

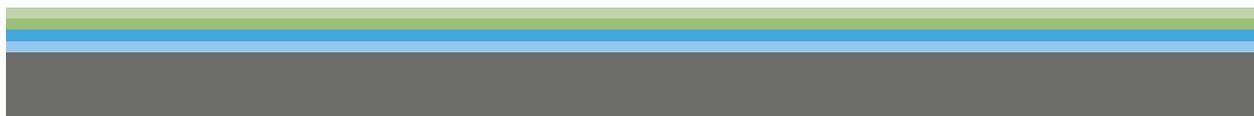
Workshop Report
Assessment Frameworks and
Indicators Selection Workshop

16-19 November, 2014

Abu Dhabi, UAE

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RATIONALE

Assessment Frameworks and Indicators Selection Workshop

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Abu Dhabi, UAE

Under the leadership of Ministry of Environment and Water (MOEW) and Environment Agency Abu Dhabi (EAD), Abu Dhabi Global Environmental Data Initiative (AGEDI) in partnership with United Nations Environment Programme (UNEP) with support by the Centre for Environment and Development for Arab Region and Europe (CEDARE) are organizing training workshop entitled: Assessment Frameworks and Indicators Selection Workshop.

Objectives

The main purpose of the workshop is to develop a platform for various Institutions in the United Arab Emirates (UAE) to meet and discuss the forward-looking Integrated Environmental Assessment (IEA) and reporting process. The workshop aims to familiarize experts with essentials about data collection including selecting the most appropriate and reliable types and sources of data and how to collect, store and analyze the data. The discussions during the workshop aim to address these issues, with particular focus on statistics and spatial data collection, within the DPSIR (Driver-Pressure-State-Impact-Response) indicators framework. It also aims at identifying the main national and local data vendors and sources, data acquisition and custodianship and methods for accessing and interacting with international community such as UNEP-Live. The workshop will be used as a platform to review and discuss with all partners the mandated reporting obligations of each Emirate. During the workshop, a core agreeable list of indicators will be selected to be implemented in target institutions - including indicators to be implemented in NRT in subsequent workshops that will be conducted in synchronization with the development of the NRT system.

Workshop Methodology

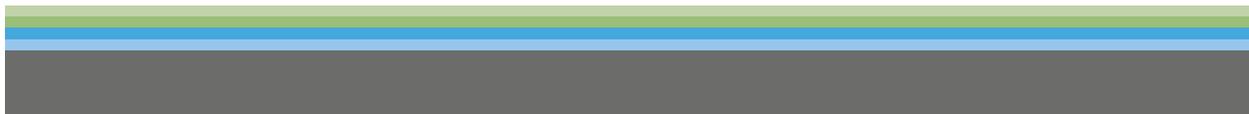
The workshop is based on the participatory approach. Different stakeholders are involved in an interactive process that promotes knowledge and information exchange, and makes clear their position and interests on various indicators priority issues. Engaging participation helps identify the main environmental priority issues that truly matter at the local and national level, strengthens the analysis of the observed change, and builds ownership of the workshop findings among institutions who custodians of following up action. The workshop methodology is a mixture of lectures, working groups, discussions, and presentations from participants.

There is a need to develop an understanding of the current status of environmental data and indicators framework and reporting in the UAE. This will ultimately construct the basic foundation to design the requirements and needs with respect to environmental information as well as future environmental assessment activities.

Accordingly, AGEDI with the support of EAD intend to develop a systemic IEA process to produce and communicate with all partners for future-oriented, policy-relevant information on key interactions between the natural environment and human society.

Reporting on environmental trends and their interactions with economic and social development is becoming mandatory for many governments and organizations around the world including the UAE. Assessments and reporting can increase the accountability of decision making and help answer important questions about development and the environment, such as: How effective is UAE's environmental performance? How is it related to current national policies? What are the policy options in UAE? These are challenging questions that need our collective wisdom within an integrated approach based on the best scientific knowledge and technical capabilities available.

Data in the IEA process is a means to assist the decision-making. Given that data have an important role in decision-making, it is critical that the data and indicators we use and develop are reliable and scientifically sound, relevant to the target audiences and easily understood.



Understanding environmental issues, their causes and impacts on humans and ecosystems, and the effectiveness of current policy solutions is inherent to scientifically sound reporting of information.

The National Reporting Toolkit (NRT) is an online system, using templates to generate reports, which will increase the ease with which countries generate, verify and publish data, information and knowledge on the State of the Environment. The web-based system will display information related to nationally relevant needs and issues across environmental, social and economic domains. By reducing the time it takes to complete a State of Environment Report, the toolkit aims to provide decision-makers with the most recent data and help optimise the use of Government resources to work on implementation. Phase 1 of this project, focused on Abu Dhabi, is building a proof of concept for what should be a highly replicable and scalable system that can be used by other countries at the national, regional and global level over the subsequent phases of the project.

EAD has a comprehensive collection of environmental datasets, covering terrestrial and marine biodiversity, freshwater, air and groundwater status. Similarly, other nations have spent decades building up sophisticated monitoring architectures. The NRT aims to build on top of this existing capacity, utilizing it as far as possible; not re-inventing the wheel but providing an additional component to improve the uptake of reports and information into actions. The toolkit aims to also expand the available capacity to use and interpret environmental data and indicators in decision-making.

The workshop will cover and not limited to the previous/current/planned State Of the Environment Reporting (SOER) in addition to other indicator-based reports. It will highlight the existing environmental monitoring and reporting obligations, activities, capacities, resources, plans, status etc. Experts will analyze the national and local environmental issues in the UAE as well as focus on the existing data sources. The discussion will highlight the existing data gaps and the inconsistencies in data and indicators at the local and national level.

The objectives of the capacity building process are to identify the main functions that will be used as data input to NRT system. It also identifies the main requirements for NRT outcomes and reporting systems. The objectives include identification of the data specifications and quality assessment, categorize and list available data for indicator themes. The workshop aims at identifying the main national and local data vendors and sources, data acquisition and custodianship and methods for accessing and interacting with UNEP-Live. The workshop will discuss the platform for using NRT reporting functions and interpreting indicators. The training will develop recommendation for Indicator reporting using the NRT System.

Acronyms	
AGEDI	Abu Dhabi Global Environmental Data Initiative
AQI	Air Quality Index
CEDARE	Centre for Environment and Development for the Arab Region and Europe
CICPA	Critical Infrastructure and Coastal Protection Authority
CPI	Corruption Perception Index
CSD	Commission of Sustainable Development
EAD	Environment Agency - Abu Dhabi
EAD - EISOM	EAD - Environmental Information Science & Outreach Management
EAD - TEPS	Terrestrial Environment Protection Sector
EAD - TMBS	Terrestrial Marine Biodiversity Sector
EOAR	Environment Outlook for the Arab Region
EPDA	Environment Protection and Development Authority
EPI	Environmental Performance Index
ESI	Environmental Sustainability Index
GCC	Gulf Cooperation Council
GEO	Global Environment Outlook
HDI	Human Development Index
IEA	Integrated Environmental Assessments
MDGs	Millennium Development Goals
MEA	Millennium Ecosystem Assessment
MOEW	Ministry of Environment and Water
NCMS	National Centre for Meteorology and Seismology
SCAD	Statistics Centre Abu Dhabi
SEIS	Shared Environmental Information System
SoE	State of the Environment
SDGs	Sustainable Development Goals
UNCCD	United Nations Convention to Combat Desertification
UNEP - ROWA	United Nations Environment Programme Regional Coordinator, Regional Office for West Asia
UAE	United Arab Emirates
WDI	World Development Indicators

Inauguration session

Opening Remarks

Dr. Ahmed Baharoon, Executive Director, Environmental Information, Science & Outreach Management – EAD and Acting Director of AGEDI

Dr. Fahad Hareb, Head of Air Quality department, MOEW, UAE

Dr. Ahmed Abdelrehim, Regional Programme Manager, Knowledge Management Programme, CEDARE

Dr. Adel Farid Abdelkader, Regional Coordinator, UNEP Regional Office for West Asia

The Inauguration Session of this four-day workshop (Agenda – Annex 1) was held at the main meeting hall at Dusit Thani, Abu Dhabi Hotel. More than seventy experts from various Federal and municipal entities in the United Arab Emirates (UAE), international experts, organizers from AGEDI and CEDARE, and high-level event executives were invited in this participatory workshop (List of Participants – Annex 2). According to the Agenda, the workshop was inaugurated at 9.30 am by Dr. Ahmed Baharoon, Executive Director, Environmental Information, Science & Outreach Management – Environment Agency - Abu Dhabi and Acting Director of AGEDI, Dr. Fahad Hareb, Head of Air Quality department, Ministry of Environment and Water, UAE, Dr. Adel Farid Abdelkader, Regional Coordinator, UNEP Regional Office for West Asia, and Dr. Ahmed Abdelrehim, Regional Programme Manager, Knowledge Management Programme, CEDARE.

Dr. Ahmed Baharoon welcomed Dr. Fahad Hareb, AGEDI's main partner in the NRT implementation and the participants. He highlighted the importance AGEDI places in working with its partners, members and stakeholders, to achieve a more sustainable future through 'best-impact' access to environmental and societal data. Dr. Baharoon stressed the importance of maintaining the momentum of success and continuity of this capacity building process from the first NRT workshop in 2013 and extending to future workshops. This momentum was initiated by introduction to NRT in 2013, to assessment frameworks, developing data infrastructure and indicator selection in this workshop 2014, to applied training on the NRT system in 2015. He placed special attention to the importance of taking this opportunity for networking and enhancing the cooperation among the participating experts. Dr. Baharoon focused on the importance of data that is necessary to fulfil national, regional and international reporting obligations. He thanked

CEDARE and UNEP and the internationally renowned experts for these series of successful workshops.

Dr. Baharoon expressed his gratitude to the workshop participants, CEDARE, UNEP and the partners' institutions, for their considerable efforts and excellent collaboration for this workshop. He welcomed the renowned experts Dr. Adel Farid Abdelkader, Regional Coordinator, West Asia UNEP Division of Early Warning and Assessment (DEWA) – UNEP ROWA, **Dr. Ahmed Abdelrehim**, Regional Programme Manager, Knowledge Management Programme (KMP) – CEDARE, **Dr. Asma Abahussain**, Associate Professor -Earth Science/Geochemistry – Arabian Gulf University, **Dr. Gerard Cunningham**, Eye on Earth Coordinator – UNEP, **Dr. Khaled AbuZeid**, Senior Regional Water Resources Programme Manager – CEDARE, **Dr. Marc Levy**, Deputy Director – Adjunct Professor - Center for International Earth Science Information Network (CIESIN), the Earth Institute, Columbia University, **Dr. Stephen Morse**, Chair in Systems Analysis for Sustainability - university of Surrey.

Dr. Fahad Hareb thanked CEDARE, UNEP, all the organizers and the experts for tackling such an important issue of data. He stressed the fact that the plan is to unite the emirates in terms of collecting data. He highlighted that for a competitive country, all emirates need to face the challenges of data gaps and data inconsistencies to achieve the goal of representing the UAE for what it really is and what it strives to be through standardizing and unifying data to proudly report progress to the world.

Dr. Ahmed Abdelrehim, on behalf of Her Excellency, Dr. Nadia Makram Ebeid, Executive Director CEDARE, thanked the UAE for the full support it has given Egypt and the tremendous support that the Environment Agency - Abu Dhabi (EAD) and Abu Dhabi Global Environmental Data Initiative (AGEDI) has provided to CEDARE. Dr. Abdelrehim also expressed his appreciation to the Ministry of Environment and Water (MOEW) and the workshop's main partners: UNEP, Columbia University, University of Surrey, and Arabian Gulf University. He particularly thanked the participants, who took the time to attend and actively participate in these series of NRT capacity building process workshops, despite their busy schedules to achieve the objectives of the workshop. These objectives, as iterated by Dr. Abdelrehim,

are in line with CEDARE's mission of "Teaming up with countries and institutions, to weave and balance economic, environmental and social priorities in policies and actions, for a more innovative, people-centred, inclusive and sustainable future, ingrained in the central principle of environment and development for human well-being".

