

4th Arab Cleaner Production Workshop



March 8 - 10, 2010
Cleaner Production Unit (CPU)
Royal Scientific Society (RSS)
Amman - Jordan



1. Introduction

The Cleaner Production Unit (CPU) in the Environmental Research Center (ERC) at the Royal Scientific Society (RSS) hosted the 4th Arab cleaner production workshop in Amman during the period 8 - 10 of March, 2010. This workshop gathered Arab participants from Mashreq and Maghreb countries.

The main objective of such gatherings is to spread the knowledge, know-how and experience in CP and CP-related subjects and most importantly to build a network of collaboration between the participating countries.

Diverse key environmental topics were discussed during this year's event including: water health and safety, climate change, risk assessment, life cycle assessment, environmental audit and cleaner production, cleaner production in healthcare and sustainable tourism. All these subjects and tools are important and contribute to the sustainable development of a country.

The overall objective of this year workshop was to present and explore ideas and needs on how improving resources management via CP which can effectively contribute to adapt to climate change and eventually lead to setting proper environmental policies.

The workshop was attended by professionals from different industrial sectors, environmental consultants, academia, and governmental and non-governmental officials from Arab countries including Jordan, Palestine, Syria, Egypt, Lebanon, Sudan, Tunisia, Libya, Algeria, Turkey and Iran. There were also some national and international guest speakers from Switzerland, UNIDO Austria, and France. Annex 1 shows the participants names and addresses.

The workshop was undertaken in cooperation with the University of Applied Sciences Northwestern Switzerland (FHNW) and Sustainable Business Associates (SBA) with the financial support of the Swiss State Secretariat for Economic Affairs (seco).

2. Background

In 2004, an agreement was signed between the governments of Jordan and Switzerland to implement a 3-year cleaner production project in Jordan. A Swiss consortium consisting of the FHNW and SBA was selected by the seco to be the Swiss Reference Centre (SRC) for the project implementation. ERC of RSS was appointed as the project partner to implement the project in Jordan.

The overall objective of the CP project is to contribute towards a sustainable industrial production mode in Jordan and increasing the long-term competitive position of enterprises while reducing their environmental pollution by applying cost-effective measures and technologies. Jordan shall thus be in a better position to benefit in a sustainable manner from a global economy.

As of April 2004, a specialized CPU has been established at RSS serving the different sectors in Jordan (e.g. industrial, tourism, hospitals) by providing training, and CP assessment and services with the support of the SRC. A number of assessments have

been implemented and positive improvements have been realized at the enterprise level, see www.cp.org.jo.

An external evaluation carried out in March 2007 on behalf of seco concluded that the project has been very successful with good results, a well managed execution and a good impact, leading with limited resources in short time to excellent outcomes. In accordance with seco's policy on international cooperation and development, the Jordanian Environmental Policy Framework and RSS institutional and business strategy, seco decided to continue the project for a second phase (September 07 to December 09), with the aim to focus on introducing new CP related topics to further build up ERC competence and thus develop new business opportunities in CP related areas.

3. Opening session

Mr. Rafat Assi, ERC Director and CPU director started his opening speech by welcoming participants and highlighting the main themes, objectives, workshop program and activities. He noted that the workshop will last for three days and will stand from 9 A.M. until 4 P.M., where it will include six sessions on different environmental topics: water health and safety, climate change, risk assessment, life cycle assessment, environmental audit and cleaner production, cleaner production in healthcare and sustainable tourism, see Annex 2: workshop program.



4. Introduction to first day themes

A. First session: Water, Health and Safety

Water is the lifeblood of the environment, essential to the survival of all living things. However, it is one of those things that people usually take for granted until it is either gone or unsuitable to drink. Water is a limited resource. Threats to drinking water quality come from animal and plant production agriculture, industrial activities and even activities around our businesses, residences, recreational areas and transportation systems.

