



Greening WANA **Consultation Report**

8 - 10 November 2009
Amman, Jordan

Foreword & Acknowledgements

As the world confronts the worst economic crisis in three-quarters of a century, the West Asia – North Africa region is also having to respond decisively to the current circumstances. Part of this effort has been to see the ‘green lining’ in the global crisis by making ‘green’ thinking a lucrative part of the recovery strategy.

Facing up to the threats to our long-term economic and environmental sustainability means responding comprehensively to these challenges. With that aim, a group of WANA Forum leading experts met to discuss and debate the challenges and opportunities for Greening WANA, particularly in the areas of environmental education for sustainable development and greening the economy. This report seeks to capture their fruitful discussions and recommendations for ways forward.

By educating for sustainable development and working toward greening the economy, WANA can create green jobs and deliver the opportunities for everyone to play their part in shaping our future course.

Just as these are immensely challenging times, the possibilities are abundant. We thank His Royal Highness Prince El Hassan bin Talal, Chairman of the WANA Forum, and the participants of the Greening WANA Consultation for the opportunity to outline some of these possibilities. We also thank The Nippon Foundation for their continued sponsorship and support.

We come together driven by a shared understanding that our environmental and economic futures are intertwined. Greening WANA is a pathway we embark on together because our prospects and prosperity depend on it.



Baker al-Hiyari
WANA Forum Secretariat
Team Leader



Mohammad Shahbaz
WANA Forum Environment Working
Group Facilitator

Executive Summary

Participants at the First Annual WANA Forum identified Greening WANA as an overarching theme that runs throughout the WANA Forum initiatives, particularly environmental education for sustainable development, modern green industrial base and green regional infrastructure.

The objective of the Greening WANA Consultation was to develop practical and innovative solutions to 'greening' the region.

The consultation revolved around two areas: (a) greening the economy, with a focus on electric vehicle production and green mass transport and, (b) environmental education for sustainable development (EESD). Having discussed challenges and opportunities, participants identified a number of goals to take forward to the Second Annual WANA Forum.

With the aim of drawing on good regional and international practices, participants agreed to network with existing initiatives and to compile findings in a centralised database that can be easily accessed by the public. In line with addressing the knowledge gap in the region, some participants volunteered to draft a report on water scarcity and drought in WANA with recommendations to be delivered at the May 2010 Forum. Granting the WANA Forum legal status by registering as a partnership was also considered key to facilitating the Forum's participation at international fora.

As for green mass transport, participants agreed to carry out a feasibility assessment to look into furthering the bullet train and electric vehicle proposals, involving regional institutions and Japanese experts. Part of this effort entails a compilation of national and regional railroad maps and a sketch of how a bullet train from Tehran to Cairo would fit into regional schemes. Identifying possible investors from the region is also an important next step, the participants said.

With regards to EESD, participants recommended sending a panel of experts to three WANA countries to examine their curriculum and draft a proposal for integrating EESD. In parallel, a CD/DVD training manual will be developed for teachers on how to integrate elements of EESD into the curriculum. Finally, participants agreed to examine the feasibility of establishing a regional training centre to develop the technical capacity for innovative, inter-disciplinary training in sustainable development.

1. Introduction

His Royal Highness Prince El Hassan bin Talal, with the support of The Nippon Foundation, established the WANA Forum as a platform for promoting dialogue and collective action to address the issues that affect West Asia and North Africa (WANA).



Abdul Aziz Al Nuaimi and El Hassan bin Talal

The First Annual WANA Forum took place in April 2009, bringing together over 70 individuals from throughout the region to discuss shared challenges and concerns. It formed the first of three stages of the WANA Forum process which aims to: (a) identify and prioritise key issues; (b) develop policy recommendations; and (c) disseminate and advocate these policy proposals to decision-makers.

The outcome of the first meeting highlighted a number of cross-cutting areas for action:

- The reconstruction and recovery of war-torn or conflict-affected parts of the region.
- The enhancement of social cohesion between the region’s diverse peoples.
- The promotion of environmental education for sustainable development and the development of ‘green’ industries and infrastructure.

Greening WANA stems from a growing call around the world for an integrated approach to sustainable development. In other parts of the world, ‘green’ investment has led to far-reaching outcomes that ultimately led to the reduction of unemployment and raised the overall standard of living.

Environmental education for sustainable development (EESD), modern green industrial base and green regional infrastructure were among the priority issues selected by participants at the First Annual WANA Forum. Thus, the concept of Greening WANA is an overarching theme that runs throughout the WANA Forum initiatives.

The aim of the Greening WANA Consultation was to develop practical and innovative solutions to greening the region by environmentally educating for sustainable development and leapfrogging to the third, post-carbon, industrial revolution.



Meshgan Al Awar

2. Event Outline

The Greening WANA Consultation took place over a period of three days from the 8th to the 10th of November 2009. On the first day, the WANA Forum Secretariat briefed participants about the WANA Forum. The WANA region stretches from Morocco to Pakistan and from Iran to Sudan, but the Secretariat stressed that the Forum hopes to focus less on rigid boundaries and definitions and more on human geography. The WANA Forum's aim is to produce concrete proposals that lead to practical and feasible solutions that adequately address the shared human concerns of the region. Although HRH Prince El Hassan is the chairperson of this initiative, the Forum does not employ a top down approach but rather seeks to be participatory. Having identified key themes at the First Annual Forum in April, consultations are designed for expert working groups to further research and draft policy proposals for development at the Second Annual Forum in May 2010 and beyond.

Following the introduction, two break-out sessions were held to discuss the challenges facing the WANA region. While one working group focused on greening the economy, the other looked at EESD. The results of these discussions were shared with all participants after they regrouped the following day.

During the public session of the consultation, HRH Prince El Hassan highlighted the need to mobilise people towards the priorities of greening WANA with a holistic focus on building regional supra-national concepts within which joint initiatives can develop. His Royal Highness critiqued the wholesale approach of introducing development projects without paying attention to local priorities saying that if the central planning era has ended, the era of priorities has not. On the mantra of sustainable development, HRH Prince El Hassan said, "People do not want to be sustained but be given the opportunity to give their best and develop their talents." He voiced the need in the region for a Green Jobs Initiative that humanises globalisation and entails social justice for fair descent work practices. His Royal Highness warned that the WANA Forum can become a regional talk shop if regional realities are not



Greening WANA participants listen to opening remarks

brought together in partnership, stressing the need to rise above prejudices and stereotypes and to focus on the main challenges facing the WANA region. As the chairperson of the WANA Forum, HRH Prince El Hassan expressed his readiness to present a WANA unified voice by 2012 if all were in agreement on priorities that address the many challenges that affect the future of the region.

Focusing on the environmental challenges facing the WANA region and the world in general, His Highness Sheikh Abdul Aziz bin Ali Al Nuaimi spoke of a holistic environment and of the need to address the three interconnected “Es”: economy, environment and education in an integrated approach, urging the region to revert to basics, think critically, focus on balance and live circularly, rather than linearly, with the aim of sustainable development.