Dr. Adel Abdelkader thanked the Ministry of Environment and Water, EAD, AGEDI and CEDARE for their support to execute these participatory and training-oriented NRT workshops. Dr. Abdelkader thanked AGEDI and EAD for the partnership with UNEP, maintained for years since 2002. This partnership has evolved from the national to regional to international levels to reach the most cutting edge international professional standards of cooperation. He highlighted that this cooperation in initiating and maintaining reporting standards in the UAE aims to overcome main challenges of the gaps and inconsistency of data that is needed to support informed decision-making. He stressed the importance of looking at NRT as a continuous process stemming from data and indicators to informed decisions. It is also a process in terms of the continuity of issues discussed in the successive workshops where the first one "Integrated Environmental Assessment (IEA) workshop for National Reporting Toolkit (NRT)" in 2013 presented the indicators, the current workshop will discuss assessment and the selection of indicators based on the national data and the planned one in 2015 of hands-on training on the NRT system.

Dr. Abdelkader highlighted the importance of Integrated Environmental Assessments (IEA) and State of the Environment (SoE) reports in identifying environmental challenges and ways to manage them in a manner that formulates sound environmental decisions and policies, sound environmental management, as well as work plans for environmental planning that support international agreements. He concluded his introduction by emphasizing the need for high quality, quantifiable and reliable environmental data and indicators as the main building blocks of the global IEA process for sustainable development.

Dr. Ahmed Abdelrehim concluded this introductory session by extending his thanks to the panel members Dr. Ahmed Baharoon, Dr. Adel Farid Abdelkader and Dr. Fahad Hareb. He extended his sincerer gratitude to Mr. Derek

Gliddon, National Partnership and Development Manager – AGEDI, for his remarkable organizational and technical efforts in teaming up with CEDARE in organizing the workshop. He also thanked Ms. Nagwa El Karawy, Partnership Project Manager - AGEDI, for her tedious and continual efforts for the success of the development and dissemination of the NRT with all the partners in and outside the UAE.

Dr. Abdelrehim presented an overview of the workshop objectives that strives to develop a platform for the various institutions in the UAE to discuss IEA and familiarize their participants with its DPSIR methodology and national reporting tools. He also highlighted the main cutting-edge technical tools provided to all participants and how these tools could be used throughout the workshop. He emphasized the importance of understanding the process of development, analysis and methodological framework of indicators and indices in the UAE. He reiterated his gratitude to the experts whose expertise and international experiences are at the core of the participatory process of this series of capacity building NRT workshops. Dr. Abdelrehim explained the philosophy of the workshop that is based on a participatory approach where participants are experts who share their experiences and expertise to promote knowledge and information exchange about environmental data and indicators linked to environmental priority areas at the local and national levels.

Day 1

1. Introduction to the agenda and workshop objectives Vision and Strategic Goals
2. The Capacity Building Process for the National Reporting Toolkit (NRT)
3. Demonstration of the workshop on–line system
4. Institutional Data and Indicators Infrastructure Questionnaire
5. Data and Indicators for UNEP Live
6. Indicators for International Reporting
7. Monitoring, Data and Indicators for Reporting - UNEP IEA manual
8. Regional Environmental Information Systems

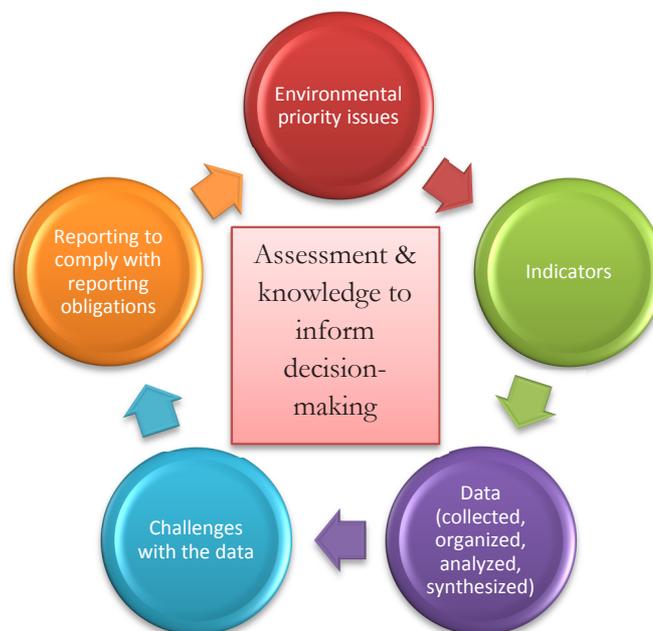
Introduction to the agenda and workshop objectives vision and strategic goals

Dr. Adel Abdelkader, UNEP

Comments from AGEDI and CEDARE

Dr. Abdelkader started the introductory session by inviting self-introductions to get acquainted with the participants, their entities and area of expertise.

Dr. Abdelkader provided a nutshell of the workshop, its aims, expected outcomes and methods. He presented the aims of data and indicators that ultimately seek to bridge science and policy under the umbrella of the vision and goals of the UAE and to promote capacity building on the local and national levels. He iterated that “*the aim of good quality relevant data and indicators is to communicate with the public and to decision-makers to take action*”. He stressed that the data and indicators are not goals in themselves but tools relevant to national priorities needed for informed decision-making as shown in the following cycle.



Dr. Abdelkader presented the main vision of the NRT workshops as facilitating the building of a unified platform and framework for the UAE in terms of environmental data and indicators. In the process, the series of NRT workshops identify and connect data users and producers to link science and

policy for the progress of the UAE. He presented the expected outputs and outcomes as follows:

1. Core list of environmental indicators categorized within the DPSIR framework;
2. Understanding of the roles and uses of data, understand inconsistencies, data gaps, function of indicators and indices in integrated environmental assessment;
3. An analysis of national reporting obligations;
4. Map of national environmental data sources;
5. Agreement on the methodology to develop strategies for collecting and validating data;
6. Understand how indicators and indices are developed and used in the UAE.

Dr. Abdelkader also stressed on the **participatory approach** of the workshop introduced by Dr. Abdelrehim in the introduction. He presented the agenda of the day and key issues of each presentation. These issues revolve around the roadmap for the development of a core set of sustainable development indicators for the UAE. This roadmap or framework entails setting criteria for evaluating the supply of data and indicators. He stressed the fact that the methodology of developing sustainability indicators and indices needs to stem from identified national priority indicators related to national priority environmental issues.

Dr. Fahad Hareb, chairing the sessions of the day, concluded this introductory session by stressing the importance of linking priority areas and indicators to international ones that affect the UAE at the regional and local levels. These in turn reflect back on the international level where the UAE could carve its place on the international map in terms of not only environmental issues but also macro-economic and social issues that affect the people and their livelihoods.

The panel members provided final comments on the structure and flow of the workshop that is moving away from rigid presentations to a participatory flow of thoughts and sharing of knowledge and expertise.

Mr. Derek Gliddon, National Partnership and Development Manager – AGEDI, also welcomed the participants and presented an overview of workshop administrative issues. He informed the participants about the services and facilities that were provided by AGEDI. Mr. Derek extended his thanks for the MOEW, CEDARE, and all the environmental and statistical organizations in UAE. He stressed the importance of data and indicators for environmental sustainability and fortitude of the UAE.

Discussion

The discussions revolved around the scope of the indicators for the NRT and whether they include sustainable indicators or only environmental indicators. Mr. Derek retorted that the scope of the NRT as an automated computerized system could use all types of indicators that can be used for any type of inputs and their products. He explained that the scope of the workshop extends to Sustainable Development Goals (SDGs) that are the ultimate goal of environmental management. He explained that the vision behind NRT is to be used by different organizations, at different scales with different needs and priorities. Mr. Derek concluded that the workshop is about the environment while recognizing its links to social and economic issues.

Dr. Abdelrehim added that the workshop needs to identify priority issues and reporting obligations that NRT will be useful for. This will be discussed throughout the days of the workshop. He concluded by emphasizing the importance of incorporating the SDGs that must be at the heart of national priorities. This in turn entails selecting relevant indicators and data to national, regional and international priorities.

The Capacity Building Process for the National Reporting Toolkit (NRT)

Mr. Derek Gliddon, National Partnership and Development Manager, AGEDI

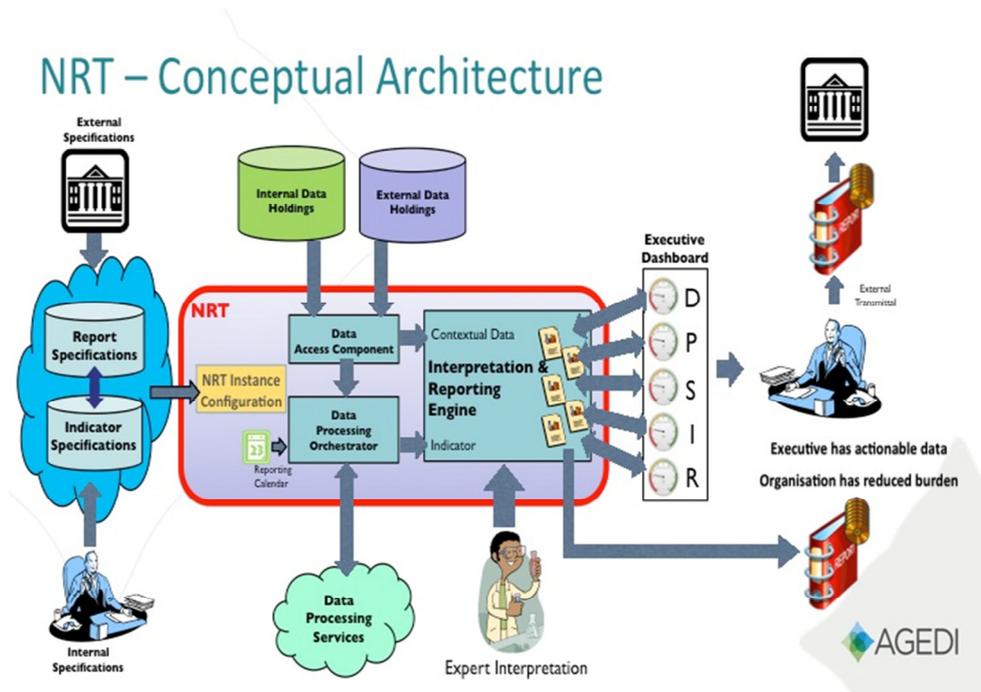
In his presentation Mr. Derek Gliddon presented a background on Abu Dhabi Global Environmental Data Initiative (AGEDI) and its characterization as a **partnership organization** in the UAE to facilitate a sustainable future on different scales from local to global. He presented its vision of addressing systematic problems of **closing the data gaps** in the UAE. He highlighted AGEDI's special initiatives and projects that AGEDI participated in over the past 12 years since the launch of the initiative in September 2002. He highlighted the importance AGEDI places on networking and cooperation with other organizations for knowledge sharing and improvement of the accessibility of information towards more informed decision-making.

