

**A STUDY TO GUIDE STRATEGIES FOR
JAPANESE COOPERATION FOR
STRENGTHENING ENVIRONMENTAL MANAGEMENT
IN THE EARLY 21st CENTURY**

- Arab Republic of Egypt -

Contents

1	Background and Objective.....	1
2	Outline of the Study.....	2
3	Profile of the Country.....	5
3.1	Geography and Land Use.....	5
(1)	Geography.....	5
(2)	Land Use and Natural Resources.....	6
3.2	Climate.....	6
3.3	Political Regime and Trend.....	7
(1)	Political System.....	7
(2)	Political Trend	8
3.4	Socio Economic Conditions.....	9
(1)	Basic Economic Indicator	9
(2)	Economic Trend	9
(3)	Japan-Egypt Relations	10
(4)	Population.....	12
(5)	Social Development Index.....	12
4	Environmental Policies and Relevant Bodies	13
4.1	Egyptian Environmental Affairs Agency (EEAA)	13
4.2	Law 4/1994.....	14
4.3	Complexity of Environmental Administration.....	17
4.4	Environmental Policy.....	23
(1)	Environment Measures.....	23
(2)	Capacity of EEAA on and Decentralization of Environmental Management.....	25
(3)	Environmental Impact Assessment (EIA)	26
5	Environmental Issues	29
5.1	Natural Environment.....	29
(1)	Issues and Measures for Natural Environment.....	29
(2)	Biodiversity Degradation	30
(3)	Desertification and Forest Conservation	37
5.2	Air Quality	42
(1)	Outline	42
(2)	Industrial Air Pollution.....	44
(3)	Black Smoke (or Black Cloud)	44
(4)	The Cairo Air Improvement Project (CAIP)	48
5.3	Water Environment.....	51
(1)	Scarcity and Degradation of Freshwater in Egypt	51
(2)	Sewage Treatment.....	53
(3)	Urban Sewage, Industrial Effluent, and Groundwater	56
(4)	Agricultural Drainage	58
(5)	Pollution in Brackish-Water Lake in Northern Delta.....	65
(6)	Marine Pollution.....	67
5.4	Environmental Monitoring	79

(1)	EIMP (Environmental Information and Monitoring Programme)	79
(2)	Water Quality Monitoring.....	80
(3)	EMTP: Environmental Monitoring and Training Center Project	84
5.5	Waste Management.....	85
(1)	Current Condition	85
(2)	Municipal Waste	87
(3)	National Integrated Solid Waste Management Strategy	91
(4)	Municipal Waste Management in Rural Area.....	93
(5)	Hazardous Waste.....	93
5.6	Others	100
(1)	Chemical Substances.....	100
(2)	CDM and Energy.....	101
(3)	EPAP: Egyptian Pollution Abatement Project	105
(4)	NGOs.....	107
6	Issues on and Measures Taken for Natural Environment and Development.....	111
6.1	Natural Environment.....	111
(1)	Issues on and Measures Taken for Biodiversity Protection	111
(2)	Issues on and Measures Taken for Forest Protection	112
6.2	Ambient Air Quality	113
6.3	Water Environment	114
6.4	Waste Management	116
7	Strategy for Assistance	119
7.1	Needs for Assistance.....	119
(1)	Necessity of Assistance in Environmental Fields	119
(2)	Trend of International Organizations	121
7.2	Policy for the Assistance.....	126
(1)	Assistance Policy in Environmental Fields.....	126
(2)	Proposed Projects	127
	References	130
	Annex:EcoConServ, Study on Status of the Environment and Relevant Policies/Measures in Egypt.....	131

List of Figures

Figure 4.1: Organizational Structure of EEAA	13
Figure 4.2: Enforcement of the Law 4/1994 by EEAA.....	15
Figure 4.3: Institutional Framework for Environmental Management	16
Figure 4.4: Application of Environmental Water Quality Standards and Effluent Standards in Egypt.....	22
Figure 4.5: Process of EIA.....	27
Figure 5.1: Map of Nature Protectorates	35
Figure 5.2: Commemorative Papyrus for Participating the Plant Trees in the Desert of Egypt Campaign.....	38
Figure 5.3: Map of Afforestation Site Using Treated Wastewater	41
Figure 5.4: Shift in Air Pollutant Density in Cairo	43
Figure 5.5: Black Smoke Forecast	45
Figure 5.6: Trend in Black Smoke Episodes in Greater Cairo	45
Figure 5.7: Location of Brackish-Water Lakes	65

Figure 5.8: Location of Monitoring Points on River Nile by Nile Research Institute	82
Figure 5.9: Location of Monitoring Points for Irrigation and Drainage Water by Drainage Research Institute	83
Figure 5.10: Location of Groundwater Monitoring Points by Research Institute for Ground Water	83
Figure 5.11: Planned Waste Management at the Ramadan Industrial City	97
Figure 5.12: Supply of Electricity by Generation Methods in 2001/2002	105
Figure 5.13: Energy Balance in Egypt in 2001/2002	105
Figure 5.14: Component of EPAP	106
Figure 7.1: Distribution of Environmental Assistance by Donor (1991-2001)	122
Figure 7.2: Components of Environmental Sector Programs.....	125