High quality water, in the right quantity at the right place at the right time, is essential to health, recreation, and economic growth.

- Ø **Session presenters:** Nisreen Al Hmoud, Ala'a Rezeq, Ziad Khalifa, Taher Kaddar, Chaden Diyab, Maysoun Bseiso, and Issam Al Khatib.



- § Nisreen Al Hmoud: From RSS delivered a presentation entitled "Water Degradation as a Human Security Challenge in Jordan". During this presentation she described the water situation in Jordan and stressed on the importance of having a proper system for health risk management to avoid spread of diseases as a result of water quality degradation.
- § Ala'a Rezeq: From the Royal Marine Conservation Society of Jordan, delivered a presentation entitled "Aspects of Water Quality and Pollution Control in Wadi El-Esh Industrial Area and Russiefa". In his presentation he mentioned how much could the impact of industrial activities adversely affect groundwater quality and he stressed on the importance of having a treatment unit for the wastewater as well as having a regular monitoring and safety plan.
- § Ziad Khalifa: From Basel Convention Regional Center for Training and Technology Transfer for the Arab States in Egypt delivered a presentation entitled "Role of the Basel Convention Regional Centers in Implementing the Environment Protection and the Hazardous Wastes Management".
- § Taher Kaddar: From Al Baath University in Syria (Faculty of Chemical and Petroleum Engineering), delivered a presentation entitled "A study of International Environment Management Systems ISO 14000 Influence at Environment Performance in Textile Industries".
- § Dr. Chaden Diyab: From Industrial Environment & Sustainability, Paris - France, delivered a presentation entitled "Green Innovative Remediation methods". Dr. Chaden talked about remediation methods and technologies that help to enhance cleanup project's environmental, social, and economic footprints.

- § Maysoon Bseiso: From the Health Ministry in Jordan, delivered a presentation entitled "Healthcare Facilities Sector in Jordan: Situations and CP Potentials".
- § Issam Al Khatib: From Birzeit University / Institute of Environmental and water Studies / Palestine, delivered a presentation entitled "Solid healthcare waste Management at primary healthcare centers and private clinics in Jenin District".



B. Second session: Risk Assessment

Risk Assessment: Is a qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and / or use of specific pollutants.

- Ø **Session presenters:** Pablo Lerena, Omar Bdour, Salah Abu Salah, and Jehan Haddad.
 - § Pablo Lerena: From Swiss Safety Institute Process Safety (SWISSI), Switzerland delivered a presentation entitled "Needs and Benefits for Risk Assessment and National Risk Profile".
 - § Omar Bdour: From Al Sayegh Group, Jordan delivered a presentation entitled "Case Study on the Chemical Storage Tank in Aqaba".
 - § Salah Abu Salah: From RSS delivered a presentation entitled "Case Study on Risk Assessment from Switzerland". He showed how to model using EFFECTS Software. Also, he mentioned that some easy and simple measures can support the safety of the public.

- § Jehan Haddad: From RSS delivered a presentation entitled "Case Study on Risk Assessment from Spain" .

5. Introduction to second day themes

C. Third session: Climate Change

For over the past 200 years, the burning of fossil fuels, such as coal and oil, and deforestation has caused the concentrations of heat-trapping "greenhouse gases" to increase significantly in our atmosphere. These gases prevent heat from escaping to space. As the concentrations of these gases continue to increase in the atmosphere, the Earth's temperature is climbing above past levels. The Earth's average surface temperature has increased by about 1.2 to 1.4°F in the last 100 years. Most of the warming in recent decades is very likely the result of human activities. Other aspects of the climate are also changing such as rainfall patterns, snow and ice cover, and sea level.

- Ø **Session presenters:** Rafat Assi, Samah Al-Jabari, Hussein Badarin, Stefan Denzler, and Nisreen Khamash.