Following the public session, two plenary sessions were held on greening the economy and EESD. The sessions were moderated by Dr. Walid Saleh, Regional Coordinator, MENA, United Nations University/International Network on Water, Environment and Health, United Arab Emirates, and by Mr. Mohammad Subbarini, Professor of Science and Environmental Education and former President of Yarmouk University, Jordan. During these sessions, presentations were given by a number of experts and scholars.

The speakers were:

- Professor Seiichiro Yonekura, Professor at the Institute of Innovation Research at Hitotsubashi University, Japan
- Dr. Hiroshi Shimizu, CEO of SIM-Drive, Japan
- Mr. Tetsutaro Muraki, CEO of TOKYO AIM, Inc., Japan
- Dr. Walid Saleh, Regional Coordinator, MENA, United Nations University-International Network on Water, Environment and Health, United Arab Emirates
- Dr. Fadia Hasna, Dean, Faculty of Nursing and Team Leader, Bedouin Health Project at Philadelphia University, Jordan
- Dr. Jauad El Kharraz, Information Manager of the Technical Unit at the Euro-Mediterranean Information System on Know-how in the Water Sector (EMWIS), France and Researcher of the Global Change Unit team at the University of Valencia, Spain

Following the plenary sessions, participants decided to convene as one larger group to jointly discuss, in an interdisciplinary approach, the opportunities for greening WANA.

On the final day of the consultation, participants were tasked with identifying

what they saw as immediate steps between now and the Second Annual Forum in May 2010. They spoke about the ways they can contribute and how the WANA Forum’s Secretariat can support and give momentum to these efforts. Since mapping regional initiatives was selected as a priority for the WANA Forum, participants proceeded by recommending individuals, institutions and organisations for the WANA Forum Secretariat to initiate contact as part of the networking necessary to further the Forum’s aims and objectives.



El Hassan bin Talal and Chahra Ksia

3. Greening the Economy Session

In the Greening the Economy plenary session, the presentations by experts from Japan focused on the idea of leapfrogging into the third industrial post-carbon revolution through electric vehicle production and green mass transport.

Professor Seiichiro Yonekura insisted that the third industrial revolution should emerge from the oil-dependent WANA region. Despite the difficulty of envisioning such ideas as the bullet train and electric vehicle production, he reminded participants that “only crazy people can change the world” citing the examples of Sony and Hyundai. Leapfrogging into the third industrial revolution, as Professor Yonekura sees it, requires the right technology, institutional investments to support long-term projects and the strong will to see it through. He noted the success of the Tokyo Olympic Games in 1964 and, in particular, the Shinkansen bullet train between Tokyo and Osaka, in the development of Japan after the Second



Hiroshi Shimizu Tetsutaro Muraki

World War – not in and of itself as much as due to the economic activity it encouraged. Constructing a regional transportation infrastructure - a train from Teheran to Cairo, for example - could help give a similar boost to the WANA



Left to right: Abdul Aziz Al Nuaimi, Hussein Abaza, Kristen Winemiller

region, as it would promote the movement of goods, people and ideas.

Mr. Hiroshi Shimizu reinforced the idea of leapfrogging into the third industrial revolution by presenting the latest in technological innovation through the example of SIM-Drive, a Japanese company that provides the highest level of electric vehicle technology and information. To start with, he presented the advantages of electric vehicles over the conventional internal-combustion vehicles (ICV) in terms of efficiency (four times more efficient because of the in-wheel motor), acceleration (370 km/h), and structure (flexible in terms of cabin space).

He then introduced the concept of 'open source' that his company is promoting, where those interested in vehicle production can use SIM-Drive technology by sharing the cost of development. In terms of its production, the electric vehicle can be developed within a short period of time at a small cost and the technology behind it can be easily grasped. The same technology can also be applied in the case of the regional bullet train idea, he said.

Mr. Tetsutaro Muraki spoke next about the financial aspect of applying those technologies through large-scale international collaboration. He used the example of his company TOKYO AIM Inc., which offers new investment opportunities for professional investors by funding large-scale infrastructure projects through a variety of sources: bank and corporate loans, mezzanine and equity. In short, TOKYO AIM Inc. could be a fundraising option for applying the project of electric vehicles and the bullet train. This could provide a model for securing initial start-up investment to further these ambitious ideas.

The discussions on greening the economy focused on the idea of WANA leapfrogging into the third industrial revolution with electric vehicle production and green mass transport as examples of a green regional infrastructure and establishment of a modern industrial base.

Participants voiced the need for a green transport strategy, one that evaluates the current transportation system in WANA (for example, consumption patterns), identifies problems and highlights the benefits of 'going green'. Ways to achieve 'greening the economy' can then be examined, whether through government, public education, investment or technology.

According to participants, greening the economy will require regional cooperation that involves the public sector, governments in particular, and private sector investors, working together to facilitate the application and implementation of ideas. In addition, local industrial companies should be encouraged to establish outside partnerships when it comes to applying latest technologies such as that of the electric vehicle.

Many questions were posed regarding the technicalities of the electric vehicle, the technology of which is now almost fully developed and ready to spread. According to the Japanese participants, electric cars have many benefits compared to the Internal Combustion Vehicles (ICVs): they are four times more efficient; their running cost is much lower (one cent per kilometre), and their maintenance cost is almost zero. Their battery lasts 20 years on average, which is why an electric car depreciates much slower than a traditional one, and can be easily disposed of. The electric vehicle cost of production is also cheaper, and although the price is currently high, it can eventually decrease if they are mass produced (above 100,000 cars annually), becoming the same or lower than ICVs.

In terms of infrastructure, electric vehicles are not very demanding; their batteries will need recharging every 300 kilometres. Electricity at present is generated by fossil fuels, but it will, in the near future, come from solar energy, assuming that solar power will gradually replace fossil fuels particularly in a region as sunny as WANA.

While participants recognised the benefits of electric vehicle production, they wished to explore the feasibility of



Ahmad Mango and Seijichiro Yonekura

such an idea for the WANA region before any action is taken.

In order to be more convincing to governments with regards to the benefits of electric cars, a participant suggested conducting a pilot study on air pollution to show how it contributes to the development of chronic diseases resulting in many deaths. An integrated approach will make a stronger case in favour of electric vehicles.



Ayad Altaai and Soubhi Abdulkarim

Developing the electric car is not a purely economic venture; political and interest group dynamics are heavily involved. The example of the General Motors (GM) electric vehicle (EV1) was cited. Although customer reaction to the EV1 was positive, GM believed that those electric vehicles were unprofitable to the automobile market as they were only able to lease 800 cars in face of production costs of one billion US Dollars over four years. The EV1 programme was consequently discontinued in 2002, and all cars on the road were withdrawn. This became a controversial issue, because some blamed the oil industry for conspiring to keep electric cars off the road.

