EnvirOnment 2007

The 5th International Conference & Exhibition for Environmental Technologies, Services & Funding

Under the auspices & inaugurated by **H.E. Dr. Ahmed Nazif** The Prime Minister of Egypt

Special Focus:
Water & Waste Water
Energy Conservation & Renewable Energy

Cairo International Conference Center
21.-23.05.2007

The Gateway to Profitable Environmental Compliance

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Environment 2007

وزارة الدولة لشئون البيئة
Ministry of State for Environmental Affairs

Environment 2007 - The 5th International Conference & Exhibition for Environmental Technologies, Services and Funding

From the 21st to the 23rd of May 2007 In the Cairo International Conference Center

	21st of May	22nd of May	23rd of May
9:30 – 11:00	☐ Opening Session with H.E. Ahmed Nazif, Prime Minister and H.E. Maged George, Minister of State for Environment	☐ Renewable Energies Strategy & Overview with the Minister of State for Environment and the Minister of Electricity & Energy	☐ New Technologies in Water, Waste Water and Irrigation ☐ Agenda 2020 and Integrated Coastal Zone Management ☐ Environmental Awareness and Education
11:30 – 13:00	☐ Exhibition Inauguration and Press Encounter ☐ Environmental Action Plans of Egypt and the Mediterranean	☐ Funding Environmental Compliance and Carbon Trading with Minister of International Cooperation, the Governor of the Central bank and head of donors and development bank	☐ Water Resources Management With the Minister of State for Environmental Affairs, the Minister of Irrigation and Water Resources and the Minister of Construction and Utilities
14:00 – 15:30	☐ Oil & Gas and the Environment with the Minister of Petroleum ☐ Eco Efficiency & Cleaner Production in Industry with the Minister of Trade & Industry ☐ Urban Waste Management with the Minister of Local Development	☐ Energizing our Future	☐ Protectorates, Eco-/lodge & Sustainable Tourism ☐ Global Water Crisis? Challenges and Opportunities
15:45 – 17:15	☐ Trade & Environment with the Minister of Trade & Industry ☐ Public Private Partnership, Public Funding meets entrepreneurial interest ☐ Emission Control & Monitoring	☐ Cleaner & Organic Agriculture ☐ RE Technologies & Energy Conservation	☐ Prospects of Renewable Material Utilization for Development ☐ Awareness, Research and Training

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Environment 2007

Time	Day I Monday, May 21st
9:30 – 11:00	**Opening Session** **Mohamed Farid Khamis, MP** *Chairman, GACIC & FEIA* **H.E. Eng. Maged George** *Minister of State for Environmental Affairs* **H.E. Dr. Ahmed Nazif** *Prime Minister of Egypt*
11:00 – 11:30	**Coffee Break**
	Exhibition Inauguration

11:30 – 13:00	**Plenary 1** Environmental Action Plans **Egypt: H.E. Maged George, Minister of State for Environmental Affairs** **Latvia: H.E. Raimonds Vējonis Minister of Environment** **Kingdom of Morocco: H.E Mohamed EL-YAZGHI Minister of Territorial Development, Water & Environment** **EU: Mrs. Karin Johansson, Pascal Odul, European Commission**
13:00 – 14:00	**Lunch**
14:00 – 15:30	**Break-Out Sessions I** ▪ Oil & Gas and the Environment ▪ Eco Efficiency & Cleaner Production in Industry ▪ Urban Waste Management
Speakers	**Oil & Gas and the Environment** **Chair: H.E. Sameh Fahmy, Minister of Petroleum** Moderator: Sherif Wadoud, Chairman, Pico Energy *Environmental Risk Assessment & the Energy Challenges*, Hossam S. Ezzeldin, Senior Environmental & SD Advisor, Shell Egypt *Environment Impact Assessment & Management*, Ahmed ElSherbiny, BP Environment Engineering *The CYTOSOL Process - Effective protection of Environment and cost saving cleanup of oil spills*, Klaus Vrey, General Manager, Global Concept GmbH, Germany

Speakers	*Natural Gas and Fuel oil Replacement Story*, Sherif Wadoud, Chairman, Pico Energy **Eco Efficiency & Cleaner Production in Industry** **Chair: H.E. Rachid M. Rachid, Minister of Trade & Industry** Moderator: Dr. Eng. Nader Riad, Chairman, CEEBA *ECO - Taking Care of the Environment ...and of Business*, Eng. Adel Taha, Chemical Sector Coordinator, Eng.Wafaa Ismail. Energy Efficiency Coordinator, Dr. Sherif Hamdy, Textile Sector Coordinator, Environmental Compliance Office „ECO", FEI *Successful Environmental Management (PREMA)in Egypt* Eng. Magued Youssef, Eng. Sameh Shaalan, Eng. Hisham El Shawy, Egypt National Cleaner Production Center *Cleaner Production EEAA Activities*, Maysoun Nabil, EEAA *Role of Cleaner Production in Raising competitiveness of the Egyptian Industry*, Hanan El Hadary, Egypt National Cleaner Production Center (ENCPC) *An Integrated initiative to expedite the Development of CDM projects in Egypt*, Emad Hassan, Nexant Inc.
Speakers	**Urban Waste Management** **Chair: H.E. Mohamed A. El Mahgoub , Minister of Local Development** *Integrated Municipal Solid Waste Treatment & Disposal Projects*, Sherif, Hisham Omar, Dept. of Chemical Engineering, University of Menia, and Chief Executive, Engineering Task Group (ENTAG) *Improvements to Municipal Solid Waste Management, Beni Suef Governorate*, Philip Jago, Medhat Awad, Mohamed Fathy, Trine Hansen, Ahmed Aziz, Danida ESP, EEAA

	Constructing a Semi Controlled Landfill for a Rural City: Experience of Edfu City, Aswan, Soad Thabet, Danida ESP, EEAA *Complementary Services in Non-Hazardous Solid Waste Management*, Hassan Abaza, Business Development & Communication Director, Veolia Environmental Services – Onyx Alexandria *Sustainable Community Initiatives in Waste Management,* Mary Ellen Mc Callum, Project Field Director, Community Environmental Action Project (CENACT)
15:30 – 15:45	**Coffee Break**
15:45 – 17:15	**Break-Out Sessions II** ▪ Trade & Environment ▪ Public Private Partnership ▪ Emission Control & Monitoring
Speakers	**Trade & Environment** **Chair: H.E. Rachid M. Rachid, Minister of Trade & Industry** Moderator: Dr. Eng. Nader Riad, Chairman, CEEBA *Environmental standards, A trade barrier or an export promotion tool*, Mohamed El Masry, Chairman, Federation of Chambers of Commerce *Environmental legislations and treaties and trade*, Dr. Peter Goepfrich, CEO, German Arab Chamber of Industry & Commerce *Ecolabeling and export promotion,* Mr. Helmy Abouel Eish, Chairman, Industrial Modernization Center (IMC) The Economics of Renewable Energy in Egypt, *Sherif Wadoud, Chairman, Pico Energy*

Speakers	**Public Private Partnership – Public Funding meets entrepreneurial interest:** **How European/Egyptian Companies can benefit from German Development Funds and Know how** Moderated by: Marlies Weissenborn, Director, GTZ Nadja Steffens GTZ - Deutsche Gesellschaft für technische Zusammenarbeit (GTZ) GmbH (Eschborn,Germany) Ricarda Horst DEG-Deutsche Investitions- und Entwicklungsgesellschaft Köln, Germany Andreas Holtkotte KfW, Cairo Office Uwe Grueeschow Grueschow Entsorgung & Umwelttechnik GmbH, Boldebuck , Germany Tarek Danish ORASCOM Hotel & Development, Cairo/Egypt
Speakers	**Emission Control & Monitoring** **Chaired by: Dr. Mawaheb Abo El Azm, President, EEAA** *Uhde EnviNOx Process for N_2O & NOx Emissions Reduction from Nitric Acid Plants – A leading technology* - , Michael Groves, Programme Development Group, Uhde GmbH, Germany *Environmental Degradation from Lead in the Greater Cairo area from 2000 to 2003 with discussion of the Estimated Health Risk*, Dr. Zeinab Safar, Head of Engineering Dept., Cairo University, Mounir W. Labib, National Coordinator ESP *Environmental Degradation from Particulate Matter and Lead in the greater Cairo area from 2000 to 2003 with discussion of the estimated health risks*, Mounir W .Labib, National Coordinator, ESP, Danida

	Fuel ethanol production from enzymatic hydrolysates of MFEX-treated rice straw, and cotton stalks, Prof. Dr. Bahaa T. Shawky, Microbial Dept., National Research Center *Environmental Information Systems and their contribution in different economic sectors, using the example of the workflow management tool UMBERTO*, Sameh Mahmoud, supported by Energy & Environmental Research Institute Heidelberg *Clean Development Mechanism: Benefits, Opportunities and Implementation in Egypt*, EEAA *Emissions from Upper Egypt Power Plants*, Madiha Abdel Fatah, Gosef Sro, Karim Said, Miriam Money, Upper Egypt Electricity Company
20:00 – 22:00	**Gala Dinner 1**

Time	Day II Tuesday, May 22nd Focus: Renewable Energies
9:00 – 9:30	**Business Encounters**
9:30 – 11:00 **Speakers**	**Plenary 2** Renewable Energies **Strategy & Overview** **H.E. Eng. Maged George** **H.E. Dr. Hassan Younes** **Minister of Environment** **Minister of Electricity & Energy** ▪ H.E. Klaus Ebermann, Ambassador of the EU ▪ H.E. Kaoru Ishikawa, Ambassador of Japan ▪ H.E. Antonio Badini, Ambassador of Italy ▪ H.E. Bernd Erbel, Ambassador of Germany ▪ Benthe Schiller, DHM, Denmark ▪ Sherif Wadoud, Pico Energy
11:00 – 11:30	**Coffee Break**
11:30 – 13:00 **Speakers**	**Plenary 3** Funding Environmental Compliance and Carbon Trading **Chaired by : H.E. Dr. Farouk El Okda** **Governor of Central Bank** **Moderated by** **Dr. Mawaheb Abouel Azm, CEO EEAA** ▪ Atsushi Matsushita, Chief Representative JBIC, Cairo ▪ Claudia Croce of the Italian Ministry of the Environment, Land and Sea ▪ Andreas Holtkotte, Director, KfW Office Cairo ▪ Benthe Schiller, Danish Embassy ▪ *WB* ▪ Karin Johansson, European Commission

	▪ Hisham Eisa, Egyptian Environment Fund, EEAA
13:00 – 14:00	**Lunch**
14:00 – 15:30 **Speakers**	**Plenary 4** Energizing our Future **KfW, GTZ** Moderated by: Prof. Amin Mubarak ▪ *Activities of GTZ in the field of renewable energies,* GTZ – Mr. Dieter Uh, Project Manager gtz: ▪ *Sectoral Framework and Funding Opportunities,* Mr. Andreas Holtkotte, Director KfW ▪ *IMC study: Renewable Energy Sector in Egypt,* Prof. Adel Khalil, Vice Dean of Faculty of Engineering, Cairo University ▪ Rural Electrification with Mini Grids, Prof. Dr. Jürgen Schmid, Director of ISET, German Coordinator of the renewable energies theme for the German-Egyptian year of science and technology, Kassel University
15:30 – 15:45	**Coffee Break**
15:45 – 17:15 **Speakers**	**Break-Out Sessions III** ▪ Cleaner & Organic Agriculture ▪ RE Technologies & Energy Conservation **Cleaner & Organic Agriculture** **Chaired by H.E. Minister of Agriculture** Moderated by Dr. Mohamed Khalil *Organic Agriculture and food utilization, a case study* Ḥelmi Abouel Eish, Chairman Sekem *Global prospects for Cleaner and Organic Agriculture* Ayman Korra, Chairman Consukorra Group *Using compacted rice straw bales as a growing media instead of naturally infected soil for improving eggplant and sweet*

	pepper production under open field conditions in Egypt, Dr. Hanan A. El Marzooky, M. Anwar Abdel Sattar, Ali I. Mohamed, Suez Canal University, Faculty of Agriculture *Aforestation*, Dr. M. Khalil, EEAA
Speakers	**RE Technologies & Energy Conservation** *Chaired by: Eng. Samir Hassan, Chairman NREA* *Energy Conservation and its environmental impacts in Alexandria Electricity Distribution Co.*, Eng. Moustafa el Badan Eng. Mervat El Nahas, Eng. Amani Attia, Alexandria Electricty Distribution Co. *Energy Efficiency Improvement in Household Appliances,* Dr. Ibrahim Hassan, EEIGGRP GEF/UNDP *World's First Solar Process Steam Plant Completed In Egypt,* Amr Mohsen, CEO, Lotus Solar Technologies *Prospects for the Production of Ethanol and Bio oil from Rice Straw*, Prof. Dr. Shadia Tawfik, National Research Centre
20:00 – 22:00	**Gala Dinner2**

Time	Day III Wednesday, May 23rd Focus: Water Resources
9:00 – 9:30	**Business Encounters**
9:30 – 11:00	**Break-Out Sessions IV** ▪ New Technologies in Water, Waste Water and Irrigation ▪ Agenda 2020 & Integrated Coastal Zone Management ▪ Environmental Awareness & Education **New Technologies in Water, Waste Water and Irrigation** **Chaired by: Dr. Hussein El Atfy, deputy minister of water resources and Irrigation**
Speakers	*Water Reform Strategy in Egypt,* A. Badr, European Commission *Egypt's technological needs in water and wastewater production and distribution,* Eng. Mamdouh Raslan, Deputy Chairman & CEO, HCWW *Innovative Processes and Practices for Wastewater Treatment and reuse in the Mediterranean Region*, Dr. Mohamed Tawfic, Suez Canal University
Speakers	*Real-Time Water Treatment Process Control With Artificial Neural Networks,* Environment and Climate Research Institute, National Water Research Center *Enhancing purification of surface water in Egypt by Potassium permanganate addition,* M. Basiouny, N.Y. Abouel Kheir, T. El Metwali, E.A. Fouad, Benha University

	Performance Indicators of the Removal of Chronium using Synthesized Modified Zaditea, M. H. Serour, H. Ali, National Research center *Renewable Energy Sources, the Utilization of Ultra-clean, Low Emission Generation Resources of Energy in the Wastewater Treatment & Recycling Plants in Egypt*, Magdi el Beheiri, EPECO
Speakers	**Agenda 2020 & Integrated Coastal Zone Management** **Chaired by Dr. Mawaheb Abou El Azm, President, EEAA** **Keynote speaker: H.E. Mohamed EL-YAZGHI, Minister of Territorial Development, Water & Environment, Morocco** *Network on Governance, Science and Technology for Sustainable Water Resources Management in the Mediterranean* (NOSTRUM), Dr. Sameh Afifi, CEDARE *Integrated Coastal Zone Management Proposed Egypt's Strategy Toward Sustainable Use Of Costal Zone Resources*, M. Aly Borhan, EEAA *Horizon 2020 & Integrated Coastal Zone Management , the EU perspective*, Javir Bonilla, European Commission *METAP action plan*, Dr. Maged Hamed, World Bank *The Egyptian National Environmental Observatory*, NWRC
Speakers	**Awareness, Education and Training** **Chaired by H.E. Minister of Education** Moderated by Dr. Esam Refaat, Editor in Chief, Al-Ahram El-Ektesady *HCWW Awareness Approach*, Dr. Emad Adly, president, Arab office for Environment *Innovative Water Awareness Campaigns for a New Generation in Egypt*, Environment and Climate Research Institute, National Water Research Center

	Network on governance, Science and Technology for Sustainable Water Resources Management in the Mediterranean, Dr. Sameh Afifi, CEDARE
11:00 – 11:30	**Coffee Break**
11:30 – 13:00	**Plenary 5** **Water Resources Management** **H.E. Eng. Maged George, Minister of State for the Environment** **H.E. Dr. Mahmoud Abou Zeid, Minister of Water Resources & Irrigation** **H.E. Ahmed El Maghrabi Minister of Housing, Utilities & Urban Development** **H.E. Klaus Ebermann, Ambassador of EU,** **H.E. Bernd Erbel, Ambassador of Germany** **H.E. Tjeerd de Zwaan, Ambassador of the Netherlands** **Presentation: Strategies for PPP models and Opportunities**
13:00 – 14:00	**Lunch**
14:00 – 15:30	**Break-Out Sessions V** ▪ Protectorates, Eco-/lodge & sustainable Tourism ▪ Global Water Crisis? – Challenges & Opportunities **Protectorates, Eco-lodge & sustainable Tourism**
Speakers	**Chaired by the Minister of Tourism** Moderated by: Eng. Hazem Bashat, AEEC *Protectorates in Egypt* Dr. Mustafa Foda, director of the Natural Conservation Sector, EEAA

	Eco-Touristic Value Of The National Park Of Belezma (Batna, Algeria), Haroun Chenchouni, Department Of Biology, Faculty Of Sciences, University Of Batna, Algeria *Ecolodge and Sustainable tourism in Egypt*, Dr. Monir Nematalla, EQI *Conserving Biodiversity of Ecosystems in Petroleum Industry*, Hazem Bashat:, AEEC *Economic Water desalination for touristic resorts*, Rudolf Rieger, Intergeo, Austria *Wastewater Recycling in Touristic Resorts*, HCWW
Speakers	**Global Water Crisis? – Challenges & Opportunities** **Chaired by: Mohamed Alfy, deputy minister of Housing, Utilities & Urban Development** Moderated by: Dr. Sameh Abdel Gawad, Cairo University *Community Based Approach – Option for Sustainable Wastewater Management*, GTZ - Dr. Hans-Werner Theisen, Chief Technical Advisor: ► *Sectoral Framework and Funding Opportunities*, KfW – Mr. Andreas Holtkotte, Director KfW ► *Private Sector Utility Management under Water Scarcity*, Severn Trent Water International Ltd. – Mr. Lloyd Martin:
15:30 – 15:45	**Coffee Break**
15:45 – 17:15	**Break-Out Sessions VI** ▪ Rural Sanitation ▪ Prospects of Renewable Material Utilization for Development ▪ Research & Training

	Rural Sanitation **Chaired by Dr. Abdel el Kawy Khalefa, Chairman of HCWW**
Speakers	*Rural Sanitation Strategy: Proposed Conceptual Framework:* Dr Ahmad Gaber, Chairman, Chemonics Egypt *Development of a Rural Sanitation Plan in a Pilot Area:* Dr Hazem Saleh, Menoufia University *Application of the Decentralized approach in Rural Sanitation*: Dr Mahmoud Abd el Azeem, Ain Shams University
	Prospects of Renewable Material Utilization for Development – Alternative Wood- Wood Treatment - Bio-composites
Speakers	*Bio Composites, Role of the Plastic Technology Center in Industry Development*, Dr. Hamid el Mausely, PTC *Utilizing Renewable Material resources and export*, Wolfgang Altenburg, gtz *Treatments of palm midribs to improve its physical and mechanical properties*, Dr. Moataz Qenawy *Bio Fibre Plastic Composites via presenting PHD Study*, Eng. Ayman Abdul-Wahab *Bio degradable films from renewable natural resources*, Prof. Yehia Moharam
	Awareness, Research & Training Moderated by: Eng. Nabil Hassan, University of Applied Sciences, Cologne
Speakers	▪ *New Master of Science Programme: Integrated Water Resources Management (for Arab and German young professionals*, DAAD – Prof. Dr. Gaese: ▪ *Sustainable Energy through awareness raising at the local level*, HSS – Wolfgang Mayer, Regional Representative

17:15 – 17:45	**Closing & Recommendation**

Speakers

Prof. Adel Khalil

Adel Khalil is a professor of Heat Transfer and Power Plants at Mechanical Power Engineering Department- Faculty of Engineering, Cairo University and is currently the Vice Dean for Graduate Studies and Research. Prof. Khalil gained a PhD Degree from the University of Wisconsin, Madison-USA in 1978. He worked as a visiting professor at several Educational and Research institutions including the University of Wisconsin, the American University in Cairo, Nuclear Research Center at Karlsruhe-Germany and the University of the Arab Emirates. His research interests are directed to heat transfer and thermo-economic analysis of Energy Systems including both low and high temperature applications. As a consultant he has a wide experience in Power Generation Technologies, Energy Conservation, Renewable Energy Systems and Refrigeration/ Air Conditioning applications.

Adel Taha

Adel Taha (3.11.1974) has a M.Sc. in Organic Synthesis, Chemistry department, Faculty of Science, Cairo University. He is a certified OHS Management Systems Auditor/ Lead Auditor
Certified Energy Managers
He is currently a Chemical Sector Coordinator, Environmental Compliance Office, Federation of Egyptian Industries where he is responsible for: i. Conduct pre- and full assessment studies. Review and refine environmental audit reports carried by Egyptian consultants in chemical industries to identify cleaner production projects; ii. Identification and assessments of projects, so the projects can be implemented, including financing; iii. Training for Egyptian local consultants incorporation with Danish experts in the field of chemical industries and OHS; iv. Organizing workshops and training programs for industries. He is a member of the Egyptian Society of Analytical Chemistry, and the National Coordination Committee for the Strategic Approach to International Chemicals Management (SAICM). His key qualifications are: Pollution Prevention (PP); Cleaner Production (CP); Environmental Auditing (EA); Environmental Management System (EMS); Environmental Impact Assessments (EIA); Certified Energy Manager (CEM); Certified OHS management systems auditor.