Mr. Gliddon provided the participants with an overview on the NRT objectives and functions. He explained the NRT process that is developed to address the need of the decision-makers who are "*overwhelmed with uncoordinated information with a slow and expensive process*". He iterated the needs for indicators that are standardized, flexible and fit for the purpose of organizations with limited resources, and relevant to all scales of governance (local, national, regional and global). He presented the requirements of NRT to be:

1. Indicator-based environmental reporting tool (objective and automatable)
2. Support mandated reporting obligations from the local to national to Regional and Global levels.
3. Support environmental management reporting
4. Support multiple indicators (e.g. DPSIR) – inclusive of social and economic dimensions
5. Relevant around the world
6. Relevant at all scales of Governance (local, national, regional and global)
7. Durable - capable of accommodating new and evolving indicators
8. Appropriate for organisations with few resources (Web Solution)
9. Deliver business benefit – i.e. improve organisational efficiency
10. Support the diversity of data control policy regimes (conservative to open)
11. Support collaboration and knowledge sharing

Mr. Derek Gliddon stressed that the indicators also need to deliver business benefits and improve organization efficiency, support the diversity of data control policy and most importantly support collaboration and data sharing. He presented the NRT reports as essential **Data Transfer Vehicle** linking the different scales of governance.

Mr. Gliddon presented the NRT conceptual Architecture that integrates and links objectives, methodology and outcomes in a comprehensive conceptual framework of the NRT process and vision as shown in the following diagram.



Mr. Gliddon stressed the importance of the participatory philosophy and hierarchical cooperative approach (EAD, MOEW and the entities in the individual emirates) of the workshop building on the previous one and leading to the following one to maintain a momentum of engagement with stakeholders at different levels to share knowledge and expertise. Mr. Derek encouraged the cooperation between EAD and MOEW to be established as experts in hosting and using and training on the NRT system that will be supported by AGEDI. This cooperation will promote capacity building for NRT for entities and organizations on the UAE federal and municipal levels.

Mr. Gliddon also provided a brief on the NRT software system that presents the executive dashboard, library of reporting obligations, user and access management on the system and most importantly the uses of the system as a capacity building tool.

Demonstration of the workshop online system

Dr. Ahmed Abdelrehim, CEDARE

Dr. Abdelrehim started by introducing logistical issues that include registration to identify expertise for the working groups. He presented an overview of the workshop objectives highlighting the main tools provided to all participants and how these tools could be used throughout the workshop. He explained that all the training materials and modules are downloaded on the tablets and the flash memories distributed to all participants. He indicated that is also uploaded on the workshop website <http://gis.cedare.int/nrt/> and corresponding mobile application to be daily updated. He talked the participants through the contents that include: the agenda, experts, questionnaire, UNEP's IEA training manuals 2 and 4 specifically linked and customized to the workshop objectives, more than 1200 indicators (e.g. World Development Indicators (WDI), UNEP and UAE indicators), their mapping charts and sources, and the supporting documents such as the Sustainable Development Indicators for the Arab region. He explained that these documents present the methodology for calculating environmental, economic and social indicators that are relevant to priority issues and reporting requirements at different local to global levels.

Dr. Abdelrehim highlighted that this workshop was intentionally designated to be participatory using cutting edge technology, as a conscious effort to reduce the use of paper and promote communication and exchange, in line with AGEDI, EAD, MOEW, UNEP and CEDARE's conservation and information-exchange vision and policies.

Institutional Data and Indicators Infrastructure Questionnaire

Dr. Ahmed Abdelrehim, CEDARE

Dr. Abdelrehim gave an overview of the questionnaire distributed to the participants, which aims to provide information about the organizations and their data infrastructure and needs. He explained that its analysis aims to highlight:

- Institutional infrastructure,
- Data sharing mechanisms,
- Reporting obligations,
- Process of prioritization of environmental issues
- Data needs and sources,
- Sustainable development and environmental strategies,
- State of the environment reporting,
- Availability of core set of environmental, economic and social indicators and their scale (local, national, regional and global),
- Challenges in terms of data and indicators (e.g. data gaps, inconsistencies, unavailability, etc.),
- Types of databases and their systems and
- Capacity building needs of the organizations and entities in the UEA.

He highlighted that this questionnaire ultimately aims to facilitate the “*painful journey of data hunting*” for environmental reporting.

Discussion

In responding to questions about the questionnaire, Dr. Abdelrehim explained that the questionnaire ultimately aims to provide a landscape and infrastructure of the data and indicators in the different organizations. The questionnaire will be collected on the last day to be well thought of and to give participants the chance to incorporate in it all the information, knowledge transfer and methodology of the workshop.

Dr. Gerard Cunningham, Eye on Earth Coordinator - UNEP, stressed the importance of questions of 5.5. and 5.6 about the monitoring system of data and indicators that provides a bird's eye view of data landscape and infrastructure. This monitoring is critical to identify what is in existence and what needs to be in place.

Dr. Fahad Hareb concluded the discussion by emphasizing the importance of these questionnaires that are critical to data and indicators that are unified, standardized and relevant to the UAE.

Data and Indicators for UNEP-Live

Dr. Adel Abdelkader, UNEP

Dr. Adel Abdelkader presented the different data and indicators presented on UNEP-Live knowledge sharing web portal available at <http://uneplive.unep.org>. He started by presenting the development of the UNEP-Live system and its interface customized to the different countries, themes or keywords.

Dr. Adel Abdelkader presented the *UNEP Live: Our Changing Environment: Place by Place* as a system-wide approach to keeping the Environment under review. He highlighted the objectives of UNEP Live web-based platform that aims to:

- Facilitate the exchange and sharing of up-to-date data, information, assessments and knowledge amongst member countries, research networks, communities of practice, indigenous peoples and society, in order to keep the environment and emerging issues under review,
- Provide open access to national and regional information and global datasets
- Provide a range of big-data, visualisation, mapping and publishing tools via local and cloud services and
- Underpin UNEP's role as information and knowledge service provider especially in the delivery of information and evidence to support the SDGs and post 2015 agenda

Dr. Abdelkader highlighted that UNEP Live will achieve these aims through different means. These include: enlarging the knowledge base for global environmental policy through community networking; encouraging and supporting greater community networking; embracing new developments in information and communication technologies and enhancing knowledge service delivery through improved translation and search functions; improving access to its information and knowledge services using distributed computing; widening the use of its services through clear strategies for governance and data use that reflects the general principles of streamlining, sharing and access.

He explained that UNEP Live will facilitate the generation and communication of reports, maps, indicators, emerging issues, and state of the environment reporting. He added that it also provides a sense of ownership interfaced as “my UNEP-Live” <http://uneplive.unep.org/myuneplive> and a medium for

use of state of the art technology for collaboration and co-operation such as mesh networking, rapid assessments, open access research communities, citizen science, cloud sourcing and dynamic translation.

Discussion

The discussion revolved around the sources and credibility of data and the need to regularly update and correct them. Dr. Adel Abdelkader retorted that this is the ultimate aim of the open-access system of UNEP-Live that involves experts, organizations and citizens in updating and correcting data. He explained that this concept of open data is subject only to the requirement of attribution and/or sharing alike data. He advocated this open system that eliminates data restrictions for the communal good and for wider knowledge sharing.

Such need for open data is depicted in the following quote:

“Numerous scientists have pointed out the irony that right at the historical moment when we have the technologies to permit worldwide availability and distributed process of scientific data, broadening collaboration and accelerating the pace and depth of discovery, we are busy locking up that data and preventing the use of correspondingly advanced technologies on knowledge.” John Wilbanks, VP Science, Creative Commons

Indicators for International Reporting

Dr. Marc Levy, Deputy Director – Adjunct Professor, Center for International Earth Science Information Network (CIESIN), the Earth Institute, Columbia University

Dr. Levy started his presentation by presenting key messages to take home from his presentation. These highlight the facts that international reporting takes many forms and serves diversified purposes that respond to different scales of environmental reporting such as those formally and informally required for multilateral environmental agreements, formal international organizations, and informal international networks. He stressed that reporting landscape is changing which urges us, when thinking about systems and processes, to pay attention to the whole reporting landscape and how it is likely to evolve.

Dr. Levy highlighted the fact that informal ad hoc reporting processes can lead to distorted reporting such as the air quality drop of UAE. Therefore, he recommended the promotion of success and legitimacy of NRT, which entails engaging it in informal international networks. Dr. Levy provided several examples of the importance of informal international information networks and the importance of integrating private sector into public data for wider more credible access of crucial importance to the data and information landscape. These examples include identifying fisheries indicators (Sea Around Us and University of British Columbia providing privately collected data for public services) and ocean health and coastal protection indices.

Dr. Levy presented the challenges that exist in responding to international reporting needs. These include the federal structure that needs harmonization of data across the different federal systems; redundancy of identical or similar information; inefficiency that needs more automated and computing systems and software; consistency; inadequate feedback about international procedures and channels of communication between the community of practice.

To summarize, Dr. Levy highlighted two main messages:

1. Using NRT not as a software but rather as a tool and a framework to drive innovation to reduce inefficiency, incompatibility and inaccessibility and to enhance cohesion, coherence and cooperation
2. Adapting NRT to respond to local and organization-level needs while linking it to regional and international reporting and legal obligations

Monitoring, Data and Indicators for Reporting - UNEP IEA manual

Dr. Asma Abahussain, Associate Professor - Earth Science/Geochemistry, Arabian Gulf University

In her presentation Dr. Asma Abahussain highlighted that this module on National IEA process design and organization, is based on UNEP's GEO approach to the IEA. She explained UNEP IEA community module provides an overview of the IEA process, why it is important, how it is governed and established through the DPSIR frameworks, who would participate and in what role. She added that it gives advice on the allocation of resources, and explains the stages involved in setting up and implementing a GEO-based IEA process. It provides a better understanding of the role and structure of the IEA process, and the participants' role in managing it.

Dr. Abahussain iterated that according to law 24 for the year 1999, the responsible authorities are required to provide environmental reporting. However, during these 15 years since the enactment of the law, environmental reporting has not been comprehensive or systematic enough. This is why IEA process and its data and indicator requirements are critically needed for informed decision-making in the UAE.

Dr. Abahussain highlighted the main strengths of the IEA that include linking human and environmental systems, channelling analysis from experts to informed decision-makers, and developing policy analysis through a participatory and consultative process. She stressed that the IEA strengths stem from its integrative methodology of DPSIR that links Drivers to Pressures to the State of the environment (linked to the political, economic and social state), to recommend policy Responses and eventually actions.

In her presentation Dr. Asma Abahussain discussed policy analysis highlighting that integrated analysis of environmental trends and policies is one of the core elements of IEA. She emphasized that the aim of IEA is to answer the following five key questions:

1. What is happening to the environment and why?
2. What are the consequences for the environment and humanity?
3. What is being done and how effective is it?
4. Where are we heading?
5. What actions could be taken for a more sustainable future?

She indicated that in order to answer these questions, IEA analysis on environment and human wellbeing trends and dynamics should be based on the drivers-pressures-state-impacts-responses (DPSIR) framework that she will be presenting on day 2.

Dr. Asma Abahussain provided several criteria for environmental priority issues that include policy relevance, urgency of the issue, its effect on human health, its economic impacts, the degree of environmental impact, aesthetic effect on the environmental and human landscapes, effect on cultural and urban heritage and loss of biodiversity.

Following this introduction, Dr. Abahussain linked the environmental priority issues to indicators that constitute the tools to obtain information on these priority issues. She explained that primary or secondary, quantitative or qualitative, spatial or non-spatial data or mixed method data are the building blocks of these indicators. She highlighted that these data and indicators track changes, identify trends and inform policies. She traced continuum of data channels from scientists to policy makers through IEA that depends on data and indicators of required characteristics. These include sensitivity, measurability, simplicity, reliability, validity, and predictability that depend on credible time-series data.

Dr. Abahussain presented the hierarchy of data, indicators and indices where data function on the operational level, indicator on the management level and indices on the strategic level. She highlight that the indices at the end of the hierarchy such as Air Quality Index (AQI), Human Development Index (HDI) and Environmental Performance Index (API) are regarded at a policy and strategic levels that do not only have environmental consequences for the country but affect economic and social conditions.