Participants regarded education and public awareness raising as vital to the concept of greening the economy. If the WANA region is to adopt and further the idea of electric vehicles, training local communities in the use of advanced technology (much simpler than that of ICV) will be required.

Participants also discussed whether the region is going to produce electric cars for export or solely for domestic markets, and how to deal with the existing ICVs if electric vehicles are introduced into the automobile market. Participants pointed out that a plant to transform existing automobiles into electric vehicles (by placing an electric motor inside each wheel) would be a better, more practical first step for the WANA region. Producing retro-fit kits would also create many jobs and be in line with a greening jobs initiative.

They all stressed that despite its advantages, the electric vehicle is only one step toward greening the economy. Participants also emphasised the importance of applying green technology to mass transportation such as buses and trains.

4. Environmental Education for Sustainable Development (EESD) Session

The presentations on EESD focused on the road to sustainability, which requires innovative, inter-disciplinary education for empowering future leaders.

Dr. Walid Saleh presented a paper on EESD where he highlighted the importance of education in any effort toward greening WANA, including informal education through civic organisations, local municipalities and mass media, all of which can be effective tools in raising public awareness. Dr. Saleh suggested that EESD be inter-disciplinary and catered to different age groups at every stage of life, starting from nursery and continuing through post-formal education since learning is a life-time process. In the WANA region, he noted, a lack of awareness exists amongst teachers themselves when it comes to the environment, and thus, a teaching manual may be a useful resource. Dr. Saleh also highlighted the need for a participatory approach in EESD where students can take an active role in developing solutions and bringing about change in their local communities.

In her presentation, Dr. Fadia Hasna talked about the Bedouin Health Project as an exemplary and replicable methodological framework for EESD. She mainly highlighted the importance of actively involving the local population at every stage so the process is fully owned by and for the people. Research is designed to address specific issues identified by the local population, and the results are directly applied to the problems at hand. Involving people from across disciplines is key, explained Dr. Hasna since sustainable development requires a multi-dimensional strategy. Moreover, she stressed the importance of using varied and cross-disciplinary methodologies for data collection and analysis.

Dr. Jauad El Kharraz spoke of water scarcity and drought in the WANA region. In his concept paper, he suggested producing, by the Second Annual WANA Forum in May 2010, a report that assesses the current situation in the region (definitions, existing indicators, scope and environmental, social and economic impact), identifies best practices for water saving measures (both planned and implemented demand and supply management actions), and studies the expected impact of climate change in the region and the concept of virtual water. Dr. El Kharraz introduced the



Mohammad Al-Smairan and Fadia Hasna

idea of using “virtual water trade” as a policy option, reminding that its applicability in the region needs to be subject to extensive investigation and analysis with regard to its socio-cultural, political and economic dimensions. Based on the outcome of Dr. El Kharraz’s preliminary research, recommendations will be formulated and discussed at the Second Annual WANA Forum in May 2010. This



Left to right: Mohamed Raouf, Odeh Al-Jayyousi, Jauad El Kharraz

report could also lead to pilot projects that can be submitted to potential funders.

The EESD discussions centred on reversing the ‘Brain Drain’ in the WANA region and laying the groundwork for EESD as the cornerstone of social and economic development in the region. While some countries work on EESD on the national level, the need for a regional perspective was stressed.

Sectoralisation of the environment was an issue of contention. Some participants suggested that because environment is at the core of everything (linked to social and economic factors), it should be integrated into the different sectors (i.e. agriculture, transportation). Others, however, argued that the focus should be on conventional education since more ambitious goals are beyond the umbrella of what the WANA Forum can realistically do.

Participants defined the scope of education as both formal (curriculum-based) and informal (reaching the adult population through other means, such as the media and sector-specific training modules). They pointed out that decision-makers may need to be one of the first target groups and that research and development should be an integral part of EESD since technological development and expertise are needed for greening the economy.

Making EESD relevant to everyday life was discussed at length as well as the need to engage students in learning by practice. Participants suggested that schools become environmentally friendly and for students to conduct research and activities that have a direct bearing on their lives.

Echo-Schools have a deeper impact on children that goes beyond environmental



Mariem Omari

awareness, participants pointed out. In California, the echo-school concept has been implemented in poverty-stricken communities. The success of these programmes is reflected in the academic achievement of students who went from failing grades to getting accepted into Ivy League universities.



Walid Saleh and Abdul Aziz Al Nuaimi

An example of innovation research is the newly launched two-seat plug-in car in Iran, which was designed and built by 14 students and graduates from Khaje Nasir Toosi University of Technology who worked on the project for 10 months.

One of the most important challenges, participants stressed, is the output of the current educational systems – of providing a skilled labour force prepared for new careers in the Green Economy. Yet, to meet this goal, the knowledge gap in the region needs to be addressed, according to participants who referenced the 2009 Arab Knowledge Report, which highlighted some of the main themes discussed at the consultation, such as the region’s poor performance in education, research and development for innovation.

Although participants recognised the need for knowledge production to take root in the region, instead of relying on outside interventions, they also suggested mapping existing regional initiatives and learning from best practices.

5. Conclusion

Participants reminded each other that the purpose of education is not the acquisition of knowledge for its sake alone but to serve a practical purpose, of making a tangible difference, which, in this case, is greening WANA. Education lies at the core of sustainable development and, according to participants, can be looked at as a two-track process. The first track is conventional primary, secondary and higher education and the second is continuous learning – raising public



Mohammad Shahbaz and Mohammad Subbarini



awareness through the media and other means and through specialised training for private and public sector employees, including policymakers.

Participants expressed concern about the current educational system in the WANA region, which everyone believed is in dire need of reform. They advocated new teaching strategies and approaches to learning, such as the concept of 'accelerated learning', which encourages students to ask questions, engage in discussions and unleash their creativity. Yet, rather than aim to change the national curriculums in the region, which participants viewed as being beyond the WANA Forum mandate, the aim should be to infuse environmental concepts into existing curriculum and to develop extracurricular activities as part of integrating theory and practice, thus making EESD relevant to everyday life.

Participants stressed that for EESD to be successful, it will have to be tailored to meet the needs of the people of WANA, rather than import Western concepts and methodologies that may not account for the cultural and historical contexts of the region. Participants agreed that the region has ceded much control of knowledge production and dissemination to outsiders and pointed out that while the region possesses abundant human, natural and economic resources, these resources are not well harnessed or effectively utilised.

Participants debated over whether the region lacks sufficient data or simply lacks awareness of existing information. In either case, participants reinforced the need to map existing regional initiatives as well as to conduct region-wide research and development in the field of sustainable development, carried out by experts from and within the region who are more capable of reflecting local realities. Participants also advocated participatory action methodology that engages private, public and civil society actors from different fields and backgrounds. Local community ownership was regarded as fundamental to realising local solutions to local problems. Employing varied research methodologies (i.e. qualitative, quantitative and cross-disciplinary) and striving to meet international standards was recommended.