Ahmed El Sherbiny

Ahmed El Sherbiny is working as Environmental Engineer in BP Egypt. His main role includes leading the Environmental Team and providing the needed technical support across BP/ Joint Venture operations. He has an MSc degree in Environmental Engineering from the American University in Cairo. He has extensive professional experience in the fields of Environment and Development, with special emphasis in Environmental Impact Assessment and Management as well as Environmental Monitoring.

Dr. Alaa Ezz

Dr. Ezz has worked in the socio-economic development, environment, finance, trade & investment fields for over 25 years. He has designed and implemented projects for various private sector and multilateral and bilateral donors in the Mediterranean and Arab regions. These regional projects encompassed industry, environment & sustainable development, investment promotion, technology transfer, trade liberalization & promotion, energy & utilities, networks & information technologies, training, and media. After ten years in the United Nations Trade and Technology Promotion System, ending up as regional director for North Africa and Middle East then 5 years as the president & CEO of EnviroEgypt SAE the lead infrastructure corporation in the region, he is presently the Secretary General and CEO of the Federation of Egyptian Chambers of Commerce encompassing 3.5 million members. On the public side, Dr. Ezz is the Secretary General of the Confederation of Egyptian European Associations "CEEBA", the Egypt-Japan Business Council "EJBC", the Egypt-Germany Business Council "EGBC", the Forum for Training and Education "FORTE" and the Association of Enterprises for Environmental Conservation "AEEC"; the chief advisor to the chairman of the Federation of Egyptian Industries "FEI" and the chairman of the Egyptian Automobile Manufacturers Association "EAMA"; the executive board member of the German Arab Chamber of Industry and Commerce "GACIC"; board member of the EuroMed Investment Promotion Council "MenaIC"; the Coordinator of Al-Ahram Regional Press Institute "ARPI"; and managing editor of Environment Today & Economy Today Magazines. After acquiring his M.B., B.Ch., Dr. Ezz has obtained post graduate degrees and conducted research in the fields of Economics, Environment, Public Health, and Management. His published work includes tens of scientific papers and economic studies, hundreds of articles and several books including "Sustainability and Development, *a developing economies perspective*", "Investing in Egypt", "Trading with Egypt", and "Environmental Planning for Developing Economies".

Alexander Burns

In 1956, Mr. Alexander Burns commenced as a trainee civil engineer with Messrs Crouch and Hogg, Consulting Engineers in Glasgow and at the same time commenced his studies at Paisley Technical College. In 1961 he graduated from College and in 1964, after a period of further training in engineering design, site supervision and management, he achieved the status of chartered engineer C.Eng., M.I.C.E. From 1962 to 1968 he worked firstly for the South of Scotland Electricity Board and later as senior assistant Sanitary Engineer with Renfrew County Council. In 1968 he joined the staff of the water development department of the government of Kenya, commencing as pipeline engineer for the Mombasa Pipeline Board. From 1971 to 1973 Mr. Buns was the chief design engineer for the department and was later appointed as coordinator of the World Bank/ KfW financed project for the Mombasa and Coastal Water Supply Project. In 1975 Mr. Burns was appointed by GKW Consulting Engineers of Mannheim, Germany, as deputy project manager, and later as project manager of Lagos Water Supply, Project, Nigeria. In 1978 he was elevated to the status of fellow of the Institution of Civil Engineers, F.I.C.E., and Fellow of the Chartered Institution of Water and Environmental Management, F.C.I.W.E.M. From 1980 to 1985 he managed several water and wastewater projects for GKW in

Liberia. In 1985 Mr. Burns joined RODECO Consulting GmbH and continued to work in Liberia to support the management of the Liberia Water and Sewerage Corporation. In 1991 he was appointed manager of the gtz supported Alexandria Water Supply Project in Egypt, which successfully ran until 2002. From 2002 to date Mr. Burns is the manager of the gtz supported project "Decentralised Waste Water Management in Kafr El Sheikh Governorate, Egypt".

Amr A. Mohsen

Amr obtained his French baccalaureat in Cairo in 1974, joined the faculty of engineering Alex University and received a B.Sc in Mechanical Power in 1981. He went on to obtain an M.Sc from the Institut Francais du Petrole in Paris in 1981 & joined Shell International in The Hague, Holland and spent the following 14 years with assignments in Holland, Thailand, Algeria & Indonesia. His last assignment with Shell was as head of Field Development Economics in Muscat, Oman. He then ran an oilfield services company, Zubair Oil & Gas, for 3 years before returning to Egypt in 1997 to become Gas Director for Amoco. In 1999, he decided to shift to renewable energy and started Lotus Solar Technologies in Cairo.

Andreas Holtkotte

Andreas Holtkotte is a German national and studied at the Universities of Osnabrueck and Heidelberg, Germany. He holds a diploma in agriculture and a MBA in International Business Relations.
He joined KfW Group in 1993 and held various positions within the institution until today. His main areas of experiences are water supply and sanitation. Prior to his current position as Director of the KfW office in Cairo, Mr. Holtkotte was responsible for portfolio management and programming for KfW's activities in Anglophone Africa. Before that he headed the KfW Office in Nairobi, Kenya.

Eng. Ayman Ali Abdel-Wahab

Eng. Ayman is born on 28.8.1976 in Cairo, Egypt. With teaching experiences in machine tools design, machine elements design, power transmissions design, Jigs & Fixture, vibrations theory, stress analysis, and production technology, he works as teaching assistant in the Design & Production Department, the Faculty of Engineering, Ain-Shams University in Cairo. He has working experiences as a design & manufacture engineer in power wash factory for washing machines manufacture, assistant supervisor for the graduation projects about design & manufacture of machines for using a cotton stalks in small-scale industries, design engineer in EMECO factory for lightening technology, design & manufacture of paper shredder and baling press as a graduation project, 1999.

Professor Dr. Bahaa T. Shawky

Professor Dr. Bahaa T. Shawky, Microbial Chemistry Department, Genetic Engineering and Biotechnology Research Division, National Research Center, Cairo, Egypt. Prof. Shawky, specialization field is fermentation technology and industrial microbiology. He acted as principal investigator of several research projects such as: (a) Fuel ethanol production from lignocellulosic wastes "Biofuel". (b) Microbial biomass protein production from agro industrial wastes "Bioprotein". (c) Production of microbial polysaccharides and poly-β-hydroxybutyrate "Biopolymers" . (d) Production of biofertilizers. (e) Enzymes produced from microbial sources "Cellulase and Hemicellulase". (f) Production of unconventional animal rations by microbial decomposition of agricultural wastes. Prof. Shawky participated in several international conferences, symposia, and workshops held in Egypt, India, Yugoslavia, Germany, USA. He supervised 25 graduates for MSc and PhD degrees. Author of 70 papers published in specialized international journals. He has a wide range of consultations and advisory activities. The holder of a patent registered at ASRT «Multipurpose Fiber Explosion Apparatus "MFEX "» . Member of several scientific societies, committees, and syndicate, namely: The Egyptian Society Of Applied Microbiology, The Egyptian Society Of Biochemistry and Molecular Biology, American Association For The Advancement Of Science (AAAS). He granted postdoctoral fellowship to: (a) Martin-Luther-Universität, (b) Institute für Polymerenchemie der Akademie der Wissenchaften, and (c) Humboldt-Universität, Germany (1982). Prof. Shawky worked as visiting Fulbright researcher and professor at the Department of Chemical Engineering, Engineering Biosciences Research Center, Texas A&M University USA (1992/ 1993).

Benthe Schiller

Benthe Schiller (born 1950, Denmark) is the Counsellor for Development at the Royal Danish Embassy in Cairo. She worked in Danish, German and French private companies. Since 1990 she is employed by the Danish Minstry of Foreign Affairs. Ms. Schiller had international short-term working assignments in several countries in Latin America, Africa and Asia. Her long-term work experience stems from employments in Germany, France, Cameroon, Burkina Faso, as well as Bolivia. Ms Schiller is a 4-lingual correspondent: English, German, Spanish (Copenhagen University of Commerce), French (L'Ecole Commerciale de la Chambre de Commerce et d'Industrie de Paris) and she earns a M.Sc. Engineering (Mechanical) from the Technical University of Copenhagen. She is decorated with the following distinctions: "Officier de l'Ordre National Burkinabé" (Burkina Faso) 1999; "Ridderkorset af Dannebrog" (Denmark) 2006. Currently, she in working in the Royal Danish Embassy in Cairo in Egypt, being responsible for all Danish development assistance to Egypt.

Dieter Uh

Dieter Uh is Project Manager of the supra-regional project "Partnerships and Networks for Renewable Energies in Developing Countries" at German Technical Cooperation (gtz) Head Office in Germany since 2005. Under his main tasks are the responsibility for interregional projects in the field of renewable energy together with German companies of all branches of RE and beyond. Beside this, he is involved in numerous projects like SOLATERM in the MENA-region, the IEA PV Task 9, the German "Export Initiative for Renewable Energies", the GNESD and REN21 network. He is assuming the responsibility for 2 professionals.
He has a broad experience concerning planning, implementation and monitoring of (esp. renewable) energy projects on mikro, meso and makro level from the technical and scientific as well as from the political side. In addition to his management tasks, he is active as in-house consultant for an infrastructure project in Mongolia and technical aspects of different projects.
Prior to working for gtz he graduated in electrical engineering at the Technical University of Berlin. There he also studied architecture without examination. A broad range of professional activities around the energy and renewable energy issue followed: as an engineer in a innovative Berlin-based company "ATLANTIS" for RE, political/ scientific advisor to Hermann Scheer, Member of German Parliament, creating the "Feed-in-Law", Research Commission of the German Bundestag on "Sustainable energy supply under the conditions of liberalisation and globalisation" and preparation of the "International Conference for Renewable Energies", Bonn on behalf of the German Energy Agency.

Emad A. Hassan

Mr. Hassan has over 20 years of experience in the energy and environmental fields, half of which is in developing countries. He provided consultancy to major donor organizations such as USAID, EBRD, the World Bank, and the IFC in the Middle East, Asia, North America, Eastern Europe, Latin and Central America. He managed 3 donor-funded projects dealing with environmental strategies, policies, and energy access including 2 long-term postings in Egypt. His project management background covered a wide spectrum of activities in the development world including business planning, technology transfer, development and implementation of market strategies, third party finance, performance-based delivery, policy development, capacity building, emission trading, and project monitoring and verification.
Earlier in his career, Mr. Hassan worked for one of the U.S. major electric utilities holding various positions in management, energy efficiency planning and implementation, regulatory interface, performance-based programs, and utility-financed initiatives. He also developed and implemented several marketing and promotional activities focusing on demand-side efficiency for design professionals, municipal/ public buildings, and equipment suppliers. Mr. Hassan has been active in the NGO societies in North America and Egypt, and has taught several energy-related graduate courses at the University of California Los Angeles (UCLA) where he received his Masters degree, and at Cal State Polytechnic University in Pomona, California.

Prof. Dr. Hamed El-Mously

Prof. Hamed is Born on 8.4.1943 in Cairo, Egypt. He is a Professor of Production Engineering at the Faculty of Engineering, Ain-Shams University in Cairo, Egypt, and Chairman of the Egyptian Society for Endogenous Development of Local Communities. He is the previous director of the Centre for Development of Small-Scale Industries and Local Technologies at the Faculty of Engineering, Ain-Shams University, Cairo, the International Coordinator of Group of Experts in Renewable Material Resources Research, United Nations Environmental Programme, Working Group on Sustainable Product Development, and member of the Executive Committee of the International Network of Engineers and Scientists for Global Responsibility (INES).

He is the leader of several research projects, devoted to finding modern avenues of utilization of agricultural residues being an important division of renewable material resources, manager of several applied projects in rural, communities in Egypt relying on the use of the date palm leaves midribs as an industrial material and a substitute for imported wood, Head of the work team for the study of technical and economic feasibility of six industrial projects in Egypt and the Arab region, and participated as an industrial planning expert in 24 projects of urban planning in different provinces and localities in Egypt.

Dr. Hans-Werner Theisen

Dr. Hans-Werner Theisen holds an M.Sc degree in Civil Engineering, specialised in Hydraulics and Water management, and a PhD in Hydrology. He has more than 15 years of practical experience in Water Resources Management, hydrological modelling, project implementation and management. His professional career includes assignments as research assistant, project manager and technical advisor.

From 1990 to 1998 he started his work in the water sector as research assistant at the Institute of Water Resources Planning and Hydrology at the University of Karlsruhe. In 1999 he finished his scientific career with a PhD in Hydrology and Soil mechanics.

After 4 years working as technical advisor in an international consulting company he entered gtz in 2003. In the last four years he was responsible for the design and preparation of gtz water projects all over the world. Since 2007 he is coordinator of the "Water Supply and Wastewater Management Programme" in Egypt.

Hanan El-Hadary

Hanan El-Hadary is currently the director of the Egypt National Cleaner Production Center (ENCPC) where she manages, assists, as well as implements different ENCPC activities. She is especially engaged in the field of new and renewable energies, as the technical assistant for the Clean Development Mechanism among other things. In addition, she is a project coordinator assisting the public sector companies in implementing industrial pollution abatement projects. This is just one of a great variety of projects that Mrs. El-Hadary is doing together with the Egyptian Environmental Affairs Agency. All this stems from a strong educational background which includes a M.Sc. in Environmental Engineering of the American University in Cairo, as well as a B.Sc in Architecture (Urban Planning). She also participated in many additional workshops, seminars and courses. Recently, Mr. El-Hadary also published to papers, one one cleaner production, the other on the role of the private sector in pollution abatement.

Prof. Dr. Hartmut Gaese

Prof. Dr. Hartmut Gaese was born 1943. After finishing an agricultural apprenticeship in 1965 and completing studies of Agricultural Sciences at the University of Stuttgart-Hohenheim in 1969. he spent time at the Institute for Agricultural Economics of the University of Hohenheim as a Doctoral Candidate and Assistant Professor. He completed a doctorate in Agricultural Economics in 1973 and was awarded the 'Prize of the European Communities for Economics 1974'. From 1977 to 1980 he lead the gtz-team in Fortaleza/ Brazil. Between 1980 and 1982 Prof. Dr. Gaese held the position of Senior Scientist of the Research Centre for International Agricultural Development in Heidelberg (South Asia Institute of the University of Heidelberg). Since 1983 he has been Professor for Technology of Agricultural Production in the Tropics and Subtropics and has been running the postgraduate course 'Technology in the Tropics' at the Institute of Technology in the Tropics (Engineering Center of University of Applied Sciences of Cologne) and Executive Director of the institute.

Hassan Abaza

Hassan Abaza (born 28.11.1947 in Beheira) is Business Development and Communication Director at the Veolia Environmental Services Company, a global company offering the entire range of environmental services in water, waste management, energy and transportation sectors. Mr. Abaza owns a B.Sc. in Agricultural Engineering from Faculty of Agriculture of the Alexandria University. His professional background further includes a Master degree in Agricultural Engineering from Warsaw University in Poland. He specialised with additional courses in Agribusiness Fellowship Program in Agribusiness and Environmental Resources School at the Arizona State University.
Mr. Abaza used to be the vice president of the Chamber of Commerce in Beheira until recently. He has also been a Member of the Parliament priorly as well as a Member of the Consultant Committee for the Business Development Services Support Project (BDSSP) – a project funded by the Canadian International Development Agency (CIDA).
Moreover, Mr. Abaza is the Chairman of Moslems Youth Association and The Regional Federation of Non- Governmental Associations and Organization- Alexandria Chairman.

Hazem Bashat

Hazem Bashat owns a B.Sc. degree in Geology and Chemistry from Cairo University, as well as a High Diploma in Petroleum Geology from Ain Shams University and a M.Sc. in Geochemistry from Cairo University. In 1958, he joined the Egyptian Petroleum Authority and then moved to Shell in 1960 where he worked in oil exploration and production projects in Sinai and the Red Sea till 1970. Afterwards he worked as a petroleum Advisor for the Ministry of Oil in Kuwait.
He re-joined Shell Egypt in 1990 as Sen. Environmental Advisor for Shell Companies in Egypt. He is the Author of Shell Egypt's Environmental Management Manual in 1992. As a certified Lead Auditor for the ISO 14001 Std and the OHSAS 18001, he successfully led all Shell Egypt efforts to be the first in Egypt to acquire such certificates.
During his professional career he acquired experience and expertise in conservation regulations of petroleum resources, environmental management systems for the petroleum industry, HSE Management, Integrated Impact Assessment IIA, Sustainable Development Management, Oil Spill Response, Crisis Management and Clean Development Mechanisms. In addition, he was appointed as the Secretary General of the Committee on Industrial Development and the Environment at the Federation of Egyptian Industries from 1993 – 1999. He is currently the Board Treasurer and Environmental Advisor of the Association of Enterprises for Environmental Conservation.

Heba Ahmed Hani Ali

Heba Ahmed Hani Ali earns a M.Sc in Chemical Engineering of the Faculty of Engineering Cairo University (2004), Thesis Title ,"Simulation and Optimization for Zeolite Production Schemes for Water Treatment and B.Sc in Chemical Eng., Faculty of Eng., Alexandria University (1999). She is currently employed as a chemical Eng. and pilot Plant Dept., Engineering Research Division National research Centre. She is also an Assistant Researcher . She did additional training courses on "Simulation in Chemical Industry" with UNIDO in Cairo and on "Process Simulation Using Aspen Plus" in Cairo. Relevant Projects she is involved in are: Development of Zeolite Production Schemes for Water Treatment, National Research Centre (NRC) and Academy of Scientific Research and Technology (ASRT), (2005-present). She has so far published one article on "Simulation and Economic Appraisal of Zeolite Production Schemes for Water Treatment".

Helmy Abouleish

Mr. Helmy Abouleish is the Chairman of the Industrial Modernization Center since June 2005. Before he was CEO of the SEKEM Group of Companies. Mr. Abouleish is also Chairman of the Egyptian Junior Business Association (EJB), several committees and chambers, including the German Arab Chamber of Industry & Commerce (GACIC), among other activities. He is a member of the steering committee of the Agricultural Exports' Traceability project, general coordinator for the Commodity Councils, as well as a member of the selecting panel of the Ashoka Foundation in Egypt. He also is an active member of several organizations including the International Demeter Organization (IDO), and others. A graduate of the Faculty of Commerce, Cairo University and Faculty of Business Administration at the American University in Cairo, he was closely involved in the establishment of all parts of the SEKEM Initiative, which promotes social and cultural development, and has specialized in finding modern approaches and novel solutions to questions on the global economy and competitiveness. He is founder or co founder of various organizations. Mr. Abouleish has worked in various positions within the SEKEM organization, and organized the first IFOAM Conference on Organic Cotton in Cairo in 1993 and AGROBIO' 96. He represented SEKEM at the meeting of the World Economic Forum 2004 and various regional events of the WEF.

Hesham El Said Eissa

Hesham El Sair Eissa (born 27.9.1963) owns a Bachelors of Commerce of Faculty of Commerce, Ain Shams University, Economics Diploma of Alexandria University, Political and Economical Systems Diploma. African Research & Study Studies Institution as well as Masters of European Studies – Economy section. Faculty of Economics & Political Science, Cairo University. He has previous international work experience and within the armed forces. He participated in various projects and has concluded some important economic research. He is currently working as a EPF Manager within the Ministry of State of Environmental Affairs since 28-3-2006 where he is responsible for i. Manage the Environmental Protection Fund (EPF) money; ii. Manage some components within the Danish project to support environmental management in Egypt; iii. Supervise projects funded by

Canada to finance environmental projects implemented by NGOs; iv. Participate in implementing a decentralized environmental management system in Egypt; v. Participate in the technical studies of cleaner production mechanism in co-ordination with The world Bank; vi. Participate in technical committees for sustainable development in Egypt; vii. prepare financial studies based on feasibility studies for the projects funded by the cleaner production support program which is funded by Denmark; viii. Advisor to establish the Environmental Protection Fund in Sudan and Morocco.

Hisham Anas Ibrahim El-Shawy

Eng. Hisham Anas Ibrahim El-Shawy was born 10.07.1960. Due to long experience sustained by professional studies in the AUC "*American University in Cairo*", as well as some other certified training centers in Management skills, and B.Sc. Science in Bio-Chemistry at the King Saud University, he has very excellent management skills. Hence, he is currently employed as an administrative manager for El-Marwa Food Industries Company. Among his responsibilities are tasks like reporting to the General Manager or the supervision of the personnel department process. Before, he has been the owner of the Lamasat gift shop, and the sales manager at ART – Arab Radio & Television. Mr. El-Shawy is very much engaged in his field as proven by his variety of professional courses he is taking every year, primarily at the AUC. Within this constant training, he developed further important personal skills within communication, presentation, leadership, negotiation, as well as multi-tasking.

Dr. Hisham Sherif

Dr. Hisham Sherif (11.09.1960) is the Chief Executive Officer of Engineering Tasks Group (ENTAG), an Egyptian firm specialized in the design, construction management and procurement of composting and recycling facilities and equipment. Dr. Sherif has assisted over 30 municipalities in Egypt and Libya to upgrade composting facilities and to plan, construct, and operate new facilities. Experienced in local and international procurement, laws and procedures governing licensing, import, and joint ventures. Dr. Sherif is a good engineering team manager. He additionally is a lecturer in chemical engineering at Minia University. This all bases upon a very good prior education: Mr. Sherif owns a PhD in chemical engineering, as well as a M.Sc and B.Sc on chemical engineering of the Faculty of Engineering at the Minia University. He has taken care of a large amount of project on solid waste recycling plants, chemical insulation constructions and industrial waste water treatment plants. He further educates himself through conferences and personal research, which amounts to a big number of lectures, presentations and papers of his. Moreover, he writes proposals of solid waste management projects to be submitted to international tenders.

