40 YEARS

الاسكوا
ESCWA

Science, Technology and Innovation Initiative for WEF Nexus

United Nations Economic and Social Commission for Western Asia

Regional Policy Workshop on the Water – Energy Nexus

30–31 October 2016

Amman – Jordan

ESTABLISHMENT OF ESCWA TECHNOLOGY CENTER (ETC)

Mission

- To Assist member countries and their public and private organizations to acquire the necessary tools and capabilities to accelerate socio-economic development in order to attain technological parity with other nations and regions.

Objectives

- To assist member countries In strengthening their capabilities to develop and manage national systems
- To assist member countries to develop, transfer, adapt and apply technology
- To determine the suitable technology for the region and facilitate its development
- To improve the legal and commercial framework for the transfer of technology
- To enhance the technological and scientific knowledge content of major economic sectors in member countries

الاسكوا
ESCWA

ETC Opening Ceremony, Nov 2011

BOARD OF GOVERNORS 2016-2018

Kuwait	د. سميرة احمدالسيد	مدير عام مؤسسة الكويت للبحث العلمي
Jordan	صاحبة السمو الملكي الأميرة سمية بنت الحسن	رئيس الجمعية العلمية الملكية رئيس مجلس إدارة مركز الإسكوا
Bahrain	د. الشيخة رنا آل خليفة	الوكيل المساعد للشؤون العربية والافرواسيوية والمنظمات وزارة الخارجية
UAE	السيد عبد الله الشامسي	الوكيل المساعد لشؤون الصناعة وزارة الاقتصاد
Sudan	د. عيسى شاطر	مدير ادارة التخطيط الاستراتيجي وزارة التجارة
Syria	د. محمد الجلالي	أستاذ مساعد في جامعة دمشق
Oman	د. عبيد السعيدي	مدير دائرة البرامج مجلس البحث العلمي
Iraq	السيدة أنوار البني	مدير عام دائرة التعاون الدولي وزارة التخطيط

BOARD OF GOVERNORS 2016-2018

 Palestine	**السيد محمد بدر** دائرة السياسات والتخطيط الاستراتيجي وزارة الاتصالات وتكنولوجيا المعلومات
 Qatar	**د. حمد الإبراهيم** نائب الرئيس التنفيذي للبحوث والتطوير مؤسسة قطر
 Lebanon	**د. معين حمزة** أمين عام المجلس الوطني للبحوث العلمية
 Libya	**د. ابراهيم تيكة** الهيئة الليبية للبحث والعلوم والتكنولوجيا وزارة التخطيط
 Egypt	**د. محمود صقر** رئيس أكاديمية البحث العلمي
 Morocco	**د. عبد الحق مرادي** مدير البحث العلمي والابتكار وزارة التعليم العالي والبحث العلمي
 KSA	**د. متعب بن عبد العزيز متعب** مدير معهد الابتكار والتطوير الصناعي – مدينة الملك عبدالعزيز للعلوم والتقنية
 Yemen	**المهندس مسعد النمري** رئيس المركز الوطني للمعلومات

ESCWA Technology Center (ETC)

Work Plan

- Technical Committee
- Board of Governors
- ESCWA bi-annual SF

NEXUS IS NOT A NEW CONCEPT!

IT HAS EXISTED UNDER DIFFERENT NAMES LIKE:

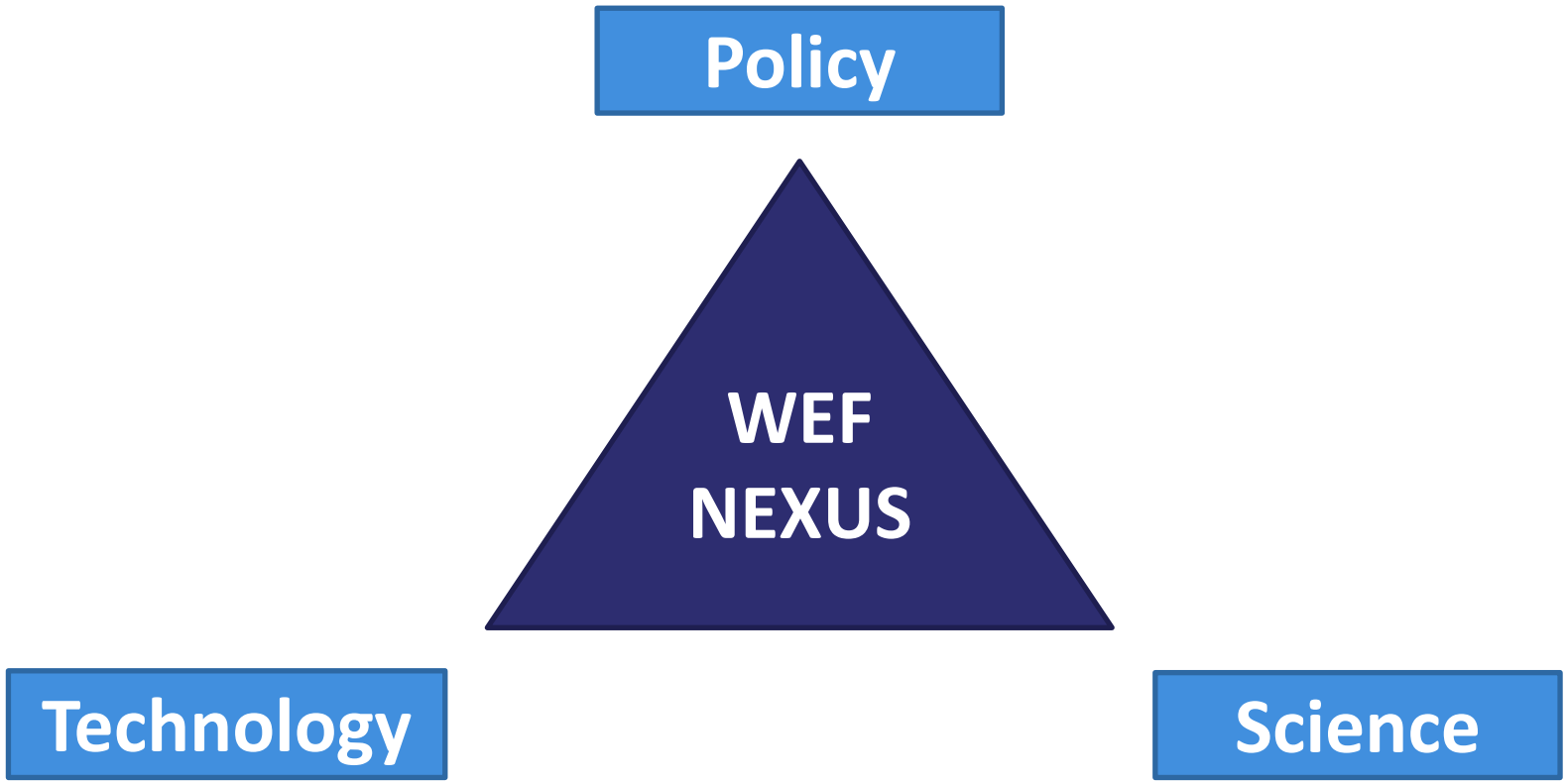
- Integrated natural resources management
- Integrated water resources management,
- Sustainable agriculture,
- Green economy principles,
- Sustainable production and consumption frameworks,
- Sustainable development

.

DRIVERS OF RISING WEF DEMAND

- **Population growth**
- **Urbanization**
- **Diversifying and changing diets**
- **Cultural and societal beliefs and behaviors**
- **Climate Change**

WEF NEXUS



MOST RELEVANT INITIATIVES/STRATEGIES

- **The Arab Strategy for STI (LAS, 2014)**
- **Water Governance in the Arab Region, (UNDP, 2013)**
- **The Arab Strategy for Water Security in the Arab Region ((LAS & GIZ, 2011)**
- **The Strategy for Sustainable Arab Agricultural Development for the Upcoming Two Decades 2005-2025 (AOAD, 2007)**
- **Renewable Energy in the Water, Energy & Food Nexus (IRENA, 2015)**

ARAB WEF NEXUS PRIORITIES (STI)

A.

