

Horizon 2020 Capacity Building/Mediterranean Environment Programme

“Desalination and the Environment”

24-26 November, Barcelona, 2010

Introduction - The Horizon 2020 Initiative

The “**Horizon 2020 Initiative**” aims to de-pollute the Mediterranean by the year 2020 by tackling the sources of pollution that account for around 80% of the overall pollution of the Mediterranean Sea: municipal waste, urban wastewater and industrial pollution.

Horizon 2020 was endorsed during the Environment Ministerial Conference held in Cairo in November 2006 and is one of the key initiatives run under the Union for the Mediterranean (UfM). The H2020 2007-2013 Road-Map focuses on the following four pillars:

- Identification of projects to reduce the most significant sources of pollution.
- Identification of capacity-building measures to help neighbouring countries create national environmental administrations that are able to develop and police environmental laws.
- Use of the EC’s research budget to develop greater knowledge of environmental issues relevant to the Mediterranean and ensure this is shared.
- Develop indicators to monitor the success of Horizon 2020.

H2020 is made up of the following components: monitoring, reporting and research (RMR); investment; and capacity building. Under each component, a project is currently being run. H2020 Capacity Building/Mediterranean Environment Programme (H2020 CB/MEP) is the project aiming at enhancing the capacities to address pollution problems at institutional and society level. In addition, through the H2020 MEP, a Hot Spot Investment Programme (HSIP) for the West Balkans and Turkey - as complementary to the Mediterranean HSIP (MeHSIP) – is being elaborated. The other two projects currently being carried out under the investment and RMR H2020 components are respectively the MeHSIP and the Mediterranean Shared Environmental Information System (Med SEIS).

The framework - Horizon 2020 Capacity Building/Mediterranean Environment Programme

Obviously pollution is expected to be substantially reduced through the installation and proper functioning of major infrastructures (e.g. sewage treatment plants), installing pollution reduction technologies in industries, etc. However, this won’t work if institutional and individual capacities are not in place. This is what the H2020 CB/MEP aims to enhance by operating within the existing and developing policy instruments, and supporting the implementation of the commitments undertaken in the framework of the ENP as well as other regional agreements e.g. of the Barcelona Convention, while cooperating, coordinating and synergising with all relevant (EU and other) programmes.

Aims and objectives

The main objective of this project is to support the implementation of Horizon 2020 with a special focus on environmental mainstreaming. It aims to address the following problems:

- low political priority given to the environment;

- insufficient integration of environment in the different sector policies (agriculture, tourism, transport or energy) and lack of inclusion of the different actors from local to international level;
- Insufficient capacities and resources at institutional and civil society level.

More specifically, the purpose is to support the implementation of the Horizon 2020 Initiative Road Map and Work Plan through capacity building and awareness raising activities, and to promote integration of environment issues in other sectors policies.

Partners

This project is funded by the European Union and implemented by the National and Kapodistrian University of Athens (NKUA) in consortium with: Mediterranean Action Plan of the United Nations Environment Programme and its Regional Activity Centres and Programmes (UNEP/MAP and its RACs), National Waste Management Agency (ANGed)/ Regional Solid Waste Exchange of Information and Expertise Network in Mashreq and Maghreb Countries (SWEEPNet), Umweltbundesamt GmbH – Austrian Environment Agency (AEA), Lebanese Ministry of Energy and Water - the General Directorate of Hydraulic and Electrical Resources (LMoEW), Hellenic Ministry for Environment, Energy and Climate Change, UNESCO-IHE Institute for Water Education (UNESCO-IHE), Mediterranean Information Office for Environment, Culture and Sustainable Development (MIO-ECSDE), Arab Network for Environment and Development (RAED), WWF Mediterranean Programme Office (WWF MedPO), Association of Cities and Regions for Recycling and Sustainable Resource Management (ACR+), Arab Countries Water Utilities Association (ACWUA).

Partner Countries

The Partner countries are: Albania, Algeria, Bosnia- Herzegovina, Croatia, Egypt, Israel, Jordan, Lebanon, Montenegro, Morocco, occupied Palestinian territory, Tunisia, Turkey and Syria.

Course Description - Desalination and the Environment

Introduction to the training course

The training course is organized within the framework of the Horizon 2020 CB/MEP project and in response to the capacity building needs identified earlier in the project. It will introduce the need for water management hierarchy of water conservation measures prior to addressing desalination and focus on assessing the impact of seawater desalination plants in terms of resource use and waste emissions and on measures for mitigating the impact on the environment by sustainable, environmentally friendly designs. The course is organized by the Arab Countries Water Utilities Association (ACWUA) and hosted by the CP/RAC. Its duration is 3 days; the language of the course is English (with interpretation into French or Arabic).

Thirty (30) participants will attend from Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, occupied Palestinian territory, Tunisia, Turkey and Syria; Three (3) from each country.

Target group

The capacity building activity is targeted to: representatives from authorities, academia and industry. From each country, the following mix of participants is desired: **one** from an environmental regulatory body, particularly related to coastal zones, **one** from a producer of desalinated water and **one** from a university or research institution in oceanography. The background level of the trainees is expected to be of intermediate level; University degree or working background in engineering, natural or environmental sciences.