Participants recognised the need for an effective regional industrial policy to develop a modern industrial base. WANA missed the first industrial revolution based on coal and the steam engine, and then the second industrial revolution based on oil and the internal combustion engine. The absence of a modern industrial base means that the region has no ailing industries to rescue, so it can leapfrog into the third industrial revolution of the post carbon economy of renewable energy with the electric car and green mass transport.

Participants welcomed the idea of introducing new green technologies, but they stressed the importance of conducting a feasibility study for the WANA region.

6. Ways Forward

Participants agreed that the WANA Forum offers regional actors an opportunity to be catalysts for change. As next steps, participants recommended the following, keeping in mind that the policy proposals advocated should always be SMART (Specific, Measurable, Attainable, Realistic, Timely).

Knowledge Sharing

- Map and network with existing initiatives to utilise existing data and resources, avoid duplicating efforts and to draw on best regional and international practices.
- Create a centralised database that can be easily accessed by the public. Participants said that this may be the best contribution the WANA Forum can make to help fill the knowledge gap.
- Produce a report on water scarcity and drought in the WANA region that evaluates the current situation in the region, identifies best practices for water saving measures, and studies the expected impact of climate change and the concept of 'virtual water'. Participants noted that producing reports are never objectives in themselves. Background data is essential to inform the process and promote concrete action.



Baker al-Hiyari

Hussein Abaza

Abeer Shakweer

Tetsuo Shioguchi

Marwan Hamdan

- Grant the WANA Forum legal status by registering as a partnership to facilitate participation at international fora and make it more widely known.

Green Industry and Transport

- Conduct a feasibility assessment on green transport in WANA, involving regional research/technical institutions and Japanese technical experts to look into furthering the bullet train and electric vehicle proposals.
- Compile national and regional railroad maps and sketch a design of how a bullet train from Tehran to Cairo would fit into regional schemes.
- Identify possible investors from the region.

Environmental Education for Sustainable Development

- Create a CD/DVD training manual for teachers on how to integrate elements of EESD into the curriculum. To further this aim, next steps include:
 - Creating an inventory of similar initiatives regionally and worldwide that can be replicated and customised for the WANA region.
 - Exploring funding options.
 - Establishing a steering committee of experts across fields to propose appropriate mechanisms for implementation.
- Identify a panel of experts to visit three WANA countries to examine their curriculum and draft a proposal for integrating EESD.
- Examine the feasibility of establishing a regional training academy to develop the technical capacity for innovative, inter-disciplinary training in sustainable development.

ANNEX 1: CONSULTATION AGENDA

SUNDAY, 08 November 2009

15:30 – 16:00	Registration (Sun Room*)	
16:00 – 17:00	<p>Overview & Introductions</p> <p>WANA Forum Moderators will brief participants on:</p> <ol style="list-style-type: none"> 1) What was achieved in the October consultations; 2) Hopes for November’s meeting; 3) Objective of Tokyo consultation; 4) Looking ahead to the Second Annual WANA Forum. 	
17:00 – 17:15	<p>Introduction to Break-Out Sessions</p> <p>What can be presented at the May 2010 Second Annual WANA Forum that will reflect concrete outcomes? Participants will break into two groups (EESD & Green Economy) to draw up an action plan.</p>	
17:15 – 18:30	<p>Break-Out Session: Greening the Economy</p> <p>Challenges facing WANA (Sun Room)</p>	<p>Break-Out Session: Environmental Education for Sustainable Development</p> <p>Challenges facing WANA (Pluto Room)</p>
After 18:30	Free Time	



Left to Right: Fatima Azzeh, Nour Qabba’ah, Laura Haddad, Michelle Bouchebel, Manal Nayfeh

MONDAY, 09 November 2009

09:30 – 10:30	Welcoming and address by HRH Prince El Hassan bin Talal
10:30 – 11:00	Remarks by H.H. Sheikh Abdul Aziz bin Ali Al Nuaimi
11:00 – 12:30	<p>Plenary: Greening the Economy</p> <p>This session will highlight the potential for WANA to leapfrog into the third industrial revolution of the post carbon economy of renewable energy, the electric car and green mass transport, and the contribution they can make to job creation, economic growth and the legal empowerment of the poor while addressing environmental challenges such as climate change.</p>
	<p>Moderator: Dr. Walid Saleh</p> <p>Presentations:</p> <ul style="list-style-type: none"> - Professor Seiichiro Yonekura will advocate the bullet train and electric vehicle proposals for the WANA region - Dr. Hiroshi Shimizu will present today's latest technology through the example of SIM-Drive - Mr. Tetsutaro Muraki will talk about the financial framework of large-scale international collaboration by using the example of Tokyo AIM
12:30 – 14:00	Lunch (Kempi Restuarant)
14:00 – 15:30	<p>Plenary: Environmental Education for Sustainable Development</p> <p>This session will address water security and sketch the road to sustainability, which requires innovative, interdisciplinary education that works toward a comprehensive framework for empowering innovative future leaders. EESD offers dynamic opportunities for learning, critical thinking and problem solving, all necessary for preparing WANA for new careers in the Green Economy.</p>

	<p>Moderator: Mr. Mohammad Shahbaz</p> <p>Presentations:</p> <ul style="list-style-type: none"> - Dr. Walid Saleh will present his concept paper on EESD - Dr. Fadia Hasna will talk about the Bedouin Health Project as an exemplary and replicable methodological framework - Dr. Jauad El Kharraz and Dr. Alaa El-Sadek will present their concept paper on water security as part of the EESD strategy 	
15:30 – 16:00	Coffee Break	
16:00 – 18:00	<p>Break-Out Session: Greening the Economy</p> <p>Realizing opportunities and paving the way to Forum 2010 - goal setting & timeline (Sun Room)</p>	<p>Break-Out Session: Environmental Education for Sustainable Development</p> <p>Realizing opportunities and paving the way to Forum 2010 - goal setting & timeline (Pluto Room)</p>
18:00 – 19:00	Free Time	
19:00 – 21:00	Dinner – meet at lobby of Kempinski Hotel at 19:30 (Venue: Al Huwara restaurant)	

TUESDAY, 10 November 2009

10:00 – 12:30	<p>Plenary: The Way Forward</p> <p>Spokespersons of the break-out groups will present the group's recommendations and open the floor to discussion on next steps.</p>
12:30 – 14:00	Lunch (Kempi Restuarant)