- § Rafat Assi: From RSS delivered a presentation entitled "Overview of Climate Change Situation in Jordan".
- § Samah Al-Jabari: From Palestine Polytechnic University delivered a presentation entitled "Biogas Production".
- § Hussein Badarin: From Ministry of Environment delivered a presentation entitled "Challenges beyond Copenhagen".

- § Stefan Denzler: From seco delivered a presentation entitled "Carbon Finance: Opportunities for Cities".
- § Nisreen Khamash: From Jordan Institute for standard and metrology (JISM) delivered a presentation entitled "Emerging Climate Change ISO Standards (Carbon footprint) ".

D. Fourth Session: Environmental Audit and Cleaner Production

***Environmental Audit (EA):** Is a systematic, documented, periodic and objective evaluation of the performance of the organization, management system and processes designed to protect the environment.*

As part of the cooperation with the University of Applied Sciences Northwestern Switzerland (FHNW) and the Royal Scientific Society (RSS) 2 Swiss graduate students Mr. Silvan Kaufmann and Mr. Philipp Bächtold were given the opportunity to complete their duties as a civilian workers, by operating as project workers for a total duration of 181 days. Part of their duties was to support the Cleaner Production Unit (CPU) in the testing and completion of environmental Audit guidelines, check-lists and to design an EA software which facilitates the EA assessment and reporting process.

Eng. Mohammad Mosa together with Eng. Philipp Baechtold presented the outcome of their work during this workshop.

- Ø **Session presenters:** Philipp Baechtold, Mohammad Mosa, Majid Saraidarian, Souhair Abu-Elela, Maher Al-Jabari, Nabila Ali, Herzi Ahmad, Bassam Hayek, Kaouther Machta, Ramzi Halouni, and Kamal Mohammedi
- § Mohammad Mosa and Philipp Baechtold delivered a presentation entitled "Environmental Audit - Tool and Database".
- § Majid Saraidarian: From Iranian Society for Green Management delivered a presentation entitled "Role of Environmental Management Accounting in Cleaner Production".
- § Souhair Abu-Elela: From the National Research Center in Egypt delivered a presentation entitled "Environmental Audit and Pollution Prevention Opportunities in Egyptian Oil and Soap Industry".
- § Maher Al-Jabari: From Palestine Polytechnic University delivered a presentation entitled "Reduction of Gas Emission from Baking of Cutting Wheels".
- § Nabila Ali: From Technical Service Directorate – Tartous / Syria delivered a presentation entitled "Environment-Economic Analysis of the Degradation in Syrian Coastal Zone Caused by Tartous Cement Company".

- § Herzi Ahmad: From Tunisia delivered a presentation entitled "Tunis International Centre for Environmental Technologies (CITET)".
- § Dr. Bassam Hayek: From El Hassan Science City / Jordan delivered a presentation entitled "El Hassan Eco-Tech Park: Concept and Key Features, Towards Sustainable Consumption & Production".
- § Kaouther Machta and Ramzi Halouni: From Tunisia Company for Studies and Development of Sfax City's Northern Coasts, delivered a presentation entitled "Taparura Project".
- § Kamal Mohammedi: From Algeria delivered a presentation entitled "Small Scale Water Desalination Powered by Autonomous Smart Hybrid Systems Integrating Renewable Energy".



6. Introduction to third day theme

E. Fifth Session: Cleaner Production and Tourism Sector

Tourism facilities hold tremendous scope to adopt environmentally responsible practices and to develop in a more sustainable manner. Cleaner production has much to offer the hospitality industry. It is easy to adopt, easy to implement and the environmental and financial savings are extremely attractive. It does however require a paradigm shift among managers and employees to ensure that the objectives are not only sustained in the workplace, but consistently upheld, monitored and improved. For cleaner production to truly make a lasting difference in the tourism sector it needs to be entrenched as a standard practice- in training establishments, hotels, tourism and hospitality associations, and in government bodies dealing in tourism.