Hossam S. Ezzeldin

Hossam S. Ezzeldin, P.E., is a Senior Environmental & Sustainable Development Advisor in Shell Exploration & Production in Egypt. Among his responsibilities are implementing and maintaining compatibility of the HSE Management System & SD elements to ISO standards, as well as providing strategic planning to management team related to environmental/oil spill crisis risks. Before, Mr. Ezzeldin has been the Director of Engineering Services for Tully Environmental Inc. In addition, he has worked as an adjunct professor at the Stevens Institute of Technology within the Department of Civil & Environmental Engineering - Hoboken, New Jersey. At Langan Engineering and Environmental Services Inc. he has been a Project Manager – for the U.S. Agency for International Development he has been a Consultant (On-call). His education includes a M.S in Environmental Engineering of the Stevens Institute of Technology in New Jersey, and a diploma in project management of the American University of Cairo. He also has international working experience in USA, Canada, Egypt, France, Italy, Switzerland, Brazil, Sultanate of Oman and UAE. He has been awarded the 'Young Civil Engineer of the Year Award' for 2000 from the American Society of Civil Engineers and the 1993 Award of the New Jersey Water Pollution Control Association's 78th Annual Conference in Atlantic City, New Jersey.

Javier Menéndez Bonilla

Mr. Javier Menéndez Bonilla is currently working as a First Secretary for the European Commission Delegation in Egypt. He is responsible for issues concerning the environment, i.e. the Short and Medium Term Priority Environmental Action Programme for the Mediterranean. Furthermore he is responsible for the Children at Risk Programme and the Higher Education Programme of the European Commission – Delegation in Egypt.

He holds a Masters (DES) in Development Studies, a Masters (MBA) in Business Administration with an emphasis in Foreign Trade, furthermore he holds a Bachelor in Law and Business.

Mr. Menéndez Bonilla worked already for the European Commission as part of the European Community Humanitarian Office in Myanmar, Thailand, North Korea and Iraq.

In addition he worked as a European Representative at Help Age International (HAI), a global network of 64 NGOs working with and for disadvantaged older people worldwide.

Professor Dr. Jürgen Schmid

Prof. Dr.-Ing. Jürgen Schmid (born in1944) is since 1998 Chairman of the Executive Board of ISET – Institut für Solare Energieversorgungstechnik, Kassel/ Hanau, which belongs to the global leading research facilities in the energy systems technology and head of the department Efficient Energy Conversion of the Kassel University.

Further more Prof. Schmid is presently member of the Scientific Board of the German Advisory Council on Global Change, co-ordinator of the European research cluster Integration of Renewable Energy Sources and Distributed Generation into the European Electricity Grid (IRED), co-founder of the

European Academy of Wind Energy (EAWE) and speaker of the German section as well as dean of the department of Electrical Engineering/ Informatics of the Kassel University.
Prof. Schmid studied Aerospace Technology at Stuttgart University, received 1976 a doctorate at Karlsruhe University, was scientist at the Nuclear Research Centre Karlsruhe, worked at Dornier company, was head of the department Systems Engineering at the Frauenhofer Institute for Solar Energy Systems and finally professor for the sustainable production of electrical energy at Karlsruhe University. 1995 he changed to Kassel University and got member of the board of directors at ISET.

Klaus – Dieter Vrey

Klaus-Dieter Vrey, born 02.02.1952 in Metjendorf.
After having his apprentice as a Industrial Clerk, he has been working for several years in sales departments of industrial companies and in the shipping and forwarding industry.
For a period of about 20 years he has been General Manager of a Tank-Installation where Mineral – Oils in different qualities have been stored, blended and been delivered as bunker. During this experience, he learned a lot about the specific requirements and problems in connection with fuel-oil. In 2006 I have agreed a exclusively distribution contract as a General Distributor for the CYTOSOL – Process.
Since that time, Mr. Very and his team did some research and development of the basic process. Their latest research is in co-operation with the University of Bremen, a process to cleanup sludges and tank-residues to get a blend-oil and to reduce the CO2 - Emission by about 250.000 tons a year in Europe. Meanwhile, they also have signed exclusively contracts with partners in the Netherlands, United Kingdom and Norway. In West-Africa they also have partners to distribute the CYTOSOL – Process and its developments.

Lloyd Martin

Lloyd Martin is Regional Director for Severn Trent Water International (STWI - providing operational partnerships, management consultancy services and training in water and wastewater utilities worldwide), and is responsible for business development and project delivery in Europe, Central Asia, Africa and the Middle East. His current projects include programs in Jordan, the Russian Federation, South Africa, Romania, Bulgaria and the Ukraine.
Lloyd has over 20 years' experience in the water industry: in operations; strategic planning and international business development. Moreover, he has worked in both the public sector of the industry (pre-privatisation) and in privatised water companies. He has also benefited from significant experience in central Government, as special adviser to the UK's Department of Trade and Industry (DTI).
Lloyd holds a double first class honours degree from Cambridge University and is a former don. He is a Chartered Water and Environmental Manager (Fellow of the Chartered Institution of Water and Environmental Management). He sat on many national water technical advisory committees before moving into international business development in the early 1990s. In the late 1990s he was seconded to the UK Government (the DTI, now UK Trade & Investment) for 2 years, representing the UK water

industry as special adviser on trade and export promotion. On behalf of the British Government he has advised numerous other countries' governments on mechanisms for Private Sector Participation and best practices in utilities operations, management and regulation.

Magued Youssef

Magued Youssef is an environmental chemist with extensive experience in the fields of Environmental Policy and Management. He owns a M.Sc. in Environmental Science and Policy. His practical experience in different sectors and organizations has adequately equipped him to understand environmental problems and workout and implement the best suitable practices. In the span of the last fifteen years, he has acquired a working knowledge of various environmental policy and management approaches in Egypt, the USA, and Germany. His main areas of strength include solid and hazardous waste management, water resources management, and environmental management systems. As a Trainer for PREMA –Profitable Environmental Management, he has introduced this new approach for the past 4 years to small and medium enterprises. Recently, he has co-provided a number of training modules in the field of solid waste management services. His background as a chemist enables him to assess the technical practices associated with pollution control and avoidance in industry. Moreover, his volunteer work with the NGOs and CBOs in the fields of Gender, Interfaith Relations, Human Rights and Public Health is one of his assets. His contribution in above mentioned fields came through teaming with experts working for the United Nations, The World Bank, InWEnt, USAID, USEPA, US Private Firms, and gtz among others.

Manar Fayyad

Manar Fayyad is a Professor of Analytical and Inorganic Chemistry at the University of Jordan since 1978 to present. Her specialization is in Inorganic / Analytical Chemistry and Water Quality. She is the Director of the Water and Environment Research and Study Center at the University of Jordan.

Her research interests lie in the areas of water quality, environmental pollution, and monitoring studies in the field of water, soil, wastewater treatment and reuse.

Dr. Fayyad has been involved in preparation and execution of Water and Environment related projects funded by international agencies including UNDP, US-AID, CIDA, SIDA, and EU.

She is a member of the Higher Education Accreditation Council/ Ministry of Higher Education. She is a member in the higher committee for Water Quality in Jordan/Ministry of Water and Irrigation. She was a member for the water policy team who worked for the water quality conservation project funded by USAID.

Dr. Fayyad was a member in the " National Selection Committee" for Global Environmental Facility Projects (small grants program/UNDP) in Jordan for seven years.

She is the Jordanian coordinator of the IWRM master program conducted in collaboration with Cologne University in Germany. This program is funded by the Ministry of International Cooperation in Germany.

Mary Ellen MacCallum

Mary Ellen MacCallum has been Project Field Director of CENACT since April 2006. She took the assignment after 12 years of working in international development as a technical advisor to and manager of environmental projects. Her area of expertise has been environmental management, with emphasis on capacity building, organisational development, and communications. In addition to Egypt, she has worked throughout Southeast Asia and China.
Before beginning her work in international development, Ms. MacCallum spent many years working a university instructor and program environmental co-ordinator and as consultant to aboriginal communities in Canada, where many of the challenges are similar to those experienced by rural communities here in Egypt including poor infrastructure and limited local capacity. Ms MacCallum has a Masters in Ecology from the University of Toronto (Canada) and an Education degree from Lakehead University (Canada). She is married with two adult children.

Eng. Medhat Ibrahim Awad

Eng. Medhat Awad is the Manager of the General Environment Department in the Beni Suef Governorate and Component Manager for the Danida Environmental Sector Programme in Beni Suef. Medhat graduated with a Bachelor of Agriculture Sciences from Cairo University in 1974 and a Masters degree in Science in 1983. Eng. Awad joined the Agriculture Directorate in 1975 and was appointed manager of the Department of Lands, Water and Environment in 1990. From 1995-2000 he was involved in the World Bank project on agriculture education during which he attended 95 specialized seminars and delivered 204 lectures to project beneficiaries. Medhat joined the Beni Suef Governorate Environmental Management Unit in 2001. In the same year he was appointed component manager for the Beni Suef activities of the Danida Environmental Sector Programme including supervising preparation of the Governorate Environmental Action Plan, capacity building to strengthen environmental management and implementation of community and demonstration projects in solid waste, health care waste, sanitation, water supply and environmental awareness. From 2005-2005, Mehat was a member of the higher consultative committee for the Finnida sanitation and waste programme in Beni Suef. He has delivered environmental presentations in many conferences in Egypt and abroad and has been involved in technology transfer visits to Denmark, Finland and Sweden.

Michael Groves

Michael Groves (52) graduated from Cambridge University, England in 1976 with a bachelor degree in chemical engineering. He has spent most of his working life to date in process plant design either with fertiliser manufacturers or with process contractors active in the fertiliser field. With over 15 years experience in nitric acid process development, design and plant commissioning he is now employed in the Process Development Group of Uhde's Fertiliser Division and is involved in nitric acid technology development, particularly of the EnviNOx® nitrous oxide N_2O and NOx abatement process.

Mohamed Farid Khamis

Mohamed Farid Khamis (14.04.1940) was awarded a post-Graduate diploma in textiles. Afterwards, he worked as an accountant at the National Bank of Egypt, and within trading import and export of carpets and rugs based in Kuwait, Arabian countries and Georgia in the US. In 1980, Mr Khamis was the Founder and Chairman of a vertically integrated industrial system in textile business under the name of THE ORIENTALS GROUP. The group consists of different companies engaged in the manufacture of carpets , rugs, fibres and yarn, as well as in marketing the products locally and abroad . Diversification programme includes the fields of tourism projects, Real Estate, Furniture, Agro industries, petro-Chemical complex and international trade. In addition, he is member of Egyptian Senate (Shura Council), Chairman of the Higher Technical Institute in 10th of Ramdan City, as well as Chairman of the Industry & Energy Committees, Egyptian state. Moreover, he is a member of the board of directions of the Federation of Egyptian Industries, and the Chairman of G15 Chambers of Commerce & Industry. He is further engaged as a member of British -Egypt Business council, the Egypt-US Presidency Council, and a member within the board of directors at the Federation of Chamber of Commerce. He is also the Vice Chairman of the Egypt-Japan Business Council "EJBC" and of the Egyptian German Business Council "EGBC".

Dr. Mostafa Abbas Saleh

Dr. Mostafa Abbas Saleh is an environmental scientist with a doctorate degree and over thirty years of experience in consulting, research and development and teaching in the environmental management and policy fields. He has a proven track record in the development, coordination, analysis, and management of complex environmental projects. Dr. Saleh has a thorough understanding of the intricate technical and policy aspects of environmental conservation and management applications in the industrial, infrastructure, socio-economic, and tourism sectors. Dr. Saleh is currently the Vice President and Head of Environment Department of Environmental Quality International (EQI), a leading consulting firm in Egypt, North Africa and the Middle East. Dr. Saleh also holds the position of Professor of Ecology at Al Azhar University in Cairo.

Dr. Saleh has also conducted numerous environmental impact assessments, environmental management and planning studies, and environmental risk assessments. He has led multidisciplinary teams conducting environmental impact assessments for a variety of integrated development projects. Mr. Saleh was the winner of the 1989 Egyptian National Award for Ecological Research and the 1974 U.S.A. National Academy of Science/National Research Council Associateship. He owns a M.S. and a Ph.D. in Environmental Physiology at the University of California, USA, as well as a B.Sc. in Biochemistry of the Ain Shams University in Cairo, Egypt.

Dr. Mounir W. Labib

Dr. Labib has over 35 years experience in the field of air pollution and conducted a lot of research work in this area. He received a B.Sc. in Chemical Engineering in 1970, Diploma in Meteorology (1972) Cairo University, PhD in Air Pollution from Cairo University (Faculty of Science) in1986, Visiting Scientist in North Carolina State University (Marine, Earth and Atmospheric Sciences-1993), and Diploma in Environmental Engineering (2000) from the AUC. His research includes both laboratory and field studies of atmospheric pollutants in

air and the mathematical models govern its dispersion. He worked in the Cairo Air Improvement Project (CAIP) funded by USAID from 1997 through 2003. He worked as Air Quality Monitoring Specialist for almost three years, then three years as Air Quality Monitoring Manager. Dr. Labib is currently working with ESP funded by Danida (since 2003) to support the Egyptian Environmental Affairs Agency (EEAA) in several components and the Strategic Support of EEAA. Dr. Labib produced 12 books during his service in the Egyptian Army. He has some reviewed publications and over 85 presentations in USA and Egypt. He awarded by the President of Egypt the Medal of Good Example and Medal of Duty.

Dr. Nader Ragheb Mitry

Dr. Mitry has over 35 years of experience as a chemical and environmental engineer, covering the different aspects of chemical engineering, environmental protection, wastewater, solid waste, hazardous waste management and waste collection and handling systems. He is a recognized expert in Biogas technology and low cost sanitation systems. He is experienced in conducting social impact assessments with rural communities

Dr. Mitry is currently working as a consultant to the Egyptian Environmental Affairs Agency (EEAA), Organization for Energy Planning (OEP), United Nations Economic and Social Commission for Western Asia (ESCWA) and UNDP/GEF as well as several private and NGO's organizations. He is a member of the High Committee of Water at the Ministry of Health and Professor of Chemical Engineering at the National Research Center in Cairo. He had participated as a principle evaluator for several social studies covering solid waste management, awareness campaigns, advocacy, hygiene education and infrastructure as well as many projects funded by international organizations as the Swiss Fund, DANIDA, ONIX, UNDP/GEF. For this, Dr. Mitry used participatory rapid appraisals and was exposed to analytical work through quantitative and qualitative surveys. He also participated in several national and international conferences and is a member of several engineering and scientific societies. He has about 60 publications, including articles in scientific journals and technical reports.

Dr. Eng. Nader Riad

Dr. Eng. Nader Riad is the President, as well as CEO of BAVARIA Egypt S.A.E., where he has priorly also acted as a President or Chairman within other branches of Bavaria. Formerly, he has been awarded the Cross Order of Merit of the First Class by the German Federal President Johannes Rau. His knowledge stems back from a B.Sc. Faculty of Engineering, Mechanical Engineering – Aeronautical Dept. and a M.A. in Industrial Engineering "Machines and Production Lines Management". He further earns a PhD in Industrial Engineering. He is board as well as founding member in several big companies like Sakkara Tourism Investments S.A.E. His PUBLIC SERVICE ACTIVITIES are : Member of Policies Supreme Council for National Democratic Party; Chairman of the Industry Committee of the German-Arab Chamber of Industry & Commerce; Chairman of Small & Medium Size Industries Committee and President of R&D and Technology Transfer Committee - Federation of Egyptian Industries; Consultant to the Parliamentary Committee for Industry & Energy ; Vice President of the German-Arab Chamber of Industry and Commerce; Board Member of Cairo Chamber of Commerce; Board Member of National Research Center; President of the Egyptian-German Businessmen Council; Member of the Economic Committee - National Democratic Party; Vice-Chairman of the Egyptian Association for the Protection of the Industrial Property; Vice-Chairman of the General Investors Sector, Federation Chambers of Commerce; Board Member of the Egyptian European Association for Economic and Social Development; Board Member of the Industrial Engineering Research Sector, Academy of Scientific Research and Technology - Ministry of Scientific Research; Board Member of the Permanent Council for Consumer Protection - Ministry of Trade; Board Member of the Permanent Council for Engineering Industries - Ministry of Economy.

Nadja Steffens

After a professional training in an international hotel chain Ms. Steffens worked for several years in the marketing and reservation department of Crowne Plaza Hotels & Resorts being responsible for the region of Middle and East Europe.
During her studies of International Business Administration in Wiesbaden, Germany and Paris, France Ms. Steffens already gained work experience in the field of International Development Cooperation while working for gtz in the programme for economic development and employment in Sri Lanka in 2003. Upon completion of her studies in 2004 she was awarded a diploma as business economist *(Diplom-Betriebswirtin)*.
Since then Ms. Steffens has been working in the headquarters of gtz in Eschborn, Germany. After an assignment in the strategic controlling department of the regional division for Asia/Latin America in 2005, she started in the Centre for Cooperation with the Private Sector where she was Project Manager responsible for Public-Private-Partership (PPP) Projects in the MENA region. Since January 2007 she has been Regional Coordinator of the PPP-department for Europe, Central Asia, Caucasus and the MENA region.

Philip Jago

Philip Jago has over 30 years international experience, of which the past 12 years have been in Egypt working with the Egyptian Environmental Affairs Agency (EEAA). Since 2005 he has been a full time adviser on the Danida Environmental Sector Programme and from 1995-2005 was the manager of the DFID SEAM I and SEAM II environmental programmes. He has extensive experience in the areas of environmental planning and management, solid and hazardous waste, pollution abatement, cleaner production, EIA, institutional strengthening, participatory processes and in the development, implementation and monitoring of environmental sub-projects. Philip was the recipient of an MBE in the 2004 UK Queen's Honour's list for contributions to environmental development in Egypt. He also received the European Environment award in 2000 for SEAM in the category 'International Partnership for Sustainable Development' and in 1999 the 'British Consultant of the Year' was awarded to Entec UK for the successful SEAM Project. Prior to coming to Egypt, Philip was managing director/director of one of the largest UK environmental and engineering consultancies from 1990-1995. From 1982-1990 he was managing director of companies in Indonesia, Singapore and Philippines and worked in Australia since graduating with a Science degree in 1972 up to 1982.

Ricarda Horst

After her commercial apprenticeship, she gained first experience in the steel processing industry. In 1985 she completed her Master's Degree ("Diplom") in Business Administration and worked for two years on a free lance basis in the optical sector. Ricarda Horst joined DEG in 1987. Until 1990 she was as in charge of financing projects in West Africa. From 1990 to 1999 she was responsible for the set-up and implementation of joint-ventures between German and Indian companies and the preparation of sector studies. Since 1999 she has worked for the Public Private Partnership Programme responsible for Egypt, Eastern and Southern Africa.

Rudolf Rieger

Mr. Rudolf Rieger has 8 years of multidisciplinary experience in various fields of environmental technology. Due to his working experience he is familiar with waste- and waste water facilities, treatment of exhaust gases, design of water- sludge- and reject treatment plants in paper industry as well as reverse osmosis plant for desalination of seawater.

He has two years of experience as consultant for health and safety in the aluminium extrusion industry; there he qualified in the Du Pont Health and Safety system "zero incidents". In addition, he is specialised in fire prevention and development of fire- prevention- concepts.

He has profound knowledge of environmental and health and safety regulations and standards and assists companies with regulatory permits and legal compliance audits.

Samah Reda Mohamed Shaalan

Mr. Shaalan owns a M.Sc. in Environmental Planning and Design from Cairo University, as well as a Diploma in Environmental Engineering, and a B.Sc. in Chemical Engineering. Since 1999 he has also been working: first at Seta Egypt, then within the Environmental and Engineering Consultation of System and Technology; afterwards he was a consultant for turn key projects at Sayyad Engineering, and on Environmental and Infrastructure Studies at Misr Consult. Due to his work experience, he is well equipped in the field of cleaner production, water treatment and environmental impact assessment among other capabilities. Mr. Shaalan is currently employed at the Egypt National Cleaner Production Center (ENCPC) as an Expert on Cleaner Production being primarily responsible for the management and implementation of entrusted Cleaner Production Projects and initiatives. Furthermore, he is engaged in the establishment of the ENCPC database, and the active promotion of the ENCPC. He also supports the elaboration of the ENCPC business plan. In training programmes for Cleaner Production, he acts as a co-worker with international experts. Mr. Shaalan has so far also participated actively in several different projects.

Sameh M. Afifi

Sameh M. Afifi, PhD earns a PhD and an M.S. in Civil Engineering, as well as M.S. of the Colorado State University. He is equipped further through his work experience as a Director of Research for the Groundwater Program at the Colorado State University. Furthermore, he was a professor at National Groundwater Institute. He also guided several graduate students with their research in hydrology. As a senior researcher he worked at the Strategic Research Unit in the Egypt National Water Research Center, and he performed long and short term multi-disciplinary water resources plans including conflict resolution and political aspects for the Ministry of Public Works and Water Resources. Further Qualifications have been gathered with the Implementation of the Integrated Water Resources Management project in partnership with AWC, UNDP, and CEDARE. He performed over 120 Environmental Site Assessments for Industrial and Oil, Gas sites in Texas, Oklahoma, Colorado, and managed over 20 re-mediation projects. He also worked on design and implementation of re-mediation system at the superfund site, Rocky Mountain Arsenal owned and operated by the US Army, Corps of Engineers. Currently, he is a senior Environmental Engineer at United Environmental Inc.. He also holds the post of the project manager in Integrated Water Resources Management project of UNDP/ Arab Water Council/ CEDARE. His research has led to the publication of over 90 technical papers and reports on groundwater and water resources.