** All plenary sessions are in the Sun Room of the Kempinski Hotel, on Level -2.*

ANNEX 2: LIST OF PARTICIPANTS

Name	Affiliation
Hussein Abaza	Chief, Trade and Economics, United Nations Environment Programme, Switzerland
Hasan Abu Nimah	Director of the Regional Human Security Centre, Jordan
Soubhi Abdulkarim	Chairman, SOUTER Group and Board Member, Sustainable Development International, UAE
Fouad Alaeddin	Managing Partner, Price Waterhouse Coopers, Middle East region
Ayad Altaai	General Coordinator, Global Initiative Towards a Sustainable Iraq (GITSI), UAE
Meshgan Al Awar	Director, Research and Studies Centre, Dubai Police Academy and Secretary General, Zayed International Prize for the Environment, UAE
El Hassan bin Talal	WANA Forum Chairman; His Royal Highness has initiated, founded and is actively involved in a number of Jordanian and international organisations and entities.
Mahieddine Emziane	Professor at Masdar Institute of Science and Technology, UAE
Fadia Hasna	Dean, Faculty of Nursing and Team Leader, Bedouin Health Project at Philadelphia University, Jordan
Baker al-Hiyari	Team Leader, WANA Forum Secretariat, Jordan
Odeh Al-Jayyousi	Regional Director of the International Union for the Conservation of Nature (IUCN), Jordan

Name	Affiliation
Hamed Kazim	CEO of HK Consulting, UAE
Jauad El Kharraz	Information Manager of the Technical Unit at the Euro-Mediterranean Information System on Know-how in the Water Sector (EMWIS), France; Researcher of the Global Change Unit team at the University of Valencia, Spain
Chahra Ksia	Chief of the Centre of Water & Arab Water Security Studies, League of Arab States, Syria
Ahmad Majdoub	Professor of English & American Literature; Dean of the Faculty of Foreign Languages, University of Jordan; The Jordan Times columnist
Ahmad Mango	WANA Forum Moderator and Advisor to HRH Prince El Hassan bin Talal, Jordan
Ahmad Muhaidat	Head of the Energy Engineering Department, German-Jordanian University, Jordan
Tetsutaro Muraki	CEO of TOKYO AIM, Inc., Japan
Abdul Aziz bin Ali Al Nuaimi	CEO of Al Ihsan Charity Centre; Chairman of International Steering Committee of Global Initiative Towards a Sustainable Iraq (GITSI), UAE
Mohamed Raouf	Program Manager, Environment Research at the Gulf Research Center, UAE
Alaa El-Sadek	President of the Arab World Academy of Young Scientists, Bahrain
Nadia Al-Sakkaf	Editor-in-Chief of The Yemen Times, Yemen

Name	Affiliation
Walid Saleh	Regional Coordinator, MENA, United National University – International Network on Water, Environment and Health, UAE
Mohammad Shahbaz	WANA Forum Environment Working Group Facilitator; President of the Jordan Badia Research and Development Centre, Jordan
Abeer Shakweer	Manager, Planning and Monitoring, Science and Technology Development Fund, Egypt
Mohammad Sherbini	International Relations Officer, Palestinian Future Society for Development and Democracy, Palestine
Hiroshi Shimizu	CEO of SIM-Drive, Japan
Mohammad Al-Smairan	Researcher at Jordan Badia Research and Development Centre; Research Assistant with the Bedouin Health Project, Jordan
Mohammad Subbarini	Professor of Science and Environmental Education and Former President of Yarmouk University, Jordan
Batir Wardam	Columnist at Addustour newspaper; writer and researcher specialised in environment and development issues; author of the Arab Science and Environment Blog, Jordan
Kristen Winemiller	Environmental Lawyer, USA
Seiichiro Yonekura	Professor at the Institute of Innovation Research at Hitotsubashi University, Japan

Annex 3: WANA Forum Secretariat

Name	Affiliation
Martti Antola	Advisor, WANA Forum Secretariat and Officer for External Relations and Governance Support, Institute for Democracy and Electoral Assistance, Sweden
Fatima Azzeh	Communications Officer, WANA Forum Secretariat
Sultan Barakat	WANA Forum Moderator, Advisor to HRH Prince El Hassan bin Talal and Director of the Post-war Reconstruction and Development Unit, University of York, United Kingdom
Michelle Bouchebel	Part-Time Researcher, WANA Forum Secretariat
Laura Haddad	Programme Coordinator, WANA Forum Secretariat
Baker al-Hiyari	Team Leader, WANA Forum Secretariat
Ahmad Mango	WANA Forum Moderator and Advisor to HRH Prince El Hassan bin Talal
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Nour Qabba'ah	Researcher, WANA Forum Secretariat
Mohammad Shahbaz	WANA Forum Environment Working Group Facilitator and President of the Jordan Badia Research and Development Centre

Annex 4: Welcoming Address by HRH Prince El Hassan bin Talal

Ladies and Gentlemen,

For those of you who are new to the WANA process, I want to extend a hearty welcome and to say that my concerns at the moment are divided between three conferences. We just finished a meeting of the Board of Trustees of the Arab Thought Forum, which is the only inter-Arab thought NGO and which is recognised by the Arab League. One of the issues that we discussed at that conference yesterday is how to mobilise the general public on the priorities of greening this region, when in reality, we see that there is an emphasis on projects rather than on concepts. The other conference taking place today is one hosted by the Dutch Government and which is taking place in the Grand Hyatt Hotel discussing energy futures and clean energy futures. I am glad that the National Energy Research Centre is represented. So it seems to me that every embassy concerned with developing projects in this region is hosting its own conferences and our resources are limited in terms of participating in all of them at the same time.

Yesterday, in the statement from the Sharm el-Sheikh Conference, it was announced that China has pledged \$10 billion in concessional loans to Africa. According to a BBC report¹, “The West has previously accused China of plundering Africa’s natural resources - to fuel its booming economy - and of overlooking the human rights records of some governments they do business with”. The Chinese representatives were asked how this \$10 billion will be spent and the answer was on piecemeal infrastructure projects. In terms of clean energy and renewable energy, the Chinese, who are extremely aware and interested, are developing a singular approach to alternative energy, particularly concentrated solar power. This interest is in particular reference to projects as things stand. The concept that I particularly support is the Trans-Mediterranean Renewable Energy Cooperation (TREC) which has introduced the DESERTEC project. I welcome the presence of Sheikh Al Nuaimi and the Masdar family represented here for the first time. Robert Zoellick of the World Bank has identified the solar power programme, as a World