Ø **Session presenters:** Smail AlHilali, Mohammed Dabbas, Muhieddin Tawalbeh, Necat Ozgur, and Fredy Dinkel.

§ Smail AlHilali: From UNIDO delivered a presentation entitled "Corporate Social Responsibility and CP in Tourism Sector in Eastern Europe".

§ Eng. Mohammed Dabbas: From Ministry of Energy and Mineral Resources delivered a presentation entitled "A First Ever Green Community in Jordan".

§ Eng. Muhieddin Tawalbeh: From the National Energy Research Center delivered a presentation entitled "Potential of Energy Efficiency and Introducing Renewable Energy in Jordan's Hotels".

§ Eng. Necat Ozgur: From Environmental Protection Agency for Special Areas, Turkey delivered a presentation entitled "Photo-Voltaic Excitation System for the Tour Boats at the Dalyan Channel".

F. Sixth Session: Life Cycle Assessment

Life cycle assessment (LCA) is a methodology to analyze all environmental burdens (consumption of natural resources, emissions to air, soil and water) of a product or service over its whole life cycle from cradle to grave. LCA is a relatively young technique; starting in the seventies / eighties, it became well-known in the nineties and today it is accepted as the best methodology to evaluate the overall environmental impacts.

The most common reasons for companies to apply LCA are for product improvement, support for strategic decisions and benchmarking. LCA is also known to be an important tool for decision-making and a basis of communication with external bodies such as government, public and stakeholders.

§ Fredy Dinkel: From Carbotech AG, Switzerland, delivered a presentation entitled "Environmental and Economic Analysis of the Different Sectors in Jordan with a Special Focus on Water Use".

Following each session, the presenters were asked to take the panel for 15 to 20 minutes to answer the audience questions, comments and to suggest some new ideas on the discussed subjects and also to consider the participants feedback on possible future means of cooperation among the participating countries with national and international organizations.

7. Closing Session

On the last day of the workshop and during the closing session Mr. Rafat Assi, ERC Director presented the CPU achievements and success stories through the whole period of the project. This was followed by a presentation from Mr. Smail Al Hilali, from UNIDO entitled "UNIDO-UNEP Network for Promotion and Implementation of

Resource Efficient and Cleaner Production (RECP) in developing and transition countries". Finally Dr. Bassam Al Hayek and on behalf of HRH Princess Sumaya bint El Hassan started the closing ceremony and delivered the certificates with Mr. Roland Knobel, Deputy of Swiss Ambassador. During the closing ceremony Dr. Bassam pointed out that although the project funding has come to an end for sure the great success achieved through the Jordanian – Swiss partnership will continue to exist. Dr. Bassam has also thanked the Swiss partners and the Swiss embassy for their moral, technical and financial support.



After the closing session a closed meeting on Resource Efficient and Cleaner Production (RECP) program UNIDO-UNEP was held with several NCPCs directors.

List of Participants of RECP meeting

| Country | Participants |
|----------------|--|
| Egypt | - Adel Taha (Federation of Egyptian Industries - ECO) - Wafa Ismail (Federation of Egyptian Industries - ECO) |
| Jordan | - Rafat Assi (Royal Scientific Society - CPU) - Mohamad Mosa (Royal Scientific Society - CPU) |
| Lebanon | - Ali Yaacoub (Lebanese Cleaner Production Centre) |
| Palestine | - Maher Al-Jabari (Palestine Polytechnic University) |
| Tunisia | - Ahmed Herzi (Tunisia Cleaner Production Centre) - Hicham Mebrouki (Tunisia Cleaner Production Centre) |
| Switzerland | - Stefan Denzler (Seco) |
| UNIDO | - Smail Alhilali (UNIDO) |

During this meeting participants discussed how to map out a practical way forward to develop a regional RECP Knowledge Management System (KMS) for the Arab region. Mr. Stefan Denzler (seco) has also confirmed Swiss government support to the RECP KMS in the Arab region as a continuation of the support provided for the establishment of CP Centres and programmes in Egypt, Jordan and Morocco and the strengthening of CP Centre in Tunisia.