Dr. Abahussain concluded by stressing the importance of IEA that aims to foster dialogue between science and policy and to facilitate reporting and communication based on a common methodology. She stressed that environmental assessments are not just reports, but rather important on-going processes. She highlighted the impact of stakeholder participation, focusing on the importance of diversity as an essential prerequisite during the process of collecting integrated data. She also stressed the differences between the IEA

and the SOE reports, and explained the key attributes and the basic conditions required for a successful IEA process.

Dr. Asma Abahussain concluded by looking at the NRT as an opportunity to close data gaps; to standardize data and prevent redundancy; to promote capacity building in the field of DPSIR, measuring and analysing data and developing indicators; to provide a basic criteria for national reporting, knowledge, experience and expertise sharing and enhance cooperating between the different entities and to come out with best practices.

The main messages and processes related to the participants included:

- Basic building blocks of indicators and indices, including frameworks, selection criteria, and elements of a participatory indicator selection process
- Data, indicators and indices and how they form an interlinked information system that is key for the implementation of integrated environmental assessment
- Practical exposure to information tools, with special emphasis on monitoring, data and indicators.
- Key concepts, techniques, benefits and constraints in areas of monitoring, data collections, indicator and indices and analysis.
- The importance of a participatory approach when developing an IEA in general, and its data and indicator components in particular.

Discussion

The first part of the discussion revolved around the Air Quality Index and the particulate matter PM10 (WHO standard 50 mg) that can reflect dust more than urban pollution in the UAE and the rest of the Gulf countries that are flagged red on the dashboard. Dr. Abahussain and Dr. Fahad Hareb explained the distortion in this index in the Gulf region where the dust hotspot emanates from Iran, Iraq and Turkey and not the Gulf. They expressed the need for taking into account the source of dust when PM10 is included in the index. They also expressed that indicators should be agreed upon on a regional level to take into account the national and regional specifications. They explained that GCC countries are developing data to prove that the PM10 stems from

the dust hotspots and not the Gulf countries but this needs reliable and systematic systems of measurement, analysis and communication of data.

Dr. Abahussain highlighted that Environmental Sustainability Index (ESI) evolved to Environmental Performance Index (EPI) to reflect more standardized indices that can be more applicable and fair to different countries. She stressed that this kind of integrated process that produces credible indices promotes the role of **Enablers of Change** for the progress of the different countries to encourage them to improve their indicators rather than inhibit their efforts.

She concluded the session and the proceedings of Day 2 by focusing on the main messages of communicating to the participants the fundamental role of knowledge gained from data in promoting understanding of environmental issues. She also stressed that IEA reporting are not only made for policy makers, but should rather be communicated with the public, parliament and other relevant stakeholders for wider scope of change.

Day 2

1. DPSIR Integrated Environmental Assessment Framework
2. Sustainable Development Indicators and the Arab Region Economic and Environmental Indicators
3. Criteria for evaluating the supply of data and indicators
4. State of the Environment Report for UAE and United Arab Emirate's vision 2021
5. Identification of National Environmental priority Issues
6. Water Indicators for the State of the Water Report
7. Atmosphere and Land Indicators for the State of the Environment Report
8. Coastal and Biodiversity Indicators
9. Social and Economic Indicators
10. Selection of core set of environmental priority Indicators

Overview of the Agenda of the Day

Dr. Ahmed Abdelrehim, CEDARE

Dr. Abdelrehim presented the flow of the agenda and changes instated to guarantee a logical and participatory flow from the previous day. He iterated that the day starts by presentations on the DPSIR methodology and critical indicators. These are followed by State of the Environment (SoE) reporting in UAE that builds upon the previous presentations in Day 1 that provides the participants a background to understand the IEA for SoE reporting. Then experts will present thematic indicators that will be followed by working groups to work and discuss these indicators.

DPSIR Integrated Environmental Assessment Framework

Dr. Asma Abahussain, AGU

This session, presented by Dr. Asma Abahussain, aimed to provide the workshop participants with a solid foundation on the DPSIR methodology. The session focused on communicating to the participants the fundamental importance of the DPSIR methodology in Integrated Environment Assessment. Through this presentation, Dr. Asma stressed the importance of using an integrative framework such as the DPSIR framework to link the knowledge gained from data, to understanding and analysis of environmental issues, to communicating information to policy-makers and other groups in society that incites responses that impacts on our environment, wellbeing and livelihoods in the region.

Dr. Abahussain started by recapping on the IEA framework that links environmental data to decision-making and identifies data gaps and inconsistencies. She introduced the DPSIR methodology, which consists of Driving forces, Pressures, States, Impacts and Responses, as a causal framework for describing the interactions between society and the environment. Dr. Abahussain provided examples of the Global Environment Outlook (GEO) and the Millennium Ecosystem Assessment (MEA) reporting processes that use the DPSIR framework. She advised the participants to get acquainted with these international processes that will benefit them in their assessment work on the local and regional level.

In her presentation, Dr. Abahussain explained the components of the DPSIR methodology while providing examples from the local and regional environment such as waste management, air quality and adaptation to climate change. She followed the integrated assessment flow through the components of the framework for the goal of sustainable development and human wellbeing. She stressed the importance of human wellbeing that consists of basic materials for good life, health, security, freedom of choice and action, and good social relations. Through this methodology, Dr. Abahussain highlighted the regional importance of Responses of provisioning and supporting ecosystem services on environmental Impacts. She focused on the importance of reliable data and well-chosen indicators in this integrated assessment flow, and how critical this is because poor information can ultimately lead to poor decisions.

The important role of indicators in summarizing the state of the environment, prioritizing our issues and giving an early warning was also demonstrated to the workshop participants, as well as the process of translating data into knowledge, and how this assists the decision-making process. Dr. Abahussain discussed the relation between data and users and how transferring data into indicators and indices can be useful and easier for users. She also shared with the participants, ways to integrate the indicators within the DPSIR framework.

Dr. Abahussain also discussed policy analysis and stressed that integrated analysis of environmental trends and policies is one of the core elements of IEA. She reviewed different kinds of policies and policy-making processes and their actors. She had indicated that policymaking is a long-term, interactive, and multi-stakeholder process to develop a framework to implement a certain policy, and to evaluate and modify its implementation on a regular basis. She explained the steps in the analysis of existing policies and the value of indicators in policy making and its potentials.

Dr. Asma concluded by highlighting that State of the Environment (SoE) reporting based on Integrated Environmental Assessment (IEA) is a much broader concept than a traditional (SoE) reporting. This IEA process is carried out using the **Drivers-Pressure-State-Impact-Response (DPSIR)** framework. It expands on a SoE reporting by undertaking a critical objective evaluation and analysis of data and information designed to meet user needs and support decision-making.

Sustainable Development Indicators and the Arab Region Economic and Environmental Indicators - Guiding Principles and Methodologies

Dr. Adel Abdelkader, UNEP

The presentation revolved around the guiding principles and methodologies of Sustainable Development Indicators (SDIs) in the region. In his presentation, Dr. Adel Abdelkader traced the development of the core set of SDIs in the region. These indicators started by 250 environmental indicators in 2003 that went through a long comprehensive and participatory process to reach a core set of 85 indicator categorized in 43 sub-themes that were in turn classified in 14 priority themes for the Arab region in the year 2007. These themes include poverty, governance, health, education, peace and security, agriculture/land, coastal and marine environment, water, biodiversity, economic development, global partnership, and consumption and production patterns. He explained that the Arab region followed global themes and added the theme of peace and security that crucially affect the livelihoods of people in the region.

Dr. Abdelkader went further in tracing the evolution of the implementation of the development of indicators' process in the region that culminated in the year 2012 by setting up a core set of 45 indicators. This set of indicator constitute of 16 social indicators, 16 economic indicators and 13 environmental indicators that are of priority importance in the region. This set of indicators is made more applicable to the region and more suitable to its needs, its resource and human capacity. These indicators cover dynamic and essential themes such as poverty, water scarcity and waste management in the region. He explained that the main aim behind developing this set of indicators is to induce change and responses to improve the economic, social and environmental state of the countries in the region.

The last part of the presentation focused on the methodology of developing and classifying indicators within priority themes for the Arab region.

The methodology of developing and classifying indicators was related to participants in matters of:

- The description of the indicator: Name, brief definition, unit of measurement and placement in indicator set. The indicators are customized from the Commission of Sustainable Development (CSD), World Bank, FAO and other international organizations.

- Policy relevance of the indicators at different scales of governance
- Methodological description
- Assessment of data concerning the data needed to develop the indicator, national and international availability and sources and data references
- Agencies involved in the development of the indicator

Discussion

The panel provided important commentary on the presentation. Dr. Fahad Hareb stressed the importance of adapting indicators to local and regional needs. Dr. Abdelrehim highlighted the importance of mandatory reporting obligations to devise these indicators in the region; a process that has been very slow in the region through the last three decades. He stressed the importance of coordinating efforts on the regional level to provide data and indicators for the planned Environment Outlook for the Arab Region (EOAR) report that tags the region on the international environmental map.

Further discussion revolved around the suitability and relevance of indicators to the different countries in the region. Dr. Adel Abdelkader emphasized that it is a flexible and dynamic process that must be adapted to the specificity of the country in question while bearing in mind the commonality of the priority issues in the region that are presented in the core set of indicators. Dr. Fahad Hareb commented further that it is important to customize these priority issues to the national level of the UAE and disseminate and publish these results. He also stressed the importance of updating data and indicators regularly to have widely disseminated timely data that represent the UAE on the regional and global levels.

State of the Environment Report for UAE

Mr. Mohamed Alam, Climate Change Expert, Ministry of Environment and Water (MOEW)

Mr. Alam gave a very thorough presentation on the process of development of the State of the Environment (SoE) reporting in the UAE, the participating entities and organizations, and the challenges faced during the preparation of the first SoE report for the UAE. He presented the stages of the development of the report from identifying and collecting data and indicators that went on from December 2013 to January 2015, to analysing them using the DPSIR framework, to developing the report by the end of this year 2014. Mr. Alam displayed the structure of the report consisting of eight chapters as follows:

1. Introduction
2. Socio-economic dimensions
3. Policies and environmental management
4. Air
5. Water resources
6. Land
7. Waste management
8. Way forward

Mr. Alam presented the challenges that the Ministry of Environment and Water (MOEW) faced in preparing the SoE report. These include the quality and availability of data and information; the inconsistency of methodology of measurement of data and calculating indicators throughout the individual Emirates of the UAE; and the discrepancy between the different data and information emanating from the different entities in the UAE and sometimes from the same entity.

Mr. Alam concluded by presenting this challenging work as another important building block in environmental assessment and reporting in the Arab region.

Discussion

The comments from the panel, experts and participants were all commendable of this first step of SoE reporting in the UAE. Dr. Adel Abdelkader congratulated the MOEW on leading this important SoE process in the UAE. He commended the SoE process that instated an institutional set up and got a very important process in place in the UAE. Dr. Gerard Cunningham, Eye on

Earth Coordinator - UNEP, congratulated the team and partners involved for taking this “monumental step” in the UAE that is always hailed and appreciated by UNEP. He encouraged MOEW and its partners to devise a strategic plan for handling challenges and maintaining momentum in producing periodic reports (that Mr. Alam said is planned for every 2-3 years). Dr. Fahad Hareb further commented that this SoE process was an eye opener for all entities in the UAE on the institutional, data, indicators and assessment challenges. These challenges, as Dr. Hareb stressed, require coordinated efforts to produce unified strong reliable and timely data and indicators necessary for environmental assessment and reporting in the UAE.

