

Regional Experts Meeting on Climate Change Education for Sustainable Development in the Arab States (Beirut, 5 - 7 May 2015)

Working Document (2)

**Sub-Regional Study on Climate Change Education for
Sustainable Development in the Arab States
(Arab Gulf Countries: Bahrain, Kuwait, Oman, Saudi Arabia,
Qatar, United Arab Emirates, and Yemen)**

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Foreword

Education in general and Education for Sustainable Development (ESD) in particular play an essential role in increasing the adaptation and mitigation capacity of communities and nations in regard to climate change by enabling individuals to make informed decisions. Quality climate change education for sustainable development designed with the purpose of empowering people to address climate change and sustainability issues improves the adaptation capacities of affected communities. Climate change poses a serious and additional threat to water resources, agriculture and rural communities in the region, especially in remote areas, post-conflict countries, dry lands and deserts; and countries with limited natural resources, communication and transportation networks/systems are particularly impacted. These developments jeopardize the achievement of the current Millennium Development Goals (MDGs), as well as the transition towards Sustainable Development Goals (SDGs) by the year 2030.

UNESCO Regional Bureau-Beirut and the Education for Sustainable Development (ESD) Section at UNESCO HQ-Paris, in cooperation with the National Commission for UNESCO in Lebanon organized a Regional Expert Meeting on Climate Change Education for Sustainable Development (CCESD) in the Arab region (Beirut, 5-7 May 2015), as part of ESD work plan for 2014-2015. The Meeting Programme included the preparation of four Sub-Regional Studies on CCESD key issues and programme development at the country and regional levels. Dr. Mona Zoghbi, Lebanon and Dr. Hani Sewilam, Egypt had prepared the four studies and contributed to the technical programme of the Expert Meeting in Beirut. UNESCO Working Team: Dr. Sulieman Sulieman, Ms. Julia Heiss, and Ms. Julia Viehofer provided guidelines and coordination for the studies and the outcomes of the Regional Expert Meeting.

The Sub-Regional Studies and the Final Report of the Regional Expert Meeting will assist ESD experts and policy makers in the region in developing quality educational and learning opportunities related to Climate Change Education for Sustainable Development (CCESD), and the Global Action Programme on ESD (2015-2019).

We would like to thank the team of experts on their efforts and contributions to the studies and the ESD programme in general, which will reflect positively on developing joint actions in the education and learning communities around the world.

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Executive Summary

This Sub-Regional study highlights good experiences, identifies needs, and generates recommendations for the advancement of climate change education for sustainable development (CCESD) in the Yemen and Arab Gulf countries (Bahrain, Kuwait, Oman, Saudi Arabia, Qatar, United Arab Emirates). This study is one of four sub-regional studies which have been prepared for the Arab states (Mashreq-5, Gulf & Yemen-7, Wadi El-Nile-3, and Maghrib Countries-4) to serve as background papers for the Regional Expert Meeting in the Arab region (Beirut, 5-7 May 2015). The findings presented in this study are based on a combination of desktop review and a needs assessment survey/questionnaire to identify organizational strategies and CCESD programmes in the countries, and the gaps and needs in capacity building in the area of policy development, teacher training and curriculum on CCESD including Disaster Risk Reduction-DRR at the levels of general education (including technical and vocational education), higher education, and life-long learning (LLL) in the Arab Gulf countries and Yemen.

General Education

Several countries in this sub-region have emphasized in their national visions the importance of ensuring that the teaching and learning experiences of young people is focused on contemporary global issues such as climate change, globalization and green economy. In some countries, several ministries and other governmental institutions have collaborated for taking practical steps towards integrating principles and activities on these themes into the national school curricula; whereas in other countries, the schools themselves have taken the lead in initiating educational programmes and activities on climate change, sustainability and general environmental issues, while the government takes a supportive rather than steering role. Yet overall, climate change and sustainability appear to often still be considered as sub-themes of general environmental education and there is a general need for re-orienting such school initiatives towards climate change education for sustainable development (CCESD) in particular, as well as for building the skills of teachers in managing such academic transitions towards CCESD. It is also worth mentioning the importance of international and regional collaborations on environmental and sustainability education in schools, especially the GLOBE programme which is being implemented in the school programmes of many countries in the Arab Gulf countries and other Arab states.

Key Recommendations: i) expanding or reorienting existing national environmental education programmes in many of the Arab Gulf countries to focus specifically on CCESD, in order to promote learning experiences for the students that are value-based, interdisciplinary, experiential and oriented towards problem-solving and critical thinking skills; ii) developing policies for enhancing and coordinating the supportive role of national governments with a focus on providing financial and technical resources, expertise guidance, and teacher training on CCESD.

Higher Education

Many universities in the Arab Gulf countries and Yemen have established partnerships with international organizations or with international higher education institutions for developing educational programmes and courses on climate change and sustainability. Several universities have also developed research strategies and programmes that address the challenges posed by climate change and the opportunities presented by sustainability within the contextual setting of their countries and the wider Arab region. Such important and innovative initiatives need to be expanded or replicated in other universities and other Arab states for achieving a greater scope of impact.

Key Recommendations: i) developing policies and strategies for building-on the existing CCESD partnerships in many Arab Gulf countries through expanding (making programmes more inter-disciplinary and with long-term); scaling-up (successful initiatives to other universities in the country and region); and replicating (successful initiatives in one country that can be reproduced in other countries with similar challenges and possibilities); ii- developing formal mechanisms for enhancing youth participation and empowerment on CCESD decisions, programmes and activities.

Life-Long Learning

Several NGOs and civil society groups in the Arab Gulf countries and Yemen have long-term programmes and/or short-term awareness and training workshops for building skills and engaging youth and local communities in climate change and environmental education and action and managing the transition to a green economy. Numerous initiatives by international organizations are focused on capacity building for disaster risk reduction (DRR) and emergency response, whereas private sector initiatives mostly target the provision of awareness and information material (such as environmental electronic magazine, citizen guide to climate change) for civil society and school programmes on climate change education.

Key Recommendations: i) developing policies and strategies to encourage and improve partnerships between universities and corporate/industry/business and NGOs for developing adult education and training programmes that build the skills of existing employees and staff on green jobs and technologies in the workplace and on managing the impacts of climate change (including DRR); ii) developing on-line platforms that facilitate communication and coordination between different stakeholders to harmonize CCESD initiatives and provide the general public with updated information about planned programmes and activities at the local, national and regional levels and opportunities for engagement and participation.

1. Introduction

The Arab region is witnessing rising risks and challenges from climate change, with impacts already being experienced and implications being observed on people's livelihoods and lives. There is evidence of prominent increases in the intensity and frequency of many extreme events such as heat waves, tropical cyclones, prolonged dry spells, intense rainfall, tornadoes, thunderstorms, and severe dust storms in the region. Furthermore, the region is highly subject to natural hazards, such as desertification's, earthquakes and landslides. Such impacts pose additional risks for already vulnerable communities striving to combat poverty and achieve sustainable development.

Climate change poses a serious and additional threat to water resources, agriculture and rural communities in the region, especially in remote areas, post-conflict countries, dry lands and deserts; and countries with limited natural resources, communication and transportation networks/systems are particularly impacted. These developments have posed challenges to the achievement of the Millennium Development Goals (MDGs) and continue to jeopardize the transition towards Sustainable Development Goals (SDGs) in the region.

Education in general and Education for Sustainable Development (ESD) in particular play an essential role in increasing the adaptation and mitigation capacity of communities and nations in regard to climate change by enabling individuals to make informed decisions. Quality climate change education for sustainable development designed with the purpose of empowering people to address climate change and sustainability issues improves the adaptation capacities of affected communities. It should be enhanced by educational programmes that explicitly prepare communities for natural disasters. Furthermore, it needs to incorporate sustainable knowledge, and promote sustainable lifestyles and development in which the importance of heritage is recognised as an integral part of their identity and an important asset that can help building resilience. Finally, climate change education for sustainable development can stress the unique cultural and natural heritage of countries in the region, which plays an important role in the building of community resilience.

While education plays a key role in strengthening adaptation and mitigation capacities, such capacities are also needed to equip education systems and infrastructures to prepare for climate change. Entire school communities - including local education authorities, administrative staff, teachers and parents - must be prepared to ensure a climate-safe and climate-friendly school environment. Adaptation needs also must be taken into account when constructing new schools which are safe and have a climate-resilient design. Education for mitigation should be supported by sustainable school and campuses that serve as a learning laboratory for students to demonstrate and further deepen understanding of the principles learned in the classroom. Furthermore, the capacity of education systems to respond to new migration streams caused by climate change impacts – or to new skill

requirements due to a changing environment - needs to be included in education strategies for adaptation to climate change.

In order to address these urgent needs, a three-day Regional Expert Meeting in the Arab region (Beirut, 5-7 May 2015), was held to address the challenges that climate change poses to education systems. The Expert Meeting will be structured around four **Thematic Areas** of CCESD in the Arab region: a) engaging with youth and communities; b) developing partnerships for Climate Change Education (CCE); c) preparing for disaster and emergencies; and d) building green societies through green job training.

The Expert Meeting helped set the stage for UNESCO's action in support to Member States in the Arab region to integrate ESD and CCE in their education plans and practices). Moreover, the Meeting developed recommendations and a plan of action to promote education as an important means to enhance climate change mitigation and adaptation in the context of sustainable development in the Arab region.

Deliberations at the Meeting built on previous events, such as the *UNESCO World Conference on ESD* (Bonn, 2009), in particular a workshop entitled "Strengthening the educational response to climate change internationally", the International Seminar on Climate Change Education (Paris, 2009), the regional expert meetings on Climate Change Education for adaptation in SIDS (Bahamas, 2011), in Africa (Mauritius, March 2013), in Asia-Pacific region (Manila, Philippines, March 2014), the Regional High Level Forum on Sustainable Development in the Arab region (Amman, April 2014), and the ESD World Conference (Aichi-Nagoya, Japan, November 2014).

As part of the technical preparations for the meeting, the UNESCO Regional Bureau-Beirut has undertaken 4 sub-regional studies and country surveys on CCESD in the Arab States (Mashriq-5, Gulf & Yemen-7, Wadi El-Nile-3, and Maghrib Countries-4). The four sub-regional studies served as background papers for the Meeting, presenting an overview of challenges, needs and the state of climate change education for sustainable development (CCESD) in the sub-regions.

This sub-regional report presents an overview of challenges, needs and the state of CCESD in the Arab Gulf countries (Bahrain, Kuwait, Oman, Saudi Arabia, Qatar, United Arab Emirates) and Yemen.

2. Methodology

The methodology adopted for the preparation of this study included the following:

- a- Conduct Desk-study review which aimed to identify and collate the recent (2008 - onwards) and innovative CCESD initiatives in the Arab Gulf countries and Yemen. The desk-study review covered the following:
 - Country-specific national documentation by public sector (Ministries, National Research Centres, etc.) of national education policies and programmes at the level of General Education (including TVET), Higher Education (including research and development) and Life-Long Learning (LLL), as well as teacher training programmes and curriculum materials on CCE, DRR and ESD;
 - Country-specific documentation by the private sector, universities (higher education institutions), and NGOs on CCESD initiatives in General Education, Higher Education, and Life-Long Learning and teacher training programmes;
 - Regional documentation on CCESD, DRR and ESD initiatives in the Arab Region and/or Arab Gulf sub-region conducted by international organizations such as UNESCO, ESCWA, UNEP, ILO; and
 - Academic reports and articles.
- b- Conduct Survey/Questionnaire on CCESD in the Arab States: The survey/questionnaire collected information on national, sub-regional and regional initiatives relevant to CCESD, organisations and entities that work on ESD and CCE (including Disaster Risk Reduction-DRR). The survey also reviewed relevant national policies, curricula and teacher education programmes. The survey was organized into three sections: Organisational Education Strategy; Organisational CCESD Programmes: Programme Details (including Best Practices); and General Insights into CCESD: Strategic.