Learning objectives

The main objective of the course is to provide to the trainees a basic understanding of desalination technologies and processes as well as an overview of:

- global and regional desalination capacities and trends
- resource use and environmental impacts and
- the technical and regulatory approaches for reducing resources use and mitigating the impacts of desalination plants

Methodology and Structure

The workshop is intended to be participatory and interactive, making use of professional learning tools such as:

- Presentations
- Discussions on emerging topics
- Open forum
- Site visit
- Personal and/or National perspectives

Learning outcomes of the training course

- Desalination versus demand side measures and conclusion that it is not an automatic response to augmentation of supply
- Understanding of desalination being an industrial water treatment process, which is often chemically, operationally and energy intensive and focused on large infrastructure developments
- Desalination is evolving into a coastal based industry in some sea areas, such as the Mediterranean Sea
- Ability to identify the most significant environmental impacts which require mitigation and in turn increase awareness on the potential cumulative impacts of desalination plants in the Mediterranean Sea
- Appreciation of the need for sustainable project designs and 'green' desalination technologies and better understanding of the concepts of environmental impact assessment (EIA) and best available techniques (BAT) as complementary approaches for mitigating the impacts of desalination plants

A preliminary overview of the course and course curriculum is given below:

- Definition and application of Water Management Hierarchy of water conservation measures
- Overview on seawater desalination processes, market, technologies and project finance
- Physical characteristics of desalination plant discharges: mixing processes, potential impacts on the environment, impact mitigation measures
- Chemical characteristics of desalination plant discharge: potential for toxicity and bioaccumulation, impact mitigation
- Design of brine intake and discharge structures and assessment of construction-related impacts
- Energy demand of different desalination processes, environmental implications of energy use, energy demand in perspective, and impact mitigation measures
- Visit and tour of a local desalination plant
- Concept and scope of environmental impact assessment (EIA) and environmental monitoring studies for desalination projects
- Concept of best available techniques (BAT) and best available practice (BEP) for desalination technologies
- National perspectives: Presentation and/or open forum

Course schedule/ curriculum				
24.11.2010	Topic	Description	Length	Method/speaker
Session 1	Official opening	Welcome addresses and opening words Introduction of course program Introduction of speakers and participants	9:00-9:30	opening words and round of introductory statements
	Seawater desalination - an emerging issue in the Mediterranean	Capacity Building Program of H2020 Assessment of seawater desalination activities in the overall context of the quality of the marine environment in the Mediterranean	9:30-10:00 10:00-10:30	Prof. Scoullos Fouad Abousamra, PhD MEDPOL Programme Officer UNEP/MAP
			<i>Coffee (15 min.)</i>	
Session 2	Introduction to seawater desalination	Role of desalination in water management hierarchy; Overview of desalination processes, market, technologies, and project finance	10:45-12:30 (1 hour 45 min.)	Koussai Quteishat Arab Countries Water Utilities Association (ACWUA)
			<i>Lunch (1 hour)</i>	
Session 3	Concentrate discharge	Physical characteristics of desalination plant discharges: Salinity and temperature, density and mixing processes, potential impacts on the environment and impact mitigation measures	13:30-15:00 (1.5 hours)	Dr. Sabine Lattemann King Abdullah University of Science and Technology (KAUST)
			<i>Coffee (15 min.)</i>	
Session 4	Chemical use and discharge	Chemical characteristics of desalination plant discharges: Copper, chlorine, antiscalants, coagulants, cleaning chemicals, toxicity and bioaccumulation, impact mitigation measures	15:15-16:45 (1.5 hours)	Sabine Lattemann
25.11.2010 Session 1 & Session 2	National and regional perspectives	Mitigation of environmental impact in reverse osmosis (RO) desalination discharges	9:00-9:45 (45 min.)	Prof. Jose Luis Sanchez University of Alicante
		Decision support system for real time adaptive management of desalination plant discharges in marine ecosystems	9:45-10:30 (45 min.)	Jose M. Hernandez Environmental Engineering and Planning Manager TYPESA GROUP
			<i>Coffee (15 min.)</i>	
		MEDVSA: A methodology for design of brine discharges into seawater	10:45-11:30 (45 min)	Pilar Palomar Instituto de Hidráulica Ambiental "IH Cantabria"
		Desalination in other Mediterranean countries (about 5 min. per country)	11:30-12:30 (45 min.)	course participants invited to make short statements
			<i>Lunch (1 hour)</i>	
Session 3	Intake and outfall designs	Design of brine intake and discharge structures and assessment of construction-related impacts	13:30-15:00 (1.5 hours)	Sabine Lattemann
			<i>Coffee (15 min.)</i>	
Session 4	Energy use	Energy demand of different desalination processes, environmental implications of energy use, energy demand in perspective, and impact mitigation measures	15:15-16:45 (1.5 hours)	Sabine Lattemann
26.11.2010 Session 1 & Session 2	Excursion	Visit of the Barcelona desalination plant El Prat de Llobregat, presentations by Degrémont and ATLL	9:00-12:30 (3.5 hours)	Bus transfer, site visit and presentations on site
			<i>Lunch (1 hour)</i>	
Session 3	EIA and BAT	Concept and scope of environmental impact assessment, monitoring studies and best available techniques	13:30-15:00 (1.5 hours)	Sabine Lattemann
			<i>Coffee (15 min.)</i>	
Session 4	Closing	Closing Remarks and Certificate Awards Departure	15:15 16:00	