Session Outputs leading to the working groups who became familiarized with:

1. A sound understanding of the roles and uses of data, indicators and indices in integrated environmental assessment;
2. Know-how on developing strategies for collecting and validating data;
3. Understanding how indicators and indices are developed and used;
4. Analytical skills to analyse indicators and indices based on outcomes;

Identification of National Environmental Priority Issues (Working Groups)

Workshop Experts

Dr. Fahad Hareb – Dr. Adel Farid Abdelkader – Dr. Ahmed Abdelrehim - Mr. Derek Gliddon

Dr. Abdelrehim initiated the working groups by introducing the documents available in the tablets that the groups will be working with.

Dr. Abdelkader explained the “Terms of reference” of the working group exercise that is concerned with identifying priority themes, issues (1-3), potential data variables, proposed key (lead) indicators, units of measurement, and current primary (lead) data sources. He explained the logistical arrangements of the three working groups that were given thirty minutes to do the exercise with the help of the experts and then present it to the workshop participants.

Working Groups

Reporting from working groups

The main themes and issues highlighted by the groups are presented in the following table:

Theme	Issues
1. Water	Quality Scarcity Sources (recharging aquifers) Management Consumption Waste water management
2. Waste	Management Generation Treatment Disposal (limited infrastructure in the UAE) Regulation Quality Quantity Reuse Reclamation
3. Biodiversity	Fisheries management (fish stock and overfishing)

	Loss of species Habitat degradation and loss Invasive species
4. Atmosphere	Air quality (emphasis on urban areas) Pollution Noise Climate change Ozone depletion
5. Marine and coastal environment	Marine water quality Coastal degradation
6. Land	Soil quality Land use and planning Degradation (including salinization) Desertification Sand dunes Contamination
7. Energy	Limited resources/non-renewable Feasibility Consumption Energy was discussed to also be integrated under air quality as it is a critical source of air pollution in the UAE.
8. Toxins	Exposure to pesticides Exposure to radiation Toxin management

Discussion of the findings

The discussion revolved around the commonality and themes emerging in the three working groups. The first six themes figured in the three groups, which reflect these themes and their issues as priorities in the UAE. The last two themes only emerged in two groups (each in only one group). The panel members and experts emphasized their importance for the local and national setting of the UAE. Their appearance in only one group reflects the need and necessity of highlighting them as critical issues for the UAE. However, the panel members and experts decided that it is better to integrate them in the six priority themes for more focused and concise results from the working groups.

Water Indicators for the State of the Water Report

Dr. Khaled AbuZeid, Senior Regional Water Resources Programme Manager, CEDARE

Dr. AbuZeid provided a very comprehensive data-driven presentation on water indicators in the region. He started by presenting regional projects using water indicators with a focus on the Monitoring and Evaluation for Water in North Africa (MEWINA) project. He traced the path of water as an issue in the international development agendas. He started by introducing the water components of the Millennium Development Goals (MDGs). Then he went into the new Sustainable Development Goals (SDGs) to be implemented post 2015. He highlighted that water was prioritized in the post-2015 development agenda in a broad goal that would capture the fundamental importance of water for both humans and the environment. This goal is: “securing sustainable water for all” as shown in the following figure.



Dr. AbuZeid presented the most important indicators of the different types of water that should include total renewable water that consist of renewable blue water and green water; non-renewable blue water; non-conventional water (from municipal wastewater and desalinization known as silver water); and virtual water.

These indicators include availability of drinking water per capita, blue water withdrawal per capita (UAE came second in the Arab region), water quality of the different types of water (Water Quality Index), urban encroachment on green cover, water consumption of green water, water coverage, water

infrastructure, hydropower potential, municipal wastewater treatment facilities, extreme weather events indicators, water and affordability indicators, water and finance indicators, virtual water and trade indicators, water and governance indicators, and water and international relations indicators. Dr. AbuZeid stressed the importance of developing these indicators for both urban and rural settings for national and regional reporting in the region.

Discussion

The discussion was centred on the availability and accuracy of water data in the Arab region and how they are communicated to the users. Dr. AbuZeid explained that through the three years of the MEWINA project, efforts were concerted on devising, developing, implementing and monitoring water indicators in the Arab region. These efforts made many water indicators available in the countries involved in the project. He called for the implementation of the best practices and lessons learned from this project and similar ones in other countries in the region. He also stressed the need to install the necessary monitoring stations to generate the data needed for the water indicators.

Atmosphere and Land Indicators for the State of the Environment Report

(Indicators Selection Working Groups)

Dr. Asma Abahussain, AGU

Dr. Abahussain gave a concise presentation on atmosphere and land indicators in the region. With regards to the atmosphere, she presented the indicators under the issue of air quality, climate change and ozone depletion. Dr. Asma Abahussain presented land indicators concerned with agricultural issues, land degradation/desertification and vegetation cover. She stressed the importance of these indicators in the region and the need to analyse them using the DPSIR framework. She presented them as building blocks to assess, analyse and report on the state of the environment.

Coastal and Biodiversity Indicators

(Indicators Selection Working Groups)

Dr. Adel Abdelkader, UNEP

Dr. Adel Abdelkader presented the set of issues and indicators of coastal and biodiversity indicators used in the Arab region. He called on participants from the organizations in the UAE to select those that are relevant to their local and national settings and fit their needs and priorities. For the biodiversity indicators, he skimmed through the biodiversity indicators classified under the issues of loss of species, loss of habitat, wildlife trade, over fishing and protected areas. He provided several sources to look up biodiversity issues that include the Global indicators online portal (<http://www.principalglobalindicators.org>) and the UAE biodiversity strategy (p. 57 to 63) about biodiversity goals and how to fulfil them.

In terms of the coastal and marine environment indicators, Dr. Abdelkader presented the main indicators classified under the coastal degradation and marine pollution. He provided some resources for this theme that include the SEIS Shared Environmental Information System (SEIS) (6) indicators that could be selected from for the context of the UAE.

Social and Economic Indicators

(Indicators Selection Working Groups)

Dr. Marc Levy, CU

Dr. Levy started by emphasizing the importance of socio-economic indicators that fulfil four main purposes of being important elements of DPSIR, components of other indicators for environmental reporting, part of diagnostic capacity and crucial elements of report stratification. He provided the source of the Sustainable Development Indicators for the Arab region as the most comprehensive source of social and economic indicators in the region. Dr. Levy stressed a main message to 'take home' from his presentation of never neglecting socio-economic indicators that are of crucial importance for environmental assessment and reporting.

Working Groups

The issues were revised through a participatory way in more concise issues representing the main themes as shown in the following tables. They were divided in three groups for the working groups to devise indicators for them in the working groups of **Day 3**.

Working group 1

Theme	Issues	Revised issues	Comments
Water	Quality Scarcity Sources Management Consumption Waste water management Toxins	Water quality Water management Water scarcity	<i>Sources</i> can be integrated under water scarcity <i>Consumption</i> and <i>wastewater management</i> can be integrated under water management
Land	Soil quality Land use and planning Degradation (including salinization) Desertification Sand dune migration Contamination Land subsidence	Soil quality Land use and planning Degradation (including salinization, soil quality, contamination)- Desertification	<i>Contamination</i> can be integrated under soil quality <i>Desertification</i> was added to degradation <i>Soil quality</i> can be classified under degradation

Working group 2

Theme	Issues	Revised issues	comments
Atmosphere	Air quality (emphasis on urban areas) Pollution Noise Climate change Ozone depletion Energy Toxins	Air quality Climate change Noise management Ozone depletion	<i>Pollution, energy and toxins</i> can be integrated under air quality
Waste	Management Generation Treatment Disposal (limited infrastructure in the UAE) Regulation Quality Quantity Reuse and recycle Reclamation Toxins Landfill management	Waste management	All issues can be integrated under waste management There was a discussion about adding <i>landfill management</i> under revised issues but it was agreed to add it in the comprehensive issues section

Working group 3

Theme	Issues	Revised issues	Comments
Biodiversity	Fisheries management (fish stock and overfishing) Loss of species Habitat degradation and loss Invasive species	Fisheries management (fish stock and overfishing) Loss of species Habitat degradation and loss Invasive species	There was a discussion about adding <i>Fisheries management</i> to marine and coastal environment but it was decided to keep it under biodiversity where it is usually classified in the UAE
Marine and coastal environment	Marine water quality Coastal degradation	Marine water quality Coastal degradation	

Day 3

1. Developing Sustainability Indicators and Indices
2. National reporting processes-Working Groups
3. International reporting processes - Working Groups
4. Data gaps - Working Groups
5. National and International Data and Indicators- Working Groups
6. Data, collection, sources, inconsistencies- Working Groups

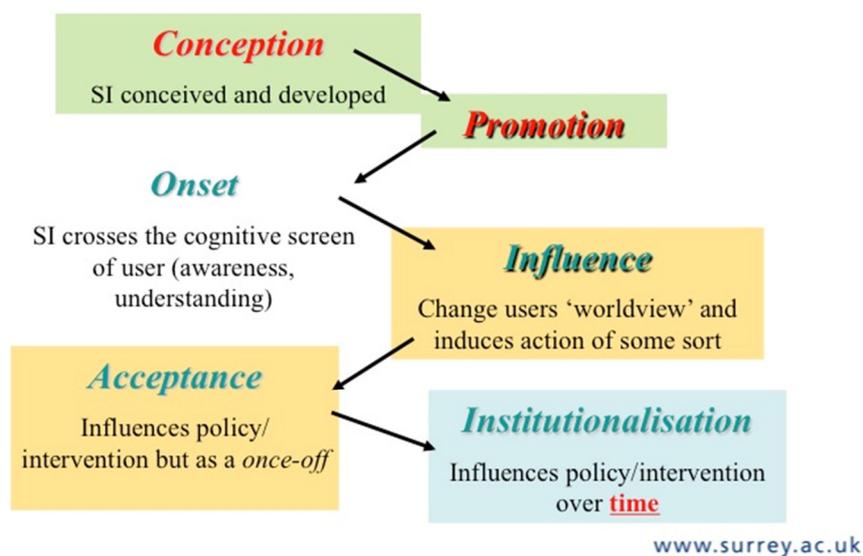
Developing Sustainability Indicators and Indices

Prof. Stephen Morse, University of Surrey

Dr. Morse provoked thoughts and debates on the use of indicators and their users. He tackled the issue of the criteria of success of sustainability indicators (SIs) that are directly linked to influence and impact. Dr. Morse brought to the table the need to evaluate the influence and impact of indicators. He pointed out the lack of literature to appraise and assess influence of indicators over policy or interventions. He attributes that dearth to the complex and difficult task of dissecting the presumed cause-effect link between the indicators and a specific policy or intervention. This task is challenging because the indicator is likely to be just one element amongst many influences on decisions and interventions. Dr. Morse also pointed out that there is a lack of assessment of evidence-based policy that are based on empirically based indicators.

“Many indicators are produced but many are just not listened to.” Dr. Stephen Morse

Dr. Morse traced the “life cycle” of the indicators from onset to influence that goes from conception to promotion to onset to influence to acceptance and institutionalization as presented in the following chain.

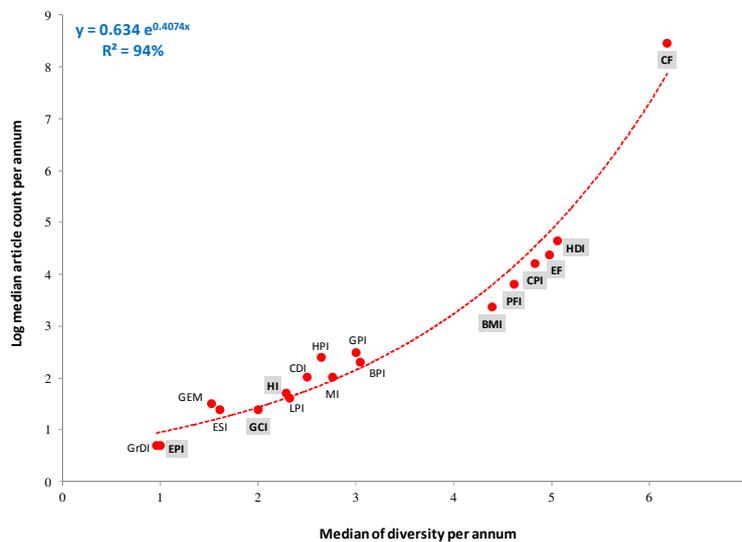


Dr. Morse highlighted that the literature on the use of indicators revolves around this theoretical framework. However, the empirical data to support its causal chain of influence is missing.