El Hassan bin Talal

1- <http://news.bbc.co.uk/2/hi/africa/8349020.stm>

Bank focus, which could generate substantial investment and job creation. Please bear in mind investment and job creation. We are not talking about \$60 billion to bring energy from the Gulf region across North Africa and into Spain; we are talking about a project which is a part of a concept such as job creation for communities which are not on a national grid. By and large, we are talking about the concept of the empowerment of the poor. I am happy at least that a partnership is now developing conceptually with the President of the World Bank. At least I'm speaking of my own communication with him. In security terms, and we spoke at the last round table of social cohesion, but there can be no social cohesion with 'haves' in terms of national grid and 'have nots' in terms of total exclusion. A social cohesion fund, was a topic of conversation I had with Paul Volcker, the former head of the US Federal Reserve. But when we speak about cohesion, we are speaking not only in the context of cohesion as presented in the summary of the last meeting of WANA and I would like to thank Robert Zoellick when he talks about the importance of rural urban migration and forced displacement under the rubric that I suggested: Territoriality, Identity and Movement² (Migration). He also speaks of helping disadvantaged young people increase their income. So the hope is to be able to envision for example, and I have said this in the past, a future where we can work in partnership with our foreign and overseas partners for a concept where the social dimensions of climate change focus on areas of impact. Looking at the importance of the Gaza Strip, the possibility of building a solar energy plant on the Egyptian side of the Gaza Strip to provide clean drinking water and cheap electricity is to my mind at least a way of encouraging the will to stay. Of course there may be those who feel in Arab bureaucracies, or elsewhere, that the initiation of such a plant might be the thin edge of the wedge. Will it mean that future services would be required of neighbouring Egypt? On the contrary, I think that the tunnels, which now number in their thousands, are being dug or have been dug with the full agreement of the adversaries. They would not be there if it were not for such an agreement. Having spoken to President Abdullah Gül of Turkey last week about the importance of the industrial city which has been now stalled for some period of time, I cannot understand why it is that we continue to insist on avoiding reality? The reality is that people have lost hope, people are frustrated and people are angry. So, creating jobs for them, providing electricity and water is absolutely essential to our future. We are talking about carrying capacity and recovery capacity. As the head of the Economic and Social

2- Dr. Lothar Brock, Germany

Council for West Asia (ESCWA), at the recent Kuwait Arab Summit Conference, Dr. Mervat Tallawy presented a comprehensive review of infrastructure projects that have been outstanding for decades in the Arab world.

There is a reversal of the old and well-known mantra of sustainable development. People don't want to exist; they don't want to be sustained. They want to be given the opportunity to give of their best and develop their talents. This is why, as a member of the Commission for the Legal Empowerment of the Poor, which I hope will be meeting in Cairo sometime in early next year and which is being coordinated by my colleague on that Commission, Professor Medhat Hassanein, the former Minister of Finance of Egypt. I hope that this will develop into a programme within the Arab region or the West-Asian region. When I say the West-Asian region of course I include all of the silenced majority, not the silent majority, but the silenced majority who see projects coming into this region, who ask why, wherefore, what is the cost, what is the benefit, and are not privileged with an answer. They are citizens if we want them to be citizens; they are not just digits. So I think it's extremely important to bear in mind as Juan Somavia, the head of the International Labour Organisation (ILO), puts it, we need a 'green jobs' initiative. The ILO adopted the Declaration on Social Justice for a Fair Globalization in June 2008. That means decent work practices and policies including consideration of 'green jobs'. Of course Juan Somavia was addressing the group of 20 countries and in correspondence with him we have identified the common agenda where global meets regional commons through which civil society, governments, and businesses from all regions create a common global agenda. So you have a third sphere (الفضاء الثالث), ad-hominem participation of individuals from government, business and the civil society. They don't have the override, they don't have the right of veto as in the Security Council, nor does the private sector, nor does civil society. They have to develop a consensual approach to the future. In addressing this future, I am deeply impressed by the initiative which has received strong support in Europe and the United States, the Reconstruction of Central and Eastern European States, and I speak as a member of the International Commission for Democratic Transition (ICDT). The WANA Forum Secretariat has to take into consideration that they are not isolated from all of these initiatives, which we are trying to network.

As I mentioned to you the last time we met, the UN High Commissioner for Refugees Mr. António Guterres said very clearly in that splendid book, *The Anatomy of A Silent Crisis*³, that a moment may come where we will not be in a position

3- The Anatomy of A Silent Crisis, Human Impact Report CLIMATE CHANGE, Global Humanitarian Forum, Geneva, 2009.

where we can distinguish between different categories of migrants. Now of course this is said in terms of climate change with the recognition that the generosity of the Chinese government, as mentioned earlier, will also go into subsidising balance of payments; into clinics and into building schools. Presumably, there will be a repayment expected on loans, which I assume is part of the package; it will not all be grants. Therefore, I wonder why it is that we cannot place the I (Identity) and the M (Migration) at the centre of our construct.

Please bear in mind the importance of the last meeting and the next meeting, because this is a process to increase awareness among the doers, among those of you who have a stake in developing the circle around the central dot. We are not talking about labels of Palestinians, Iraqis, Jordanians, Lebanese. We are trying to remove the labels and to focus on the issue of turning poverty and unemployment from a category of political economy because, in the past, the World Bank has referred to migrants as political economy as though they were on the fringes of the national economy and consequently, when speaking of national economy, they speak of GDP. Let me, once again, remind you of the importance of per capita GDP. What is the use of glowing investment figures if they do not take into consideration the improvement of human dignity and the closing of the human dignity gap between the haves and the have nots? In learning from the experiences of others, you might wish to note that the Combat Poverty Agency of Ireland defines social cohesion as bringing together, economic, social, health and educational policies to facilitate the participation of citizens in societal life. Either they participate in a legally-recognised state and internationally-approved criteria by 2012, when the UN will start discussing the new conditionalities of the MDGs, or we will continue with the present situation where it seems to me that the shadow economy of surprises such as the extensive armament of populist movements such the Houthi movement in Yemen, for example, or the situation in Afghanistan which, according to Prime Minister Brown, we have to recognise as a corrupt state. I find this rather alarming. I don't want to get into the polemics of politics but Hamas, which was elected with the approval of Jimmy Carter, former President of the United States, as a fair and free election, was immediately placed on the terrorist list. We find ourselves in a dichotomy in trying to explain to people that one election is good and another election is bad. What is important is that people have been elected either to starve or to prosper. It depends who is on the receiving end of which political programme and at which moment in time. I would rather like to depoliticise the issue. Of course I'm not talking about basic rights

and the hope of the right to return and so forth, but I do want to point out at this time, that the wholesale approach of introducing projects into a situation where there is no cultural affinity with the demands of people whose individual priorities and family priorities reminds us of the fact that, as an Arab minister said to me, the age of central planning has ended. Well, if we are talking about the age of the former Soviet Union where central planning was authoritarian planning, maybe it has ended, but if you're telling me that the age of priorities has ended, then I don't think you can find a successful company in the world without a business plan; a business plan means priorities. This is why we are here to discuss priorities.