Sameh Mahmoud

Sameh Mahmoud has graduated with BoS of Industrial and Environmental Computing from the University of Applied Science (FHTW) Berlin, Germany.
He currently works as a freelancer at the Institute for Energy and Environmental Research (IFEU) Heidelberg, Germany. He has over 3 years of work experience in the energy and environmental fields. For the German Federal Environment Agency he contributed to several studies about waste incineration plants and cement production in Germany.
With private sector companies he also participated in studies about electronic scrap, energy saving in production processes, using material flow management in European PVC production.

Prof . Dr . Shadia Ragheb Tewfik

Prof. Dr. Shadia Ragheb Tewfik has a PhD in Chemical Engineering (1976) from the Institute of Chemical Process Fundamentals, Czechoslovak Academy of Science, Prague. Her thesis focused on the " Simulation and Optimization of Complex Technological Systems ". Currently, she is working as a Research Professor at the Chemical Engineering and Pilot Plant Department, National Research Center since 1987. She is also a Member of Office for Evaluation and Follow-up of the NRC. Other relevant professional activities include the position of a principal investigator of a project for "Treatment of Cellulosic Wastes from Municipal and Agricultural Wastes to obtain Liquid Fuel" financed by Academy of Scientific Research and Technology (2003-2007); Co-Principal Investigator of several Completed Projects Pertaining to Municipal Solid Waste Management for several Governorates including Cairo,

Giza, Damietta and Port Said. In addition, she is also principal investigator of Project for Design Construction, Erection Start - up and Assessment of a Low Cost Composting plant for Zagazig City (1992-1996). After that, she worked as a co-Principal investigator of a Project for "Providing Consultancy Services for Design, Construction, Erection, Start-up and Assessment of Ten Composting Plants" (1996 - 1999).

Sherif Wadood

Born in Cairo in 1975. Mr. Wadoud is holder of Master Degree from Heidelberg University in Economics & Political Science (Double Major) focusing on Development Economics & Developing Countries. His master thesis on "Corruption in Developing Countries" gave the initiative for the publication of several articles in that regard. Worked at the Heidelberg University for 3 years (1997-2000) as a researcher, and then as an instructor for Political Science. He participated in a joint research programme between Oxford University and Heidelberg University. Returning to Egypt, he held various positions within a private sector group (PICO), in the area of Business Development, Finance & Restructuring 2000-2003. He established the first private research centre solely dedicated to the energy sector in Egypt in 2002. Currently, he is the managing director of PICO ENERGY Holding, a private sector group of companies operating in the Energy Sector. He is a member of "Society of Petroleum Engineers" and the "World Energy Council". Apart from his engagement in the energy sector, one of the founders of "Al-Masry Al-Youm", the first Egyptian independent daily newspaper since almost 50 years. Currently, he is also a shareholder and member of the Board of Directors of "Al-Masry Al-Youm" Publishing Corporation. In addition, he is a member of the Board of Directors of the German Arab Chamber of Industry and Commerce.

Soad Thabet Karmi

Soad Thabet Karmi is the Head of the Environmental Management Department in the Aswan Governorate and Component Manager for the Danida Environmental Sector Programme in Aswan. Soad graduated in 1983 with a Bachelor of Science degree from Assiut University. She worked initially in the Aswan Governorate Water Research Sector before joining the Governorate Environmental Management Unit in 2000.

Soad covers a range of technical issues with strong emphasis on solid waste management, factory and Nile cruiser inspections, environmental impact assessment and dealing with community environmental complaints.

As the Aswan component manager for the Danida Environmental Sector Programme, Soad has been closely involved in all activities including preparation of the Aswan Environmental Action Plan, strengthening environmental management, increasing environmental awareness and in the implementation in a range of community and demonstration projects that target improvements for low income groups and show the benefits of improved environmental practices.

Tarek Abdelhamid Elmitwalli

Tarek Abdelhamid Elmitwalli is currently an assistance professor in Department of Civil Engineering, Benha High Institute of Technology, Benha University, Egypt. He received his PhD on September 25 2000 from Wageningen University, Sub-department of Environmental Technology, Wageningen. The Netherlands. Thesis title "Anaerobic treatment of domestic sewage at low temperature", Supervisors: Prof. Dr. G. Lettinga & Dr. G. Zeeman. He gained his M.Sc. in September 1992 from Mansoura University, Faculty of Engineering, Department of Civil Engineering, El-Mansoura, Egypt.. Thesis title "Determination of kinetic coefficients for the domestic wastewater in Egypt using activated sludge process". The prior B.Sc. was completed in May 1987 at Mansoura University, Faculty of Engineering, Department of Civil Engineering, El-Mansoura, Egypt. Prior to this Mr. Elmitwalli has held several position as an assistant professor or lecturer. He has been working on different projects in Germany and the Netherlands, as well as Egypt. So far, he has issued about 16 publications.

Tarek Danish

Since April 2001, Mr. Danish has worked as Assistant to the Chairman of Orascom Hotel and Development.
Orascom Hotels & Development (OHD) is the Middle East leading town developer with well-known town flagships. With a land bank of 115.9 million square meters in seven countries and as a fully diversified tourism and real estate developer, OHD specializes in the development of fully self-sufficient destinations, complete with real-estate properties, hotels, marinas, golf courses, shopping centers, and restaurants. El Gouna, the company's original development, started as a simple real estate project and has since evolved into fully-fledged community with all possible components. Other OHD Towns are Taba Heights, Sinai; Sifah, Salalah, El Qurum and El Soda Island, Oman; The Cove, UAE; Tala Bay, Jordan; Albion, Mauritius; Andermatt, Switzerland; and Oued Chbika, Morocco.
With thirty years of proven experience operating and managing companies in Egypt and Canada, Mr. Danish expertise is in directing and executing an organization national and international effort in order to support its mission and revenue objectives.
Mr. Danish is a Professional Engineer; he holds a B.Sc. degree in Mechanical Engineering from Cairo University Egypt and a Master Degree in Engineering Administration from The George Washington University in Washington D.C. USA..

Uwe Grüschow

After his school-leaving examination (Abitur), he studied mechanical engineering at Rostock University. He became a graduate engineer. After his degree in 1983 he worked as a responsible head of department for the construction of agricultural machines and in other executive positions. In 1994 he founded GRÜSCHOW Entsorgung & Umwelttechnik GmbH where he is the managing director now. With this company he has been successful in the fields of waste disposal/composting including sludge recycling. The company is active in Egypt, Tunisia and Syria.
With GRÜSCHOW Maschinenbau GmbH he is currently constructing a waste separation plant adapted to the Arabic conditions.

Wafaa Ismail Abdallah

Wafaa Ismail Abdallah (16.8.1963)has a B.Sc. of Chemical Engineering, Faculty of Engineering, Cairo University. She is a certified Energy manager from Association of Energy Engineering, Association of Energy Engineer/USA. She has a professional diploma in Energy Conservation management of Tabbin Institute for Metallurgical Studies (TIMS), and professional diploma in Environmental Engineering from the American University in Cairo (AUC). Her present position is as Energy Efficiency Sector Coordinator at the Federation of Egyptian Industries/ Environmental Compliance office. Main responsibilities comprise: i. conducting pre- and full assessments and compiling the corresponding reports and studies, review and refine environmental audit reports carried out by Egyptian consultants in various industry sectors to identify energy saving options; ii. Identification and assessment of demonstration projects for key-technologies in the area so that the project can be implemented including financing; iii. Planning of information workshops and training programs for industries and Egyptian consultants. She is a member in: i. Egyptian Engineering Syndicate (EES/Egypt); ii. The International Electro Technical Commission (IEC): iii. Instrument Society of America (ISA/USA), as well as iv. Association of Energy Engineering (AEE/USA). Her key qualifications are combustion control, energy auditing, pollution prevention, environmental auditing, cleaner production, energy efficiency, environment management system, total energy management.

Wolfgang Mayer

Born 1947
Wolfgang Mayer is an architect and conservator, trained at Innsbruck University and graduated at Stuttgart University.
As a scientific member of the German Archaeological Institute he worked on several places in Egypt. After being senior conservator at the conservation department in Stuttgart / Baden Württemberg he became a visiting Professor at Cairo University.
Since 2004 he is the resident representative of the Hanns-Seidel-Foundation in Egypt.

Zeinab Safar

Zeinab Safar, PH.D is a professor and Chairman of the Mechanical Engineering Department at Cairo University. Professor Safar has a PhD in Mechanical Engineering from the University of Pittsburgh
Chairman, Mechanical Engineering Department, gained in 1973. Furthermore she is a technical adviser to the Secretary General of the National Council for Women supervising the Women Business Development Center and the Documentation Center.
She taught at many universities among them the American University Cairo, University of Pittsburgh, University of California, Berkeley and Florida Atlantic University.
Her research interests are directed to Energy efficiency and energy conservation, environmental management and environmental control, maintenance programs, small and micro enterprises development, Use of IT in development. Furthermore she is interested in gender issues and has published approximately 70 papers on those subjects.
Professor Safar is also a member of the Shoura Council.

Opening Session

Mohamed Farid Khamis, Mp

H.E. Eng. Maged George

H.E. Dr. Ahmed Nazif

Plenary 1
Environmental Action Plans

H.E. Eng. Maged George, Minister of State for Environmental Affairs

H.E. Raimonds V_jonis, Minister of Environment

H.E. Mohamed El-Yazghi, Minister of Territorial Dvelopment, Water & Environment

Karin Johansson, Pascal Odul, European Commission

Break-out Session 1

Oil & Gas and The Environment

CHAIR: H.E. SAMEH FAHMY, MINISTER OF PETROLEUM

MODERATOR: SHERIF WADOUD, CHAIRMAN PICO ENERGY

SPEAKER: HOSSAM S. EZZELDIN, SHELL

AHMED EL SHERBINY, BP

KLAUS-DIETER VERY, GLOBAL-CONCEPT

SHERIF WADOUD, PICO ENERGY

Environmental Risk Assessment In Managing Environmental Aspects of Oil & Gas Up Stream Activities

Hossam S. Ezzeldin, Senior Environmental & Sustainable Development Advisor, Shell, Egypt

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Environmental aspects of petroleum exploration and exploitation activities could be promptly considered through structured approaches and systemized management tools known as Environmental Management Systems (EMS). Many companies, operators and contractors went one step further and integrated health and safety aspects to these systems which are currently known as HSE Management Systems. Environmental components of these systems now can be certified against several international standards such as EMAS, BS7750, and the popular ISO 14001. However, many enterprises have recently realized that incorporating environmental risks in these management systems is crucial, not only for ensuring successful implementation and demonstrating compliance but also as a positive contribution to sustainable development goals and objectives. Several tools and techniques have been advised to effectively bring about this integration. This paper briefly describes integrated health, safety, and Environmental Management Systems (HSE MS), and discusses how environmental risks would be considered properly addressed in projected upstream oil and gas exploration and exploitation activities. Usually Health, Safety and Environmental (HSE), Management System provides a framework for managing all HSE risks. In addition it specifies the role of Environmental Assessment (EA) within the risk management of a project or operation. Environmental Assessment in the petroleum sector is now used as the mechanism for balancing environmental considerations with other priorities which affect the feasibility, design, construction, operation and ultimately decommissioning of a development. As such it is used as a technique for incorporating environmental aspects of petroleum activities into the decision making process. The basic aim of incorporating Environmental Risks is built on the fundamental principles of the Hazards and Effects Management Process (HEMP). This technique has the principal objective of identifying, assessing and controlling hazards and effects.
This paper describes the process of incorporating environmental risks in environmental assessments within the HSE MS.

Environmental Impact Assessment and Management

Ahmed H El Sherbiny, Environmental Engineer, BP Company, Cairo, Egypt

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"Environmental Impact Assessment (EIA) is an approach that is used to identify the key attributes of the natural environment and the natural systems of a site or region. It aims at identifying, in advance, factors which may affect the ability to build a desired development, or be affected by the proposed activity" (Baud-Bovy and Lawson, 1998). Environmental Impact Assessment and Management investigates and guarantees the environmental safety of new projects by assessing the effect of a proposed development on the environment; and identifying required mitigation measures to eliminate/reduce possible impact.

As part of BP commitments to deliver consistent environmentally sound projects across the Group, Environmental Requirements for New Projects (ERNP) were launched on November 1, 2006 with complete implementation by the end of 2007. The ERNP is a mandatory Group Practice that aims at identifying, understanding, avoiding, minimizing, mitigating and redressing any possible impacts on the environment.

The ERNP is an environmental management process that covers projects across their full life cycle, and is fully consistent with BP Group aims, goals and business structures. The practice will help BP to deliver uniform standards of environmental performance in all projects across the company. It is a planning tool that must be used before making key decisions. It recognizes the particular challenges of environmentally sensitive areas and identifies specific obligations for operating in such areas.

The full Practice information is published in three documents: Main Document, Annex I and Annex II. Main Document - ERNP Practice - provides the scope, its applicability and structure, and summaries the contents of Annex I and Annex II. Annex I - Environmental Impact Management Process (EIMP) - identifies, assesses and proposes actions to reduce a project's environmental impacts at each project's stage. Annex II - Environmental Performance Requirements (EPRs) - sets minimum requirements in twelve environmental subjects, which must be considered early in project design.

The CYTOSOL Process - Effective protection of Environment and cost saving cleanup of oil spills

Mr. Klaus-Dieter Vrey , Managing Director, Global – Concept GmbH, Brake, Germany

The presented CYTOSOL – Process is a biological and non-toxic cleanup procedure for oil-spills. The advantage of the CYTOSOL- Process is the possibility to recycle the oil and re-use it as a source of energy. All this is done without damage to the environment and with non-producing of any hazardous waste. This effects a dramatically reducing of costs and time used for cleanup operations and includes the protection of the damaged Flora and Fauna, which are able to recover
fast and easy. The unique success of the CYTOSOL – Process is a result of the revolutionary working method which allows a 100% separation of the oil, without touching the environment.

Natural Gas in Egypt's Energy Mix

Sherif Wadoud, Chairman, Pico Energy, Egypt

The policy of replacing fuel oil by natural in the Egyptian Energy mix started since the early 1990s but gained momentum and reached its peak with the rise in Egypt natural gas production. Today all but few of Egypt's Power Plants are dual fuel. Natural Gas has decisive advantages over other petroleum products, if an infrastructure exists to make it accessible. It is much cleaner and cheaper for the consumer and to the government – as it is less subsidized, than any other petroleum product. The emissions CO2, CH4 (methane), and N2O (Nitrous oxide) of natural gas are far less (almost one third less) than that of Diesel. Natural Gas major disadvantage is its inability to be stored and thus the need for massive infrastructure. Yet there is still a significant energy consumption in Egypt, which could be characterized as "Convertible Demand", i.e. economically and technically feasible to convert to Natural Gas, such as LPG Household consumption, Industrial fuel Oil consumption, vehicles gasoline consumption, and to some extent Diesel/Fuel Oil consumption for power generation. In some cases, as shown in the paper, conversion projects yield excellent payback periods for the government, while increasing the real income of the consumer. We need well structured financing, innovative technical solution and some coordination between the private and public sector.

Eco Efficiency & Cleaner Production in Industry

CHAIR: H.E. RACHID M. RACHID, MINISTER OF TRADE & INDUSTRY
MODERATOR: DR. ENG. NADER RIAD, CHAIRMAN CEEBA
SPEAKER: ENG. WAFAA ISMAIL
ENG. ADEL TAHA
ENG. MAGUED YOUSSEF, ENG. SAMEH SHAALAN, ENG. HISHAM EL SHAWY
HANAN EL HADARY
EMAD HASSAN MOHAMED

ECO – Taking care of the environment... and of business

Eng.Wafaa Ismail. Energy Efficiency Coordinator

The Environmental Compliance Office (ECO) in the Federation of Egyptian Industries (FEI) was set up in 2002 as a part of the Danish support to the Environmental Sector in Egypt. Danida has provided funds (69 million DKK) allocated to the industrial sector to support initiatives abating pollution, promoting safe working conditions and ensuring environmental legislative compliance. An agreement was signed by EEAA, FEI and the National Bank of Egypt (NBE) for setting up a Revolving Fund (RF). The Revolving Fund provides funds for SME (private sector) wishing to invest in new equipment to ensure proper compliance with environmental legislation. ECO links members of FEI, EEAA, international donors, R&D organizations and consulting firms together. (ECO) provides consultancy services and financial support in the field of environmental compliance. ECO helps enterprises achieve environmental compliance by the application of Cleaner Production technologies (CP) thus reducing the environmental impacts of their business and at the same time attaining higher profits due to improved product quality and reduced waste.

More than 40 projects have successfully implemented CP options

Residential buildings beside our client in metallurgical sector increases the danger of environmental impacts on the surrounding environment
The results achieved from the CP verify how CP and Energy Efficiency can be successfully implemented in industries in Egypt.

The following environmental benefits have been achieved:
1-CO_2 reduction = 647.6 t/y
2-SO_2 reduction = 24.1 t/y
3-PM10 reduction = 7.6 t/y
4- Heavy metals reduction = 0.22 t/y
5-Total Suspended Particulates reduction =0.64 t/y

The above mentioned savings have been achieved through the implementation of replacing cupola

furnace working with coke to a rotary furnace working with N.G, developing shakeout and sand blasting processes and upgrading painting area. The total cost of investment for the options that have been implemented to improve the environmental conditions for the client was 2,201,300 million Egyptian pounds with pay back period around 1.8 year.

Case Study- Cleaner Production in the Chemical sector

Eng. Adel Taha, Chemical Sector Coordinator

The Environmental Compliance Office (ECO) in the Federation of Egyptian Industries (FEI) was set up in 2002 as a part of the Danish support to the Environmental Sector in Egypt. Danida has provided funds (69 million DKK) allocated to the industrial sector to support initiatives abating pollution, promoting safe working conditions and ensuring environmental legislative compliance.

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ECO links members of FEI, EEAA, international donors, R&D organizations and consulting firms together.

(ECO) provides consultancy services and financial support in the field of environmental compliance.

ECO helps enterprises achieve environmental compliance by the application of Cleaner Production technologies (CP) thus reducing the environmental impacts of their business and at the same time attaining higher profits due to improved product quality and reduced waste.

More than 40 projects have successfully implemented CP options.

Through the implementation of cleaner production options in one of the chemical sector clients the following reductions had been achieved:

1- **$C0_2$ emission reduction** = 113.6 tons /yr
2- **SO_2 emission reduction** = 6.8 tons/yr
3- **COD reduction** = 9.3 tons/yr
4- **Heavy metals reduction** = 17.9 tons/yr
5- **Water consumption reduction** = 3210 m^3/yr

The above mentioned savings had been achieved through the implementation of an acid vapors extraction and collection system, dust collector, automatic acid filling machine, a grid casting machine working with a closed instead of open furnace working with LPG and with a waste water treatment unit.

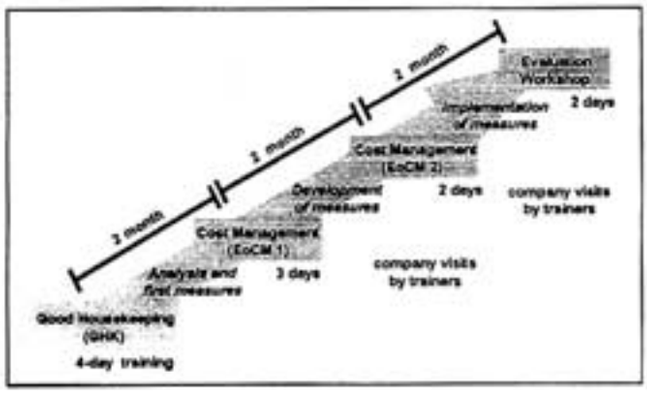
The **total cost** of investment for the options that have been implemented to improve the environmental conditions in this case was **2.8 million** Egyptian pounds with a **pay back period** around **3.8 years**.

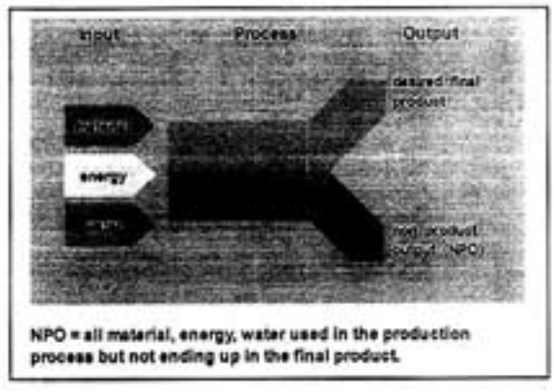
Profitable Environmental Management (PREMA) in Egypt - Successful Triple Win Programs

Eng. Magued Youssef, Eng. Samah Shaalan, Eng. Hisham El Shawy, Egypt National Cleaner Production Center

Profitable Environmental Management (PREMA) is a programme designed for owners and managerial staff of micro, small or medium-sized companies. PREMA actively supports the implementation of measures designed to firstly lower the ecological impacts of production, secondly reduce costs and thirdly enhance the organisational capabilities of involved staff and the company itself. This focus on a triple win ensures sustainable implementation – since it ensures that the environment-oriented measures are economically attractive and there is sufficient capacity within the company to transfer the theory into practical actions. PREMA is based on a series of workshops and network meetings (s. Graph 1) which allows sufficient follow up by the trainers, and promotes exchange between participating companies. The programme is modular and flexible so that the various tools and methods can be combined or adjusted to suit the specific requirements of each group of companies or type of institutional client. PREMA, which was developed by the German Agency for Technical Cooperation GTZ has been applied in more than 35 countries worldwide with considerable success.