Questionnaires have been received from ESD Coordinators, policymakers, teachers and researchers from the concerned countries. A total of 4 questionnaires have been received from the Arab Gulf countries and Yemen (specific number per countries is provided in Annex 2).
- c- Identify gaps and needs in capacity building in the area of policy development, teacher training and curriculum on CCESD including DRR.
- d- Consult with main stakeholders including concerned line ministries, NGOs, UN agencies and civil society working on CCESD and DRR on findings and challenges, needs and the state of CCESD in the Arab States.
- e- Undertake a mapping of partners to identify activities and responsibilities.
- f- Develop and submit a draft and final draft of the Study in English and Arabic for the CCESD education and learning programmes and activities.

The study output also includes a proposal for developing plans and strategies on CCESD at the Regional/Sub-Regional levels by potential national partner institutions including government, universities, international/regional organization, and NGOs. This proposal is based on the following format: i) Policy Planning and Programme Review; 2) Curriculum Development; iii) Teacher Education and Training; and iv) Programmes of Civil Society and NGOs (Life Long Learning).

3. CCESD in the Education and Learning Systems

The following are examples of best practices in each of the Arab Gulf countries and Yemen:

i. Regional and Sub-Regional Initiatives

The desk study review in the Arab Gulf countries (Bahrain, Kuwait, Oman, Saudi Arabia, Qatar, United Arab Emirates) and Yemen has identified several regional and sub-regional initiatives related to the four themes on CCESD, especially on capacity building for managing climate change and transition to a green economy. These regional initiatives aim to promote cooperation between the different Arab Gulf countries regarding climate change and sustainability issues, often in collaboration or partnership with international organizations such as UNEP and ESCWA. Some initiatives, such as 'Eye on Earth' and the 'Global Learning and Observations to Benefit the Environment (GLOBE)' programme are global initiatives with regional centers or programmes of implementation in various Arab Gulf countries. Other initiatives, such as the 'Arab Region Atlas of Our Changing Environment', have been specifically developed to address the particular challenges and opportunities on climate change and sustainability in the Arab region. There are also several initiatives developed by Arab Gulf countries for encouraging investment in education, innovation and technology in climate change, sustainability and green economy issues, and for holding competitions and prizes for regional, sub-regional and national projects around these themes. Some of the best practices at the regional/sub-regional level for Arab Gulf Countries and Yemen include the following:

- **UNEP-ROWA's Climate Change Programme** works at the regional and national levels and covers the four pillars of the 2007 Bali Action Plan, namely mitigation, adaptation, finance and technology. www.unep.org/rowa/
UNEP-ROWA programmes include:
 - 1- **'Environment in Humanitarian Response'** has performed training for UNRWA staff in conducting environmental assessments of refugee camps in order to reduce negative environmental impacts and to support the inclusion of environmental considerations in humanitarian response;
 - 2- **'Eye on Earth'**: UNEP/ROWA supports and partners with the Abu Dhabi Environmental Data Initiative (AGEDI) on the Eye on Earth Initiative, a global public information network to enhance access to environmental and societal data. The initiative, which was launched in Abu Dhabi in December 2011, aims to

bridge the environmental knowledge gap by connecting and strengthening existing network initiatives;

- 3- **'Biodiversity Strategic Plan 2011-2020'**: ROWA has convened a large number of training workshops and awareness platforms to support the effective implementation of the Plan in the region; and
 - 4- **'West Asia Regional Network on Climate Change' (WARN-CC)**: The Network provides adaptation and mitigation capacity building on key issues in the region. Two of the flagship regional initiatives are the “Regional Initiative for the Assessment of the Impact of Climate Change on Water Resources and Socio-Economic Vulnerability in the Arab Region” and the “Ecosystem-Based Adaptation to Climate Change.” At the national level, four countries (Bahrain, Jordan, Kuwait and Syria) have completed the framework of the national environmental information network which will be used to establish the national environmental information networks.
- **Sustainable Development Goals: An Arab Perspective**: A discussion paper submitted by ESCWA in 2014 in which it proposed 10 development targets reflecting the future development aspirations in the region, namely: 1. End extreme poverty. 2. Create decent jobs. 3. Provide quality education and lifelong learning for all. 4. Empower girls and women, achieve gender equality and the full realization of women's human rights realization of women's human rights. 5. Ensure healthy lives. 6. Secure access to water and sanitation for all and promote the sustainable use and management of natural resources. 7. Promote sustainable food production. 8. Ensure decent housing and infrastructure services in rural and urban areas. 9. Secure peaceful societies and effective institutions. 10. Advance global partnerships for sustainable development. www.escwa.un.org/
 - **The Sustainable Development Policies Division at ESCWA** conducts national and regional training workshops on climate change and broader environmental issues. For example, a workshop (2014) was organized on applying the Climate Change Vulnerability Assessment Methodology in the Arab Region. The training targeted senior experts from institutions based in the Arab region who are engaged in climate change impact assessment and vulnerability assessment research, to enhance their capacities in geographic information systems and experience working with climate change and water-related databases.
 - **A Framework for a Green Economy Investment Roadmap for the Arab Region**, developed by ESCWA and UNEP, is a regional green economy investment vision and roadmap, supported by the Council of Arab Ministers Responsible for the Environment (CAMRE) under the League of Arab States (LAS). The framework seeks to develop a capacity building and training programme for national planners and decision-makers that is based on the green economy toolbox: toolbox of policies, methodologies and analytical tools for strengthening green economy policies and measures across the Arab countries, and information and technology tools such as a

software-based integrated modeling tool for Arab countries to undertake quantitative analysis for national strategies.

- **The Arab Region Atlas of Our Changing Environment (2013)** developed by UNEP to provide detailed information and imagery about environmental change across 22 Arab countries over the last 50 years. It highlights national challenges being faced by each country in the Arab region.

<http://na.unep.net/atlas/viewAtlasBookWithID.php?atlasID=2447>

- **The Sustainable Development Initiative in the Arab Region** developed by the League of Arab States is a comprehensive regional approach aimed at developing a regional programme for sustainable development. The Initiative includes a focus area on Education, Awareness, Scientific Research, and Technology Transfer; through promoting environmental education, encouraging national and regional capacity development on environmental information and technologies, as well as Arab prizes related to the environment and sustainable development such as “the International Zayed Prize” on Environment and “Sultan Qaboos Prize” for the Protection of the Environment.

http://www.un.org/esa/sustdev/partnerships/activities_initiate/101202_sd_initiative_arab_region.pdf

- **The Global Learning and Observations to Benefit the Environment (GLOBE)** programme has offices in 12 Arab countries (Bahrain, Egypt, Jordan, Kuwait, Lebanon, Mauritania, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, UAE). Programme aims to develop practical primary and secondary school-based science and education programmes as well as teacher workshops and online training. Programme is generally administered by the Ministry of Education in each country. E.g.: In Bahrain, the GLOBE programme is administered by the Ministry of Education and advises teachers, students and working groups on environmental and climate change issues. In Oman, the Oman Ministry of Education and The GLOBE Programme organized the international student environmental GLOBE Camp (2015), with student participation Arab region including Oman, Saudi Arabia, Bahrain, Lebanon, United Arab Emirates and Jordan. The event provides students with opportunity to learn about various environmental themes through hands-on approach including scientific measurements, games, competitions and a Science Fair featuring students' environmental projects. The camping programme also collaborates with various environmental organizations such as the Environmental Preservation Office; National Field Trip Centre in Environment Preservation; Sultan Qaboos University; the Ministry of Environment; and the Environmental Omani Society. <http://www.globe.gov/web/>
- **The Cooperation Council Center for Arab Gulf States Emergency Management** established by the Arab Gulf countries and based in Kuwait. The centre aims to promote and coordinate the efforts and capabilities of the countries in the field of regional disaster management. The centre conducts training to staff and stakeholders on disaster risk management, simulations, and technology applications.

- The **Arab Youth Climate Movement (AYCM)** was established by Arab youth in the lead up to UNFCCC COP18 in Qatar (2012) with over 20 national coordinators across 15 countries in the Middle East and North Africa (MENA) region. AYCM focuses on "educating, empowering, inspiring, mobilizing, and engaging young climate activists in environmental and developmental activities." <http://aycm.org/>

ii. Country Initiatives

Education for climate change, sustainability, and general environmental issues is recognized in the national visions and strategies of education of many the Arab Gulf countries. In some countries, the national visions include text or statements on the importance of enhancing formal education and learning on climate change and sustainability. Other countries have taken concrete steps in integrating environmental education, including climate change, into curricula in their schools and some public universities. Several governments have also developed national initiatives and projects for raising awareness and building skills of the general public on climate change and sustainable development.

Many initiatives by international organizations are focused on lifelong learning for building the capacities of diverse professionals and practitioners in the Arab Gulf countries and Yemen on climate change policy, adaptation and management (including DRR), as well as on sustainable industrial development. Some international initiatives in these countries particularly target women in order to develop their skills and competences for participating in climate change policy and action in their communities. At the level of private sector, many universities have established partnerships with international organizations or with international higher education institutions for developing educational programmes and courses on climate change and sustainability. Several NGOs and civil society groups in these countries have long-term programmes and/or short-term awareness and training workshops for building skills and engaging youth and local communities in climate change and environmental education and action.

The following are examples of best practices in each of the Arab Gulf countries and Yemen:

Bahrain

At the national level, the government is undertaking concrete steps and strategies for integrating concepts and principles of education for sustainable development, including climate change education, into school curricula, with a focus on interactive and hands-on educational approaches, and for teacher training on these programmes. The government has also developed initiatives for raising awareness on, and enhancing access to information on climate change amongst the general public. Initiatives for building skills in designing policies and managing the transition to a green economy, some specifically targeting women, have been developed by international organizations; whereas climate change

initiatives by the private sector included informal educational and training projects for youth and women.

