouti	LDC	Updating the national chemicals management profile, development of a national SAICM capacity assessment and holding a national SAICM priority setting workshop	UNITAR	\$49,946	1st	multi-country
		Strengthening the capacity of Djibouti to control the transboundary movements of hazardous wastes and chemicals in the context of the Basel Convention, the International Health Regulations (WHO, 2005) and other relevant MEAs as per necessary, and ensure their environmentally sound management*	Basel Convention Regional Centre	\$249,930	6th	individual
Egypt		Assessment and Capacity Building in Chemicals and Chemicals Waste Management in Egypt	UNIDO	\$250,000	5th	individual
Eritrea	LDC	Developing a national chemicals management profile, developing a national SAICM capacity assessment, and holding of a national SAICM priority setting workshop in Eritrea	UNITAR	\$70,150	2nd	individual
Gabon		Country support for the Implementation of the Libreville Declaration on Health and Environment in Africa: Development of guidelines and capacity building for Situation Analysis and Needs Assessment in view of developing country plans for joint action*	UNEP-WHO	\$248,400	6th	multi-country
Gambia	LDC	Strengthening Capacities for SAICM Implementation and supporting Globally Harmonized System of Classification and Labelling of Chemicals (GHS) Capacity Building in the Gambia	UNITAR	\$250,000	6th	individual

Country	LDC-SIDS	Project title	Executing agency	Funding	Round	Project type
Ghana		Updating the national chemicals management profile, developing a national Strategic Approach capacity assessment and holding a national Strategic Approach priority-setting workshop in Ghana	UNITAR	\$50,750	2nd	individual
Kenya		Strengthening Capacities in Kenya for National SAICM Implementation	UNITAR	\$249,900	3rd	individual
		Country support for the Implementation of the Libreville Declaration on Health and Environment in Africa: Development of guidelines and capacity building for Situation Analysis and Needs Assessment in view of developing country plans for joint action*	UNEP- WHO	\$248,400	6th	multi-country
Lesotho	LDC	Updating the national chemicals management profile, developing a national SAICM capacity assessment, and holding of a national SAICM priority setting workshop in Lesotho	UNITAR	\$54,950	2nd	individual
Liberia	LDC	Developing a National Chemicals Management Profile, developing a national SAICM capacity assessment and holding a national SAICM priority setting workshop in Liberia	UNITAR	\$71,050	3rd	individual
		Liberia, UNDP, and UNEP Partnership Initiative for the Integration of Sound Management of Chemicals Considerations into Development Plans and Processes	UNDP & UNEP	\$250,000	5th	individual
Madagascar	LDC	Updating the national chemicals management profile, development of a national SAICM capacity assessment and holding a national SAICM priority setting workshop	UNITAR	\$49,946	1st	multi-country
		Recycling/disposal of Insecticide-Treated Nets, exploratory project	WHO	\$250,000	5th	individual
Malawi	LDC	Updating the national chemicals management profile, developing a national SAICM capacity assessment, and holding of a national SAICM priority setting workshop in Malawi	UNITAR	\$50,576	2nd	individual

Country	LDC-SIDS	Project title	Executing agency	Funding	Round	Project type
Mali	LDC	Updating the national chemicals management profile, developing a national SAICM Capacity assessment, and holding a national SAICM priority setting workshop in Mali	UNITAR	\$58,400	3rd	individual
		Chemical Accident Prevention Programme for West Africa (CAPP-WA)*	-	\$250,000	6th	multi-country
Mauritania	LDC	Mauritania, UNDP and UNEP Partnership Initiative for the Integration of Sound Management of Chemicals Considerations into Development Plans and Processes	UNDP & UNEP	\$250,000	5th	individual
Morocco		Strengthening national capacity in safe management of public health pesticides in Morocco	WHO	\$175,000	5th	individual
Nigeria		Establishing an Institutional Framework and Strengthening National Capacity within an integrated national programme for the sound management of chemicals and implementation of the strategic approach in Nigeria	-	\$230,000	1st	individual
Rwanda	LDC	Updating the national chemicals management profile, development of a national SAICM capacity assessment and holding a national SAICM priority setting workshop	UNITAR	\$49,946	1st	multi-country
Sao Tome & Principe	LDC-SIDS	Updating the national chemicals management profile, development of a national SAICM capacity assessment and holding a national SAICM priority setting workshop	UNITAR	\$49,946	1st	multi-country
Senegal	LDC	Strengthening National Capacities in Senegal for SAICM Implementation	UNITAR	\$250,000	5th	individual
		Chemical Accident Prevention Programme for West Africa (CAPP-WA)*	-	\$250,000	6th	multi-country
Seychelles	SIDS	Developing an Integrated National Programme for the Sound Management of Chemicals and SAICM Implementation in Seychelles	UNITAR	\$250,000	5th	individual

Country	LDC-SIDS	Project title	Executing agency	Funding	Round	Project type
Sudan	LDC	Development of a Sustainable Integrated National Programme for Sound Management of Chemicals	UNIDO	\$144,072	3rd	individual
Tanzania	LDC	Capacity Enhancement for the Implementation of the Stockholm Convention in the United Republic of Tanzania	-	\$248,819	4th	individual
Uganda	LDC	Uganda, UNEP & UNDP Partnership initiative for the implementation of SAICM	UNDP & UNEP	\$250,000	1st	individual
Zambia	LDC	Strengthening Capacities for SAICM Implementation and Supporting GHS Capacity Building in Zambia	UNITAR	\$250,000	5th	individual

#### Annex Table A5: Quick Start Programme trust fund civil society projects in Africa (4)

Organization	Project title	Country(ies)	Funding	Round	Project type
AGENDA, iLima-Kenya & NAPE	SAICM implementation in East Africa: Law reform and capacity building for sound chemicals management in Kenya, Tanzania and Uganda	Kenya, Tanzania & Uganda	\$250,000	5th	civil society
Day Hospital Institute for Development and Rehabilitation	National awareness campaign for all stakeholders on the safe use and management of pesticides according to the International Code of Conduct on the Distribution and Use of Pesticides	Egypt	\$199,000	2nd	civil society
Tanzania Plantation and Agricultural Workers Union	Strengthening the capacity of agricultural workers and workers' organisation in the implementation of SAICM	Tanzania (LDC)	\$241,800	1st	civil society
Society of Environmental Toxicology and Chemistry	Scientific Capacity Building in Support of SAICM in Africa	Africa	\$250,000	4th	civil society