The framework sparked a debate about this linear model that some participants expressed its need for more complex and multiple pathways in the chain of indicator's influence. Dr. Morse urged participants to not underestimate the complexity of the framework that needs constant development in terms of empirically evidence-supported pathways.

Dr. Morse presented a standard set of global economic, social and environmental indicators. He was very critical of the uninformed use of these indicators that are presented in what he denoted to as “league table ranking” or “fame and shame” that are primarily “consumed” by the press.

Dr. Morse presented two criteria for measuring the success of indicators, namely: the number of articles that use the indicators and the diversity of reporting of the indicators. He recommended the **Nexis** database to assess these criteria. Dr. Morse showed patterns for the success of indicators for several global indices. Applying these criteria to the Human Development Index (HDI) results in findings that the HDI, which – according to Dr. Morse - the European press mistakenly presents it as a measure of the quality of life, is increasingly used in the press. Shown on a graph of *article number as a function of diversity*, Dr. Morse presented the findings of the higher success of the carbon and ecological footprints, HDI and Corruption Perception Index (CPI). On the other side, the Environmental Performance Index (EPI), happiness and gender indexes figured at the end tail of the curve as shown in the following graph of article number as a function of diversity.



Though Dr. Morse acknowledged that this method measure success in a narrow way, he drew insightful conclusions from their findings as follows:

- All SIs are ‘survivors’ (>10 years) but success of some SIs (CF, EF, CPI, HDI) contrasts markedly with the relative lack of success of others.
- ‘Focus’ of the SI is important (human development, corruption) **BUT** is not the major determinant of success (e.g. poor performance of ‘Happiness Index’)
- ‘Age’ of the SI and backing from a major international organisation are not guarantees of success (number of articles, diversity of reporting)
- Influence of an SI is a complex variable to tie down and is not just about an instrumental use – interesting parallels with the concept of **memes**.
- An SI does not necessarily need to be ‘*technically excellent*’ to be successful. Indeed it seems rare for potential ‘users’ of SIs to be asked to make an input into development.

Dr. Morse concluded by presenting his ideas and critical review of indicators and their success as food for thought that he hopes would spark debate that would promote the use and impact of indicators and indices.

Discussion

Discussion debated this thought-provoking underexplored frontier of indicators. Opinions suggested impact weighing the impacts of the article tackling the different indicators, and the investment in public relations (article per dollar spent). Dr. Abdelrehim also suggested the effect of timing of this analysis where for example in time of climate change events such as the COPs might trigger publishing about the carbon footprint while disregarding other indices. Arguments also revolved around the effect of indices as analysed by multiple theories of change. For example, Dr. Levy mentioned that the ecological and carbon footprint indices presume an effect of change in the way people think about the world while EPI aims to influence policy-makers and hold them accountable. This policy effect that might result from only one article in the press can initiate pressure on policy makers to convene policy initiatives that can have significant effects, which has proven effective in many countries. The discussion was very fruitful and triggered many ideas and directives for future research, policy and impact analysis.

Working Groups

The task of the working groups in the two sessions of Day 3 consisted of:

Session 1: Devising *indicators, units* and *sources* for the themes and issues identified in Day 2

Session 2: Indicating *availability* and *reporting obligations* corresponding to the identified themes, issues and indicators

The members of the working groups focused on issues that are relevant to their work to share their expertise and learn from others' experience and knowledge. The working group sessions maintained through the days of the workshop built momentum of working on forming a roadmap for devising standardized indicators relevant to the priority issues, themes and reporting obligations of the different entities in the UAE.

The three working groups consisted of:

- **Working group 1** working on the themes of *Water* and *Land*
- **Working group 2** working on the themes of *Atmosphere* and *Waste*
- **Working group 3** working on the themes of *Biodiversity*, and *Marine and coastal environment*

The experts provided guidance on the process and sources of information. The provided sources include the GEO portal, the *ECOLEX: the gateway to environmental law* available at <http://www.ecolex.org/start.php>, and the *Socio-Economic Data and Application Center (SEDAC)* hosted by Columbia University available at <http://www.ecolex.org>.

Reporting from the two working group sessions

The participatory-led products of the two sessions of the working groups culminated in tables indicating identified *themes, issues, indicators, units, sources, availability* and *reporting obligations*. These were further revised by experts and participants in a participatory session in Day 4.

Day 4

1. Presentation of the findings
2. Future Outlook; Sustainable Development Goals
3. Criteria for Evaluating the Supply of Data and Indicators
4. Needs, Challenges, Mechanisms and Protocols for Institutional Data Sharing for NRT
5. Elements of Framework for Environmental Indicators and Roadmap towards NRT Implementation at the National Level

For the availability: Green refers to available, yellow to partially available and red to unavailable
For the reporting obligations: Blue refers to international and regional obligations and green refers to national obligations

THEME	ISSUE	PROPOSED KEY (LEAD) INDICATORS	UNITS	SOURCES* (website if available)	AVAILABILITY	REPORTING OBLIGATIONS
1	2	3	4	5	6	7
1- Water	Groundwater quality	pH Salinity Heavy metals Concentration of Nitrates, Iron, Chlorides, Sulphates, radioactive elements, pesticides, herbicides and coliforms	mg/L	EAD MOEW	PH levels measured for 1300 wells Water level and salinity only measured annually	1-State of the Environment report 2-Water management strategies on the local and national levels
	Drinking/fresh water quality	BOD levels COD levels Coliforms, faecal	Counts/100 ml	Regulation and Supervision Bureau (RSB)	Yes	Water State in the Arab Region

	Water management	Freshwater: annual intake	Mm3/year	MOEW Federal Electricity and Water Authority (FEWA)	?	GCC Water Strategy 3-Sustainable Development Report 4- Performance Management report
		Annual freshwater use by sector / source	Mm3/year	Ministry of Energy MOEW FEWA ADWEA	Yes	
		% of treated used waste water	%	DEWA SEWA		
		% of unaccounted for water	%	ADWEA SCAD		
	Water scarcity	Annual groundwater recharge	Mm3/year	EAD	Renewable and Groundwater Policy Briefs	5- Renewable and Groundwater Policy Briefs
		Annual groundwater drawn by sector	Mm3/year/Sector	EAD	Yes	Awareness Programmes MDGs SDGs

SCAD is responsible for reporting on all water issues in Abu Dhabi

THEME	ISSUE	PROPOSED KEY (LEAD) INDICATORS	UNITS	SOURCES	AVAILABILITY	REPORTING OBLIGATIONS
1	2	3	4	5	6	7
2-Land	Soil quality	Areas affected by salinization Salinity content?	000 ha	EAD	Yes	United Nations Convention to Combat Desertification (UNCCD)
		Areas affected by contamination	000 ha	EAD	Not available yet EAD future project	
	Land use and planning	Land subsidence	Mm/year	To be measured	Not available	6- Urban Planning
	Degradation - Desertification	% of inland degradation	%	EAD	Available 2010	United Nations Convention to Combat Desertification (UNCCD) in those
		% of coastal land degradation	%	EAD	Not known	

		Areas affected by waterlogging	000 ha	EAD	Yes	<p>countries experiencing serious drought and/or desertification</p> <p>7- EAD - General Secretariat for the Executive Council (GSEC) report</p> <p>The Convention on Wetlands of International Importance (RAMSAR)</p> <p>8- Environmental strategies and Agenda – Abu Dhabi</p>
		Productivity of agricultural land	Ton/ha			

THEME	ISSUE	PROPOSED KEY (LEAD) INDICATORS	UNITS	SOURCES	AVAILABILITY	REPORTING OBLIGATIONS
1	2	3	4	5	6	7
3- Atmosphere	Air quality	Concentration of PM 2.5 (hourly and daily)	ug/m3	MOEW Fujairah Municipality	Yes	Sub-national to national reporting
		Concentration of pollutants (SOx, O3, NOx, CO, PM 10)	ug/m3	Dubai Municipality EAD via Statistics Centre Abu Dhabi (SCAD) National Centre for Meteorology and Seismology (NCMS)	Yes	9- Reporting on compliance to Decree 12 of year 2006 to MOEW on quarterly basis Sub-national to national reporting
		% of exceedance to WHO and Decree 12 for year 2006			Yes	10- UAE vision 2021 11- Abu Dhabi Environment agenda and strategy

		Air Quality Index (AQI) (SO _x , O ₃ , NO _x , CO)		Under discussion on the national level MOEW		
	Climate change	CO ₂ eq per GDP	Ton/\$ or AED	Ministry of Energy	Yes	The sustainable development report of the Arab region
		CO ₂ eq per capita per year	Ton/person	MOEW – Agriculture sector	Yes	12- Strategy implementation
		CO ₂ per KWhr	Ton/KWhr	EAD via SCAD Petroleum Supreme Council	Yes	State of Environment report – MOEW
		Total CO ₂ equivalent (CO ₂ -e or CO ₂ -eq)	gm or ton (ppm?)	Ministry of Economy	Yes	UAE National Communication to UNFCCC
		Budget spent on adaptation per year	\$ or AED/year	TADWEER		

		% of critical habitats & vulnerable species with conservation management plans to improve resilience to climate change	%	Center of Waste management (CWM) – Abu Dhabi Public Works at Ras Al Khaima, Umm Al Quwain Bee'ah Waste Management – Sharjah Dubai Carbon Centre of Excellence	Partially available Methane capture for landfill (SCAD)	
	Ozone depletion	% of phasing out of ODS relative to baseline		MOEW Customs Federal Authority	Yes	Montreal Protocol Each Emirate to report to the MOEW for international reporting
	Noise management	Percentage of exceedance from existing standards as of Federal Law 24		EAD	Partially available	15- Abu Dhabi Environment agenda and strategy

THEME	ISSUE	PROPOSED KEY (LEAD) INDICATORS	UNITS	SOURCES	AVAILABILITY	REPORTING OBLIGATIONS
1	2	3	4	5	6	7
4-Waste	Waste management	Municipal waste generation per capita per day	Kg/capita/day	Ministry of Environment and Water TADWEER	Available for all municipalities	
		% of municipal waste treated	%	Center of Waste management (CWM) – Abu Dhabi		UAE vision 2021 Abu Dhabi Environment agenda and strategy
		Generation of hazardous waste per capita per year	Kg/capita/year	Public Works at Ras Al Khaima, Umm Al Quwain		Basel Convention Menemata Convention
		% of hazardous waste treated	% Type (subject to trans-boundary regulations)	Bee'ah Waste Management - Sharjah		

Need for more information on Mercury indicators for the UAE

THEME	ISSUE	PROPOSED KEY (LEAD) INDICATORS	UNITS	SOURCES	AVAILABILITY	REPORTING OBLIGATIONS*
1	2	3	4	5	6	7
5- Biodiversity	Fisheries management	Sustainable Catch Index for key species		MOEW EAD - Environmental Information Science & Outreach Management (EISOM) EAD - Terrestrial Marine Biodiversity Sector (TMBS) – Ms. Reem Al Baharna	Yes	16- Critical Infrastructure and Coastal Protection Authority (CICPA) Environmental strategies and Agenda
		Number of fines for illegal fishing activities		EAD Critical Infrastructure and Coastal Protection Authority (CICPA)	No	17- CICPA

	Loss of species	Estimated number of key species		EAD – EIOSM EAD – TMBS – Dr. Shaikha AIDhaheri EPAA Sharjah Environment Protection and Development Authority (EPDA) – Ras Al Khaimah	Yes	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Gulf Cooperation Council (GCC) Wildlife
		% of threatened species		EAD – EIOSM EAD – TMBS – Dr. Shaikha AIDhaheri EPAA Sharjah	Yes	CITES Cooperation with the International Union for Conservation of Nature (IUCN)
		% of reptile species evaluation (threatened species)			Yes	IUCN Indian Ocean and South-East Asia (IOSEA)
	Habitat degradation and loss	% of terrestrial protected areas		EAD – EIOSM, TMBS & Terrestrial	Yes	The Convention on Wetlands of International Importance
		% of marine protected areas		Environment Protection (TEP)		

		% of critical habitats protected		MOEW EPAA Sharjah	Yes	(RAMSAR) Environmental strategies and Agenda – Abu Dhabi
	Invasive species	Number of invasive species controlled		EAD – TMBS TADWEER Center of Waste management (CWM) – Abu Dhabi EPAA Sharjah	Yes	CITES
		Number of feral cats being spayed or neutered		EAD Department of Municipal Affairs (DMA) TADWEER Center of Waste management (CWM) – Abu Dhabi	Yes	
		Number of ships complying with regulations		No source but supposed to be CICPA and EAD	Yes	19- MOEW

The reporting obligations on the theme of **Biodiversity** on the national level concerns the State of the Environment reporting by the Ministry of Environment and Water, EAD - General Secretariat for the Executive Council (GSEC) and Statistics Centre Abu Dhabi (SCAD). It concerns GCC agreements on the regional level and the Convention on Biological Diversity (CBD) on the international level.