Government and public sector initiatives:

- Government is undertaking educational reform consisting of a four-part strategy: 1- integrating ESD principles into primary school curricula, overseen by the Ministry of Education, with focus on environmental topics including recycling and energy conservation; 2- expanding the scope of the Quality Assurance Authority for Education and Training (QAAET) to address climate change, with the aim of building youth skills and knowledge to confront climate change and build sustainable communities, with focus on teacher training on such programmes; 3-establishing the environmental auditing system at the primary school level, to monitor water use, energy conservation and waste management and raise student awareness on climate change risks; 4- promoting hands-on approach to climate change education at all school levels; this will involve introducing field-based educational techniques such as the creation of eco-clubs, support for student-led conservation campaigns and other ideas that engage students on climate change issues. Government seeks to coordinate awareness raising programmes and activities across sectors and stakeholders including educators, trainers, policy makers, legislators, citizens, researchers and general public. <http://unfccc.int/resource/docs/natc/bhrnc2.pdf>
- Government seeks to promote public engagement through developing a set of 'Climate Change Best Practice Guide' to inform stakeholders of practical measures to reduce energy consumption and increase resilience to climate change impacts.
- Government is conducting technical capacity building and training workshops to ensure access of policy-makers, civil society and the private sector to climate change information. It also involves a number of proposed future initiatives such as research and development and human resources development in clean technology and waste management; technology transfer, and partnership-building.
- Several public sectors are undertaking environmental education actions and programmes including the Ministry of Education; the Public Commission for the Protection of Marine Resources, University of Bahrain, Arabian Gulf University, and several registered environmental NGOs.
- The Ministry of Education incorporated environmental subjects in schools curricula. The Ministry of Water and Electricity promote public awareness on climate change, the importance of water conservation and energy efficiency.
- Over 40 schools participate in the GLOBE programme for raising student and community awareness amongst on environmental issues and climate change.
- University of Bahrain - Masters programme in Environment and Sustainable Development (ESD) supported by UNESCO. The targeted groups include graduates, researchers, managers, administrative heads, decision makers, and technical staff working in areas related to the environment. <http://www.uob.edu.bh/>

International organizations initiatives:

- British Council Middle East conducted skills development training workshop (2009) on theme of climate change in the Middle East, with aim to increase regional knowledge on climate issues, supported by the Climate Handbook compiled specifically for Arab countries. <http://www.britishcouncil.bh/en>
- UNIDO in collaboration with the German Federal Enterprise for International Cooperation (GIZ) and the UNIDO Investment and Technology Promotion Office (ITPO)/Arab International Center for Entrepreneurship & Investment (AICEI), organized a 10-day training programme “EQuIP – Enhancing the Quality of Industrial Policies” hosted at the Royal University for Women. Programme aims to support policymakers from developing countries to formulate and design evidence-based policy strategies for inclusive and sustainable industrial development. <http://institute.unido.org/>
- UNDP Bahrain, the University of Bahrain and UNDP Gender Team established a partnership to launch and implement in the Arab countries the projects and programmes of the 'Gender and Economic Policy Management Initiative' (GEPMI), a capacity development programme designed to build skills of policy makers and development practitioners to identify and address gender biases in the economic sectors, and effectively plan, implement, monitor and evaluate development policies, strategies, programmes and projects that are responsive to gender equality. UNDP and GEPMI-Arab States produced a module on gender and climate change to link the impact of climate change in the development process and how it affects the Arab world. <http://www.bh.undp.org/content/bahrain/en/home.html>

Private sector and NGOs initiatives:

- Arab Youth Climate Movement-Bahrain: Citizen science programme aiming to raise awareness on natural resources and climate change in Bahrain and contribute and develop a national database to feed environmental research and policy. www.aycm.org/
- Bahrain Women Association-Environmental Citizenship programme, organizes various workshop for educating and empowering women and youth on environmental issues including climate change. for e.g.: workshop on 'managing participatory planning in facing climate changes and its relation with gender', to train women on different aspects of project planning and management; workshop to educate youth on climate change causes and consequences and the role of youth; “My Environment Unit” to the kindergartens’ teachers.
- 3BL 'Triple Bottom Line' Associates-Bahrain is a social impact and sustainability consultancy. One of its programmes is focused on curriculum development, workshops and training on sustainable development and social entrepreneurship, targeting youth, business, civil society, and intergovernmental organizations. <http://www.3blassociates.com/index.html>

Kuwait

Various national initiatives are undertaken by the public sector, including the Ministries of Education, and of Water and Electricity, to enhance environmental awareness and competences for climate change management. This includes integrating environmental education and concepts of climate change into the school curricula, assessing climate change knowledge at universities, and developing national environmental awareness campaigns. In addition, the Environment Public Authority developed programmes to enhance access to, and monitoring of environmental information, and to provide in-service training for government staff on various environmental issues. Initiatives by international organizations focus on building skills of different government officers across various sectors on disaster risk reduction (DRR), and private sector initiatives seek to engage youth and local communities in environment and climate change awareness campaigns, projects and trainings.

Government and public sector initiatives:

- The Ministry of Education integrated environmental education in school textbooks from elementary to secondary education levels, addressing basic concepts such as ecosystem, food chains, energy flow, biodiversity, conservation and pollution. Emphasis is placed on the local environmental context such as life in the desert, water consumption, waste disposal, water desalination and threats to biodiversity. Other actions taken by the Ministry of Education to raise environmental awareness include a Kids ISO 1400 programme, a National Environmental Centre for Students (Janoob Alsurra), and establishing and funding environmental teams in schools.
- The Ministry of Electricity and Water initiated a national environmental conservation campaign called “Tarsheed, aiming to reduce the per-capita consumption of electricity and water. The campaign was delivered through various media channels and in different languages. The ministry also supplied a hotline for electrical emergency reporting as well as resource abuses. The success of Tarsheed campaign led other Arab Gulf countries such as Saudi Arabia, UAE and Qatar to apply similar campaigns.
- Kuwait’s environmental protection agency 'Kuwait Environment Public Authority' (KEPA) created an extensive awareness and monitoring project called “Beatona”, as Kuwait's official environmental portal. The project is developed and managed by the environmental monitoring information system of Kuwait (eMISK). Beatona.net raises awareness on various environmental themes though providing scientific information and real-time environmental news in a user friendly manner. KEPA also includes an Administrative and Training Department that identifies training needs of different government sectors on environmental issues and conducts relevant training.
<http://www.beatona.net/CMS/index.php?lang=en>

- Public Authority for Applied Education and Training (PAAET): contains an in-service training centre aimed at providing necessary training of government staff on various issues including environmental themes. For e.g.: PAAET conducted a national conference on 'Impacts of Climatic Changes and Urban Activities on the Environment of Kuwait', aimed at exchange of information and experiences amongst experts and specialists on the climate change challenges in Kuwait and the effects of urban activities on the environment in Kuwait environmental problems, as well as the identification of key challenges to achieving sustainable development, and ways to enhance public awareness on climate change and environmental preservation. www.paaet.edu.kw/
- Kuwait University (KU) and the Public Authority for Applied Education and Training (PAAET) promote climate change research and offer specialized environmental college programmes and specific climate change courses. These programmes include: environmental technology management, environmental engineering, earth science and environment, and environmental health. Kuwait University provides environmental education courses at undergraduate and graduate levels (which include climate change concepts and science), and has a Masters Programme in Environmental Sciences and in Sustainable Development, which include a climate change course. www.kuniv.edu/
- Kuwait University conducted a “national needs assessment” survey to explore public opinions and capabilities on climate change. The audience included government officials, business leaders, NGO representatives, scientists, clergy and youth. Among the topics that survey questions explored were climate change indicators, climate change implications, awareness channels, lifestyle, and the role of the government on climate change.
- The College of Women provides environmental education courses focused mostly on promoting role of women in environmental management and preservation.

International organizations initiatives:

- UNDP Kuwait – Energy and Environment programme conducts various projects on climate change and other environmental issues. For e.g.: Project for engaging schools on World Environment Day, to deliver a video of public service that showcases the importance and need for a greener and more environmentally-friendly Kuwait. <http://www.kw.undp.org/>
- The UN International Strategy for Disaster Reduction (UN/ISDR), the UN Human Settlements Programme (UN-HABITAT) and the UN Development Programme (UNDP) Kuwait conducted a workshop (2011) on "Advancing Disaster Risk Reduction and Urban Strategy in the Gulf States," aimed at promoting stakeholder awareness and knowledge of disaster risk reduction (DRR) trends and policies in the context of urban planning and climate change. Over 25 participants took part in the event,

representing ministries for municipalities affairs, disaster management authorities, and representatives of cities from the Gulf region.

Private sector and NGOs initiatives:

- The Environmental Voluntary Foundation aims to raise environmental awareness and civic engagement through various programmes, activities, and school visits and workshops and through environmental films, with special focus on marine environment. <http://www.freekuwait.org/>
- Kuwait Oasis non-profit organization developed the 'Kuwait Green Wall Project' which seeks to engage schools and communities in tree-planting projects and increasing social responsibility and awareness on importance of water conservation. The success of the project has led to the creation of affiliated programs in Qatar and Jordan. <http://www.kuwait-oasis.com/>
- Kuwait Institute for Scientific Research (KISR) conducts research studies and programmes on various environmental issues such as environmental preservation, natural resources management, innovative and sustainable agricultural methods, and renewable energy. KISR provides IT expertise and facilities for researchers and students, and training for practitioners and communities on these various topics. <http://www.kisr.edu.kw/en/>
- Kuwait Foundation for the Advancement of Science provides support and training for capacity building on various environmental themes, and publishes Majallat Al-Oloom, a monthly scientific magazine to improve communication of scientific information in a simple approach targeting general public.
- The American University of the Middle East, based in Kuwait, developed a research themes and directions strategy to address the specific needs of Kuwait, the Arab Gulf region, and Middle East region. Among the target industries/sectors for this research strategy are a focus on renewable energy, environmental preservation, sustainability and environmental health in Kuwait and the Arab Gulf countries, globalization, as well as focus on learner-centered approach, engaging the curriculum in research and learning, and aligning education and learning outcomes with market and development needs.
- Green Line Environmental Group in Kuwait aims to raise awareness on various environmental issues through involving youth and local communities in environmental projects, including on climate change, and by providing an environmental magazine and online web portal for raising awareness on various environmental themes. <http://www.greenline.com.kw/>
- Boubyan Bank, in collaboration with UNESCO, organizes an annual 'green environmental initiative' for public and private schools in Kuwait, to encourage students to develop innovative environmental projects.

Oman

The Omani government developed the Vision for Development (Oman 2020), which clearly emphasized the need to achieve sustainable development through developing human resources, skills and capabilities; creating the framework of a stable macro-economy; and providing adequate conditions for economic diversification. The public institutions and departments often collaborate on initiatives, such as the collaboration between the Ministry of Environment and Climate Affairs and Ministry of Education on developing programmes for environmental education and education for sustainability in school curricula. International organizations and the private sector, especially universities and environmental NGOs focus on youth and community environmental awareness and green competitions and awards.