ANNEX 1

List of Participants

| Name | Country | Organization | Occupation | e-mail |
|-------------------------|-----------|---|--|--|
| Smail ALHilali | Moroco | UNIDO – Vienna | CP Specialist | s.alhilali@unido.org |
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| Insaf Abdallah Alawad | Sudan | Akhir lahaza newspaper | Translator and Editor | insafalawad@yahoo.com |
| Mohamed Wassim Elhani | Tunisia | ANCSEP | Sanitary engineer | Mohamed.wasim.etheni@rns.tn |
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| Name | Country | Organization | Occupation | e-mail |
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| Herzi Ahmad | Tunisia | Tunisian International Center for Environmental Technologies (CITET) | Main engineer | ae.ah@citnet.nat.tn |
| Kaouther Machta | Tunisia | Institut Supérieur des Etudes High Institute for Technological Studies of Sfax Tunisia | Research coordinator | kaouther.machta@isetsf.rnu.tn kaouther.machta@planet.tn |
| Ramzi Halouani | Tunisia | Company for studies and development of Sfax city's northern coasts | Site Manager / Ing. Geology & Environment | ramzi-halouani@yahoo.com r.halouani@seacnvs.com.tn |
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| Majid Saraidarian | Iran | Iranian Society for Green Management | President | Saraidarian@iran-gma.com |
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| Bachtold Philipp | Switzerland | University of Applied Sciences Northwestern Switzerland | Project worker | bachtold.philipp@gmail.com |

ANNEX 2
Workshop Agenda

Day 1 – Monday 8th March 2010

08:30 | Pick up from Hotel (Jerusalem International)

09:00 – 09:30 | Registration

09:30 – 10:00 | Workshop Agenda Walk Through

10:00 – 13:30 | Session 1: Water, Health and Safety

Water Degradation as a Human Security in Jordan

Dr. Nisreen Al Hmoud, Jordan

Prince Hamzah Oil Spill Combat Center

Mustafa Abu Aisheh, Jordan

Aspects of Water Quality and Pollution Control in Wadi El-Esh Industrial Area and Russiefa Municipality

Ala'a Rezeq, Jordan

Role of the Basel Convention Regional Centers in Implementing the Environment Protection and the Hazards Waste Management and Its Risks to the Environment and the Human Health

Dr. Ziad M. A. Khalifa, Egypt

11:00 – 11:30 | Networking Coffee Break (2nd floor)

International Solidarity for Simultaneous Energy and Water

Aicha Kafif, Morocco

Evaluation of the Toxicity and the Mutagenicity of Mararakech's

Selki Azeddine, Morocco

A Study of International Environment Management Systems Influence at Environment Performance in Textile Industries

Taher Kaddar, Syria

Green Innovative Remediation Methods

Dr. Chaden Diyah, France

Healthcare Facilities Sector in Jordan: Situations and CP Potentials

Maysoon Bseiso, Jordan

Solid Healthcare Waste Management in Primary Healthcare Centers and Private Clinics

Issam Al Khatib, Palestine

Discussion

13:30 – 14:30 | Lunch (RSS Cafeteria)

14:30 – 16:00 | Session 2: Risk Assessment

Needs & Benefits for Risk Assessment and National Risk Profile

Dr. Pablo Lerena, Switzerland

Case Study on the Chemical Storage Tank in Aqaba

Al Sayegh Group, Jordan

Case Study on Risk Assessment from Switzerland

Salah Abu Salah, Jordan

Case Study on Risk Assessment from Spain

Jehan Hadad, Jordan

Discussion

Day 2 – Tuesday 9th March 2010

08:30 | Pick up from Hotel (Jerusalem International)