The Concept: The basic concept of PREMA is the so-called Non-Product-Output (NPO) approach, which separates all inputs of the production process whether it is contained in the final product or not; in the latter case it is defined as NPO (s. Graph 2). The objective is to reduce this NPO in order to achieve reduced costs and environmental benefits, e.g. by lower energy or water consumption for the same amount of desired output.





NPO = all material, energy, water used in the production process but not ending up in the final product.

Learning Experience in Egypt

In November of 2005, the first integral PREMA programme was set up by the German development institution InWEnt together with the Alexandria Business Association (ABA). It was followed by similar programmes organised by the Egyptian National Cleaner Production Centre (ENCPC, with funding by gtz and UNIDO) and the Printing Industry Development Association (PIDA) in conjunction with InWEnt.

Results show that all participating companies identified a tremendous waste of resources, water and energy. Therefore, companies have high saving potential in environmental and financial terms. In a porcelain manufacturing company, for instance, a reduction of solid waste of more than 1 ton per day, implying a considerable reduction in energy use and material and water consumption could be achieved. This measure resulted in savings of more than 100,000 € annually. A printing house saved more than 10% of the input paper and almost 2% of paper waste, simply by improving the quality control and handling of the material. In a fruit and vegetable processing company, additional profit

reaching up to approx. 630,000 L.E. due to additional mango juice products with corresponding reductions of solid waste by 3.75% amounting to 170 tons during the season.

More measures are being implemented in Egypt, leading to real improvements, not only to indicated improvement potential. The triple win approach, combined with the approach to have regular network meetings to discuss implementation problems and solutions how to overcome them, has succeeded to create numerous success stories in Egypt, like in more than 35 countries before. For many of these companies, PREMA can provide an entry point for future plans of an ISO 14001 certification.

The following table provides an overview of the programmes and involved companies. The presentation will provide more details on the approach, the implemented measures and their effects.

Partner-Institutions	Year	No. and type of companies
ABA / InWEnt	2005/2006	4 (textiles, porcelain, hotel)
ENCPC / gtz/ UNIDO	2006	4 (food / food processing)
PIDA / InWEnt	2006/2007	5 (printing industry)
ENCPC / gtz / UNIDO	2007	4 (textiles / garment)
ENCPC / gtz / UNIDO	2007	4 (food / food processing)

Contacts:

ENCPC: 26 A Sherif St. Emoubilia Building – Down town – Cairo
Tel: 002 02 3925984

Magued Youssef, PREMA Trainer, PREMAnet (inwent_egypt@yahoo.com)

Role of Cleaner Production in Raising Competitiveness of the Egyptian Industry

Hanan El Hadary, Director of the Egypt National Cleaner Production Center

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The Egypt National Cleaner Production Center (ENCPC) is supported by the Ministry of Trade and Industry (MTI) in close cooperation with the United Nations Industrial Development Organization (UNIDO). The ENCPC is established as a service provider to the Egyptian industry. It is an integral part of the program for "Egypt's Technology Transfer and Innovation Centers (ETTIC)" for Modernization of Egyptian Industry. At the same time the ENCPC is part of the UNIDO National Cleaner Production Centers (NCPCs) and National Cleaner Production Programs (NCPP) network worldwide.
The present initiative aims at enhancing the competitiveness and the productivity of Egypt's industry, promoting sustainable social advance in a way compatible with environmental protection.

To achieve its self-financially sustainability, the ENCPC focuses on the following aspects:

- Clear demand orientation
- Focus on services, which are useful to exports (i.e labels issues) and combine these services with access to financing
- Charges for services

The ENCPC offers environmental services to the Egyptian industry provided by local and international experts. The ENCPC services could be highlighted as follows:

- Technical Assistance (TA) for Cleaner Production (CP) taking into consideration technology and the access of available financing packages.
- Technical Assistance for Clean Development Mechanism (CDM) projects.
- Industrial Waste Management and Recycling Initiatives (closing the material cycles)
- Assistance for environmental Labels (e.g. Oeko Tex for textiles), (Environmental Management System ISO 14001, OHSAS) and Quality labels (CE marks).
- Introduce the new, service oriented business model of Chemical Leasing
- Implement training programs (e.g PREMA, Profitable Environmental Management)
- Supply chain management including Corporate Social Responsibility (CSR, SA8000)
- Compliance assistance for national, international standards and regulation

The ENCPC is currently implementing several projects on cleaner production and chemicals management (chemical leasing) in the following fields:

1. Two projects on the Industrial Applications of Solid Waste Fractions from Iron and Steel Production at El EZZ Steel (slag & dust) to be reused in the road construction
2. Project focusing on the environmental improvement and compliance of the animal charcoal production site and solving the odour problem at Packin Company
3. Industrial Waste Management and Improvement of environmental performance at Crystal Asfour (Solid waste minimization by recycling of expired moulds)
4. Three projects on optimization of the galvanization process conditions in El-Sewedy Arab Steel Fabrication Company, El-Babteen Power Communication Company and Kandil Industries Company
5. Project on optimization of Solid waste through Alloys recovery EIPAL-Egyptian International Company for Aluminum Profiles
6. Study on the recycling of plastic (PET) in Egypt
7. Chemical Leasing on Fluxing Process, Zinc Misr Company and El Sewedy Company
8. Chemical Leasing on Electrostatic Powder Coating, Akzo Nobel for Powder Coatings S.A.E

and Unionaire Company and ABB

9. Chemical Leasing on Cleaning with Hydrocarbon Solvent, GM Egypt and Dr Badawi for Chemical Work,

This paper will present the activities and the services offered by the ENCPC and will elaborate in details the success stories with the Egyptian Industries including the forecast benefits (economical and environmental)

An Integrated Initiative To Expedite The Development Of CDM Project In Egypt

Emad A. Hassan, Nexant Inc., Washington, USA
Hamed Korkor, Vice Chairman for Research and General Studies, EGAS

This paper will provide a description of one of the newly introduced market models designed and managed by the Egyptian Natural Gas Holding Company (EGAS) and Nexant Inc., a global consulting firm, to expedite the development of GHG emission reduction projects under the Clean Development Mechanism (CDM). The spirit of this initiative is to facilitate a partnership environment, in which the interests and objectives of EGAS and other relevant market players (end-users, LDCs and financial institutions) are aligned to produce a portfolio of reliable and marketable Certified Emission Credits (CERs).

As a facilitator and the lead entity responsible for developing the gas sector in Egypt, EGAS designed this experimental business model that leverages selected financial, management, marketing and technical resources and expertise into one comprehensive package to appeal to target end-users. Reliability of the emission reduction sources and the credibility of the players are key factors considered by international buyers and therefore, EGAS carefully selected the partners that can bring to the initiative the maximum value-added to target projects.

To ensure success, the initiative addressed many of the existing market barriers that have historically hampered the development of GHG mitigation projects. Furthermore, and to offer a high degree of flexibility in choices, an investment sharing scheme was developed to reward the partners based on their investment contribution and level of risk taking.

Critical to the initiative however, is the selection of the target projects and the speed by which these projects can run through the certification cycle in time to be ready for potential buyers such as carbon funds and international brokers by 2008.

The paper will discuss the specific roles that EGAS, Nexant, natural gas distribution companies and the financial industry will play to provide end-users a competitive service offering to attract industrial and commercial customers to participate in an expedited manner. To that end, an MOU was signed with the National Bank of Egypt to provide preferential lending terms to projects under the umbrella of this effort. The initiative also relies on the strong marketing skills of gas LDCs and their interest in expediting gas connection to enhance their network investment.

While the prime focus of this effort is on fuel switching from liquid fuel to natural gas, the initiative also covers other applications that lead to reduction in any of the 6 GHGs of the Keyoto Protocol such as, among others, energy efficiency measures and gas pipeline leakage.

Urban Waste Management

CHAIR: H.E. MOHAMED A. EL MAHGOUB, MINISTER OF LOCAL DEVELOPMENT

SPEAKER: HISHAM OMAR SHERIF

PHILIP JAGO, MEDHAT AWED

SOAD THABET

HASSAN ABAZA

MARY ELLEN MACCULLUM

Integrated Municipal Solid Treatment & Disposal Projects

Sherif, Hisham Omar, Department of Chemical Engineering, University of Menia, Egypt, and Chief Executive, Engineering Tasks Group (ENTAG)

In 1995, Government of Egypt implemented a Solid Waste Recycling Program (MSW, Green waste, Market waste, Sludge and Food Processing Solid Waste) that covers major areas of Egypt. Through public-private partnerships, a simple recycling system, which involves manual sorting, mechanical separation and an open aerobic composting using self propelled turning machines to produce organic composts, was created. This model was derived from four generations of development stages in the last 10 years and this year there is a program to implement phase no. 5. The evolution of technology used in composting industry was studied. The impact of using the current model, combined with the identification of future needs of the technical and management structures concluded the recommendations for replication of the current model in other developing countries and implementation of a comprehensive solid waste recycling system. A detailed comparison is made on the alternatives for MSW treatment & disposal.

Improvements to Muncipal Solid Waste Management, Beni Suef Governate

Medhat Awed, Danida ESP, EEAA
Philip Jago, Danida ESP, EEAA

After introducing some general data of the Beni Suef Governate and lining out the key components of the Beni Suef Solid Waste Master Plan, the targets for improvement will be discussed. Afterwards, necessary data background will be given to understand the project. The revenues and expenditure of Beni Suef will be discussed then. The presentation will further elucidate different examples of landmills, and outline the plan for implementation in the near future until 2011.

Constructing a Semi Controlled Landfill for a Rural City: Experience of Edfu City, Aswan

Soad Thabet Karmi, Danida ESP, EEAA

An inside to the construction of a semi controlled landfill will be given. The whole development project, as well as its problem will be illustrated and explained in detail. Furthermore, light will be shed upon the geotechnical investigations, and the exact cell design. Finally, the costs of the Edfu Landfill will be elaborated.

Complementary Services in Non-Hazardous Solid Waste Management

Hassan Abaza, Business Development & Communication Director, Veolia Environmental Services – Onyx Alexandria, Egypt

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In 2001, the Governorate of Alexandria decided to privatize rubbish collection and disposal and signed 15 year contract (threw an international tender) with Veolia Environmental Services European leader & number 2 worldwide in waste management.

We clean, collect, transfer, sort, treat and waste valorization, in addition of old dumpsites closure and rehabilitation.

Also, the company organizes environmental awareness campaigns in schools, clubs, universities, and beaches...etc in order to help inhabitants adopting the ideal environmental behavior.

Sustainable Community Initiatives in Waste Management

Mary Ellen MacCallum, Project Field Director, Community Environmental Action Project, Elfostat, Cairo

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CENACT is collaboration between Canadian International Development Agency, EEAA, and Cowater International. A four year, five million dollar (CAD) project, it aims to strengthen and increase NGO participation in environmental management within the context of national policy for partnership in environmental improvement.

It is building those partnerships by funding community initiatives in solid and agricultural waste management. These initiatives are becoming established, as demonstrated by the results being achieved. The project is unique in several aspects, especially that government staff are working side by side with local communities, and communities are recognizing the importance of women to the success of their subprojects.

Break-out Session 2

Trade & Environment

CHAIR: H.E. RACHID M. RACHID, MINISTER OF TRADE & INDUSTRY

MODERATOR: DR. ENG. NADER RIAD, CHAIRMAN CEEB

SPEAKER: MOHAMED EL MASRY

HELMI ABOUL EISH

SHERIF WADOUD

The Economics of Renewable Energy in Egypt

Sherif Wadoud

Until recently, Egypt Energy Economics was foremost characterized by a lack of a comprehensive understanding of Egypt's Energy Demand and Supply situation for the next 10 to 20 years. So far energy was dealt with in an ad hoc manner and through fragmented policies that reflect no coherent strategies.

The energy demand is heavily distorted by heavy subsides in the vicinity of 75 % of International prices. This subsidies leads to major inefficiencies and provide no incentive to convert to less costly fuel sources like Natural Gas not to mention any renewable sources.

The supply side is characterized by depleted oil reserve and decreasing production, which forces the government to buy the production share of foreign partner at international prices to satisfy local demand. As far as Natural Gas, Egypt has increased its Gas reserves and production significantly. Still it has to buy foreign partner share to satisfy local and export commitments.

All energy sources must be checked against their availability, commercial accessibility and acceptability. By doing so, we expect the government in the very near future to shift part of its attention to renewable energy. Untapped opportunities could well be targeted in Renewable Energy Sector, whether large or marginal project, grid connected or off grid power supply, building integrated PV, solar thermal application, particularly associated with water desalination, water heating and air cooling through absorption chillers.

A crucial point is whether the Government and the private sector in Egypt can address the renewable energy sector as an "industry" and not merely from an "infrastructure project" point of view; an industry that requires investment, human capital, know-how transfer, and government incentives. This industry could well serve the European vision of importing green power from North Africa in the coming 15 years.

Public Private Partnership

MODERATOR: MARLIES WEISSENBORN, DIRECTOR, GTZ

SPEAKER: NADJA STEFFENS

RICARDA HORST

UWE GRUESCHOW

TAREK DANISH

Public Private Partnership – Public Funding meets entrepreneurial interest: How European/Egyptian Companies Can Benefit from German Development Funds and Know How

Nadja Steffens, PPP Regional Coordinator Europe, Caucasus and Central Asia, gtz, Eschborn, Germany

Ricarda Horst, Senior Investment Manager, DEG-Deutsche Investitions- und Entwicklungsgesellschaft, Köln, Germany

Uwe Grueschow, Managing Director, Grueschow Entsorgung & Umwelttechnik GmbH, Boldebuck, Germany

Tarek Danish, Assistant to the Chairman, ORASCOM Hotel & Development, Cairo, Egypt

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PPP projects are an attractive tool for enterprises planning or realizing investments in developing and emerging countries. The PPP-Programme of the German Ministry for Economic Cooperation and Development co-finances projects which benefit both the enterprise and the local economy in the target country. PPP projects can be realized with almost all enterprises and in almost all sectors relevant to development. They can encompass the transfer and introduction of new technologies, know-how and technical/ managerial skills as well as the improvement of quality, production or social standards.

The PPP-Programme is carried out by DEG and gtz who assist companies to structure PPP projects according to the guidelines of the programme, offer advice at all stages from planning to implementation and provide co-financing and/or in kind contribution of maximum 200,000 Euros. The companies themselves make at least an equal contribution – financially and/or in kind. A reimbursement of the financial contribution is generally not intended.

Representatives from DEG and gtz will introduce the Public Private Partnership Programme in detail. The German Company Grüschow and the Egyptian Company ORASCOM Hotel & Development have successfully integrated PPP projects in their business strategies with support from the PPP-programme. They will pass on their practical experience with this programme.

Emission control & monitoring

CHAIR: DR. MAWAHEB ABO EL AZM, PRESIDENT, EEAA

SPEAKER: MICHAEL GROVES

DR. ZEINAB SAFAR

MOUNIR LABIB

PROF. DR. BAHAA T. SHAWKY

SAMEH MAHMOUD

The Uhde EnviNOx® Process for N_2O and NO_x Emissions Reduction from Nitric Acid Plants – A Leading Technology –

Michael Groves, Programme Development Group, Uhde GmbH, Germany

Nitrous oxide (N_2O) is an invisible by-product of the manufacture of nitric acid by the Ostwald process. It forms during the catalytic oxidation of ammonia over platinum / rhodium gauzes, the major product being nitric oxide (NO). Since nitrous oxide is a potent greenhouse gas with some three hundred times the effect of carbon dioxide on global warming, and nitric acid plants now represent the single largest industrial process source of nitrous oxide emissions, there is a need for abatement technologies to counter this problem.

The first commercial-scale implementation of Uhde's EnviNOx® (combined N_2O and NO_x) abatement technology for nitric acid plants has been in operation for over 3½ years. During this time a consistent 98-99% rate of N_2O removal has been achieved, while NO_x emissions have been reduced to less than 10 ppm. The process, which relies on the decomposition of N_2O in the tail gas of nitric acid plants, works best at temperatures above ~425°C. For nitric acid plants with tail gas temperatures as low as ~350°C, Uhde has developed an EnviNOx® variant that uses small quantities of a hydrocarbon reducing agent and ammonia to achieve high N_2O conversions and virtual elimination of NO_x emissions. First installations of these EnviNOx®-variant using methane or propane as reducing agents went into successful operation at the Abu Qir Fertilizers Co. in Egypt and at the Huchems Fine Chemical Corp. in South Korea.

Environmental Degradation from Particulate Matter and Lead in the Greater Cairo (GC) area from 2000 till 2006 with discussion of the Estimated Health Risks

Mounir W. Labib, National Coordinator, Environmental Sector Program (ESP), Danida, EEAA ,
Zeinab Safar, Head of Mechanical Engineering Department, Cairo University,
Ahmed Abou El Soud, Environmental Quality Sector, Egyptian Environmental Affairs Agency (EEAA)
and Mohamed H. Khalil, Environmental Researcher, Cairo University

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The Egyptian Environmental Affairs Agency designed many policy programs for covering many of environmental issues. One of these objectives is the development of an air quality strategy framework which involves the estimation of environmental degradation and the health risk for criteria pollutants in the Greater Cairo (GC) area.

This paper summarizes the estimation of health risk from particulate matter and lead pollution using the data available during 2000 through 2006. The exposure from particulate matter and lead pollution is discussed using pollution maps for the GC area. The estimation of human health risk from airborne lead pollution is presented for children and adults.

Health risk and benefit scenarios are also presented, along with an economic evaluation of the environmental degradation using an estimation of present value damage cost from particulate matter and lead pollution. Also, the potential economic benefits from the reduction of particulate matter and lead pollution the GC area were discussed in this paper.

Lead Smelters and Lead Foundaries in Egypt for 1998 to 2007 and efforts done for upgrading it to be environmentally friendly

Mounir W. Labib, National Coordinator, Environmental Sector Program (ESP), Danida, EEAA ,
Zeinab Safar, Head of Mechanical Engineering Department, Cairo University,

One of the main goals of the Egyptian Environmental Affairs Agency (EEAA) is to take actions regarding implementing the Lead Smelter Action Plan (LSAP).
One of the main objectives of the LSAP is the relocation of lead smelters to industrial sites, since they emit harmful lead particulates in both the workplace and the surrounding community.
The LPA provides technical assistance to lead smelter owners so that new smelters are equipped with state-of-the-art equipment and air pollution control systems. It also enables them to relocate the smelters to new industrial zones, and to use modern emission control equipment, as well as modern equipment for production.
In order to facilitate the planning, a survey was carried out to produce a comprehensive baseline database for lead smelters and foundries—both licensed and unlicensed—throughout Egypt. The survey covered: Geographical distribution of smelters and foundries, Annual production figures, Smelter emission control equipment in use, Fuel used, Solid wastes produced, Smelter work force, Sites available for remediation and proposed sites for relocation of smelters and foundries. This work presents the baseline survey on 1998 and the status till beginning of 2007 with regard to the Egyptian environmental regulations.

Fuel ethanol production from enzymatic hydrolysates of MFEX-treated rice straw, and cotton stalks

Bahaa T. Shawky, Microbial Chemistry Department, Genetic Engineering and Biotechnology Research Division, National Research Center, Cairo, Egypt

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The increasing demands placed on finite supplies of energy make it imperative to find alternative, unconventional resources, to replace oil. Lignocellulosic materials, given proper treatment, prove to be a potentially exploitable resource and has environmental as well as economic advantages. Strong environmental legislation has been driving efforts to make ethanol from biomass economically viable. Production costs for ethanol from biomass have been decreasing year by year. Pretreatment, enzyme recovery, and development of efficient microorganisms are some promising areas of study for reducing process costs. However, it appears that « biofuels » will survive and continue to exhibit modest increases in contributions to primary energy demand. A comprehensive assessment of renewable-technology options has shown that biofuels is the only option capable of making significant contribution to all energy sectors.

The present study presents a new pretreatment called Multipurpose Fiber Explosion (MFEX), which operates under relatively mild conditions and which appears to be effective, economic, and clean, where biomass is treated with carbon dioxide and ammonia in sequence to make use of the synergistic effects obtained under pressure and a moderate temperature for a few minutes and then rapidly releasing the pressure. Rice straw (RS) and cotton stalks (CS) were pretreated by Multipurpose Fiber Explosion (MFEX), and the treated materials hydrolyzed using 10 IU commercial cellulases/g dry substrate. A genetically engineered ethanologenic organism was used to ferment resulting sugars from enzymatically-hydrolyzed MFEX-treated biomass substrates. This sequential hydrolysis and fermentation was carried out in pH-controlled, stirred fermenters. A total reducing sugars of about 550, and 410 mg/g dry MFEX-treated RS, and CS, respectively was achieved within 24 hours hydrolysis with commercial cellulases. Of this total, about 320, and 230 mg/g RS, and CS, respectively was glucose which was rapidly fermented within 24 hours by the recombinant *Klebsiella oxytoca* leading to an ethanol yield of about 300, and 207 mg/g dry MFEX-treated RS, and CS, respectively. In all fermentations, glucose utilization was rapid, whereas xylose utilization was slow and incomplete.