List of Tables

Table 3.1: Average Temperature and Rainfall in North Egypt, Cairo	6
Table 3.2: Average Temperature and Rainfall in South Egypt, Luxor.....	7
Table 3.3: Average Temperature and Rainfall in Sinai Peninsula (Sharm El Sheikh).....	7
Table 4.1: Major Environment Related Laws and Regulations	17
Table 4.2: Institutions and Responsibilities for Water Quality Management.....	21
Table 4.3: Environmental Measures in Egypt	23
Table 4.4: Result of Inspection Efforts by Inspection Unit.....	26
Table 4.5: Temporal Evolution of EIAs Reviewed by EEAA.....	28
Table 4.6: Distribution of EIAs by Sector (Years 2000 and 2004)	28
Table 5.1: Flora and Fauna in Egypt.....	29
Table 5.2: Causes of Biodiversity Degradation	30
Table 5.3: Threatened Species Living in the Secondary Environment.....	33
Table 5.4: Natural Protectorates	34
Table 5.5: International Conventions Regarding Biodiversity.....	36
Table 5.6: Projects by International Aid Institutions	36
Table 5.7: List of Organization Related to Afforestation.....	40
Table 5.8: List of Afforestation Site Using Treated Wastewater.....	40
Table 5.9: List of Afforestation Site Using Treated Wastewater Under Establishment	41
Table 5.10: Ambient Air Quality Limit Values as Given by Law No.4 for Egypt (1994) Compared to the World Health Organization (WHO) Air Quality Guideline Values	43
Table 5.11: Annual Average of Air Pollutant in Each Governorate, Part 1	46
Table 5.12: CAIP Components and Results and Future Trend	49
Table 5.13: Water Balance of the River Nile	51
Table 5.14: National Water Resource Utilization and Development Plan.....	52
Table 5.15: Water Supply and Sanitation Coverage across Egypt.....	53
Table 5.16: Projections of Wastewater Treatment Coverage.....	54
Table 5.17: Design Capacity and Actual Treatment Amount of Sewage Plant in Each Governorate in 2002	55
Table 5.18: Effluent Quality from Major Industries Discharging to the Nile.....	56
Table 5.19: Water Quality of Agricultural Drains in Upper Egypt	60
Table 5.20: Loads of Organic and Inorganic Pollutants Discharged into the Nile from Upper Egypt Drains	61
Table 5.21: Breakdown of Inflow into Agricultural Drainages in the Delta Area.....	63

Table 5.22: Water Quality of Lake Mariout	66
Table 5.23: Responsible Institutions of Coastal Environment Conservation of Egypt.....	69
Table 5.24: Outline of the EIPM Program.....	79
Table 5.25: Summary of National Water Quality Monitoring Program	81
Table 5.26: Major Instruments Provided by JICA to EEAA Laboratories.....	84
Table 5.27: Breakdown of Waste Stream of Egypt.....	85
Table 5.28: Scattered Amount of Solid Waste, 1999.....	86
Table 5.29: Roles of Governmental Institutions in Municipal Waste Management	87
Table 5.30: MSW Management Relevant Legislation	88
Table 5.31: Waste Category, Participating Ministry and Management Costs.....	89
Table 5.32: Outline of Completed Privatizations	90
Table 5.33: Targeted Value of the SWM National Strategy	92
Table 5.34: Supports from Donor Agencies and Foreign Government for Municipal Waste Management.....	92
Table 5.35: The Outline and Costs of the Hazardous Waste Management Facility in The 10th of Ramadan Industrial City	97
Table 5.36: International Accords Regarding Hazardous Substances	100
Table 5.37: List of CDM Project Under Consideration in Egypt.....	101
Table 5.38: Contribution of Energy Sector in GDP.....	103
Table 5.39: Primary Energy Production.....	104
Table 5.40: Domestic and Regional NGOs	107
Table 5.41: International NGOs	109
Table 5.42: NGO Networks	110
Table 6.1: The Main Programs of the Five Year Plan (2000-2005)	112
Table 6.2: Major International Donors and Their Projects	113
Table 6.3: Budget Planned for MSW	116
Table 6.4: Budget for Agricultural Waste Management Program.....	117
Table 6.5: Budget for Medical Waste Management	117
Table 6.6: Budget for Construction Waste Management Program	117
Table 7.1: Environmental ODA for Egypt during 1991 - 2001	122
Table 7.2: Development of Potable and Sewage Serviced in Egypt by USAID.....	123
Table 7.3: Egypt Environmental Information System Project by CIDA.....	124
Table 7.4: Preference for Future Counterparts in Environmental Field.....	126
Table 7.5: Cost of Environmental Degradation in Egypt	127