Organization	Year	Initiative/project	STI Priorities/Needs
LAS	2014	The Arab Strategy for STI	• Water Sector: - Technology for Water efficiency/ conservation - Water resources protections technologies from drains & pollution - Fighting climate change expected impacts over water resources - Effective water resources management technologies - Water desalination Technologies - Technologies to develop efficient unconventional water resources • Food Sector: - STI for more efficient food production through the wise management of natural resources (Energy, water and land). - STI to produce more with less

ARAB WEF NEXUS PRIORITIES (STI)

AOAD	**2007**	**The Strategy for Sustainable Arab Agricultural Development for the Upcoming Two Decades (2005-2025)**	- **STI for Improving the Efficiency of Irrigation Systems** - **Developing Appropriate Water Harvesting Techniques** - **Development of Suitable Desalination Techniques** - **STI for Appropriate Techniques for Water Treatment and Recycling** - **STI for Water Conservation Techniques** - **STI for Water Delivery and Distribution Techniques** - **STI for Suitable Techniques for Recycling of Agricultural Drainage Water**
LAS in cooperation with GIZ	2011	The Arab Strategy for Water Security in the Arab Region to Meet the Challenges and Future Needs for Sustainable Development 2010-2030	- STI to develop and conduct scientific agricultural research in the arid and semiarid areas - STI to introduce new modern agricultural techniques - Technologies and principles to ensure optimum use of available water resources - STI to Preserve and protect water resources from contamination and over-exploitation. - Strengthening scientific, technological and industrial base with regard to water resources technologies for: availability evaluation, control degradation and sustainability.

ARAB WEF NEXUS PRIORITIES (STI)

UNDP	**2013**	**Water Governance in the Arab Region**	- **Investment in R&D in water technologies (desalination and Treatment)** - **STI Climate change adaptation with regards to water resources** - **New Technologies for water desalination, such as reverse osmosis, electrodialysis and hybrids, and more energy efficient and better suited to different types of water.** - **Integrated solar energy and desalination systems.**
IRENA	2015	Renewable Energy in the Water, Energy & Food Nexus	- Integrated Renewable energy and water desalination systems. - New Renewable Energy technologies powering water treatment plant - Renewables for water distribution for agricultural purposes (Solar, wind-based water pumping) - Water for producing Renewable energy - Renewable energy to Food production

COMMON PRIORITIES

A. Water efficiency / conservation technologies;

B. Water desalination Technologies;

C. Scientific agriculture research;

D. Renewable energy technology deployment in the water, energy & food nexus

Sample: Involved Arab Research Centers in STI for WEF Nexus Priorities

Priorities	Organization	Field	Country	Programs
Water efficiency technologies	**Kuwait Institute for Scientific Research (KISR)**	- Desalination - Wastewater & Aquifer Recharge - Water Analysis - Resource Management	Kuwait	- Innovative Desalination Technologies Program (IDT) - Innovative Technologies for Wastewater Treatment and Reclamation Program (ITWTR) - Thermal Desalination Technologies Program (TDT) - Water Resources Management and Allocation (WRMA) Program
Water desalination Technologies	**Water Desalination and reuse Center, (KAUST)**	Water Desalination Membranes Technology Environment	Saudi Arabia	- Water Desalination and Reuse - Innovations In Desalination Processes And Systems - Materials and Membranes for Water, Energy and Environment - Sustainable Water Technologies in Industry and Agriculture / Aquaculture
	The Middle East Desalination Research Center (MEDRC)	Solutions to Fresh Water Scarcity	Oman	- Thermal Desalination technologies - Membrane Desalination technologies - Hybridized Systems: Studies for development of hybrid desalination

Sample: Involved Arab Research Centers in STI for WEF Nexus Priorities

Priorities	Organization	Field	Country	Programs
Water desalination Technologies	**Qatar Environment and Energy Research Institute (QEERI)**	• sustainability of water resources, • waste water treatment and reuse.	Qatar	- Innovative Way to Remove Heavy Metals from Water - Membrane Development: technologies for addressing global water and energy issues in a sustainable manner
	Water, Energy & Environment Center, Jordan University	Water and energy technology development	Jordan	The center directs its activities to the following fields: - Drinking water management. - Irrigation management.
	Advanced Water Technology Group,(AWT)	**Desalination Powered by Solar** • Renewable Energy and water desalination	Saudi Arabia	Projects: - SWRO Features - Optimization - Solar Features