With regard to the work of the Global Humanitarian Forum⁴, I'm so happy that we have been able to get human and climate into the same sentence, because as you know, there is yet another conference (Copenhagen) in continuation of the Brundtland Report Initiative on the planet Earth on which we live. I do hope that the mistake that was committed by the Brundtland Commission when we discovered that they were talking about the trees of Amazonia and forgetting to talk about the 40 million people living under the trees is not committed again. The time has come to recognise that climate change impacts the scarcity of fresh-water resources, weather-related disasters, food insecurity, migration and displacement. It also creates social tensions, competition for scarce resources, strains on government capacity to deal with deteriorating conditions, social destabilisation, weaker economic performance, institutional breakdown and by that I mean the ability to develop what doctors have described as a good bedside manner. Do we know what priorities are as stated by the people? Or are we assuming or presuming that priorities should be dictated from outside the region? In this context, before you start talking about bullet trains from Tehran to Cairo or the production of electric cars, please remember that schema - that overall framework where we talked about a referendum for the West-Asian region by 2012, where we can clearly identify answers to the questions that will be put to us under the title of global commons meets regional commons. Since we last met, I have been invited to consider chairing an international global commons trust. I would only accept such a responsibility of travelling around the Arab world, trying to coordinate answers to the kind of questionnaire that could be presented in a future General Assembly, if I felt that all of you are in agreement on the priorities which I hope in consultation that we can develop. So I would emphasise the importance of a so-called consultation mode. As we go to Copenhagen, we are talking, and I

4- Human Impact Report: Climate Change, Global Humanitarian Forum, Geneva, 2009

think this is a common denominator between all Arab countries, of how to face severe water shortages in the longer term. Quite honestly, if this is a bad year in terms of rainfall, I think that you will find that the Jordanian water table, which is dropping considerably every year, will face us with a real dilemma next year. It is important to recognise that the initial national communication for climate change in 1997 stated that the country [Jordan] has good potential to develop solar power generation, but has not been taken seriously. If it had, we would not be in the state of verging on deep concern or panic that we are at the present time. Today we only have renewable energy sources to develop. Of course if you look at the energy map, one minute you hear references to oil shale, the next minute to nuclear power and to other forms of energy.

So I think one of the facts of life that we have to recognise is that this country is one of the ten most water poor countries in the world. We're already running a deficit of 500 million cubic metres of water per year, in addition to which in the energy sector the biggest source of GHG emissions, with transport, industrial use and power generation subsectors being leading sources of emission within the energy sector. The fact is that I do not see any prioritisation for the region at the present time. Prioritisation exists in other areas; for example, the National Center for Human Resources Development (NCHRD) in this country has this year been chosen by the World Bank to be a regional centre for an initiative on research that is mainly associated with the assessment of students' performances through international and national studies. NCHRD has been involved for some time in the implementation of development projects in the Arab region in the fields of human resources development in general including general, technical and vocational education. NCHRD has implemented development projects for many Arab countries, most recently in Syria and Iraq. We are recognised by the World Bank as a regional centre, but unfortunately external recognition is not enough. What is important is that this external recognition leads to a partnership with countries in the region. I see a trilateral partnership, an Asian partnership. Ms. Ann Pettifor of Advocacy International and others have suggested the importance of creating an Asian Monetary Fund, with Asian growing rights. Maybe a window that fund could focus on could be an asymmetric cohesion fund, which focuses on the asymmetries of poverty versus wealth, of energy versus deprivation of energy, on the importance of land use. I don't think that any country, certainly in the Fertile Crescent and I can't speak for the Gulf region where distances are shorter, but I don't think that any of us can boast a land-use map which is legally binding.

In terms of this region, after the Kuwait Summit Conference, I spoke to the Emir of Kuwait of nuclear options, for example, in the Gulf region, and it seems that there is a brutal reality in that there is still no regional approach. I think that it is perfectly clear that the continuation of such a process, in speaking of carrying capacity, we have the statistical capability with our well-developed department of statistics, which is capable of being empowered for a discussion on economic profiles. We have developed a human statistics centre as well as a human development centre. We have a national resource centre potentially in the National Geographic Centre in this country, but unfortunately these three words: human, natural and economic are not harnessed within a concept which the IUCN describes as *hima*, an Arabic word which includes climate change, energy ecosystems and livelihoods, conservation for poverty reduction and future for sustainability. All of these terms could be embraced by the term *hima*, so we are not talking at one moment of Al Gore's global warming and human warning. I am not issuing a warning to the whole of humanity; I'm just suggesting to you that the time has come to get our act together: If we don't put our Arab house in order (إذا ما وضبأ بيتنا العربي), we do not have an intellectual or ethical point of departure to discuss the future with the international community.

I want to emphasise the importance of greening WANA through to the third post-carbon industrial revolution and through environmental education for sustainable development. There are those among you from the region - as I said in Japan, you regard us as the Middle West, not the Middle East - who realise that the time has come in terms of our Asian context, to recognise that Japan has been working tirelessly to impress upon the oil-producing states of the region the importance of developing a hinterland. Because without a complementarity between oil and the hinterland, one cannot talk about regional stability let alone regional livelihood. We started discussions about WANA, which actually was born out of our involvement with the Prague Forum 2000 hosted by Václav Havel, where we also were fortunate to get the extensive support of Mr. Yohei Sasakawa of The Nippon Foundation, Japan. It seems that our focus today is largely on investment and quick returns. That we need to build a concept is obvious, but how do we go about it in terms of NGOs, such as this initiative and such as the Arab Thought Forum? How do we bridge the gap between policy makers and their policies, as opposed to their politics, is a question that I want to put to you. I hope that you keep in the forefront of your mind every time you turn to WANA what is the effect; is it just a talk shop? It will remain a talk shop unless we develop

within its context the kind of partnerships that would bring the Asian reality and the Euro-Atlantic reality and the regional reality together. I don't know how many countries in the region are signatories to the European Energy Charter, or to the Energy Charter Treaty. I don't know how many countries are aware of their international resources in terms of becoming members of such an energy-efficient community of nations or regions, but I do want to say that in terms of the energy sector master plan and the many other initiatives: the Euro-Mediterranean Energy Partnership, UNEP's Plan Bleu and the Global Environment Facility, that we do not yet have an interdisciplinary approach. It is in that context that I thought that WANA should be able to offer some answers in the plenary in which these consultations become part of the planning to develop a synergy by creating a nucleus of aware individuals, a network as we develop through this process of disciplines and a case to be made for human dignity and the centrality of human dignities, brought back to me once again by the fact that the Arab world needs 100 million jobs in ten years, so we are talking about the age group of 15 - 24. The choice is still ours, those of us who are aware. I am afraid that the choice is limited unless and until we rise to international standards in their application in the region. For that reason, I hope that personal preferences over different types of projects and prejudices that have existed for a long time in terms of solar power and those of us who have tried to promote it have been aware of the prejudices on the subject from a technical point of view. It is no longer a question of how to resolve the issue. The question today is how do we create solar power within our region, developing this national and regional resource and what are its derivatives? So we need, I think, to develop a roadmap in this direction, a roadmap which is sensitive to the social challenge that we face, which I believe is the challenge to our very identity. Do we continue to exist without an industrial base? Or do we contribute on the basis of creating the necessary environment for a productive base? In short, once again, do we enable the poor? Thank you very much for participating in this meeting.