List of Photos

Photo 5.1: Some of Threatened Species.....	31
Photo 5.2: Holm of River Nile (Cairo).....	32
Photo 5.3 Farm and Canal (Saqqara).....	32
Photo 5.4 Bird Species Living in Secondary Environment	33
Photo 5.5: Recently Planted Trees (Japanese Friendship Forest).....	39
Photo 5.6: Cultivation for Supplemental Planting	39
Photo 5.7: Growth of Planted Trees.....	39
Photo 5.8: Traffic Congestion in Cairo	42
Photo 5.9: Brick Factories (mazot combustion)	44
Photo 5.10: Iron Works at Alexandria	44
Photo 5.11: Generation of Black Smoke from Open Burning	44
Photo 5.12: Vehicle Emission Testing Center & CNG Fueling Station.....	48
Photo 5.13: Lead Smelting; Old Style and New Style Intruded by CAIP.....	48
Photo 5.14: Canal Polluted with Solid Waste	54
Photo 5.15: Water Pollution Status of Canal in Cairo	56

Photo 5.16: Agricultural Drain Polluted with Solid Wastes, Sewage and Dead Animals.....	58
Photo 5.17: Pump Station at Alexandria.....	64
Photo 5.18: Dragged Material Containing Municipal Waste in Canal at Alexandria	64
Photo 5.19: Oil Contamination in the Gulf of Suez	68
Photo 5.20: Scatting of Wastes at the Delta Area	85
Photo 5.21: Wastes Management by Private Sector (FCC: Covers Giza and Cairo).....	86
Photo 5.22: Compost Plant in Alexandria	90
Photo 5.23: Condition of Waste Disposal Site in the Delta Area, Tanta	93
Photo 5.24: Hospital Wastes Dumping.....	94
Photo 5.25: Wastes Mixed with Hospital Wastes.....	94
Photo 5.26: Hazardous Waste Disposal Site in Alexandria	99

ABBREVIATIONS

ARC	Agricultural Research Center
BOD	Biochemical Oxygen Demand
CAA	Competent Administrative Authorities
CBD	Convention on Biological Diversity
CCC	Cairo Central Center
CDA	City Development Associations
CDM	Clean Development Mechanism
CNG	Compressed Natural Gas
COD	Chemical Oxygen Demand
COMESA	Common Market for Eastern and Southern Africa
COP	Conference of the Parties
DANIDA	Danish International Development Agency
DDC	Desert Development Center
DFID	Department for International Development
DO	Dissolved Oxygen
EEAA	Egyptian Environmental Affairs Agency
EGPC	Egyptian General Petroleum Corporation
EIA	Environmental Impact Assessment
EIMP	Environmental Information Monitoring Program
EM	Environmental Management
EMU	Environmental Management Unit
EOP	End of Pipe
EPADP	Egyptian Public Authority for Drainage Projects
EU	European Union
FAO	Food and Agriculture Organization
FC	Fecal Coliform
FCC	Fomento de Construcciones y Contratas
Fe	Iron
FTA	Free Trade Agreement
GDP	Gross Domestic Products
GEAP	Governorate Environmental Action Plan
GEF	Global Environment Facility
GIS	Geographical Information System
GOFI	General Organization for Industrialization
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
IEMS	Industrial Environment Management System
IMF	International Monetary Fund
ITTO	International Tropical Timber Organization
LE	Egyptian Pond
MALR	Ministry of Agriculture and Land Reclamation
MD	Ministerial Decree
MoHP	Ministry of Health and Population
MoHUNC	Ministry of Housing, Utilities and New Communities
MoHUUC	Ministry of Housing, Utilities and Urban Communities
MoI	Ministry of Industry
MOPSE	Ministry of Public Sector Enterprise
MSW	Municipal Solid Waste
MWRI	Ministry of Water Resources and Irrigation
NAP	National Action Plan
NBU	National Biodiversity Unit
NEAP	National Environmental Action Plan
NGO	Non-Governmental Organization
NREA	New & Renewable Energy Authority
pH	potential of Hydrogen
PMD	Prime Ministerial Decree

POPs	Persistent Organic Pollutants
PPP	Polluter-Pays-Principle
RBO	Regional Branch Office
SCA	Supreme Council of Antiquities
SPA	Shore Protection Authority
SWM	Solid Waste Management
TDA	Tourism Development Authority
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
UNCCD	United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa
UNDP	U.N. Development Programme
UNEP	U.N. Environment Programme
UNESCO	U.N. Educational, Scientific and Cultural Organization
USAID	U.S. Agency for International Development
VOCs	Volatile Organic Chemicals
WFP	World Food Programme

Unit: 1 Fadden = 1,038 acre

Currency: 1 Egyptian pound ≈ 18 Japanese Yen