THEME	ISSUE	PROPOSED KEY (LEAD) INDICATORS	UNITS	SOURCES	AVAILABILITY	REPORTING OBLIGATIONS*
1	2	3	4	5	6	7
6-Marine and Coastal environment	Marine water quality	Number of harmful algae bloom per year		EAD – Marine Water Quality Unit	Yes	20- Annual report Environment Strategies and Agenda
		Marine water quality index (Need for specifying indicators)		EAD – Marine Water Quality Unit	Yes	
	Coastal degradation	% of urban population living in coastal areas	%	Abu Dhabi - Urban Planning Council (UPC)	Yes	Environment Strategies and Agenda

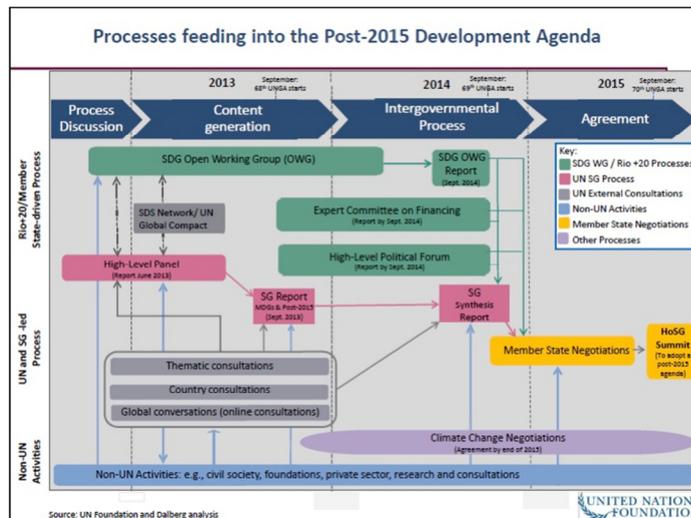
		% of coastal and marine protected areas	%	EAD – Terrestrial Marine Biodiversity Sector (TMBS) – Mr. Ashraf Cibahy EPAA Sharjah	Yes	Environment Strategies and Agenda
		Aquaculture Production Index		EAD – TMBS – Mr. Mohamed Al Mazrouie	Yes	
		% of coral bleach	%	EAD – TMBS – Mr. Edwin Grandcourt EPAA Sharjah	Yes	

The reporting obligations on the theme of **Marine and Coastal environment** on the national level concern the Ministry of Environment and Water, EAD - General Secretariat for the Executive Council (GSEC) and Statistics Centre Abu Dhabi (SCAD)

Future Outlook; Sustainable Development Goals

Dr. Marc Levy, CU

In his presentation, Dr. Levy gave a future outlook on the post-2015 Sustainable Development Goals and the processes feeding into it.



He highlighted the main differences between the MDGs and SDGs that include the move toward the centrality of the environment and sustainability; widening of the focus from poor countries to a more universal outlook; data revolution central; and the aiming for more robust achievable results. Dr. Levy concluded by highlighting the significance of future challenges that are constantly on the rise. He recommended building a resilience system that could accommodate these challenges.

“Future challenges are more significant, there are not going anywhere and we need to build a system that can accommodate these challenges.” Dr. Marc Levy

Discussion

The discussion revolved around the qualitative and quantitative methodology and messages of the sustainable development targets and their multiple purposes. Dr. Gerard Cunningham highlighted the importance of staging these targets at the next Eye on Earth Summit in October 2015 that will hopefully engage the expertise of the experts present in this meeting. Discussion also tackled the adaptation of these targets to the countries in the Arab region and how they can guide the assessment and reporting initiatives therein.

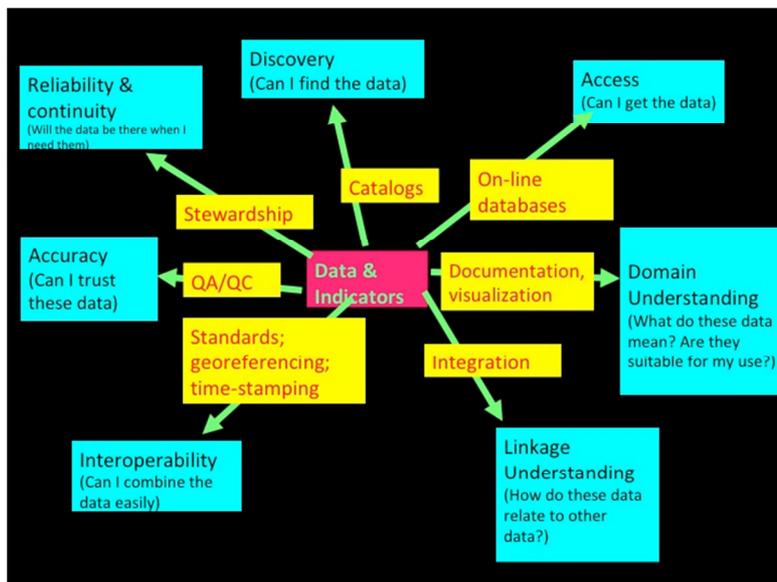
Criteria for Evaluating the Supply of Data and Indicators

(Panel Discussion)

Dr. Marc Levy, CU

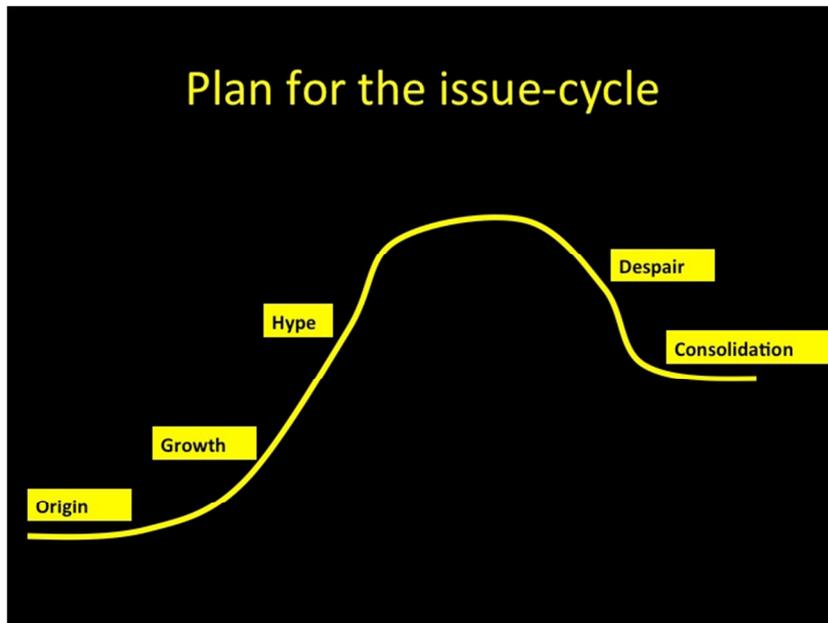
Dr. Levy traced the evolution of the data and indicator provider model to accommodate the diversified needs of users. He explained that it progresses towards the development of intricate data infrastructure to mediate between data producers and users. He stressed that data infrastructure needs to accommodate important criteria for data and indicators. These include discovery, access, domain understanding, linkage understanding, interoperability, accuracy, reliability and continuity. In relation to interoperability, Dr. Levy stressed that it is not only a matter of standards or tools but the critical issue is rather in the development of tools that would help data users. He added that manual intervention is needed to make “data fit together” and connect the data to the users.

Dr. Levy delivered a main message that “*data infrastructure fails if it does not meet the demand of understanding the data by users*”. This understanding can be promoted through stewardship (i.e. investing in the long term care and survivability of a system); standards, geo-referencing and time-stamping; integration; documentation; and visualization that integrates information in an appropriate manner through on-line database, catalogues, etc.



“Helping users make wise choices is a community building and community strengthening task”. Dr. Marc Levy

Dr. Levy concluded by emphasizing the importance of effective innovation throughout the ***plan for the issue cycle***. He represented this plan as a bell shaped curve emanating from the origin passing through growth to reach hype. It will undeniably pass by stages of despair to eventually reach consolidation.



A short discussion followed the presentation. It mainly focused on the **plan for the issue cycle** and the need to decrease the gap between the stages of peak and consolidation.

Needs, Challenges, Mechanisms and Protocols for Institutional Data Sharing for NRT

Workshop Experts

Dr. Abdelkader introduced this working group exercise that aims to assess and discuss the needs, challenges, mechanisms and protocols for institutional data sharing for NRT.

The three working groups constituted of:

Working group 1: MOEW and National Bureau of Statistics (NBS)

Working group 2: Environment Agency – Abu Dhabi

Working group 3: Other federal and municipal entities and institutions.

Four assessment questions were distributed to the participants in the three working groups.

These questions are:

1. How can NRT assist your institution in the reporting process?
2. What are the needs to implement NRT at your institution (technical - institutional - financial)?
3. List the potential challenges to implement NRT in your institution
4. What are your recommendations to overcome these challenges?