ANNEX 5: SUMMARY OF HH SHEIKH ABDUL AZIZ BIN ALI AL NUAIMI'S PRESENTATION

In his presentation entitled Introducing New Creative Thinking Strategies For Holistic Environment, His Highness Sheikh Abdul Aziz bin Ali Al Nuaimi, CEO of Al Ihsan Charity Centre and Chairman of International Steering Committee of Global Initiative



Towards Sustainable Iraq (GITSI), spoke about the need to revert back to basics, to the roots of the WANA region's traditions and cultures in the face of global environmental challenges such as limited natural resources, climate change, land transformation, biotic additions and losses, as well as depletion and degradation.

Environment lies at the core of the Islamic faith. The underlying principle that forms the foundation of Prophet Mohammad's holistic environmental policy is the belief in the interdependency between all natural elements, and the premise that if humans abuse or exhaust one element, the natural world as a whole will suffer direct consequences.

The three pillars of the Prophet's environmental philosophy are based on the Quranic teachings and the concepts of *tawhid* (unity), *khalifa* (stewardship) and *amana* (trust). In line with the concept of *tawhid*, the Prophet Mohammad acknowledged that God's knowledge and power covers everything, which is why abusing any of his creations (a living being or a natural resource) is considered a sin. The Quran explains that humankind holds a privileged position among God's creations on Earth: he or she is chosen as *khalifa* (vice-regent) and is entrusted with an *amana* - the responsibility of caring for God's earthly creations.

The importance of sustaining the environment was highlighted by Prophet Mohammad: "When doomsday comes, if someone has a palm shoot in his hand, he should plant it," which suggests that even when all hope is lost for humankind, one should sustain nature's growth.

H.H. Sheikh Al Nuaimi pointed out that the environment does not exist in isolation; it is interconnected with economy and education, forming the three "Es", and need to be addressed as such.

As an example of introducing new creative thinking strategies for a holistic

environment, His Highness cited the example of the United Arab Emirates which has recently launched green initiatives, with the aim of refocusing its economy towards investment in cleaner industries and technologies. Amongst these were initiatives to create new 'green' jobs and to 'green' existing ones, both of which linked environment to economic growth.

The Masdar Initiative is an excellent example of innovation, which can be emulated in WANA. It aims to turn Abu Dhabi into an international hub of renewable energy, to support the development, commercialisation and adoption of sustainable technology around the globe and to foster the development of a knowledge-based economy.

Masdar's Carbon Management Unit works on developing sustainable technologies, including large-scale projects that lead to significant carbon emission reductions.

One of the most promising ways of reducing carbon emissions is Carbon Capture and Storage (CCS) which is about capturing the emitted CO₂ gases from large point sources, such as fossil fuel plants, and storing them underground.

CCS is one of the most ambitious large-scale carbon capture projects that Masdar is developing in Abu Dhabi. The project aims to build a network connecting major CO₂ emitters with oil reservoirs, with the aim of significantly reducing Abu Dhabi's carbon footprint emissions by 2020, and replacing the vast amounts of natural gas currently re-injected into the oil reservoirs.

For CCS to work in WANA, according to H.H. Sheikh Al Nuaimi, the region should enter into partnership with CO₂ emitters to reduce or reuse carbon emissions. Carbon trading can also work within this region, he said. Power plants are the largest emitters of CO₂ gas in the region. Thus, His Highness suggested conducting a pilot project of CO₂ injection into oil reservoirs, which can be commissioned jointly by the largest oil producing company in WANA.

In order to reduce carbon emissions, H.H. Sheikh Al Nuaimi called on governments to expand existing environmental laws to govern and regulate the reduction of carbon emissions from all industries through the use of environmental permits and monitoring programmes for gas emissions.

His Highness highlighted the importance of being ecologically intelligent - to know one's impacts on the environment. One has to be first aware of and transparent about the challenges in order to work on solutions for environmental issues, he said.

H.H. Sheikh Al Nuaimi stressed the importance of carrying out research on such

issues to give evidence and validate findings. His Highness cited findings from the Arab Public Opinion and the Environment Conference Report of 18-Country Survey which was published in the July 2006 issue of *Al-Bia Wal-Tanmia* (Environment and Development) Magazine by the Arab Forum for Environment and Development (AFED). As part of a series of questions in the survey, respondents were asked to evaluate the state of the environment in their countries and comment on the level of importance they accorded to environmental problems. In the United Arab Emirates, 55 per cent of the respondents believed the state of the environment in their country got worse, 40 per cent believed it got better and five per cent thought there was no change. Air pollution was viewed by 40 per cent of respondents from countries across the Arab region as the undisputed principle environmental problem. At 74 per cent, hazardous waste was second on the priority list. Weak environmental awareness was chosen by 71 per cent of the respondents as a major environmental problem whereas solid and municipal waste was voted as the fifth major environmental problem, scoring 70 per cent of the total sample.

H.H. Sheikh Al Nuaimi drew the participants' attention to the fact that people increasingly live their lives linearly: "We take, we use and we throw. To be productive consumers, we need to turn our waste into a viable reusable resource."

Industrial ecology seeks to link together industrial processes so that one process makes use of the by-products of another, which would otherwise go to waste. In this way, resources are used more productively, less hazardous waste and other pollution is generated, and material, energy and water throughput is minimised.

One of the cases presented by industrial ecologists is the story of the spontaneous but slow evolution of the (industrial symbiosis) at Kalundborg, a small industrial zone on the coast, 75 miles west of Copenhagen in Denmark. This web of materials and energy exchanges among companies (and with the community) has developed over the last 20 years in Kalundborg. The aim behind most of the exchanges was originally to reduce costs by using 'waste' products to generate income. Gradually, the managers and town residents realised they were generating environmental benefits as well, through their transactions. His Highness cited the example of Kalundborg as a successful model that can be emulated in WANA for developing a desirable web of material, waste and energy exchanges with the aim of sustainable development.

Our urban ecosystems (cities) are mostly linear. In order for cities to become more sustainable they will need to implement circular metabolism where energies and materials used can be recovered. Keys to successful urban metabolism/ecosystems

(measured by looking at energy efficiency, material cycling, waste management and effectiveness of infrastructure) is educational recycling campaigns for all sectors of society, starting new urban projects and creating green jobs, re-injecting waste (acquired from the construction, demolition and building industry) into urban development, and reusing organic waste which forms a high percentage of human-produced waste. Waste trading whereby one city can use another city's waste is vital.

H.H. Sheikh Al Nuaimi concluded by citing the late Sheikh Zayed Bin Sultan Al Nahyan: "We cherish our environment because it is an integral part of our history and our heritage. On land and in the sea, our forefathers lived and survived in this environment. They were able to do so only because they recognised the need to conserve it, to take from it only what they needed to live and to preserve it for succeeding generations."



**Thank you to the participants of the
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