Sample: Involved Arab Research Centers in STI for WEE Nexus Priorities

Priorities	Organization	Field	Country	Programs
Water desalination Technologies	**Masdar Institute**	**The Institute Center for Water and Environment (iWater)** • Clean water production technology and Climate change	UAE	Water and environmental technologies, including - Water and waste water treatment, - Water re-use and recycle, - Advanced materials for water applications - Water and environmental resource management engineering
	The Royal Scientific Society, (RSS)	• Water Technologies • Renewable Energy	Jordan	- Nanotechnology in water and wastewater treatment: safe method for disinfection. - Developing new and innovative onsite wastewater treatment method: Drawer Compacted Filter
Scientific agriculture research	**The Arab Center for the Studies of Arid Zones and Dry Lands, (ACSAD)**	ACSAD Conducts research into the development of the arid and semi-arid areas of the Arab World	Arab Countries (LAS)	Integrated development projects, which include: - The Date Palm Research - Monitoring and combating desertification project, and - Agricultural Technology Development and Transfer to Farmers project

Sample: Involved Arab Research Centers in STI for WEF Nexus Priorities

Priorities	Organization	Field	Country	Program
Scientific agriculture research	**The National Center for Agriculture Research and Extension,**	- Improving agricultural production - Achieve and maintain food sufficiency	Jordan	- Improvement of Water Irrigation Management in Jordan and Lebanon - Irrigation Management Information System Program in Jordan and the Middle East (IMIS). - Treatment and Reuse of Wastewater in Agricultural Production Program - Agricultural Utilization of Low-Quality Water - Ultra-High-Frequency Irrigation for Increased Agricultural Efficiency - Middle East Irrigation Management Information System Project
	Agriculture Research Center	- Transfer of new technologies	EGYPT	- Development of functional markers through association analysis of candidate genes for drought tolerance in barley

SAMPLE: INVOLVED ARAB RESEARCH CENTERS IN STI FOR WEF NEXUS PRIORITIES

Priorities	Organization	Field	Country	Program
Renewable energy technology deployment in the water, energy & food nexus	**IRENA**	• Renewable Energy • Water Desalination	Worldwide, Abu Dhabi	- Solar, wind-based water pumping - Biofuels for tractors and on-farm - Solar-based desalination, heating and cooling for protected cropping - Biomass residues use for on-site energy generation - Indirect renewable energy inputs for fertilisers


المنظمة العربية للتنمية الصناعية والتعدين
المبادرة العربية لتطويع علوم وتقنيات النانو والتقنيات المتلاقية
اللجنة العليا للمبادرة
اللجنة العلمية الفنية
(فريق الخبراء)
اللجان القطاعية
لطاقة
لميا
لبيئة
لز عة
لغذ
لصحة
لطب
لنانو
لتصنيع
لإلكتر يا
لمو ناتوية
لتعليم
لتد يب
لإعلا
لثقافة
لعلمية
لتوعية
لمو
لبنية
لتحتية
فرق العمل البحثية

وقامت اللجان القطاعية بتحديد قوائم المشروعات ذات الأولوية وجارى العمل في إعداد وثائق المشاريع كفرص استثمارية للترويج لها لدى القطاع الخاص العربي . وقد تم تحديد مشروع رئيسي للمبادرة :

" المشروع العربي لاستخدامات تقنيات النانو في تحلية المياه وتوليد الكهرباء باستخدام الطاقة الشمسية "

ETC-TAG-AIDMO

LETTER OF UNDERSTANDING

"Industrialization Feasibility of Projects based on Nano Technology for Water Desalination & Solar Energy in The Arab Countries"

ETC-TAG-AIDMO
LOU

ACTION PLAN:

Phase 1: Conducting the study: TAG-Org will conduct the study, while ESCWA will provide technical available relevant material and AIDMO will support the efforts with scientific required contributions and review through in kind contributions.

Phase II: Prepare projects proposals based on the findings of the study. (TAG-ORG, ESCWA and AIDMO)

Phase III: Matchmaking between investors and potential opportunity owners, through an event to disseminate and promoting the developed proposed projects. (TAG-Org, ESCWA and AIDMO)

40 YEARS

الاسكوا
ESCWA

THANK YOU

United Nations Economic and Social Commission for Western Asia

NAEL AL MULKI

UN ESCWA TECHNOLOGY CENTER