In order to develop an economically feasible ethanol production process, improved fermentation technologies appear necessary to utilize all the monomeric sugars derived from biomass. Research to develop this technology is now in progress.

Environmental information systems and their contribution to environmental protection in different economic sectors, using the example of the workflow management tool UMBERTO.

Sameh Mahmoud
Bachelor of Industrial Environmental Computer Science
Supported by Energy and Environmental research institute, IFEU-Heidelberg

Ecobalance is an essential part of the modern environmental protection. By building up models, calculation and visualization of material and energy flow systems of the production processes in a company will create ecobalances of input-output materials to identify harmful substances.
A workflow management tool is used to analyze the process systems, either in a plant or a company,or to analyze along a product life cycle. Results can be assessed by using economic and environmental performance indicators. Cost data for materials and processes can be entered to support managerial decision making.
The main aspect of the presentation will be to present, on the basis of two examples: 1) cement industry and 2) waste incineration plant, how environmental information systems can be used to protect the environment.

Clean Development Mechanism: Benefits, Opportunities and Implementation in Egypt, EEAA

Emissions from Upper Egypt Power Plants

Madiha Abdel Fatah, Upper Egypt Electricity Company

Gosef Sro, Upper Egypt Electricity Company

Karim Said, Upper Egypt Electricity Company

Miriam Money, Upper Egypt Electricity Company

Day II

Plenary 2
Renewable Energies

Chair: H.E. Eng. Maged George, Minister of Environment
H.E. Dr. Hassan Younes, Minister of Electricity & Energy

Speaker: H.E. Klaus Ebermann, Ambassador of the Eu
H.E. Kaoru Ishikawa, Ambassdor of Japan
H.E. Antonio Badini, Ambassador of Italy
H.E. Bernd Erbel, Ambassador of Germany
Benthe Schiller
Sherif Wadoud

Denmark and Renewable Energies & Energy Conservation

Benthe Schiller, Counsellor for Development, Royal Danish Embassy, Cairo, Egypt

Denmark has successfully developed renewable energy technologies during the last 30 years. Due to a sudden raise in energy prices in the early 70's, Denmark was forced to develop a new energy policy in which energy savings became a MUST. Legislation focusing on alternative energy technologies was passed, research centres for renewable energies were supported and one result was the development of the wind turbine industry in Denmark.

The wind turbine industry has established more than 30.000 wind turbines around the world. In Egypt a 62 MW Wind Mill Park financed under Danish grant is already functioning in Zafarana, and Wind Atlas for Egypt has been elaborated under Danish grant aid. In 2007, a new mixed credit financed contract of another 120 MW Wind Mill Park at Zafarana has been signed with NREA. NREA and the Danish Ministry of Foreign Affairs have signed an agreement that Denmark will buy Certified Emission Reductions from Egypt totalling 600,000 tCO2e before the end of 2012.

In 2006, the total number of manufactured turbines from the Danish company VESTAS will save 122 million tons of CO2 over the course of the turbines 20-year design lifetime creating thousands of job opportunities.

About 18% of the electricity generated in Denmark is coming from wind turbines.
In Denmark, biomass accounts for approximately 70% of renewable – energy consumption, most in form of straw, wood and renewable wastes, while biogas accounts for less.
The total amount of biomass in Egypt is in the order of 60 million tonnes per year, which is a tremendous energy source for Egypt.
Solar energy is in Denmark mainly used for heating and the world' largest solar heating system is placed in Marstal, the main town of a small island in Denmark. It includes also seasonal storage of solar heat in soil deposit.

Energy savings in Denmark are focused on:

- Saving energy in buildings, including energy labelling.
- Initiatives for energy labelling of household appliances.
- Initiatives for industry, including voluntary agreements on energy efficiency.

Danish legislation on Renewable Energy can be found on the web-page www.ens.dk in which also an English version can be selected.

Plenary 3
Funding Environmental Compliance and Carbon Trading

Chair: H.E. Eng. Maged George, Minister of Environment
H.E. Dr. Farouk El Okda, Governor of Central Bank

Speaker: H.E. Kaoru Ishikawa, Ambassador of Japan
Claudia Croce, Italien Ministry of the Environment, Land and Sea
Karin Johansson, European Commission
Andreas Holtkotte, Kfw Cairo
Benthe Schiller
Hisham Eisa

Funding Environmental Compliance - The Engagement of KfW Bankengruppe

Mr. Andreas Holtkotte, Director, KfW Office Cairo, Egypt

KfW Entwicklungsbank, on behalf of the German government, supports the Egyptian government in its efforts for public and private sector promotion and pollution abatement since 1995. The support has been provided through three credit lines and channelled through five banks. With such support, 95 companies are in full compliance with the environmental regulations, their chance to export has increased, and 1,700 jobs have been created. Due to such success, KfW and EEAA agreed to extend a new financial support to the Egyptian industry. The new program will be launched in early 2008. For the first time, it is planned to promote of the program among SME's with an innovative scheme of finance.

Danish Development Assistance to Egypt

Bente Schiller, Counsellor Development, Royal Dutch Embassy, Cairo, Egypt

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The start of Danish Development Assistance to Egypt dates back to 1969. Till today, Egypt has received far above 2 billion Danish Kroner – DKK (equalling 2 billion L.E.) as grant.

At the very beginning the Danish assistance to Egypt took the form of State loans from the Government of Denmark to the Government of Egypt, but Egypt has later benefited from a debt relief of 965 million DKK. At the end of the 1980's, Danish development assistance switched to grants. Egypt especially benefited from grants to the following sectors: Water & Sanitation, Renewable Energy (wind mills), and Environment. Simultaneously, Denmark was supporting the Civil Society in Egypt with numerous minor projects. From 1996, Danida started to give interest free loans to Egypt under the so-called Mixed Credit Scheme. So far, the sectors benefiting from these interest-free loans are Water & Waste Water Treatment, Grain Silos, and Wind Mills. The loan element of these mixed credits has totally reached 1.1 billion DKK and the grant element in form of interests paid by Danida will amount to a total of 493 million DKK.

In 1997, Danida expanded its support to Egypt now targeting the private sector by means of the so-called "Private Sector Programme", which since 2006 changed name to "B2B Programme" (Business-to-Business). Under this umbrella, the Egyptian private sector has received 143 million DKK.

In 2003, Danida started a regional initiative called the Partnership for Progress and Reform, and in this context dialogue between Egypt and Denmark is promoted via the Danish-Egyptian Dialogue Institute with a budget of 20 million DKK.

In 2006, Danida introduced the Public Private partnership Programme (PPP-Programme) in Egypt. The programme targets companies, local authorities, organizations, institutions and associations to enforce corporate social responsibility within the community.

The general grant aid to Egypt will phase out by end of 2008, however the Mixed Credits Scheme, the B2B Programme, the PPP Programme and the Partnership for Progress and Reform programme will all continue in Egypt.

Developing Egyptian Environmental Protection Fund

Hisham Eissa, Gihan Bayoumi, Shimaa Moussa , Environmental Protection Fund

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The Environmental Protection Fund (EPF) which was established by Law 4/1994, plays a pivotal role in the collaborative efforts between the government and the community as the Egyptian government. The EPF is an important support tool within the Ministry of State for Environmental Affairs and the Egyptian Environmental Affairs Agency (EEAA) as an innovative financial mechanism for backing serious private, public, and non-governmental organizations that aim to combat environmental problems in Egypt.

The EPF is the public funding mechanism dedicated to stimulate investments in sustainable environmental projects, to increase compliance with Law 4, and to mobilize private and public interest in addressing Egypt's growing environmental challenges.

In addition to its being a tool to achieve national environmental objectives, the EPF is providing financial support to environmental investments, thus aiming at correcting market failures and bridging the transitional period of the economy.

A strategic focus is to direct EPF towards becoming a revolving fund that generates income from its own lending and investments. Accountability, transparency and efficiency must be cornerstones of everyday operations and governance. A results based management system is implemented to assure focus on achieving set objectives, allowing for efficient management and motivation of staff.

DANIDA is currently supporting the EPF through the ESP programme for shifting the EPF set up towards independency, aiming at increasing investment activity of EPF, have a better image, leverage and fund sustainability, more effective and results oriented management, efficient and professional appraisal of projects. The ESP supported EPF in developing a business plan setting a clear framework of the Fund's mission, vision, core competence and funding mechanisms. The EPF operational manual which addresses the institutional and organizational frameworks defining the mandate and activities of EPF is currently being updated in cooperation with the ESP programme. The EPF's project cycle has clearly defined stages, responsibilities, procedures and project selection criteria. The EPF's communication strategy addresses various stakeholders in order to reach the largest number of financially feasible environmental projects in Egypt to the benefit of the country.

Significant effort is devoted to promote EPF towards clients, donors and other stakeholders in order to improve EPF's image.

Plenary 4
Energizing Our Future – German Cooperation and Renewables

MODERATOR: PROF. AMIN MUBARAK
SPEAKER: DIETER UH, PROJECT MANAGER
ANDREAS HOLTKOTTE, DIRECTOR KFW
PROF. ADEL KHALIL, VICE DEAN OF FACULTY OF ENGINEERING, CAIRO UNIVERSITY
PROF. DR. JÜRGEN SCHMID

Activities of gtz in the field of renewable energies

Dieter Uh, Project Manager, German Technical Cooperation (GTZ), Eschborn, Germany

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- Overview on gtz
  A short introduction to gtz as one of the implementing organisations of German Development Cooperation
- Overview on gtz activities in the field of energy/renewable energies
  An overview of the manifold activities of gtz in the field of energy: capacity development, rural electrification, policy advisory with a focus on renewable energy
- Successes and Challenges
  Some best practices and some experiences, outlook on the forthcoming challenges

Outlook
With a focus on the MENA-region, I shall present some ideas and visions on a sustainable energy future

Sectoral framework and funding opportunities

Mr. Andreas Holtkotte, Director KfW Office Cairo, KfW Entwicklungsbank on sectoral framework and funding, KfW banking group, Frankfurt, Germany.

A conducive sector environment, the so called "level playing field", for renewables is the major challenge in a lot of countries to support the further development of clean energy production and to attract private foreign direct investments. The presentation will discuss some of these challenges and will equally present funding opportunities.

Renewable Energy Sector in Egypt - Industrial modernization Center (IMC) Study

Prof. Adel Khalil, Professor of Heat Transfer and Power Plants at Mechanical Power Engineering Department , Vice Dean Faculty of Engineering , Cairo University, Egypt

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The study was initiated by the Industrial Modernization Program (IMC) and carried out by a team of local and international experts through the Energy Research Center at Cairo University. The study reviews global industrial and innovation policies in the renewable energy sector, the performance of the Egyptian industry and innovation policy as it applies to renewable energy technologies, and the potential for a choice of specific technologies or applications, positioning Egyptian designs, manufacturers and capabilities in relation to other players in the regional and international markets. A set of future scenarios was formulated for the penetration of renewable energy in the energy system through stakeholder consultation and carry out an in-depth quantitative and qualitative analysis taking into account key variables such as developments in energy pricing and technology advances. A development strategy and action plan was proposed to enhance the competitiveness of the industry, with detailed focus on a limited number of technology choices. This strategy is developed in close collaboration with the national stakeholders, including representatives of key institutions and private companies. It also addresses the potential and costs for the promotion of the industry and innovation sector involved in renewable energy.

Rural Electrification with Mini Grids

Prof. Dr.-Ing. Juergen Schmid, Chairman of the Executive Board of ISET and member of the German Advisory Council on Global Change

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Technology and benefits: modularly structured hybrid systems using photovoltaics, wind energy, bio energy, hydro energy, storages and back-up aggregates => expandable systems technology starting with some kilowatts up to megawatts for micro grids

Status: basic components are developed and pilot plants are realised und approved => field test in big regions with successive projected development is needed

Operation models: traditional utility of national power networks, community management or local entrepreneur

Political boundary conditions and benefits: feed-in tariff concept "act on granting priority to renewable energy sources" for off-grid systems, like "EEG" in Germany or 40 other countries => simple and clear proceeding, reliability for investors or credit grantors, planning reliability for producers, motivation for optimal operation

Financing: redistribution to all consumers, private sponsors, World Bank (contract with recipient country), emissions trading (clean development mechanism), development co-operation

Needed: strategic country co-operations

Break-out Session 3

Cleaner & Organic Agriculture

CHAIR: H.E. MINISTER OF AGRICULTURE

MODERATOR: DR. MOHAMED KHALIL

SPEAKER: HELMI ABOUEL EISH, CHAIRMAN SEKEM

AYMAN KORRA, CHAIRMAN CONSUKORRA GROUP

DR. HANAN A. EL MARZOOKY, M. ANWAR ABDEL SATTAR, ET AL.

RE Technologies & Energy Conservation

CHAIR: ENG. SAMIR HASSAN, CHAIRMAN NREA

SPEAKER: ENG. MOUSTAFA EL BADAN, ENG. MERVAT EL NAHAS, ENG. AMANI ATTIA

DR. IBRAHIM HASSAN, EEIGGRP GEF/ UNDP
AMR MOHSEN, CEO LOTUS SOLAR TECHNOLOGIES
SHADIA TAWFIK

WORLD'S FIRST SOLAR PROCESS STEAM PLANT COMPLETED in EGYPT

Eng. Amr A. Mohsen – CEO Lotus Solar Technologies, Heliopolis, Cairo, Egypt

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The African Development Fund offered a grant to Egypt in order to build the world's first plant that would use the sun's thermal energy to generate process steam with the aim of creating a base for advanced solar energy local know-how and the launch of a new industry.

The New & Renewable Energy Authority, NREA (part of the Ministry of Electricity & Energy) selected a consultant (Fichtner Solar of Germany) to conduct a study of the energy use of the industrial sector and prepare tender documents for the design and construction of the plant.

NREA issued an international tender in May 99. The turnkey project was awarded to Lotus Solar Technologies of Egypt in October 2000 to build the plant over an 8,000m2 site inside the El Nasr Pharmaceutical Chemicals factory, located at Abu Zaabal on the northeastern outskirts of Cairo.

Plant construction started in September 2001 and was completed in September 2003. Plant trials produced solar steam for the first time on 18th October 2003 during commissioning. Plant operation started in May 2004, as soon as the factory's steam network was ready to receive solar steam.

The process side of the plant was designed by Egyptian engineers in Cairo and components were constructed at a factory in the 10th of Ramadan City. The solar components were constructed onsite. The plant controls were designed and installed by Egyptian engineers. The project has an overall local content of over 80%.

The project has succeeded in acquiring unique solar plant expertise through all the design, construction and operation stages of the plant, thereby providing the sought opportunity to become the basis for the formation of local solar energy industry. The plant also offers a wealth of performance and other data that should be used to deepen our understanding of the performance of solar devices.

This paper will present an overview of the project, describe the solar steam plant, review its performance to date as well as offer some post-mortem analysis.

The paper will also recommend future steps that could be adopted to increase the exploitation of

Egypt's prolific sun resources in industrial and other sector applications.

Prospects for the production of ethanol and bio-oil from rice straw

Shadia R. Tewfik*, Abdel Ghani M. G. Abulnour, Hala A. Talaat, Mohamed H. Sorour, Nader R. Mitry, Nihal M. ElDefrawy, Safaa A. Ahmed, Josef Y. Farah and Amr M. El Sengiedy, *National Research Center, Cairo, Egypt*

With the depletion of fossil fuels, there is increasing interest worldwide towards the utilization of renewable energy sources. Biomass represents one of the major resources that is currently processed to provide fuels in solid, liquid or gaseous forms. Biomass currently represents about 3% of the total energy consumption in the USA. In Egypt, the Ministry of Electricity and Energy plans to develop renewable energy sources to cover about 3% of the total national needs by 2010. However, biomass is currently used in rural stoves at a very low efficiency.

On the other hand, one of the major environmental problems occurring annually is what is known as the "black cloud" which prevails in October almost every year due to the open burning of solid and agro wastes in general and rice straw in particular.

Through a grant from the Academy of Scientific Research and technology, a project for the production of liquid fuels from ligno-cellulosic materials is being currently conducted by the authors of this article. The work proceeds along two main directions viz. the thermal treatment to produce bio-oil and the production of ethanol through the hydrolysis/fermentation route. Along the first direction, a set-up has been designed and manufactured to process about 1 kg/hr of ground rice straw. The process essentially comprises pyrolysis at 400 to 600°C for less than 1 minute in a column using nitrogen as the carrier gas. The solids are separated in a cyclone and the gases are then suddenly cooled to condense the liquid fraction (bio-oil). Preliminary experiments indicate that the bio-oil produced has carbon, hydrogen and nitrogen content in accordance with reported data. Work is being currently undertaken to identify the optimum operating conditions comprising temperature, retention time and flow rate.

Along the ethanol production route, rice straw has been subjected to pretreatment using different alkaline and acidic methods. Saccharification has been conducted using cellulase enzyme (Novozyme and Validase TR). Fermentation has been then conducted using *Saccharomyces Cerviciae*..Both sequential and simultaneous saccharification and fermentation have been explored on a laboratory scale. Results are in agreement with published work. Scaling-up is currently underway to define the optimum conditions. Material and energy balance and techno-economic studies are to be undertaken using the software ASPEN PLUS and ASPEN ICARUS.

This paper presents a review of the current status and potentials for liquid fuel production from ligno-cellulosic materials with emphasis on rice straw. Further, preliminary results from the ongoing project shall be highlighted.

Day III

Break-Out Session 4

New Technologies in Water, Waste Water and Irrigation

CHAIR: DR. HUSSEIN EL ATFY, DEPUTY MINISTER OF WATER RESOURCES AND IRRIGATION

SPEAKER: HEBA A HANI, ET AL.

AHMED BADR, EUROPEAN COMMISSION

ENG. MAHMOUD RASLAN

DR. MOHAMED TAWFIC

NATIONAL WATER RESEARCH CENTER

M. BASIOUNY, N.Y. ABOUEL KHEIR

M.H.SEROUR, H.ALI

MAGDI EL BEHEIRI

Performance indicators of the removal of Chromium using synthesized modified Zeolite A.

Heba A. Hani, Shadia R. Tewfik, Mohamed H. Sorour Nabil Abdel Moneim Chemical Engineering and Pilot Plant Department, National Research Center, Cairo, Egypt; Chemical Engineering Department, Faculty of Engineering, Cairo University, Giza, Egypt

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Uncontrolled accelerated large scale industrialization contributed negatively to the quality of environment specially in underdeveloped countries. Heavy metal pollution in particular affects soil and surface & underground waters and consequently departure from acceptable quality indicators.

Several methods are available to reduce the heavy metal concentration including chemical precipitation, ion exchange, adsorption, and reverse osmosis. Most of these methods suffer from high capital and operating costs and problems of disposal of residual metal sludge and sometimes low efficiency in removal of trace levels of the cations present in surface/ well water. This has encouraged research on using efficient low cost adsorbent materials to purify heavy metal contaminated water. Resins are powerfully used for this purpose and also zeolites.

The advantage of zeolites over resins, apart from their much lower cost, is their higher ion selectivities, in addition to being considered as environmentally friendly. Zeolites have a three dimensional structure constituted by $(Si, Al)O_4$ tetrahedra connected by their oxygen vertices forming channels where water molecules and exchangeable cations counterbalance the negative charge generated from the isomorphous substitution.

Chromium III have been successfully removed from contaminated waters using zeolites A, X, and Y. These types mainly differ in the Si/Al ratio and consequently cation exchange capacity (CEC), pore and cavity diameters. According to reported work, the chromium exchange capacity (CrEC) of zeolite A, X, and Y is 75, 85, 68 mg Cr^{3+}/g respectively. However, the synthesis of zeolite A is easier, simpler and more controllable than the other types. Thus zeolite A has been selected to be investigated in this study.

The present work focused on a novel approach for the synthesis of designed zeolite A. The major strategy for synthesis adopted hydrothermal treatment from pure chemicals (alum and sodium silicate) with initial silica to alumina ratio of 1.79

The adopted synthesis procedure comprises the stages of aging, crystallization and specific post treatment procedures. Synthesis proceeds at elevated temperatures where crystals form through nucleation, crystal growth and agglomeration. Typical processing temperatures and retention times for the zeolite synthesis are (25°C, 10min) for aging and (80°C, 1hr), (95°C,1hr) for crystallization, under step change in temperature, respectively. Prepared modified zeolite A samples (MZA) have been mainly characterized by XRD, XRF, BET surface area, N_2 adsorption. The formed zeolite has the oxide molar ratios 1.08 Na_2O:1 Al_2O_3:1.68 SiO_2:1.8 H_2O, while the surface area and total porosity are about 228 m^2/g and of 61.7% respectively.

The modified zeolite has been tested for the treatment of surface/well water targeted for potable uses. Further performance indicators have been developed through application of MZA for the removal of Cr^{3+} using simulated contaminated water containing chromium (III) salts employing batch adsorption method. The analysis of experimental results indicates a relatively high level of loading of 112 mg Cr^{3+}/g MZA. These results confirmed the strong potential of newly developed Zeolite MZA for upgrading surface or ground water subjected to moderate level of contaminants.