Government and public sector initiatives:

- The Research Council has developed a national programme: Adapting Towards Sustainable Development Research Programme aimed at promoting sustainable development through providing recommendations for policy and practice. The programme consists of various research projects addressing education on climate change and environmental issues including: Entrepreneurial Education for Sustainable Development: The Role of Higher Education Institutions; and A National Public Awareness Strategy for Sustainable Development. <https://home.trc.gov.om/>
- The Sultanate has developed an environmental awareness and media strategy based on 4 themes: environmental education, environmental literacy, environmental media, communication and outreach.
- The Ministry of Environment and Climate Affairs – Directorate-General for Climate Affairs, coordinates and participates in research studies and national reports and participates in awareness of climate affairs programmes. For e.g.: The Capacity Building on Climate Change Project aims to facilitate electronic communication and access to information available on climate change through developing a website which provides updated information on climate change issues in the Sultanate. The project also includes a national survey of greenhouse gas emissions from different sectors in the Sultanate, and developing a database for reporting on climate change in accordance with international agreements.
- The Ministry of Environment and Climate Affairs organized an environmental forum themed 'Environmental Education and its Role in the Society,' with participation of many public, private and civil society institutions. The forum aimed to identify the concept of environmental education and its role in environmental preservation, the role of authorities in environmental education, and the obstacles facing environmental education programmes at educational institutions. It also aimed to strengthen coordination and cooperation among the concerned authorities in the field of environmental education to develop environmental awareness among all members of society, in addition to strengthening the role of research and practical

projects and participation in activities supporting environmental education.
<http://moeca.gov.om/>

- Cooperation between Ministry of Environment and Climate Affairs and the Ministry of Education on several projects including: i-preparation of the environmental education for sustainable development programme in Omani curricula; ii-introduction of environmental concepts into the curriculum and preparation of booklet on environmental preservation to be used in adult education; iii-developing programme on cognitive development, implemented by the Ministry of Education, especially regarding environmental geography and related themes on climate change, natural resources, environmental values and behaviours.
- Ministry of Education developed programmes for: i- integrating life skills education into secondary levels, in order to prepare for life after school, whether at higher education, further education on entry into labor market; ii-professional development of teachers and educators through in-service training programmes to help prepare teachers for the educational reforms being integrated into the curricula, including climate change and sustainability concepts and courses (e.g., training geography and science teachers on GIS, weather and climate concepts, and the GLOBE programme); iii- integrating key concepts and themes of Education for Sustainable Development in Omani curricula of general and secondary education, with particular focus on key themes within DESD: overcoming poverty, gender equality, intercultural peace and understanding, sustainable production and consumption, and information and communication technologies; iv- developing guidebooks for curriculum planners as well as teachers on integrating sustainability and climate change topics into the educational curriculum (e.g., documents on 'natural disasters concepts' and "national strategy for the protection of Omani environment and for conservation of natural resources)
- Government has developed the National Committee for Civil Defense and Relief for enhancing preparedness and national capabilities for management of natural disasters and emergencies.
- Sultan Qaboos University developed programmes for integrating key concepts and themes of Education for Sustainable Development across its faculties of commerce, education, and agriculture. The approach is focused on showcasing innovative best practices, promoting critical thinking and problem solving skills through experiential learning, and linking sustainable development and climate change to subjects, themes and courses being taught. The Faculty of Education in particular integrates ESD concepts into its teacher education programs and curriculum and conducts field training for teachers to apply ESD pedagogical approaches in real-life contexts.
- Sultan Qaboos University developed an 'Eco-friendly House Competition' programme for teams of college students to design, build, and operate eco-friendly houses that are cost-effective, energy-efficient, and attractive. The competition is open to all higher educational institutions, both public and private, which offer different

academic programmes such as architecture, engineering and design. The University has also developed programmes, in collaboration with the Ministry of Education and other institutions, for engaging schools in environment and sustainability education and for enhancing the application of sustainability principles and practices in school campus as well as education, such as the 'School Garden Project' and the 'Green Schools' project. <http://www.squ.edu.om/>

- German University of Technology in Oman and Sultan Qaboos University, funded by The Research Council (Oman) initiated the research project entitled “Towards Sustainable Patterns of Urbanisation in Oman” to examine patterns of urbanisation in Oman, focused on two case studies to gather data that can correlate urban development policies, physical planning standards, and residential building types based on sustainability criteria. As a possible outcome of the research, the team aims to detect driving forces of the ongoing urbanisation trend in Oman and develop strategies and programmes to control and guide the resulting urbanisation patterns.

International organizations initiatives:

- The Sultanate of Oman and the World Meteorological Organization (WMO) sponsored a workshop (2014) to build capacity of forecasters on operational tropical cyclone forecasting and warning. The workshop participants included national and regional meteorologists working in tropical cyclone forecasting.
- UNESCO Sultan Qaboos Prize for Environmental Preservation awarded for significant contribution to environmental management or preservation related to UNESCO programmes, including environmental and natural resources research, environmental education and training, raising environmental awareness through the preparation of environmental information material, and activities for establishing and managing protected areas.

Private sector and NGOs initiatives:

- The Environment Society of Oman publishes educational material and organizes events, workshops and contests for raising community awareness and involving the public in climate change and conservation activities and promoting women's environmental education and empowerment. The Society has also developed in cooperation with the Ministry of Education, an environmental studies subject in school curricula. <http://www.eso.org.om/>
- The Higher College of Technology in Muscat developed an eco-friendly house for promoting practical engagement of students and wider college community with environmental issues and for encouraging students, teachers and practitioners to think of environmentally-friendly designs and to encourage the use of solar energy and efficient heating and cooling systems. <http://www.hct.edu.om/>

- Oman Green Awards seeks to raise awareness on environmental preservation and motivate behavior change amongst corporate and individuals. The Awards are presented in 9 different categories including the Green Education Award and the Green Campaign of the Year. www.omangreenawards.com/
- OURPLANET International School Muscat was nominated for the Oman Green Awards in the Education Section. The School applies innovative learning strategies with topical focus; academic instruction is organized alongside activities relevant to the technological development of sustainable systems, with a strong focus on renewable energy production, storage, and transport. In the primary level, sustainability concepts are embedded in project-based learning, with special focus on concepts of reuse, reduce, and recycle. In the advanced grades, students conduct research and experiments with new technologies in renewable energy, in collaboration with worldwide energy research institutes. <http://www.ourplanet-muscat.com/>

Saudi Arabia

Many national initiatives for environmental education and sustainable development are in cooperation between public (ministries), private (universities and NGOs) and international (e.g. UNESCO) organizations. At general and higher education levels, such partnerships often focus on developing environmental education programmes and environmental management policies that are implemented within the schools and universities and in collaboration with local communities. Other initiatives have targeted public environmental awareness and lifelong learning, teacher training, and youth capacity building for life and work skills in a globalized world. There is also a special governmental agency responsible for technical and vocational education and training.

Government and public sector initiatives:

- Academic curricula at schools integrated key concepts on sustainable development, seeking to achieve balance between raising environmental awareness, promoting environmental values and attitudes, and developing skills to manage environmental challenges. Some of the main concepts include climate change, responding to disasters, desertification, sustainable consumption, citizenship and human rights.
- King Abdullah Bin Abdulaziz Public Education Development Programme includes several programmes that occasionally include ESD concepts, including teacher training projects; building youth skills for twenty-first century and life and work skills; promoting concept of good citizenship and social responsibility; preparing youth academically and professionally in accordance with the labor market requirements; partnering with public and private sector for youth training and practical learning.

- Saudi Environment Society, in collaboration with the Ministry of Education and UNESCO, launched its environment awareness programme at 540 schools, to raise youth environmental awareness under the title 'My environment - green flag green country'. The programme is considered one of the most important national programmes for environmental awareness and sustainable development, and the Kingdom will serve as the starting point for the initiative of international and regional activation of common schools environmental programme. The participating schools adopt the concept of 'environmental sense and awareness', through implementing environmental management policies within and outside the school environment in collaboration with the local community such as programmes on water and energy consumption, waste disposal and recycling. The programme targets all schools in the Kingdom in all its stages: kindergarten, elementary, middle, and secondary schools, in all regions of the Kingdom of Saudi Arabia, and the length of implementation up to five years. The programme aims to increase teacher knowledge on various environmental issues and provide them with the information, concepts and skills that will help them to effectively contribute to this initiative, and to increase students' knowledge and strengthen their leadership in environmental preservation for sustainable development and the promotion of positive behaviors, and the connection between curriculum and non-formal education for extracurricular activities, and activating the role of the teacher in the school and community service. <http://www.sens.org.sa/>
- The Technical and Vocational Training Corporation offers training in environmental protection and environmental technology. It has also developed training programmes for harmonization of education and training outputs and labor market needs, and has also included various sustainability concepts and themes in its curricula. <http://www.tvtc.gov.sa/>
- King Abdulaziz University: 1-Center of Excellence in Environmental Studies conducts community service and environmental awareness training on various environmental issues; 2-Center of Excellence for Climate Change Research organizes lectures and symposia on climate change and its effects, and develops training courses on climate change studies. <http://cees.kau.edu.sa/>

International organizations initiatives:

- UNEP/ROWA launched the West Asia Climate Change Network to facilitate exchange of experience, information and knowledge on climate change adaptation, mitigation, technology relevant to the West Asia region. The Network mobilizes resources to enhance scientific, technical and institutional capacity for climate change management and conducts capacity building activities. UNEP/ROWA also conducts regional training workshops on access to developing adaptation strategy and funding and on local approach to managing climate change risks.

- Collaboration between the Kingdom of Saudi Arabia and the Ministry of Education (U.S.) to develop and apply the GLOBE programme which seeks to enhance knowledge and skills of both school students and teachers on various environmental themes.

Private sector and NGOs initiatives:

- Saudi Aramco Programme of Environmental Education. Schools are involved in the programme through Friends of the Environment in collaboration with Saudi Aramco and the Ministry of Education. Campaigns include the rationalization of water consumption in primary schools, and the distribution of brochures and the involvement of family/homes.
- Friends of the Environment aims to spread environmental awareness and introduce students to environmental topics and work to find solutions to environmental problems. <http://sabq.org/EiWfde?w=c>
- Under the supervision of the Ministry of Education, in cooperation with Saudi Aramco, school projects are organized for the environmental education programme. For example, an awareness campaign entitled "A healthy and clean environment stems from our neighborhood" for the dissemination and implementation of the campaign in all schools in Riyadh. The project launched with 90 nominated schools in Riyadh, with successful results in 87 schools so far, including establishing "Friends of the Environment" groups in local schools and preparing an action plan that includes recycling, landscaping and rational use of water and electricity, and the protection of wildlife.

Qatar

The Qatar National Vision (QNV 2030) emphasizes the importance of increasing citizens' environmental awareness and responsibility, and incorporates concepts and principles of environmental education and education for sustainable development. There are several public sector initiatives in collaboration with international organizations aimed at raising awareness and promoting more environmental-friendly practices amongst youth and communities. Some international initiatives have focused on providing training for government officers and other practitioners on disaster management, recovery and reporting. Several private sector initiatives on environmental education, including CCESD, are taking place in Qatar's Education City, mostly targeting students in schools and universities to promote sustainable behaviours and consumption through curriculum education as well as through practical and evidence-based learning such as installing sustainable technologies on-campus to link the curriculum to real-life examples and models.

Government and public sector initiatives:

- The environmental pillar in the Qatar National Vision (QNV) 2030 aims to direct Qatar towards a balance between developmental needs and the protection of its natural environment.
http://www.gsdp.gov.qa/portal/page/portal/gsdp_en/qatar_national_vision/qnv_2030_document
- Qatar National Commission for Education, Culture and Science, under the Supreme Education Council, has introduced to the UNESCO Associated Schools four programmes focused on inter-cultural dialogue, media awareness and national belonging, green schools, and UNESCO Ambassadors programme. The green schools programme focuses on enhancing environmental education and awareness strategies and practices such as tree planting and recycling projects in schools.
- The Qatar Green Center of the Ministry of Environment organizes awareness and training sessions for students and communities on various environmental and climate change topics. Main activities include green competition for school children, competitions for best house and school gardens, and national awareness campaigns on environmental preservation and sustainability. www.qgreen-clean.com

International organizations initiatives:

- UNESCO office in Doha developed 'Resources Re-Cycling Book for Qatar', in collaboration with the Ministry of Education, Ministry of Energy, and Ministry of Municipal Affairs & Agriculture. The book promotes the waste-management philosophy "reduce, reuse, recycle", and aims at all citizen above the age of 12. The same project will be extended to the sub-regional level, including Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. www.unesco.org/doha
- The International Institute for Sustainable Development trained a group of eight Qatari students to cover the upcoming climate change talks in Doha (2012). The training provided the students an opportunity to shadow IISD's report writers at a live conference and gain hands-on writing experience. www.iisd.org/
- Qatar Foundation International launched Youth Ambassadors for Science and Environment (YASE) Programme, which aims to build youth skills on global challenges such as climate change. The Programme emphasizes 2 key elements of environmental education: conservation and innovation; it enhances youth understanding of global environmental issues and trains them to raise awareness and action in their own communities. www.qf.org.qa/
- The International Recovery Platform (IRP) initiative, supported by the United Nations Office for Disaster Risk Reduction (UNISDR), organized a training programme on disaster recovery planning for sixty officials from various ministries, city authorities and NGOs. The training programme focused on planning, managing and executing disaster reduction and recovery activities. Similar training on disaster recovery

planning in the Arab region has been conducted in Algeria and Lebanon and a regional workshop for the Cooperation Council for the Arab States of the Gulf.