09:00 – 12:00 | Session 3: Climate Change

Overview of Climate Change Situation in Jordan

Rafat Assi, Jordan

CDM in MENA Region: Opportunities and Prospects

Mohammed Al Zaroug, Libya

Biogas Production

Samah Al-Jabari, Palestine

Challenges Beyond Copenhagen

Hussein Badarin, Jordan

10:30 – 11:00 | Networking Coffee Break (2nd floor)

Carbon Finance: Opportunities for Cities

Dr. Stefan Deizler, Switzerland

Emerging Climate Change ISO Standards (Carbon footprint)

Nisreen Khamash, Jordan

Discussion

12:00 – 16:00 | Session 4: Environmental Audit and Cleaner Production

Environmental Audit - Tool and Database

Philipp Baechtold, Switzerland

Mohammad Mosa, Jordan

Role of Environmental Management Accounting in Cleaner Production

Majid Saraidarian, Iran

Environmental Audit and Pollution Prevention Opportunities in Egyptian Oil and Soap Industry

Dr. Souhair Abu-Elela, Egypt

Reduction of Gas Emission from Baking of Cutting Wheels

Dr. Maher Al-Jabari, Palestine

Environment-Economic Analysis of the Degradation in Syrian Coastal Zone Caused by Tartous Cement Company

Nabila Ali, Syria

Tunis International Centre for Environmental Technologies (CITET)

Herzi Ahmad, Tunisia

13:30 – 14:30 | Lunch (RSS Cafeteria)

El Hassan Eco-Tech Park: Concept and Key Features, Towards Sustainable Consumption & Production

Bassam Hayek, Jordan

Integrated Management of Solid Wastes, Energy and Water in Moroccan Universities

Mohamed Tahiri, Morocco

Taparura Project

Kaouther Machta, Tunisia

Ranzi Halouni, Tunisia

Small Scale Water Desalination Powered by Autonomous Smart Hybrid Systems Integrating Renewable Energy

Kamal Mohammedi, Algeria

Discussion

19:30 – 22:00 | Dinner (Reem Al Bawadi Restaurant)

Day 3 – Wednesday 10th March 2010

08:30 | Pick up from Hotel (Jerusalem International)

09:00 – 11:30 | Session 5: Cleaner Production and Tourism Sector

Corporate Social Responsibility & CP in Tourism Sector in Eastern Europe

Smail AlHilali, UNIDO

Dissemination of CP Technologies Among Egyptian Industrial Sector

Ahmed Kamal, Egypt

GRECO Initiative

Virginia Alzina, Spain

A First Ever Green Community in Jordan

Mohammed Dabbas, Jordan

Potential of Energy Efficiency and Introducing Renewable Energy in Jordan's Hotels

Muhieddin Tawalbeh, Jordan

Tourism Industry and its Impact on Water Resources in Morocco

Nouhi El-Khalil, Morocco

10:30 – 11:00 | Networking Coffee Break (2nd floor)

Photo-Voltaic Excitation System for the Tour Boats at the Dalyan Channel

Necat Ozgur, Turkey

Discussion

11:30 – 12:00 | Session 6: Life Cycle Assessment

Environmental and Economic Analysis of the Different Sectors in Jordan with a Special Focus on Water Use

Dr. Fredy Dinkel, Carbotech

12:00 – 13:30 | Closing Session

CP in Jordan: The Way Forward

Rafat Assi, CPU-RSS, Jordan

The UNIDO-UNEP RECP Network: The Global and the Regional Chapters

Smail Al Hilali, UNIDO

Closing Remarks

Swiss Embassy

RSS President

Dissemination of Certificates

13:30 – 14:30 | Lunch (RSS Cafeteria)

14:30 – 16:00 | Parallel Activities

- § Optional : Tour for participants
- § Discussion/Brainstorm to determine the design, functionality, roles and responsibilities for the knowledge management system. (closed meeting of Arab NCPC/NCPP's Directors)