Experimental program is currently underway for improving the cost effectiveness of the modified zeolite.

Agenda 2020 & Integrated Coastal Zone Management

CHAIR: DR. MAWAHEB ABOU EL AZM, PRESIDENT, EEAA
KEYNOTE SPEAKER: H.E. MOHAMED EL-YAZGHI, MINISTER OF TERRITORIAL DEVELOPMENT, WATER & ENVIRONMENT MAROCCO
SPEAKERS: DR. SAMEH AFIFY
ALY BORHAN, EEAA
JAVIER MENDEZ BONILLA
DR. MAGED HAMED, WORLD BANK

Network on Governance, Science and Technology for Sustainable Water Resources Management in the Mediterranean (NOSTRUM)

Dr. Sameh Afify, CEDARE

Water resources are scarce in the Mediterranean area, and yet the current management regimes are at times neither efficient nor sustainable. The need to improve on the current system is paramount, if the objective of sustainable development subscribed by partner countries and the EU, and stability in the region, are to be achieved and maintained.
The great theoretical potential of Dss tools for helping policy makers to bring the principles of **Integrated Water Resources Management** (IWRM) into practice for managing socio-political conflicts over competing demands for water uses in different environmental situations seems to be not yet exploited.

The ultimate aim of NOSTRUM-DSS Co-ordination Action is to *contribute to bridge the gaps between science and real life*, in order to provide Dss developers with insight into the language and the needs of policy makers (PMs) and stakeholders, and subsequently to *provide PMs effective tools based on an integrated approach for problem solving in the context of IWRM.*

The key objectives of this Co-ordination Action are:

1. To establish durable links between scientific institutions, governments, NGOs, SMEs and other stakeholders and improve public awareness on water management;
2. To improve scientific knowledge and applied methodologies in IWRM;
3. To promote the development of suitable Dss tools built upon real needs of policy making in IWRM.

NOSTRUM-Dss has a strong potential to support and foster the achievement of many EU initiatives and international relation policies, especially with Partner Countries in the Mediterranean through the contribution to the Euro-Mediterranean Partnership.

Integrated Coastal Zone Management Proposed Egypt's Strategy Toward Sustainable Use Of Costal Zone Resources

Mohamed Aly Borhan, Head of the General Directorate of Integrated Management of Coastal Areas and Lakes, EEAA.

The major goal of Integrated Coastal Zone Management (ICZM) is to contribute to sustainable development and utilization of coastal areas and their biological resources. ICZM is a dynamic, multidisciplinary, iterative and participatory process to promote sustainable management of coastal areas balancing environmental, economic, social, cultural and recreational objectives over the long-term.

ICZM employs a comprehensive method of planning and managing human activities within a defined coastal area, taking into account the relevant ecological, social, cultural and economic dimensions and the interactions between them.

This paper attempt to summarize the drivers, pressures, states, impacts and responses initiated by Egypt to establish a well accepted ICZM National Strategy that will help Local Community to prepare their Long-term visions and plans toward the integrated uses of Coastal Areas as a step towards the sustainable uses of its resources.

Awareness, Education and Training

CHAIR: H.E. MINISTER OF EDUCATION

MODERATOR: DR. ESAM REFAAT, EDITOR IN CHIEF

SPEAKER: DR. EMAD ADLY, PRESIDENT ARAB OFFICE FOR ENVIRONMENT

DR. MOHAMED AHMED HELAL

Plenary 5
Water Resource Management

SPEAKERS: H.E. MAGED GEORGE, MINISTER OF STATE FOR ENVIRONMENTAL AFFAIRS
H.E. DR. MAMDOUH ABOU ZEID, MINISTER OF WATER RESOURCES AND IRRIGATION
H.E. AHMED EL MAGHRABI, MINSITER OF HOUSING, UTILITIES & URBAN DEVELOPMENT
H.E. KLAUS EBERMANN
H.E. BERND ERBEL, AMBASSADOR OF GERMANY
H.E. TJEERD DE ZWAAN, AMBASSADOR OF THE NETHERLANDS

Break-Out Session 5

Protectorates, Eco-lodge & sustainable Tourism

MODERATOR: ENG. HAZEM BASHAT, AEEC

SPEAKER: DR. MUSTAFA FODA

HAROUN CHENCHOUNI

DR. MOSTAFA ABBAS SALEH

HAZEM BASHAT

RUDOLF RIEGER

HCWW

Eco-Touristic value of the national park of Belezma (BATNA, ALGERIA)

Haroun Chenchouni, Engineer/Researcher, Department of Biology, Faculty of sciences, University of Batna, Algeria

The National park of Belezma (26.250 ha) is a protected area situated to Batna in the Algerian Northeast. It was create with as objective, the preservation and conservation of the existing natural heritage. However, it crosses at present a multiannual period of drought which is at the origin of the disturbances in its natural resources. Indeed, the decay of the Cedar of the Atlas *Cedrus atlantica* M. and the disappearance of several animals sorts is indeed a proof.

Rich is both diversified in flora and in fauna, the park contains particularly a plentiful and varied community but which remains little studied. From point of view floristique, the number of sorts listed (counted) this day is 447, this represents approximately 15 % of the national potential which is 3139 sorts. The fauna of sc plentiful and varied Belezma contains most of the sorts of Algeria of the North. The censuses have revealed 387 species distributed into several classes.

This variety of fauna and flora with the variety of the landscapes and the ecosystems offer in the park a very lucrative value by welcoming every year more than 100000 persons distributed in various slices of the society (Researchers, pupils, students, families, visitors of passages, foreign,...)

Besides, hiding several antique archaeological sites (Romans, Byzantine and Berber), what directs this nature reserve to the second dimension of protection and valuation, what is that of the ecotourism. In the present communication, we shall measure in evidence the values pulled by the biological, archaeological wealth for the improvement of the tourism at the level of the National park of Belezma and Algeria.

Siwa Sustainable Development Initiative

Dr. Mostafa Abbas Saleh, the Vice President and Head of Environment Department of Environmental Quality International (EQI)

Siwa Oasis, located about 70km east of the Libyan border on the edge of the Qattara Depression, possesses an exceptional natural environment, a number of attractive archeological sites and spectacular geomorphologic features. Living through the centuries in relative isolation has allowed the Siwan community to maintain their own identity and traditions. These qualities, all indicative of the economic potential that the oasis holds, dictate the importance of preserving its fragile eco-system, maintaining its cultural heritage and developing economic activities in a sustainable way. In 1997 EQI began privately investing in Siwa through a series of community-based initiatives that form a sustainable, private sector led development initiative. The Siwa Sustainable Development Initiative is an integrated sustainable development plan that addresses economical, cultural and environmental challenges. EQI's investments in Siwa are in the following areas: (1) Ecotourism; (2) Traditional Artisanship; (3) Organic Farming & Trade; and (4) Renewable Energy. Together, these activities form an integrated plan that aims at establishing a sustainable private sector led development model, which is socially and environmentally responsible. Adrère Amellal is the centerpiece of this initiative. The ecolodge is situated on palm and olive groves at the foot of a mountain's cliff called Adrère Amellal ('white mountain' in the native Siwi Berber language), overlooking Lake Siwa. Built from rock salt and mud, it uses the same traditional techniques applied in the oasis some 2,500 years ago. Dilapidated Siwan houses have been restored and extended, using kershef – a mixture of rock salt and mud – to build the walls. This method keeps indoor temperatures moderate and ensures that the structures blend with the environment. The premises are free of electricity and telephones. Doors and windows are strategically positioned to capture the desert breeze, eliminating the need for air-conditioning. Oil lamps and candles are used for lighting, braziers for heating. Furnishing draws on natural materials, traditional design, and local skills. Ceilings are made of palm beams, while doors, windows and fixtures are made of olive wood from annual tree trimmings. Wastewater is first settled in sedimentation tanks, allowing the supernatant to flow through perforated pipes into a sealed wetland where indigenous papyrus plants are grown to complete the biodegradation process. The initiative has sought to create a place where people can experience well-being, happiness and joy - one that would be in touch with nature and open to all without barriers, physical or psychological. The initiative has brought to Siwa what is of value from the outside world; in return, the Siwans have given back the best of what they have to offer. It has created a dynamic where the influx of people has become a positive force that enhances the quality of life of the Siwans and non-Siwans; a dynamic where people relate to each other in a positive way and where everyone benefits. It has ensured strong cross-cultural exchanges; once a closed community, the Siwans are now becoming increasingly receptive to other cultures, while maintaining their own cultural identity with dignity and pride. EQI's success in Siwa rests on the mutual respect established between EQI and the eleven Siwan tribes. This process has been a delicate one that required an open and respectful approach to the community, its environment, and its culture. EQI also maintained an open dialogue with the authorities, which proved to be extremely useful in reaching needed policy changes.

Water desalination

Rudolf Rieger, INTERGEO, Salzburg , Austria

While worldwide water consumption is on the rise, the quality and amount of available water is steadily decreasing. In 2005, 5% of the world's population was facing a shortage of water, and the German Foundation for World Population for World Population predicts that in 2050 this percentage will have risen to 32%. The United Nations reports that a third of all countries already lives under medium to high water stress. INTERGEO is helping to provide a partial solution to this problem by producing water desalination plants based on reverse osmosis. Using state-of-the-arte technology, our plants can provide drinking water at under 0.8 €/m2. Our plants are an independent and reliable water supply for many applications, including hotels and resorts, marinas, agricultural irrigation and for water supply in arid countries. With affiliates in the Mediterranean countries, no one is closer to the market than INTERGEO. We provide technical training for the responsible personnel in the branch offices and offer support in all areas of the project process.

Global Water Crisis? – Challenges & Opportunities

CHAIR: MOHAMED ALFY, DEPUTY OF HOUSING, UTILITIES & URBAN DEVELOPMENT
MODERATOR: DR. SAMEH ABDEL GAWAD
SPEAKER: DR. HANS-WERNER THEISEN, CHIEF TECHNICAL ADVISOR
ANDREAS HOLTKOTTE, DIRECTOR KFW
LLOYD MARTIN

Water Supply and Wastewater Management Program – Egypt

Dr. Hans-Werner Theisen, gtz Chief Technical Advisor, gtz Cairo, Egypt
Alexander Burns, Co-speaker

In 2005, 1.1 billion people were without access to clean drinking water and 2.6 billion without basic sanitation. Whilst international endeavours to improve the provision of clean drinking water are considerable, efforts in the area of wastewater management and sanitation have been far from sufficient. In many countries development projects in the water supply and sanitation sector had little impact on the poor, who in many cases remained unserved. In Egypt, a new approach to provide adequate sanitation services to small communities has been developed and is implemented since mid 2002 with German development assistance through gtz. The success story of the sewage system in the first village contains high potential for replication. The provision of a well functioning sewer system and the treatment plant has in a short time upgraded the village to a showcase model. The participation of the population coupled with hygiene promotion programmes leading to improved hygienic behaviour, the high quality of the design and execution and simple operation management at very low, affordable costs as well as the trouble-free performance of the system serves as a leading example for rural development.

Global Water Crises – Challenges and Opportunities

Andreas Holtkotte, Director KfW, Cairo, Egypt

The countries of the MENA region have increasingly to deal with water scarcity. Population growth and pollution of water resources are major challenges. The presentation will first introduce what KfW is and what they do within the water sector. Morover, Mr. Holtkotte will highlight the water challenge, ist scarcity as well as water stress. Discussing some of these pertinent issues, the vivious cycle of low profitability and sustainability will be elucidated as well as the way out.
Finally, the practical example from Jordan presented by Lloyd Martin will be introduced.

Global Water Scarcity: Meeting the Challenges

Mr. Lloyd Martin, Regional Director, Severn Trend Water International, Birmingham, UK

This paper examines ways in which sector reform in the water industry can contribute to overcoming some of the challenges that face utilities suffering water scarcity in semi-arid environments. It uses the case study of the Northern Governorates of the Hashemite Kingdom of Jordan, where KfW and the Water Authority of Jordan (WAJ) are jointly funding a 3 year Managing Consultant Contract in the Northern Governorates, which is being undertaken by Severn Trent Services International[1] (STSI) from the UK, together with its local Jordanian partner, Consulting Engineering Center (CEC).

The presentation briefly outlines the background to the Jordanian water sector and the Governorates before examining the steps that have been taken by the Government to improve efficiencies in the sector. These include, but are not confined to, Private Sector Participation (PSP) mechanisms, such as the one described in this paper.

Management Contracts are a form of PSP that have been utilised in the water sector in the Hashemite Kingdom of Jordan now for several years. In the Northern Governorates Water Authority (NGWA), which is centred on the city of Irbid and serves approx 1.25 million people in the north of the country, the form of contract is a Managing Consultancy. This form of PSP is examined in the paper, in both concept and practice. The establishment of an effective joint management team within NGWA is particularly vital to this approach, and the presentation evaluates the situation to date, after the first year of the project.

The results so far of the NGWA Managing Consultancy Contract are presented, in terms of:

- efficiency performance improvements against targets
- approaches to overcoming water scarcity
- the role of and need for effective procurement within NGWA.

In the remaining two years of the contract, the main focus will be on implementing the management and operational changes that have been identified as being necessary during the first, predominantly diagnostic, year. The presentation assesses these forthcoming objectives, challenges and prospects. It concludes with an analysis of the lessons learned to date: both for the project itself and also, where appropriate, for the Egyptian water sector.

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[1] **Severn Trent Services International was formerly Severn Trent Water International. The Company was renamed in May 2007.**

Break-Out Session VI

Rural Sanitation

CHAIR: DR. ABDEL EL KAWY KHALEFA, CHAIRMAN HCWW

SPEAKER: DR. AHMAD GABER
HAZEM SALEH
DR. MAHMOUD ABD EL AZEEM

Prospects of Renewable Material Utilization for Development – Alternative Wood-Wood Treatment – Bio-composites

SPEAKER: PROF. DR. HAMED EL-MOUSLY
WOLFGANG ALTENBURG
DR. MOATAZ QENAWY
ENG. AYMAN ABDUL-WAHAB
PROF. YEHIA MOHARAM

The Renewable Material Resources: A Material Base For The Realization Of Endogenous And Sustainable Development

Prof. Dr. Hamed El-Mously, Design & Production Department, Faculty of Engineering, Ain Shams University

The renewable material resources (RMR) are those resources on earth within the reach of people everywhere. They need not be excavated and can thus be obtained locally without, necessarily, the interference of the government or big companies. They are oftenly reproduced locally by the efforts of local or indigenous people, who have a lot of knowledge and technical heritage, associated with growing, manufacture and utilization of these resources. This means that endogenous development could begin in each village/local community with what people have more at hand and know better about, i.e., RMR. The approach of rediscovery of RMR may open a wide area for innovation for many countries in the South to develop patterns of production and consumption more sustainable than those prevailing in the North, thus realizing what is called leap frogging. Besides, the sustainable use of RMR in the South could serve within the perspective of Agenda 21 as an integrated approach: for the substitution of non-renewable resources by RMR, the decrease of the consumption of energy in manufacturing industries, associated with RMR and the avoidance of the environmental problems, caused by the open-field burning of the agricultural residues. This may create a win-win situation between the North and the South, especially because the rational use of RMR in many countries of the South may decrease the pressure on cutting of forests in the North. For example, there is a real chance for Egypt to make a drastic decrease of its annual ~ 4 billion L.E. wood import value by using its 72 million tons of agricultural residues!

Bio-fiber Plastic Composites

Eng. Ayman Abdul-Wahab

With the impending environmental crisis, the whole world is witnessing a shift from non-renewable (e.g., metals and plastics) to renewable (e.g., wood) resources. Being located in an arid zone, Egypt has meager wood resources. Therefore, it is significant to direct research to find local resources that could serve as a substitute for wood.

Extensive work has been conducted to determine the mechanical and physical properties of molded products from cotton stalks, as a secondary product resulting after collection of cotton crop. As far as mechanical properties are concerned, these properties significantly surpass the corresponding values for particleboard.

Therefore, the objective of the research is to determine the appropriate conditions of manufacture of molded products from cotton stalks that could be used as a substitute for wood.

The specimens of molded products have been made by using urea-formaldehyde resin with percentage 10%, 20%, and 30% at 160 °C. The specific pressure ranged from 100 to 200 kg/cm^2 with press cycle time ranging from 8 to 12 minutes.

For the determination of the mechanical and physical properties of molded products, specimens were prepared according to DIN standards to conduct the following tests: static bending, internal bond, hardness, thickness swelling after 2&24 hours, and water absorption after 2&24 hours. The results of tests show that, the mechanical and physical properties of cotton stalks molded products significantly surpass the corresponding values for particleboard. The statistical analysis has been made using SAS and MSTATE programs. Moreover, it was possible to determine the appropriate conditions for manufacture of these molded products.

Proceeding from the aforementioned results, it is possible to recommend the use of cotton stalks molded products not only as a substitute of wood, but also as a substitute for non-renewable resources (e.g., plastics).

Awareness, Research & Training

New Master of Science Program: Integrated Water Resources Management (for Arab and German young professionals)

Prof. Dr. Hartmut Gaese, Executive Director, Cologne University of Applied Science
Institute for Technology in the Tropics, Cologne, Germany
Co-Speaker: Prof. Nader Ragheb Mitry, Professor of Chemical Engineering, National Research Center

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Water resources, indispensable basis for development, food supply and health, become ever scarcer and more polluted.
The concept of Integrated Water Resources Management (IWRW) offers solutions to the water crisis in linking water to other vital resources. It regards the whole water cycle in connection with human interventions as the basis for sustainable water management.
Worldwide exists a high and growing demand for experts adequately trained in the concepts of IWRM.
Next to the technical and managerial knowledge related to water resources, these experts should also be familiar with the practices of project funding and international cooperation. Bilateral projects between Germany and Arab countries need experts who are familiar with the culture, language and politics of both sides and are well trained in intercultural communication.
The objective of the M.Sc "IWRW" is to form such experts and to promote the concept of IWRM within the context of German-Arab cooperation.

Sustainable Energy through awareness raising at the local level

Dipl.Ing Architect Wolfgang Mayer, Resident Representative Hanns-Seidel-Foundation, Cairo, Egypt

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The renewable energy industry in Egypt is not developed like in other Arab countries.
It requires the need of community support.
In cooperation with the Nile Centers, established in all Governorates of Egypt and belonging to the State Information System of the Ministry of Information, Hanns-Seidel-Foundation develops with various expert on the field of renewable energy training programs for young representatives of the local communities on new and renewable energy issues and applications, including programs on installation, operation and maintenance of systems like solar water heaters for domestic use and the use of biogas in rural areas .
Solar hot water heaters we find around the Mediterranean Sea providing millions of people with hot water for various applications. With the improvement in technology, it has become one of the most reliable heating sources found today.
Because of the substitution of energy here in Egypt, this system is not well known to local people. Increasing the prices of conventional energy, the investment for solar heater will become attractive.
Hanns-Seidel-Foundation is supporting local initiatives on this field and is promoting the use of this technology. By training young people they will have the chance to find new jobs in the field of a sustainable technology.
The technology for biomass use in rural areas is simple and cheap. With support in financing and training programs on installations the HSS promote the reuse of biological waste as a source of energy.

Drainage Water Reuse

Manar Fayyad, Professor of Analytical and Inorganic Chemistry at the University of Jordan, Jordan

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Water scarcity is a growing global problem challenging sustainable development and expansion of cultivated areas to meet increasing food requirements. Egypt is one of the countries facing great challenges, due to its limited water resources represented mainly by its fixed share of the Nile water, and its aridity is the general characteristics of the country.

The agriculture sector is the largest user of water in Egypt with its share exceeding 80% of the total demand for water. In view of the expected increase in water demand from other sectors, such as municipal and industrial water supply, the development of Egypt's economy strongly depends on its ability to conserve and manage its water resources.

Efficient and effective use of all water resources in Egypt requires the formulation and implementation of an appropriate water sector policy. The Ministry of Public Works and Water Resources (MPWWR) is formulating a national water policy for the 21st Century to face the challenges of water scarcity. The policy's overall objective is to utilize the available conventional and non-conventional water resources to meet the socio-economic and environmental needs of the country. An assessment of water resources has been made. As a result of this analysis, a preliminary setting for various policies has been determined. The formulated policy focuses on three major aspects: demand management, resources development, and environmental protections Strategy options to be considered are:

- Conservation projects in the upper waters of the Nile Basin
- Recycling Nile aquifer water
- . Recycling drainage water
- . Recycling wastewater after treatment
- . Utilization of desert groundwater
- . Cost recovery based on cultivated area and type of crop
- . Harvesting of rainfall
- . Improvement of water quality
- . Limitation of the rate of land reclamation
- . Raising public awareness of the water problem.
- These options should be integrated into the generally accepted National Water Policy for Egypt.
- The means that such policy achievements and successes must be presented through the following programs:
- . Public awareness,
- . Continuous monitoring and evaluation,
- . Improvement of water resource management,
- . Enforcement of laws and decrees,
- . International cooperation and
- . Use of modern technologies in water resource management research and development.

Reuse of Agricultural Drainage Water

The strategies for drainage water reuse include the following measures:

- . Increasing the reuse of drainage water from about 4.5 BCW/year to 7.0 BCM/year by year 2000 and to 9.0 BCW/year by year 2017 with average salinity of 1170 ppm. This could be achieved through implementing several projects to expand the reuse capacity at different

areas. Main future projects include the El-Salam canal project, the El-Omoom and El-Batts drainage project;.