- The Permanent Emergency Committee in association with UNISDR conducted a training workshop (2014) on disaster risk reduction and reporting on progress in implementation of the Hyogo Framework for Action. The workshop addressed natural risks reduction programmes and national coordination mechanisms for risk reduction, with models of best practice and implementation and for monitoring and reporting on progress.

Private sector and NGOs initiatives:

- Qatar Foundation (QF) focuses on sustainable development through environmentally-friendly initiatives that cut across research, education and the Foundation facilities. For e.g.: QF Education Division developed a Sustainability Education Coordination (SEC) initiative which conducts recycling and related awareness events in the student dorms; on-campus student jobs promoting sustainability; and environmental education events and annual fairs on campus. The Education division also developed the Sustainable Living Ambassador programme for students to educate and encourage their friends and colleagues on energy consumption and sustainable living, and organizes sustainability internships for students.
- Education City conducts environmental research and development and implements environmental sustainability projects on-campus, including the establishment of a solar panel test facility, environmental education events and programmes, and recycling pilot projects.
- Qatar Green Building Council (QGBC) launched an e-survey that encourages residents to share information about their household energy and water consumption, with the aim of determining current national levels of environmental awareness in order to develop best practice guidelines for both the professional and residential sectors and develop training to relevant groups. www.qatargbc.org/
- The Qatar Foundation for Education, Science and Community Development hosts an annual Qatar Environmental Education Fair to celebrate Earth Day on April 22, for various organizations to present environmentally-friendly ideas for implementation in the fields of education, research and business. Fair attendees are mainly students and teachers from universities, including Carnegie Mellon University in Qatar, Texas A&M University at Qatar (TAMU-Q), and Virginia Commonwealth University in Qatar (VCU-Q).
- Qatar University hosted an international training workshop (2014) on conservation of biodiversity and ecosystem, organized by IUCN Commission on Ecosystem Management (CEM), West Asia Region and the College of Arts and Sciences in Qatar University; aimed at enhancing knowledge and skills about wetlands, biodiversity conservation and management planning. www.qu.edu.qa/

- Carnegie Mellon University Qatar, supported by Qatar Foundation, organized campus-wide conversation on the impact of climate change on food security. Over 100 students from different universities and majors shared knowledge and ideas on how global climate change might affect future generations, explored the link between climate change and food sustainability and discussed potential solutions to loss of agricultural lands and depletion of fisheries. <http://www.qatar.cmu.edu/>
- GeorgeTown University School of Foreign Service in Qatar developed several projects including an ethics course on Environmental Politics for students (2012– 13); Climate Change Lecture Series for the general public (2012); student projects on “reduce reuse recycle; energy management; water conservation and reducing the use of bottle water. <https://qatar.sfs.georgetown.edu/>
- GreenGulf’s ‘Solar Schools’ project, in association with SolarWorld and Qatar School Technologies installed solar panels in schools. The project also seeks to link solar technology and education materials to teach students the benefits of clean, renewable energy.
- Texas A&M University in Qatar established a Help Out Planet Earth (HOPE) environmental club, and organized various workshops on green buildings and on sustainable water use and energy utilization.
- Qatar Academy Senior School developed a course on environmental systems and societies and numerous student activities and programmes such as an environmental club and a recycling programme. <http://www.qataracademy.edu.qa/senior-school>
- Friends of the Environment Centre in Qatar collaborates with government, NGOs and the private sector for conserving biodiversity through field surveys, and offering environmental educational and awareness programmes focusing on students, families and local communities. It also organizes an annual national competition for schools to present students' environmental projects of fine arts and writings including drawings, essays, or exhibits and beach cleaning projects.
- Entalek develops outdoor activities and environmental education programmes in Qatar based on experiential education programmes. Entalek has designed different field studies for school environmental programmes for schools, focusing on hands-on field activities and school expeditions.

United Arab Emirates

At the national level, several ministries are cooperating on climate change education and action. For example, the Ministry of Environment has a climate change department and coordinates with the Ministry of Energy to prepare a UAE Climate Change Report (incorporating a mitigation and adaptation plan), focused on the transition to a ‘green economy’. The Ministry of Education is amending the curriculum to incorporate more environmental thinking and teaching. Several international organizations are focused on capacity building for DRR and emergency

response, whereas private sector initiatives mostly target provision of awareness and information material (including an environmental electronic magazine) for civil society and school programmes on climate change education.

Government and public sector initiatives:

- Dubai Supreme Council of Energy is the main governing body responsible for planning and coordinating with relevant authorities for identifying new energy sources and sustainable energy. It has developed the Dubai Integrated Energy Strategy 2030.
- The Ministry of Education and Emirates Foundation for Youth Development collaborated for introducing sustainability and financial literacy into public schools across the UAE through incorporating ESD concepts. Focus will be on incorporating topics such as climate change, disaster risk reduction, sustainable consumption and personal financial management.
<http://www.emiratesfoundation.ae/en>
- The Abu Dhabi Global Environmental Data Initiative (AGEDI) contains programmes on environmental education and training. For example, the 'Eye on Earth': UNEP/ROWA supports and partners with AGEDI on the Eye on Earth Initiative, a global public information network to enhance access to environmental and societal data. The initiative, which was launched in Abu Dhabi in December 2011, aims to bridge the environmental knowledge gap by connecting and strengthening existing network initiatives <http://www.agedi.ae/>
- The Ministry of Development and International Cooperation, the International City for Humanitarian Services and the United Nations Office for the Coordination of Humanitarian Affairs held a 5-day training workshop on emergency response. The workshop was based on the emergency response guide which was released in 2011. The workshop seeks to introduce Emirati humanitarian workers to the contents of the emergency guide; enhance UAE donor's ability to respond to emergencies; strengthen the role of the Ministry of Development and International Cooperation in UAE response to humanitarian situations around the world; build skills of Emirati humanitarian workers to prepare, plan, and evaluate needs in emergency situations.
- Environment Agency-Abu Dhabi covers priority areas on: i-providing environmental information and knowledge and promoting environmental education and shared responsibility; ii-providing staff training and development and organizational efficiency with regards to environmental sustainability; iii-producing innovative environmental education and training programmes and learning materials for colleges and schools, and information and resources on sustainable living for citizens and community (e.g. Save the Planet Series: Seven Books on Climate Change ; Choose Wisely Consumer Guide. <http://www.ead.ae/home/>

- The Zayed Future Energy Prize is an annual award for innovative achievements in renewable energy and sustainability by individuals, organizations or NGOs. The prize encourages projects and initiatives for solving challenges of climate change, energy security and other environmental issues. <http://zayedfutureenergyprize.com/en/>

International organizations initiatives:

- The International City for Humanitarian Services and the Office of United Nations High Commissioner for Refugees (UNHCR) in Dubai launched the regional training on "Emergency Management" in cooperation with several government departments and institutions. The training targeted participants from the Ministry of Development and International Cooperation, Red Crescent UAE, Dubai Police Foundation, and the National Commission for the Management of Emergencies, Crises and Disasters and several humanitarian organizations in the Gulf states of Saudi Arabia, and the State of Kuwait, Oman, Qatar and Bahrain.
- The International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) founded ATHAR (Architectural and Archeological Tangible Heritage in the Arab Region), a regional conservation center based in Sharjah. ICCROM-ATHAR organized a 2-week specialist workshop (2014) on "Building National Capacities for Managing Risks to Cultural Heritage in Case of Emergency" in Egypt, in partnership with ALESCO, UNESCO Office in Cairo and in cooperation with the Egyptian Ministry of Antiquities and Ministry of Culture. The workshop included participants from fields including urban planning, architectural conservation, legislation, cultural restoration, and information management, imaging and GIS, and from six Arab countries: Egypt, Iraq, Libya, Palestine, Sudan, Syria and Yemen. The workshop aimed to create a working group to manage emergency situations and threats to cultural heritage to be effective at the national and regional levels, through an interactive and participatory approach. The workshop also emphasized the importance of understanding the international and national legislation that can be applied to the protection of cultural heritage in the midst of crisis and, therefore, improve the application of legislation on the protection of cultural heritage in times of crisis. The workshop focused on the development of skills in the field of risk management and rapid documentation and emergency procedures and safety measures that can be taken to protect the heritage, with an emphasis on the importance of education and the role of the community in emergency situations, and planning for repairs after the expiration of the crisis. Among its expected outcomes in the long run is the establishment of an observatory of cultural heritage to become a reference for all Arab countries.
- UNDP-UAE: Promoting Low-Carbon Development in Dubai. The project aims to build capacity of the Dubai Carbon Centre of Excellence (DCCE) on carbon financing, and to enhance sustainable development in Dubai through integrating climate change into development planning and implementation processes, assisting Dubai to become the

low-carbon economy, through a programme of staffing, outreach, capacity development. www.ae.undp.org/

Private sector and NGOs initiatives:

- Environment news is an electronic magazine that covers environment and development news and includes daily news and selected articles from the media, and studies issues related to climate change, green technologies and renewable energies. It also reports on activities of NGOs and government institutions working on environmental issues, and provides interactive learning materials to raise public environmental awareness. <http://www.env-news.com/>
- Emirates Wildlife Society focuses on biodiversity conservation in key sites across the emirates including species and ecosystems of concern in the region, raising awareness on the high UAE Ecological Footprint and contributing to policy and institutional framework to address environmental issues. Several projects address the UAE's ecological footprint through communication initiatives and education programme to raise environmental awareness. Its environmental education programme consists of three projects: 1-Online education resource for students through 'Be'ati Watani; programme comprising eight courses for school students aged 6 – 14 years, designed with information about the UAE's natural ecosystems and habitats; 2- 'Echo-Schools' programme aims to raise students' awareness on sustainable development issues through classroom study as well as school and community action; 3-'Blue Flag' eco-label awarded to beaches and focused on sustainable water management and environmental education.
- Emirates Wildlife Society in association with WWF (EWS-WWF) launched the 'Heroes of the UAE Schools programme' in partnership with the Ministry of Education for addressing climate change and the UAEs ecological footprint through schools across the UAE. The programme consisted of a learning module on climate change followed by an energy and water reduction competition for schools to motivate students to take collective action. <http://www.heroesoftheuae.ae/en>
- Masdar Institute of Science and Technology is focused on providing real-world solutions to sustainability challenges, mainly on energy and sustainable technologies. The Institute's Strategic Plan 2012-2017 incorporates themes such as climate change adaptation, environmental sensing and monitoring, and training on sustainable technologies, as well as targeted educational programmes and activities such as the Young Future Energy Leaders (YFEL) programme for encouraging young people to pursue their studies in sustainable energy. Another interesting programme by the Institute is 'Ektashif', a one-week educational programme for undergraduate students to raise their awareness and skills on energy and sustainability issues and developing their teamwork and communication skills.