Presentation of working groups

Questions	Working group 1 MOEW - NBS	Working group 2 EAD	Working group 3 Federal & municipal entities
<p>1. How can NRT assist your institution in the reporting process?</p>	<ol style="list-style-type: none"> 1. Standardizing and unifying reporting methodologies, units, time and methods of measurements from the source 2. Developing national reporting to fulfil national and international reporting obligations 3. Accuracy and speed of providing the data and information needed for reporting 4. Early warning systems (water, land, etc.) 5. Having a unified template for national reporting to facilitate reading reports and obtaining information 	<ol style="list-style-type: none"> 1. Facilitate management of reporting requirements and reporting to SCAD and MOEW 2. Facilitate data collection, analysis and reporting on environment vision 2030, five year strategy Abu Dhabi and environmental policy agenda 3. Provide a systematic approach for internal data archiving, data processing, reporting and presentation 4. Entities reporting to EAD on their emissions and discharges in a consistent and processed manner 5. Facilitate identification of gaps 	<ol style="list-style-type: none"> 1. Facilitate data collection, integration, analysis, evaluation of data results, mitigation measures, suggestions and recommendations and submission to decision-makers 2. Simplify the procedures 3. Help submit concise information to decision-makers 4. Help comply with national and international reporting requirements and conventions

		6. All indicators presented with metadata and clear definition of indicator and calculation method	
2. What are the needs to implement NRT at your institution (technical - institutional - financial)?	<ol style="list-style-type: none"> 1. Monitoring change and trends in national and international indicators 2. Communication with relevant institutions to monitor the indicator 3. Develop national environmental database for indicators and for communicating with relevant institutions and for regular monitoring 4. Facilitate complex indices 5. Calculating complex indicators on the national level such as Carbon Footprint 6. Defining priority indicators and scale of projects that 	<ol style="list-style-type: none"> 1. Software made available to EAD and partner entities 2. Awareness and training 3. Endorsement by senior management to be used and included in MoU with partner entities 	<ol style="list-style-type: none"> 1. Capacity building for human resources 2. Financial assistance 3. Technical assistance (laboratories, equipment, stations, software) 4. Awareness for the private and governmental agencies

	<p>are needed to achieve national goals</p> <p>7. Provide energy and time and decrease redundancy</p>		
<p>3. List the potential challenges to implement NRT in your institution</p>	<p>1. Data availability</p> <p>2. Data accuracy</p> <p>3. Data sources</p> <p>4. Information security and authorization to use the NRT</p>	<p>1. Getting endorsement from senior management</p> <p>2. Data availability: effort to collect data (right data at the right time)</p> <p>3. Data readiness: effort to upload and develop templates (right format)</p> <p>4. Possible technical issues with software</p>	<p>1. Data gaps and absence of data</p> <p>2. Data accuracy</p> <p>3. Training on the NRT system to have a skilled staff</p> <p>4. Situation analysis need to cover all environmental and socio-economic issues</p>
<p>4. What are your recommendations to overcome the challenges?</p>	<p>1. Formation of a quality control team</p> <p>2. Capacity building training for the users of the NRT</p> <p>3. Assigning focal point for each entity to provide and upload needed information</p> <p>4. Quarterly periodic reporting and meeting of</p>	<p>1. Presentation to senior management</p> <p>2. Compliance with agreed/defined data calendar</p> <p>3. Compliance with agreed / defined reporting calendar</p> <p>4. Engagement/training of IT department support (from UNEP?)</p>	<p>1. Human resource availability</p> <p>2. Training</p> <p>3. Providing software programmes and technical support</p> <p>4. Financial support</p> <p>5. Enforce reporting and communication regulations to entities</p>

	environmental coordination committee and council for coordinating municipal affairs		
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Elements of Framework for Environmental Indicators and Roadmap towards NRT Implementation at the National Level

Mr. Derek Gliddon

Mr. Gliddon recapped on the NRT context, process and conceptual architecture. He started from the **need for indicators** on the two levels of management at the local level and the mandated reporting on the subnational level. He stressed the need to understand priority needs and the specification for reporting. Mr. Gliddon emphasized the importance and usefulness of the participatory exercise that would guarantee the success of the NRT tool.

He presented the preparations that the participants can undertake for workshop 2 in early 2015. These include:

1. Reviewing workshop 1 reports and recalling the methods used in workgroup exercises
2. Sharing and discussing reports with colleagues
3. Researching and cataloguing (including gaps):
 - a. Reporting Obligations and the indicators they need
 - b. Environmental management issues that need to be reported to Executive and Leadership
 - c. Consider the whole DPSIR chain and what are the indicators they need
 - d. Data Sources (In-house and External); Existence; Access; Suitability
 - e. Identify and talk to Subject Matter Experts

Mr. Gliddon concluded by presenting the deployment plans for NRT for the years 2014, 2015 and 2016 as follows:

2014

Nov – New NRT (standalone version) demonstrated at EAD

Nov & Dec – Capacity building and preparatory workshops for EAD and UAE entities

Dec - Delivery of final Phase 1 NRT

2015

Q1-Q2– NRT used by EAD and refined by UNEP developers

Q1-Q2 – UNEP Developers add inter-NRT communication capabilities

Q1-Q2 – Hands-on training workshop: Bring your data

Q2 – EAD endorse NRT as production-ready

Q2-Q3 NRT instance created for Ministry of Environment and Water (MOEW)

Q3 MOEW achieve expert NRT user status

Q4 MOEW (with AGEDI support as required) develop NRT technical capacities with other entities

Q4 AGEDI host (as required) NRTs for other entities

2016

MOEW with AGEDI support other UAE entities in using NRT

Closing of the workshop

Dr. Ahmed Baharoon closed this very fruitful and engaging workshop by stressing on the valuable participation and contribution of participants from all entities in the UAE to this project that is highly valued by AGEDI. He extended his thanks to CEDARE, AGEDI team led by Mr. Derek Gliddon, the partners and the experts that ensured the success of the NRT process from its initiation.

Dr. Abdelrehim extended his thanks to Dr. Baharoon for providing the support that made this process possible. He praised the success of the workshop that was very participatory and very engaging with substantial results to push forward the NRT process (Workshop Evaluation – Annex 3).

Dr. Asma Abahussain reiterated the success of the workshop that was taken very seriously by all the participants who were engaged in the participatory process of this workshop. She stressed the need to capitalize on the fruitful results of this workshop to maintain the momentum and ensure the success of the NRT process.

Dr. Adel Abdelkader strongly echoed the success of this participatory workshop that engaged all the participants, who are experts in their field, to yield very fruitful results of assessing reporting frameworks, indicator selection and data mapping. He stressed on the importance of the engaging vision behind this workshop in building capacities and promoting communication and cooperation for the success of the NRT system. He also emphasized the importance of linking UAE's national reporting to national, regional and international obligations and priorities as manifested in the working group exercises.

The workshop was concluded by distributing certificates as a token of valued attendance and participation to the participants.

The workshop ended on a sentimental note of gratitude from AGEDI and CEDARE to Dr. Adel Abdelkader who will be culminating his work with UNEP by the end of November. However, it was not a farewell but rather a welcoming of Dr. Abdelkader in new capacities to benefit from his expertise and experience in future work.

The closing of this successful workshop culminated on a note of appreciation

from CEDARE to Dr. Baharoon for his outstanding leadership towards enabling effective access to data and environment information throughout the Arab region.

Annex 1: Workshop Agenda

Assessment Frameworks and Indicators Selection Workshop

16-19 November, 2014

Abu Dhabi, UAE

DAY 1

SUNDAY 16 NOVEMBER, 2014

08:30 - 09:00	Registration
09:00 - 09:30	Opening remarks <i>AGEDI, UNEP, CEDARE, EAD</i>
09:30 - 10:00	Introduction to the agenda and workshop objectives vision and strategic goals <i>Dr. Adel AbdelKader, UNEP</i> <i>Comments from AGEDI and CEDARE</i>
10:00 - 10:15	The Capacity Building Process for the National Reporting Toolkit (NRT) <i>Mr. Derek Gliddon, AGEDI</i>
10:15 - 10:30	Demonstration of the workshop on-line system <i>Dr. Ahmed Abdelrehim, CEDARE</i>
10:30 - 10:45	Coffee Break
10:45 - 11:15	Institutional Data and Indicators Infrastructure Questionnaire <i>Dr. Ahmed Abdelrehim, CEDARE</i>
11:15 - 11:30	Discussion
11:30 - 12:15	Data and Indicators for UNEP-Live <i>Dr. Adel AbdelKader, UNEP</i>
12:15 - 13:00	Indicators for International Reporting <i>Dr. Marc Levy, CU</i>
13:00 - 14:30	Lunch
14:30 - 15:30	Monitoring, Data and Indicators for Reporting - UNEP IEA manual <i>Dr. Asma Abahussain, AGU</i>
15:30 - 16:00	Coffee Break
16:00 - 16:30	Regional Environmental Information Systems <i>Dr. Ahmed Abdelrehim, CEDARE</i>
16:30 - 17:00	Discussion

DAY 2

MONDAY 17 NOVEMBER, 2014

09:00 - 09:10	Overview of the Agenda of the Day <i>Dr. Ahmed Abdelrehim, CEDARE</i>
09:10 - 09:30	DPSIR Integrated Environmental Assessment Framework <i>Dr. Asma Abahussain, AGU</i>
09:30 - 10:00	Sustainable Development Indicators and the Arab Region Economic and Environmental Indicators - Guiding Principles and Methodologies <i>Dr. Adel AbdelKader, UNEP</i>
10:00 - 10:30	State of the Environment Report for UAE <i>Mr. Mohamed Alam, Ministry of Environment and Water (MOEM)</i>
10:30 - 10:45	Coffee Break
10:45 - 11:15	Identification of National Environmental Priority Issues (Working Groups) <i>Workshop Experts</i>
11:15 - 11:45	Water Indicators for the State of the Water Report <i>Dr. Khaled AbuZeid, CEDARE</i>
11:45 - 12:15	Atmosphere and Land Indicators for the State of the Environment Report (Indicators Selection Working Groups) <i>Dr. Asma Abahussain, AGU</i>
12:15 - 12:45	Working Groups
12:45 - 13:00	Reporting from Working Groups
13:00 - 14:30	Lunch
14:30 - 14:45	Coastal and Biodiversity Indicators (Indicators Selection Working Groups) <i>Dr. Adel AbdelKader, UNEP</i>
14:45 - 15:00	Social and Economic Indicators (Indicators Selection Working Groups) Dr. Marc Levy, CU
15:00 - 15:45	Working Groups
15:45 - 16:00	Coffee Break
16:00 - 16:30	Reporting from Working Groups
16:30 - 17:00	Discussion of the findings

DAY 3

TUESDAY 18 NOVEMBER, 2014

09:00 - 09:30	Overview of the Agenda of the Day <i>Dr. Adel AbdelKader, UNEP</i>
09:30 - 10:00	Developing Sustainability Indicators and Indices <i>Prof. Stephen Morse, University of Surrey</i>
10:00 - 10:30	Discussion
10:30 - 10:45	Coffee Break
10:45 - 11:15	National Reporting Processes (Working Groups) <i>Workshop Experts</i>
11:15 - 11:30	Discussion and presentation of the findings
11:30 - 12:00	International Reporting Processes (Working Groups) <i>Workshop Experts</i>
12:00 - 12:15	Data Gaps (Working Groups) <i>Workshop Experts</i>
12:15 - 12:45	National and International Indicators (Working Groups) <i>Workshop Experts</i>
12:45 - 13:00	Discussion and presentation of the findings
13:00 - 14:30	Lunch
14:30 - 15:00	Data Collection, Sources and Inconsistencies (Working Groups) <i>Workshop Experts</i>
15:00 - 15:30	Discussion and presentation of the findings

DAY 4

WEDNESDAY 19 NOVEMBER, 2014

09:00 - 09:10	Overview of the Agenda of the Day and Conclusion of Day 3 <i>Dr. Asma Abahussain, AGU</i>
09:10 - 09:40	Presenting the Final List of Priority Indicators
09:40 - 10:00	Discussion
10:00 - 10:30	Future Outlook; Sustainable Development Goals <i>Dr. Marc Levy, CU</i>
10:30 - 10:45	Coffee Break
10:45 - 11:00	Criteria for Evaluating the Supply of Data and Indicators (Panel Discussion) <i>Dr. Marc Levy, CU</i>
11:00 - 11:15	Needs, Mechanisms, Protocols and Challenges for Institutional Data Sharing for NRT <i>Workshop Experts</i>
11:15 - 12:00	Working Groups
12:00 - 12:15	Presentation of Working Groups
12:15 - 12:30	Elements of Framework for Environmental Indicators and Roadmap towards NRT Implementation at the National Level <i>Workshop Experts</i>
12:30 - 13:00	Discussion
13:00 - 13:30	Distribution of Certificates
13:30 - 14:00	Closing
14:00	Lunch

Annex 2: List of participants

EVENT EXECUTIVES

1. **Dr. Ahmed Abdulla Baharoon**
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Annex 3: Workshop Evaluation