- Improving the quality of drainage water especially in the main drains;
- Separating sewage and industrial wastewater collection systems from the drainage system;
- Draining 50% of the total generated drainage water in the delta into the sea to prevent seawater intrusion, and to maintain the salt balance of the system;
- Implement an integrated information system for water quality monitoring in drains using the existing data collection network after updating and upgrading; and
- Continuous monitoring and evaluation of the environmental impacts due to the implementation of a drainage water reuse policy especially on soil characteristics, cultivated Crops, and health conditions.
- Reuse of Sewage Water after treatment (Within the national programme for safe use of treated sewage water for a forestation, planting Jatropha has been achieved in upper Egypt (Luxor Governorate) by using treated sewage water).
- The future policy for using sewage water can be summarized as follows:
- Increase the amount of secondarily treated wastewater use from 0.26 BCM/year to 2.8 BCM/year by 2001 and to 4.5 BCM/year by 2017;
- Limit the use of treated wastewater to cultivated non-food crops such as cotton, flax, and Trees;
- Separate industrial wastewater from domestic sewage, so that it would be easier to treat Domestic sewage with minor costs and avoids the intensive chemical treatment needed for industrial wastewater treatment.

Envir nment 2007

Market Information

1.1 Profit-maximization

Using Environmental and renewable energy technologies enhances in medium term the profitability of businesses and makes them globally competitive. Innovative technologies can greatly reduce production costs through saving or rationing energy and other raw materials. This is especially important since oil and gas prices are now on the rise. Complying with European and international environmental legislation is essential for Egyptian exporters, as 90% of internationally traded goods are subject to environmental standards. Compliance provides Egyptian companies with direct access to European and US markets. Companies which produce particularly environmentally-friendly can be awarded eco-labels. This ensures growing sales in foreign markets, as European and US consumers are becoming increasingly aware of environmental standards.
Egypt has particularly promising prospects for the development of renewable energy technologies. Due to its significant endowment with renewable energy resources, Egypt has the potential to become a regional trading hub in the renewable energy technologies sector. Capacity building in solar and wind technologies may allow Egyptian suppliers and consultants to export equipment and services for renewable energy projects in the MENA region. Egypt even has the potential to export energy produced from regenerative resources. The government projects that 50% of Europe's energy consumption will be generated from solar and wind energy plants in the Middle East by 2050.
Industrialized countries also benefit from Egyptian companies' efforts to up-grade their technologies, as this provides European and US companies with a new export and investment market. The rapid growth of Egypt's economy results in growing demands for cleaner production and renewable energy technologies. Increasing production of these technologies will lead to economies of scale and the development and refinement of the material.

1.2 An Encouraging Legal Framework

The use of environmental and renewable energy technologies are strongly encouraged by the Government of Egypt. The Egyptian Ministry of Power and Electricity included the use of renewable energies in its national energy planning as early as in the 1980s. The New and Renewable Energy Authority (NREA) was founded in 1986; this arm of the Ministry of Power and Electricity acts as a focal point for expanding efforts to introduce and develop solar, biomass and wind power generation. The Authority's goal is to increase the proportion of power generated by renewable energy resources – excluding hydro energy power, which cannot be extended any further – to three percent by the year 2010. Egypt is an active member of REN 21, the Renewable Energy Policy Network created at the Bonn 2004 Renewable Energies Conference. In addition, Egypt has hosted the third Middle East and North Africa Renewable Energies Conference in June 2006.
Providers of other environmental technologies such as water treatment and waste management systems will also benefit from the government's increasing concern for environmentally-friendly production. The first Environmental Protection Law was enacted in 1994 (Law 4) under the Environmental Action Plan (EAP). Thanks to the pressure of a growing environmental movement, the Egyptian Ministry of State for the Environment was established in 1997. Since then, the government provides strong incentives for the introduction of cleaner production technologies. All new industrial projects, for example, have to be evaluated on the basis of an Environmental Assessment Plan. The second National Environmental Action Plan (NEAP) was ratified in 2002. The plan recognizes that Egyptian exports can only be competitive if they are produced environmentally-friendly. The measures proposed under this plan, including public-private partnerships for up-grading production technologies, setting up an integrated waste management system and reforming the production and delivery of drinking water, are scheduled to be completed in 2017.

21, Soliman Abaza St., off Jamet el Dowal El Arabia St., Mohandessin | Tel. 0020 2 336-8153 | Fax 0020 2 336-8786
E-Mail: magicx@ahk-mena.com

1.3 Sustainable growth

The exploitation of resources will be at the origin of sustainable growth in Egypt and the MENA region. Egypt's oil reserves are expected to be exhausted in 14 to 15 years. Staggering increase in the nation's total power requirement from the burgeoning Egyptian population and economy all the more tightens Egypt's fossil fuel reserves. Hydropower generated by the Nile has already reached its optimum output and can not be further developed.
Egypt and other MENA countries can thus gain enormously from energy-saving and exploiting renewable energy resources. Renewable forms of energy allow the least-cost, sustainable and reliable supply of energy for the region. By using more renewable resources for domestic consumption, Egypt can expand its oil and gas exports, boosting export earnings.
The investment in Egypt by companies from the industrialized countries helps to upgrade Egypt's infrastructure with regard to new power generation plants (wind, solar), transport systems and sewage treatment plants and create new jobs. The technology transfer resulting from the initial investment will encourage the Egyptian private sector to become active in Environmental and renewable energy technologies. More generally, the investment will strengthen the Egyptian economy and may become a point of departure for foreign investment in other sectors.

2. Environmental Technologies and Services

A number of growing environmental sectors provide foreign companies with highly profitable investment opportunities in Egypt.

2.1 Water & Waste Water

Cost of water production and distribution, for both for irrigation and domestic and industrial use has been escalating over the past years. Water delivery is no longer considered a free service. It is becoming cost recovery service that will be dealt with in a public-private-partnership manner. That issue is being compounded by the ever growing population and resulting urban and agricultural developments throughout the country. More water use is naturally resulting in more wastewater production hence need for more wastewater treatment plants.

The degradation of water quality is a major problem in Egypt, the most populous country in the Arab world. Population density and growth, industrial growth and the lack of sanitary systems all contribute to raising demand for drinking water and waste water management. In addition, Egypt depends on artificial irrigation and its diversified industry is in growing need of water management systems for the production process, cooling water and sewage plants. Industrial water needs are expected to rise from 3.6 BCM/year in 2000 to 5.5 BCM/year in 2017, bringing along a greater need for waste water treatment. Waste water flows nowadays reach 3.5 BCM/year, but only half this amount receives treatment.
The Egyptian water technologies market began its upsurge in 2004, thanks to the confidence which Egypt's reform-oriented government enjoys. Trust of bi- and multilateral donor agencies and developments funds in Egypt's environmental projects increased, making local financing components for water infrastructure projects easily accessible. The Kreditanstalt für Wiederaufbau greatly contributes to the financing, which makes German companies the leading beneficiaries of this development. The sewage plant in Kureimat, for example, is being built by a German firm. German companies can also benefit from creating consortiums with Egyptian firms active in the water sector.

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E-Mail: magicx@ahk-mena.com

2.2 Waste management

Waste management is another challenge which Egypt is currently tackling. With storing room for waste far insufficient, no recycling systems, improper transportation and the transmittance of diseases through rats and dogs, much of Egypt's waste is still being burned, affecting human health in an extremely negative way. After the privatization of the waste management sector five years ago, the Government of Egypt published plans for establishing a Solid Waste Management System. It continues conducting tests and explorations to identify potential landfills. Egypt's waste management industry is of increasing importance due to its growth potential and its reach in the 72 million inhabitants country.
The subsector of hazardous waste (produced in industry and the medical sector) seems best fit for foreign investment. Private and public companies' stuff needs to be trained in the handling of these substances. Furthermore, investment is needed in the subfield of recycling. Many companies have yet to comply with international environmental standards in order to export their products. Training in waste minimization, clean production and ecoefficiency can reduce production costs for these companies and make them more competitive in global markets. Consultancy is also a potentially growing branch, as few waste management consultants are established in Egypt. Foreign companies have lately benefited from joint ventures with their Egyptian counterparts. A truck engineer in Luxor, for example, was provided with technical expertise by a German company for the foundation of a garbage collection enterprise.

2.3 Air pollution reduction

Air pollution is yet another matter which worries Egypt's environmentalists as well as ordinary citizens. With 15 million inhabitants, the city of Cairo is by far the most polluted spot in the country. Sand, industrial sites, vehicles, burned garbage and industrial detritus contribute to the emission of fine particular matter (PM10) and carbon dioxides. This can potentially result in climate change, the salianation and inundation of the Nile and changes in rainfall patterns. Egypt is highly sensitive to these developments and strives to reduce carbon dioxide and greenhouse gas emissions. Especially entrepreneurs who wish to export are forced to comply with international and national emission standards. Articles 34 to 74 of law 1994/4, for instance, define thresholds for the air pollution that workers can be exposed to.
A growing number of companies and organizations are operating in the area of air protection in Egypt. There is, however, still need for equipment, testing and measurement systems, consultancy certifying and training. Only filtering and measurement equipment is produced locally so far. Once again, foreign firms can conclude contracts with local distributors for the delivery of equipment and technologies.

2.4 Environmental training and awareness

The major problem for Egypt's environmental protection program is a general lack of public awareness, although respecting environmental standards can provide Egyptian companies with easy access to foreign markets. Companies will be willing to change their production standards if they are aware of the economic gains from such reforms. We therefore witness a growing interest in technical workshops and trainings sessions about environmental standards and ways to attain them and environmental equipment and their handling.

2.5 Ecotourism

Another important growth sector in Egypt, although not directly linked to technology, is ecotourism. This form of sustainable tourism aims at safeguarding unique natural and water resources and enables tourists to escape from the stress and hustle of the modern world. Ecotourists enjoy the beauty and serenity of nature while trekking, hiking, camping, canoeing or fishing.

Egypt possess vary divers ecosystems – deserts, seas, oasis, rivers valleys and the Sinai mountains – and thus has a great potential for ecotourism. The WTO estimated in 2005 that nature based tourism represented 15% of tourism expenses worldwide, and it is a well-know fact that ecotourists are generous spenders. Foreign companies can significantly contribute to ecotourism development in Egypt by cooperating with local tour operators to offer travel packages. The provision of services and consultancy to Egyptian operators as well as the promotion and marketing of ecotourism also offer profitable business opportunities.

3 Renewable Energy

Egypt and the whole MENA region have tremendous potential for the use of renewable energy technologies especially wind and solar power generation. Egypt's energy market is expected to grow by 7-8% annually until 2010. Almost all the solar, wind and biomass technologies and applications have been demonstrated and field-tested in Egypt.

3.1 Wind energy

Wind energy is the most developed type of renewable energy resources in Egypt, where the phase of demonstration and pilot projects has already been surpassed. The wind atlas for the Gulf of Suez finds that the Red Sea provides especially favorable conditions for wind parks, with an average wind speed of 10 m/s. The power generation potential has been estimated at around 3,000 MW. Another promising area is the desert of Oweinat, were wind speed reaches 7 m/s.
Encouraged by this obvious potential, the first wind farm with a capacity of 400 KW was established in Ras Ghareb on the Red Sea coast in 1988. A second wind farm was established in Hurghada in 1992. It was first connected to the local distribution network of the city and later to the national grid. In 2001, another farm was built at Zafarana in a German, Danish and Egyptian joint venture. The second and third extension phases with a total of 47 MW were awarded to joint bidders Vestas Deutschland GmbH, ABB New Ventures and Kolay Engineering. Vestas has thereafter completed the fourth extension phase financed by a € 75 million loan from Germany's KfW Kreditinstitut für Wiederaufbau. Plans project the generation of 850 MW from the farm by 2010.
Further extensions of Egypt's wind farms are constantly being negotiated. Although the delivery of wind turbines is still controlled by a handful of multinational companies, small and medium enterprises are needed for the construction of towers, the establishment of control systems and the operation and maintenance of wind energy plants.

3.2 Solar energy

The solar atlas, which NREA has developed for Egypt, demonstrates that annual global radiation varies between 1900-2600 kWh/m²a, which is an extra-ordinarily high level. Solar systems have been deployed in Egypt for domestic water heating, industrial process heat applications and agricultural drying. Six local manufacturers are active in components and systems production and installation. As to solar thermal electricity generation, the NREA initiated a program for Bulk Renewable Energy Electricity Production (BREEP) in 1994. The first solar thermal electricity plant in Korimat, financed by the World Bank's Environmental Facility Operational Program, is expected to generate 150 megawatts by 2008. The government promotes investments of this type by providing free land for solar thermal plants. Investment opportunities, however, lie not only in the field of large scale power generation plants but also in locally limited applications. Photovoltaic systems, for example, can be used to supply isolated rural areas with electricity for light and running water or provide air-conditioning in remote resort towns. The higher costs of these innovative technologies will be compensated by savings in network construction. Another interesting application is the supply of security fences or the lights in a sea port with solar generated power, which protects these installations from power outages.

3 3 Biomass energy

Several R&D activities have been carried out mainly in the areas of biogas production, stoves improvement and small scale grassfires. Small-scale biogas plants with a digester volume ranging from 5 to 50 m3 have been tested. NREA is presently utilizing its facilities for further studies and testing activities. Consultancy by companies experienced in biomass applications and the provision of testing and measurement equipment are highly welcomed.

4. Emission Trading

The Clean Development Mechanism (CDM) is one of the Kyoto Protocol programs for the reduction of greenhouse gas (GHG) emission. Under the CDM, an industrialized country with a GHG reduction target can invest in a project in a developing country without a target and claim credit for the emissions that the project achieves. German companies, for instance, invested in a wind power project in Egypt, thus replacing electricity that would otherwise have been produced from coal. Egypt then sold the credit for the emissions that have been avoided to Germany which, in turn, used them to meet its own GHG reduction target.
Both sides benefit from CDM projects. For industrialized countries, the CDM greatly reduces the cost of meeting the reduction commitments that they agreed to under the Kyoto Protocol. Developing countries receive financial and technical assistance in upgrading their energy infrastructure and can sell certified emission reductions for profit. This diversification of external earnings will reduce oil-exporting countries' dependence on the highly volatile world oil price.
Egypt is striving to develop efficient, transparent and strong criteria and institutions for the marketing, approval and control of CDM projects, thus making the country attractive for international CDM investors and ensuring the efficient implementation of CDM projects. The private sector will play an important role in this process, be it as project hosts, in project design and implementation, or in the verification of emission reductions. Donors and governmental authorities are the potential facilitators of CDM projects. Environment 2007 therefore intends to increase awareness and bring together businesses and the various financing institutions in order to ensure their full participation in the CDM process.

5. Funding

Obtaining financing for investments in renewable energies and other environmental sectors is facilitated by the Egyptian governments' investment promotion and a wide range of donor institutions. As to renewable energy technologies, the first agreements with international consortiums for constructing and operating power plants according to private operator models such as BOOT projects (Build - Own - Operate - Transfer) have already been finalized, and more extensive foreign investment is anticipated. The visit of the German Minister of the Environment, H.E. Sigmar Gabriel, to Egypt in June 2006 led to the creation of the German-Egyptian Renewable Energies Association. Endowed with an initial budget of € 1 million, this association encourages German-Egyptian cooperation and technology transfers in the field of renewable energies.
Several donors, such as the Kreditanstalt für Wiederaufbau, UNDP and GTZ, make funds, including a mixture of grants and soft loans, available for consultancy and the acquisition of cleaner technologies and its required machinery and equipment. This makes Egypt the largest EU aid recipient in the Mediterranean basin. Along with the World Bank and other donor institutions, the government also initiated Egypt's Pollution Abatement Project (EPAP), which provides polluting industries with financial assistance to upgrade their production techniques. EPAP's first phase ended in 2004, but in March 2006 the World Bank approved a € 16 million loan for re-launching the project. This promise triggered another € 115 million in concessionary lending and grants from various development agencies and private donors. These funds apply to both mainstream production technologies as well as end-of-the-pipe waste management technologies.

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Tel.: 00 20 2 3368 183, ext. 514
Fax: 0020 2 3368 786
E-mail: magicx@ahk-mena.com
Website: aegypten.ahk.de

Trade & Environment

Opening statement of
Dr. Eng. Nader Riad
Chairman CEEBA

- **Your Excellency Engineer Rachid Mohamed Rachid, Egypt's minister of trade and industry**
- **Distinguished panelists**
- **Ladies and Gentleman**

It is a pleasure to be here today for this session on Trade and Environment.

When ministers agreed in Marrakesh in 1994 that a Committee on Trade and Environment should be established, they recalled, among other things, the Rio Declaration, Agenda 21 and the Preamble to the Agreement establishing the WTO itself. Thus, the WTO (TRADE), and UNEP (ENVIRONEMNT) share common objectives.

The Singapore Ministerial Conference noted that the breadth and complexity of the issues showed that further work was needed on all items of its agenda. I think that these meetings like today's have served to enhance understanding of the relationship between the trade and environment agendas, as well as grasp of the direction of the multilateral trading system.

Building on these sessions will help us to maximize synergies and reduce potential tensions.
In the GATT, the word "environment" was seldom heard in trade circles (except when they talked about "the trading environment").

The phrase “sustainable development” was in nobody's vocabulary until it was coined by the Brundtland Commission in 1987, yet it served as the basis for the progress made at the UN Conference on Environment and Development in Rio in 1992.

I think the placing of trade and environment issues on the WTO's agenda and the introduction of sustainable development as one of the WTO's aims has helped to raise awareness internationally and nationally of the need to maximize synergies between trade and environment policies.

But first, we must clarify what is the Issue? Is it Environment affecting trade? Or it is Trade affecting environment?

Second where did it come from?
Environment in GATT was a non-issue for 40 years. Then came elephant ivory issue, Rio, Tuna-Dolphin, illegal shark hunting and the rapid emergence of the Trade-Environment agenda. And now WTO-CTE, Doha and environmental negotiations

Impact of environment on trade
The “trade first” mentality of most negotiators as Environment poses a Northern advantage as it restricts Market access “green protection”. Not to forget the south right to pollute and to over-exploit resources as the north has already done for decades to develop.

Impact of trade on environment
The list is long. It sways from Product effects, to Scale effects, to Structural effects, to direct effects. Besides Transport effects, and else. These issues are regulated by the Multilateral Environmental Agreements: mainly Basel, Biodiversity, Kyoto. Yet newer issues are emerging such as Growth hormones, Genetically Modified Organisms

Today, there is an Improved understanding of the trade environment link**.** Environment has become an international consensus; as well as a consumer demand.

Now its time to hear our Minister, H.E Rachid Mohamed Rachid, definitely his intervention would be most important for all of us.

Conclusions and recommendations

1. Decision-makers need to consider socioeconomic impacts (costs) of regulations on:

Small enterprises v/s large enterprises
Different sub-sectors in an economic sector
Output v/s exports v/s imports

Policy instruments need to be well targeted to meet policy objectives.

2. What is on the WTO Agenda is not necessary what is most important for developing countries:

proactive efforts needed to shape the agenda

3. Capacity building in standard-setting needed to:

Establish (or question) scientific justification
Ensure transparency & notification (rights & responsibilities)
Strengthen conformity assessment

CLEANER PRODUCTION

Opening statement of
Dr. Eng. Nader Riad
Chairman CEEBA

- **Your Excellency Engineer Rachid Mohamed Rachid, Egypt's minister of trade and industry**
- **Distinguished panelists**
- **Ladies and Gentleman**

It is a pleasure to be here today for this session on a topic that is very close to my heart, namely Cleaner Production

But first we must agree that Cleaner production is not just technology and eco-efficiency.

It is a philosophy of manufacturing. It is an overall approach to industrial management to reduce the use of energy, time and material resources and also to minimize waste and pollution to the least. It involves a shift in environmental protection from a "down stream" approach where pollution is managed after it is created, to a "up stream" approach where the creation of pollution is avoided or minimized to the least at the source. What is called waste minimization. That is naturally besides reuse and recycling growing trends.

In aiming to build a sustainable green society, and to ensure that future generations can continue to live and prosper in a healthy environment, The government of Egypt as well as our businesses do recognize that a strong regulatory framework and an `down

stream' focus on pollution control are no longer sufficient besides being non economic
Today, we operate in a globally competitive world which demands cheaper and smarter ways to produce, as well as achieve our environmental goals. We need to integrate the environment into our economic systems instead of considering the environment only as an afterthought.

'Cleaner production' is the overall approach to business management. It involves changing attitudes and rethinking products and processes. However, cleaner production is not only about manufacturing and production. It covers all processes, products and services and their environmental impacts, including planning and design influence.

In many cases it has been proven that organizations can actually protect the environment better *and* EVEN save money. By applying cleaner production approaches they can discover how to increase efficiency and reduce waste and pollution. Modest commonsense improvements or changes in production can considerably lead to reduce environmental problems and repay costs in less than a few years, with ongoing profits thereafter.

More important, it is the way to be eco-labeled, the gateway to expanding exports and sales which we will discuss in the following session

I would grasp the opportunity and call for an Egyptian eco–labeling distinction to be put on certain products as a superlative quality recognition as organized in Europe under
Blue Angel, Blue Bird, Blue Rose or else.

Now its time to hear our Minister, H.E Rachid M. Rachid

Definitely his moderation would be most significant