- Arab Science and Technology Foundation develops projects to support the fields of information and technology through funding and developing scientific and technological fields in the Arab world. Projects address environmental awareness and science, youth empowerment through capacity building for innovation and entrepreneurship, as well as women initiatives to develop their technical skills and strengthen their role on regional and international levels. www.astf.net/
- Over 50 schools in the UAE are registered with the Eco-Schools programme, an international initiative aiming to promote whole-school environmental action. The programme engages children and young people in key issues including the environment, sustainability, global citizenship and the value of a low carbon future. It is an environmental management tool, learning resource and awards scheme. <http://www.ecoschoolsuae.org/en/>

Yemen

Yemen's Strategic Vision 2025 recognizes the importance of environmental protection and climate change adaptation through enhancing education, encouraging research and development in the field of environmental issues and sustainability, and supporting the work of public and private sectors in this field. The Strategic vision also addresses the need for innovation and training in fields of science and technology and TVET and for directing university education to market demands.

At the national level, the Environmental Protection Agency is responsible for preparation and implementation of programmes to raise awareness and environmental education in coordination with the relevant authorities; participation in the preparation of plans on national response to natural disasters and pollution; coordination with the relevant ministries for the integration of environmental concepts in educational institutions and programmes. Many international organizations target specifically women education and empowerment on sustainability and technology; others collaborate with government for designing competitions and prizes for environmental preservation projects. Private sector initiatives often target school and university students' environmental education, teacher training, and outreach to local communities through educational activities and training workshops.

Government and public sector initiatives:

- The General Authority for Environment Protection Branch of Aden organized a training workshop on establishing and managing environmental clubs at school, in cooperation with the Regional Organization for the Conservation of the Red Sea and Gulf of Aden. The two-day workshop with participation of administrators and supervisors of environmental clubs from 20 schools. <http://www.persga.org/>

- The Ministry of Planning and International Cooperation prepared a report on the national assessment of sustainable development in Yemen to highlight the integration of environmental and social dimensions in development planning and to identify sustainable development priorities post-2015. This assessment also identified best practices, challenges, opportunities and recommendations post-2015 in coherence with Yemen's Strategic Vision 2025. The identified priorities relate to population growth and needs within the pathway to sustainable development in Yemen, the rational use of water resources and other natural resources, the importance of developing physical infrastructure, and institutional performance through good governance, anti-corruption and partnership with civil society, donors and the private sector with defining roles and coordination of efforts.
- The Ministry of Water and Environment in collaboration with Ministry of Education conducted a study on developing a national strategy for integrating concepts, values and skills related to sustainability and DRR in school curricula, and developing teaching materials for schools on climate change and effects of natural disasters on communities.
- The 'Biodiversity and Climate Adaptation Programme' at the Ministry of Agriculture and Irrigation and the Meteorology Department at the General Authority of Civil Aviation and Meteorology organized a 10-day training course in the field of climate modeling. The course aimed to build the skills of 16 trainees from the meteorological sector, Public Authority for Water Resources, the Public Authority for Agricultural Research and Extension and the General Authority for the Protection of the Environment, and to provide them with scientific and practical information in the field of Meteorology and variables of climate such as weather, climate and rainfall and disaster prediction and global warming.
- The Environmental Awareness Center in Adan province aims to raise the level of environmental awareness among members of the community, using a community participation approach and across multiple communication channels; develop environmental skills among individuals and involve them in decision-making on environmental protection and conservation of resources.
- Sana'a University's Gender Development Research and Studies Center conducts teaching and research on gender and development in the Yemeni community issues. The Center has organized symposium and workshop on importance of national dialogue for sustainable development and of women engagement and empowerment in the discussions and decisions for sustainability. The symposium will be followed with activities and seminars to link the Center with faculties and research centers at the University and other universities and with other local and international organizations and civil society. <http://www.su.edu.ye/>

International organizations initiatives:

- The U.S. Middle East Partnership Initiative (MEPI) organized 'The Women in Technology Networking and Sustainability Conference' in Yemen to build skills and empower girls and women in areas of technology, environmental preservation and sustainability. http://mepi.state.gov/mh_110710.html
- UNDP-Yemen has programmes on environmental sustainability, focused on developing education material and workshops on environmental issues including climate change to enhance public awareness.
- The Yemeni National Commission for UNESCO conducts various educational and training courses and workshops for school youth and teachers on environmental pollution, sustainable development and climate change.
- The Sultan Qaboos Prize for Environmental Preservation is a biennial award sponsored by UNESCO for recognition to contributions by individuals, groups, institutes or organizations in the management or preservation of the environment, including climate change and sustainable development. <http://un-qaboos-prize.net/en/>

Private sector and NGOs initiatives:

- The Environmental Awareness Center in Sana'a benefitted thousands of students (approximately 58 schools), employees of boards of mothers and associations, and citizens through environmental awareness campaigns, printed awareness material, and social networking. The awareness programmes focused on environmental preservation and protection. The center also produced and broadcast a television programme of thirty episode titled " Stay Honey", produced and broadcast on various channels, official and private radio stations with the support of the Capital Secretariat in collaboration with the cleanliness and the municipal sector fund.
- The Yemeni Environmental Organization develops training programmes for university students and teachers on sustainable development and climate change. For example: an educational and training workshop for youth on climate change adaptation and the links to a green economy, and for teachers on climate change and sustainability and their environmental, social, political and economic dimensions.
- Environment Protectors Organization and Sustainable Development (EPODS) aims to spread environmental awareness among different social groups, especially women and school and students, and to conduct training for environmental management and conservation. In addition, the organization conducts studies and programs on sustainable development and environmental impact assessment and works with different agencies to issue environmental laws and regulations. The organization is currently focused on raising awareness and preparation and implementation of environment-friendly projects in coordination and cooperation with governmental and civil and international institutions.

- Foundation Support for Development (FSD) is an NGO that is focused on building capacities and empowering youth, women and local communities on various socio-political and environmental issues through innovative projects and through partnerships with other organizations and public sector.

<http://www.nakhweh.org/ar/organizations/756-Yemeni-Development-Foundation>

4. Partners and Stakeholders

In the Arab Gulf countries and Yemen, national governments, often led by the Ministry of Education, play a key role in incorporating concepts, principles and practical activities related to various environmental themes including sustainability and climate change into academic curricula at general and higher education levels. In many cases, several other ministries and public institutions collaborate on such initiatives, such as the Ministry of Environmental Affairs, Ministry of Electricity and Water, National Research Councils and public universities in these countries.

There are numerous partners and stakeholders undertaking different roles and initiatives on climate change (including DRR) and sustainable development, although not all are directly involved in CCESD in particular. At the international level, key partners and stakeholders include the following:

UNDP; UNEP/ROWA; UNESCO; UNIDO; UN-HABITAT; UNHCR; ESCWA; ICCROM; World Bank; WMO; USAID ; U.S. Middle East Partnership Initiative; EU organizations; British Council Middle East; German Federal Enterprise for International Cooperation; Qatar Foundation International.

The following are examples of key partners and stakeholders on CCESD initiatives by the public and private sector in the Arab Gulf countries and Yemen, categorized based on General Education (including TVET)– Higher Education – Life-long Learning:

General Education (including TVET)

- Environment Society of Oman
- OURPLANET International School in Muscat (Oman)
- Saudi Aramco (Saudi Arabia)
- Saudi Environment Society (Saudi Arabia)
- Emirates Wildlife Society (UAE)
- Qatar Foundation
- Yemeni Environmental Organization

Higher Education

- University of Bahrain
- Kuwait University
- Higher College of Technology in Muscat (Oman)
- Masdar Institute (UAE)
- King Abdulaziz University (Saudi Arabia)
- Carnegie Mellon University (Qatar)
- GeorgeTown University School of Foreign Service in Qatar
- Sana'a University (Yemen)
- Sultan Qaboos University (Yemen)

Life-long Learning

- Bahrain Women Association
- Environmental Voluntary Foundation (Kuwait)
- Public Authority for Applied Education and Training (Kuwait)
- Environment Agency Abu Dhabi (UAE)
- Environmental Awareness Center (Yemen)
- Environment Protectors Organization and Sustainable Development (Yemen)

5. Developing Plans and Strategies on CCESD

i. Policy Planning and Programme Review

At the national level, the strategic visions and national plans of several countries in the Arab Gulf region incorporate principles or themes on education for sustainability (including climate change) or environmental education. Such national plans need to be complemented with guiding policies and clear implementation mechanisms and strategies to incorporate climate change and sustainability themes into all levels of the formal education system in schools and universities. The development of educational programmes on climate change education for sustainable development (CCESD) must be supported by binding decisions and policies supportive of the strategy, vision and objectives of CCESD. It must include a specific plan of execution that is time-bound to specific targets. It must also include adequate follow-up mechanism for monitoring and evaluation. The policies on CCESD must ensure continuity of such strategies and their long-term application, by presenting evidence and indicators on the development and achievement of the targets, and periodically assessing the overall process and impact.

It is also important to design policies to increase funding for education programmes on CCESD, as financial support can sometimes be consumed in the administration and operations of academic institutions. Policies on CCESD must also recognize the important

role of the private sector in advancing this field, especially universities, research centers, and NGOs. Policy-makers must therefore aim to involve the private sector in the consultations and decisions on CCESD and must devise mechanisms and platforms for continuous communication and cooperation between the public and private sector. CCESD programmes can also enhance the role of local communities by developing awareness and action projects that target the general public as well as specific population groups such as practitioners, women and youth, in collaboration with local NGOs and civil society.

At the regional level, it is recommended to: i) develop policies that strengthen existing collaborations and partnerships on disaster risk management and response strategies between the different countries in the Arab region; ii) identify and unify the key terminologies on climate change education for sustainable development in the Arabic language in order to ensure coherence and to avoid confusion, misconception or misunderstandings in communications across the different stakeholders in the Arab region; and iii) establish online networks and platforms for enhancing connection and collaboration among different CCESD initiatives in the Gulf sub-region and Arab region, as well as for sharing best practices and methodologies and identifying novel and innovative opportunities on CCESD. In addition,

ii. Curriculum Development

At the national level, it is important to comprehensively integrate climate change education for sustainable development in academic curricula, rather than just in environmental courses or scientific subjects. It is recommended to incorporate CCESD in an interdisciplinary manner into diverse fields of study in order to teach climate change from the social, economic, environmental and political dimensions. Integrating CCESD into the different academic disciplines and levels can enable young learners to acquire the knowledge and skills necessary for managing the risks and impacts of climate change and transition to a green economy. These skills include critical and systems thinking, long-term envisioning, teamwork and partnerships with diverse disciplines and cultures, flexibility and adaptability to unpredictable or uncontrollable risks and natural disasters (DRR), as well as functional and technical (and IT) skills in utilizing sustainable technologies in their daily lives and workplace.

It is recommended that CCESD integration strategies be developed: i) based on a short-term, medium-term and long-term plans for the rehabilitation of the educational system, processes and outputs; ii) from theoretical as well as practical approaches; and iii) with focus on instilling environmentally-ethical understanding and practices related to climate change and sustainable development. Schools should integrate CCESD concepts and skills into all levels: primary, middle and secondary. It is also recommended to encourage schools to become associated with UNESCO School programmes such as the

UNESCO Associated Schools Project Network (ASPnet) and the Green Schools programme, which focus on providing quality education through curriculum and enhancing the educational experiences of young learners by addressing international and inter-cultural understanding, peace, sustainable development.

Universities should incorporate CCESD courses through inter-disciplinary programmes at undergraduate levels, and develop graduate courses, diplomas and certificates on climate change and sustainable development with specific focus on the issues, challenges, and opportunities in the Arab region.

At the sub-regional/regional level, key partners and stakeholders from the different Arab Gulf countries can facilitate or pave the way for such national curriculum development towards CCESD, by holding regional meetings and consultations for identifying shared contextual and regional challenges and opportunities on climate change (including DRR), and agreeing on key concepts, knowledge and skills that could be integrated into CCESD programmes and that are particularly relevant to the Arab region.

iii. Teacher Training and Education

Governments, especially the Ministry of Education, and the private sector, including schools and universities, must invest in human resources for climate change education for sustainable development. Given the importance of the education sector in advancing and empowering young learners, future leaders, citizens and communities to face the challenges of climate change, it is essential to build the capacities of teachers in incorporating climate change and sustainable development concepts and activities into their teaching. Teacher education and training on CCESD can ensure greater efficiency and impact in the integration of CCESD in academic programmes and curricula as well as better learning outcomes for students.

Climate change and sustainable development concepts must therefore be incorporated into teacher preparation programmes, and into pre-service and in-service teacher training. All levels of teacher training programmes are considered important stages towards integrating education concepts in the field of climate change and development, to train teachers in the teaching and learning programmes for a sustainable future and so that they have adequate knowledge, understanding and competence to be able to adopt the curriculum changes and apply lessons and activities related to CCESD in the classroom. It is also advisable to tailor the education and training programmes to meet the different disciplines and teaching subjects and approaches of teachers and to the age groups of students.

It is also important to maintain consistency and continuity by providing teacher training opportunities on an ongoing basis to keep ahead of developments and innovative learning

approaches in CCESD. The Ministries of Education can develop adequate follow-up procedures for effective and sustainable programme implementation. Furthermore, teachers should be encouraged and supported to participate in conferences, workshops and events in the field of climate change and sustainable development for the acquisition of skills and expertise and solutions to help support education in the field of CCESD.

iv. Programmes of Civil Society and NGOs (Life-Long Learning)

The study findings for the Arab Gulf region and Yemen capture many interesting environmental initiatives for life-long learning, often focused on youth, government officers, environmental practitioners, women, and the general public. Some of these initiatives are spearheaded by national ministries and the public sector, others by the private sector and international organizations. Yet most are focused on general environmental themes such as water conservation and biodiversity or on sustainable development concepts, but there are less initiatives and programmes that particularly address the challenges of, and adaptation to climate change and to climate-induced natural disasters. Therefore, it is recommended that national governments develop preliminary strategies and techniques for ensuring emphasis on climate change education in such lifelong initiatives, in order to prepare local communities, citizens as well as professionals to its impacts and risks in the region.

In addition, it is recommended to expand and sustain, in terms of time, scope, and participation, the existing training programmes or short-term courses or workshops that seek to build skills and competences on climate change technologies and green economy so that they reach wider audience of beneficiaries, partners and stakeholders. Furthermore, civil society groups and NGOs can develop on-line platforms that: i) facilitate internal communications and coordination between these different groups to harmonize CCESD initiatives; ii) provide the general public with updated information about planned programmes and activities; and iii) encourage local communities to identify their own needs on CCESD such as certain skills or knowledge/understanding that can help them respond to its specific challenges and impacts in these communities.

6. Issues, Challenges, and Opportunities

This section addresses the main challenges and opportunities for climate change education for sustainable development (CCESD) in the Arab Gulf countries and Yemen, as based on the study findings and the mapping of key partners and stakeholders.

Issues and Challenges:

- Culture of the community, teachers and students in schools lacks in-depth knowledge and awareness about climate change and sustainable development; more often oriented to general environmental awareness. Similarly, CCESD and

ESD more generally are still considered as a sub-area of environmental issues and therefore still needed to be clarified and organized for deeper understanding through a comprehensive national strategy to address this situation.

- Weakness of self-funded public/government resources for the integration of education in the field of climate change and sustainable development.
- The lack of cooperation and coordination across public institutions, and between private institutions, civil society, and schools and universities, and the competent authorities on CCESD initiatives.

Opportunities:

The identified initiatives on climate change education for sustainable development often engage various key partners and stakeholders in the Arab Gulf countries and Yemen. These initiatives shed light on many opportunities for advancing CCESD in the Arab Gulf countries and Yemen. At the national level, there is opportunity for developing implementation strategies for integrating CCESD into the national visions and strategies of these countries and in their educational reform and advancement projects, such as in Bahrain's Quality Assurance Authority for Education and Training, and Yemen's Strategic Vision 2025. Developing clear implementation strategies could help spearhead and coordinate CCESD initiatives at the national and local levels for these countries. It is also recommended to re-orient existing national environmental education initiatives in the Arab Gulf countries towards CCESD in particular, or at least integrate CCESD in a comprehensive approach that profoundly addresses diverse climate change themes as well as social, economic, and political dimensions of climate change and sustainability.

Public sector initiatives on CCESD and DRR education and training, such as the Ministry of Development and International Cooperation's training workshop on emergency response (UAE) and the 'Biodiversity and Climate Adaptation Programme' (Yemen) could be expanded and scaled from short-term workshop days or sessions into national long-standing, or periodical programmes implemented in different regions, urban and rural, of each country. National initiatives such as KEPA's 'Beatona' environmental portal (Kuwait); 'Capacity Building on Climate Change Project' (Oman); and Saudi Environment Society-environmental awareness programme could also be replicated in other Arab Gulf countries while tailoring to specific national needs and context.

In addition, many academic institutions are taking the lead on important programmes on climate change and wider sustainability issues; such as the school programme by OURPLANET International School Muscat and 'Be'ati Watani online education resource (UAE). Their experiences, processes of implementation, and lessons learnt could be valuable for encouraging as well as guiding/supporting similar programmes in schools in other countries. An example from higher education is the 'Climate Change Lecture Series for the

general public' (Qatar) which could be similarly held by universities in other countries to enhance CC public awareness, and ideally could become a staple and permanent programme within these universities rather than for a short or specific time frame. Moreover, initiatives that enhance hands-on and experiential learning through sustainable projects on-campus, such as by Education City (Qatar) and Masdar Institute (UAE) should be encouraged and supported, financially and technically, for wide application in different school and university campuses in the countries in this sub-region.

Several initiatives for training youth and communities on green jobs, sustainable industrial development, and sustainable technologies, such as UNIDO's EQuIP programme (Bahrain), the Ministry of Education's programme for integrating life skills education into secondary levels (Oman), and the Technical and Vocational Training Corporation activities (Saudi Arabia) can be thematically expanded to address competences and skills for CCESD and DRR. Similar initiatives targeted towards women, such as GEMPI (Bahrain), could also be expanded to include CCESD education and training.

At the regional level, there are several important initiatives on sustainable development and general environmental issues, such as the 'Arab Region Atlas of Our Changing Environment', and the 'Sustainable Development Goals: An Arab Perspective' discussion paper. These initiatives offer an opportunity to be replicated to develop similar programmes or outputs which can be tailored specifically to CCESD in the region.

In addition, the countries in the Arab Gulf region should build-on the 'Framework for a Green Economy Investment Roadmap for the Arab Region' by developing national green economy policies and strategies. This framework also presents a valuable opportunity for guiding CCESD initiatives and programmes that can help meet the education and learning requirements and skill-sets for a green economy.

Furthermore, national governments should support national and regional youth initiatives such as AYCM through providing funding and technical support and establishing formal channels for youth consultation on CCESD decisions, plans and strategies of action. Governments could also establish focal points for the various regional initiatives on CCESD such as the UNEP-ROWA's Climate Change Programme, and the climate change training workshops by the Sustainable Development Policies Division at ESCWA, in order to coordinate and support these programmes as well as direct/orient such initiatives to most needed sectors, stakeholders or groups to enhance their impact. Finally, national and regional initiatives for environmental and sustainability-themed competitions/prizes, such as the Sultan Qaboos Prize for Environmental Preservation, Oman Green Awards, and Zayed Future Energy Prize, encourage innovation and engagement of diverse stakeholders, and could be expanded to include dedicated prizes for CCESD initiatives.

7. Conclusions and Recommendations

Education is an empowering tool for enabling individuals, communities and countries to attain the values, knowledge and skills to manage the responsibilities, burdens, impacts and opportunities of climate change in their lives and jobs. In the Arab Gulf countries and Yemen, the importance of education for building a resilient, sustainable, peaceful and continuously developing society and country is recognized in the governments' national visions and strategies. Yet it is essential to integrate climate change education for sustainable development more clearly and profoundly into these national policies and strategies with adequate and time-bound mechanisms of implementation. The integration of CCESD in curricula and programmes of study must also be planned and applied in ways that are compatible with the resolutions and recommendations of UNESCO and with the particular contextual environment of each country. The role of the private sector and international organizations is evidently important in supporting CCESD initiatives at the local, national and regional levels. National governments could therefore develop mechanisms that can facilitate coordination of activities and cooperation on initiatives for CCESD, as well as on-line platforms for sharing good practices and opportunities for partnerships across the sub-region/region.

Particular recommendations for general education (including TVET), higher education, and life-long learning in the Arab Gulf countries and Yemen include:

- For General Education (including TVET), it is recommended that schools expand or re-orient existing environmental education programmes in many of the Arab Gulf countries to focus specifically on CCESD, in order to promote learning experiences for the students that are: i) in-depth and inter-disciplinary (addressing in-depth social, economic, and political aspects of climate change science, impacts and response rather than general environmental education); ii) based on values education and ethical and moral dimensions of sustainability; iii) experiential with hands-on activities; and iv) oriented towards problem-solving and critical thinking skills. National governments can support this process by providing financial and technical resources, expertise guidance, and teacher training on CCESD.
- For Higher Education, the study has identified several important CCESD partnerships between higher education institutions (HEIs) and the private sector, or with international organizations and universities, which can be further developed for greater scope of impact. It is recommended to expand or scale up such existing CCESD partnerships. Expansion, in terms of discipline as well as time-frame, can be undertaken by HEIs themselves and is recommended for university initiatives that currently target a specific educational discipline or major or that are implemented for a short time frame. Scaling-up can be steered by national governments and local

authorities, and is recommended for initiatives that are being implemented within a specific university or area/district, so that HEIs in other areas can develop and apply similar CCESD programmes. Replication is recommended for successful initiatives in one Arab Gulf country that can be reproduced in other countries with similar challenges and possibilities.

- For Life-Long Learning (LLL), it is recommended that national governments in the Arab Gulf countries and Yemen develop policies and strategies to encourage and improve partnerships for formal and non-formal CCESD learning mechanisms through the private sector and international organizations. In particular, such policies could target and promote partnerships between three key partner and stakeholder groups: i) partnerships between universities and corporate/industry/businesses for developing adult education and training programmes on CCESD to build the skills of existing employees and staff on green jobs and technologies in the workplace and on managing the impacts of climate change (including DRR); ii) partnerships between local NGOs, civil society, and international organizations for developing CCESD education and training programmes at the local community level that are both wide-reaching to the general public as well as tailored to specific vulnerable population groups such as women who are low-educated, or people with illnesses and disabilities.

Finally, it is recommended that UNESCO-Beirut establish a regional online platform for CCESD in order to encourage, promote and coordinate exchange of ideas and good practices, consultation on common challenges, and the extension or replication of a country's successful projects to other countries in the region.

References and Resources

References for Regional Initiatives:

UNEP-ROWA's Climate Change Programme

<http://www.unep.org/rowa/KeyActivities/ClimateChange/tabid/101289/Default.aspx>

Sustainable Development Goals: An Arab Perspective

<https://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=1282&menu=35>

ESCWA - Climate Change Vulnerability Assessment Methodology in the Arab Region

<http://www.escwa.un.org/escwanewsdetails.asp?id=46>

Framework for a Green Economy Investment Roadmap For the Arab Region

<http://css.escwa.org.lb/SDPD/3315/1.pdf>

Arab Region Atlas of Our Changing Environment

<http://na.unep.net/atlas/viewAtlasBookWithID.php?atlasID=2447>

Sustainable Development Initiative in the Arab Region

http://www.un.org/esa/sustdev/partnerships/activities_initiate/101202_sd_initiative_arab_region.pdf

GLOBE programme <http://www.globe.gov/web/>

Cooperation Council Center for Arab Gulf States Emergency Management

<http://www.iaea.org/technicalcooperation/Home/Highlights-Archive/Archive-2014/04102014-Gulf.html>

Arab Youth Climate Movement <http://aycm.org/>

References for Country Initiatives:

BAHRAIN

Educational reform strategy <http://unfccc.int/resource/docs/natc/bhrnc2.pdf>

Bahrain women association

<http://en.bahrainws.org/my-environmental-unit-for-a-correct-environmental-culture/>

Environmental Citizenship Program

<http://en.bahrainws.org/my-environmental-unit-for-a-correct-environmental-culture/>

GEMPI <http://unjobs.org/vacancies/1399922667943>

Uni Bahrain ESD Masters Programme

<http://www.uob.edu.bh/english/pages.aspx?module=pages&id=2426&SID=599>

British Council Middle East

<http://inspireengage.com/skills-development-training-instalment-three>

ESCWA Green Economy Roadmap <http://css.escwa.org.lb/SDPD/3315/1.pdf>

UNIDO-EQuIP Programme <http://institute.unido.org/equip-training-programme-inaugurated-in-bahrain>

Bahrain Women Association-Environmental Citizenship programme

<http://en.bahrainws.org/category/environmental-citizenship/>

3BL Associates <http://www.3blassociates.com/index.html>

KUWAIT

Environment Public Authority - Kuwait's Initial National Communications under the United Nations Framework Convention on Climate Change, 2012

<http://unfccc.int/resource/docs/natc/kwtnc1.pdf>

Tarsheed Campaign <http://blogallalong.com/2007/09/10/tarsheed-kuwait-multi-million-power-consumption-awareness-campgain/>

Kuwait Environment Public Authority (KEPA): Beatona project

<http://www.beatona.net/CMS/index.php?lang=en>

PAAET Conference

<http://www.paaet.edu.kw/mysite/Default.aspx?tabid=5141&language=ar-KW>

UNDP Kuwait - Environment and Energy projects

http://www.kw.undp.org/content/kuwait/en/home/operations/projects/environment_and_energy.html

UNISDR - "Advancing Disaster Risk Reduction and Urban Strategy in the Gulf States

<http://www.unisdr.org/archive/20421>

Kuwait Oasis Green Wall Project <http://www.kuwait-oasis.com/>

Kuwait Institute for Scientific Research (KISR) <http://www.kisr.edu.kw/en/>

Kuwait Foundation for the Advancement of Science

<http://www.kfas.org/ar/index.html>

American University of the Middle East - Kuwait

<http://www.aum.edu.kw/Research-Directions.html>

Green Line Environmental Group-Kuwait

<http://www.greenline.com.kw/>

OMAN

Oman Vision for Development (Oman 2020)

http://www.unesco.org/education/wef/countryreports/oman/rapport_1_1.html

Research Council -Adapting Towards Sustainable Development Research Programme

<https://home.trc.gov.om/tabid/765/language/en-US/Default.aspx>

Ministry of Environment and Climate Affairs – Initial National Communication under The United Nations Framework Convention on Climate Change, 2013

<http://unfccc.int/resource/docs/natc/omnnc1.pdf>

Sultan Qaboos University initiatives

https://books.google.com.lb/books?id=vR587QMqQfYC&pg=PT107&lpg=PT107&dq=Sultan+Qaboos+University+++ESD&source=bl&ots=oZYTgDdzOK&sig=4OJQBuls1MUyw_725c--IKZ6sr8&hl=en&sa=X&ei=E_UkVafVMIqdsAGs5ID4Bw&redir_esc=y#v=onepage&q=Sultan%20Qaboos%20University%20%20%20ESD&f=false

WMO workshop <http://climate-l.iisd.org/news/wmo-oman-build-cyclone-forecastingwarning-capacity/>

UNESCO Sultan Qaboos Prize for Environmental Preservation

<http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-programme/awards-and-prizes/sultan-qaboos/about-sultan-qaboos/>

Environment Society of Oman <http://www.eso.org.om/>

OURPLANET International School Muscat

<http://www.ourplanet-muscat.com/nominee-oman-green-awards/>

SAUDI ARABIA

King Abdullah Bin Abdulaziz Public Education Development Programme

<http://susris.com/glossary/king-abdullah-bin-abdulaziz-public-education-development-project/>

Saudi Environment Society projects

http://www.sens.org.sa/index.php?option=com_content&view=article&id=11&Itemid=231&lang=ar

Technical and Vocational Training Corporation <http://www.tvtc.gov.sa/>

King Abdulaziz University - Center of Excellence in Environmental Studies

http://cees.kau.edu.sa/Default.aspx?Site_ID=188&Lng=EN

Saudi Aramco Programme of Environmental Education

<http://earthwatch.org/corporate-partnerships/partnership-profiles/saudi-aramco>

'My environment - green flag green country' programme

<http://archive.aawsat.com/details.asp?section=43&article=663779&issueno=12133#.VSbORvmUcfv>

Friends of the Environment project <http://sabq.org/EiWfde?w=c>

QATAR

Qatar National Vision

http://www.gsdp.gov.qa/portal/page/portal/gsdp_en/qatar_national_vision/qnv_2030_document

Qatar National Commission for Education, Culture and Science

<http://www.sec.gov.qa/En/Pages/Home.aspx>

Qatar Green Center of the Ministry of Environment

www.ggreen-clean.com

'Resources Re-Cycling Book for Qatar'

<http://www.unesco.org/csi/pub/other/recycl-Qatar2.htm>

International Institute for Sustainable Development

<http://www.iisd.org/media/iisd-reporting-services-train-qatari-students-cover-climate-change-talks-doha>

Qatar Foundation - Youth Ambassadors for Science and Environment

<http://thepeninsulaqatar.com/news/qatar/191707/qatar-foundation-international-launches-yase-programme>

International Recovery Platform <http://www.unisdr.org/archive/37533>

Education City initiatives <http://www.qscience.com/doi/pdf/10.5339/connect.2013.41>

Qatar Environmental Education Fair

<http://www.meed.com/qatar-environmental-education-fair-to-celebrate-earth-day/3133972.article>

Carnegie Mellon University Qatar <http://www.qatar.cmu.edu/news/view/1181>

GreenGulf - Solar Schools

<http://www.green-gulf.com/news/press-releases/qatar%E2%80%99s-schools-go-green>

Qatar Sustainability Expo www.qatarsustainability.com/

Friends of the Environment Centre in Qatar

www.birdlife.org/middle-east/partners/qatar-friends-environment-centre

Entalek <http://www.entalek.org/mangroves.html>

UNITED ARAB EMIRATES

UNDP-UAE: Promoting Low-Carbon Development in Dubai

http://www.ae.undp.org/content/united_arab_emirates/en/home/operations/projects/environment_and_energy/Project_78940.html

Abu Dhabi Global Environmental Data Initiative

<http://www.agedi.ae/Pages/pdf/7%20Environmental%20Education.pdf>

Zayed Future energy Prize <http://zayedfutureenergyprize.com/en/>

ICCROM-ATHAR Center <http://athar-centre.org/?p=4687&lang=ar>

International City for Humanitarian Services and UNHCR- 'Emergency Management'

<http://www.unhcr-arabic.org/54bc8ff26.html>

Environment News electronic magazine <http://www.env-news.com/>

Emirates Wildlife Society –Heroes of UAE Schools programme

http://uae.panda.org/ews_wwf/

Masdrar Institute for Science and Technology <https://www.masdar.ac.ae/about-us>

Arab Science and Technology Foundation

<http://www.astf.net/en/projects/arab-science-and-technology-foundation-projects-overview>

YEMEN

Yemen Strategic Vision 2025

<http://www.yemenwater.org/wp-content/uploads/2013/06/Vision2025.pdf>

Regional Organization for the Conservation of the Red Sea and Gulf of Aden

http://www.persga.org/archive_ar.php

<http://www.persga.org/calender.php?id=104>

Ministry of Planning and International Cooperation

<http://www.althawranews.net/news-111017.html>

'Biodiversity and Climate Adaptation Programme' at the Ministry of Agriculture and Irrigation <http://www.althawranews.net/news-111897.html>

Sana'a University's Gender Development Research and Studies Center

<http://www.gdrsc.net/arabic/>

MEPI- Women in Technology Networking and Sustainability Conference

http://mepi.state.gov/mh_110710.html

Environmental Awareness Center in Sana'a

<http://www.sabanews.net/ar/news390433.htm>

Environment Protectors Organization and Sustainable Development (EPODS)

<http://www.epods-ye.org/>

Annexes (1 – 2)

1. Number of Surveys Received per Country

GULF COUNTRY	NUMBER OF SURVEYS RECEIVED
BAHRAIN	-
KUWAIT	1
OMAN	-
QATAR	-
SAUDI ARABIA	1
UNITED ARAB EMIRATES	-
YEMEN	2
Total	4

2. Mapping of Country/Sub-Regional CCESD Best Practices

Country	Engage with Youth and Communities إشراك الشباب والمجتمعات المحلية	Develop Partnerships for CCESD تطوير الشراكات حول التعليم في مجال التغير المناخي والتنمية المستدامة	Prepare for Disasters and Emergencies الاستعداد لمواجهة الكوارث والطوارئ	Building Green Societies through Green Job Training بناء المجتمعات الخضراء بواسطة التدريب على الوظائف الخضراء	الدولة
Bahrain	'Climate Change Best Practice Guide'	University of Bahrain - Masters programme in Environment and Sustainable Development (ESD) http://www.uob.edu.bh/		British Council Middle East conducted skills development training workshop (2009) on theme of climate change in the Middle East http://www.britishcouncil.bh/en	البحرين
Kuwait	Ministry of Electricity and Water – Tarsheed programme http://www.mew.gov.kw/	Kuwait University: “national needs assessment” survey to explore public opinions and capabilities on climate change.	UN International Strategy for Disaster Reduction, the UN Human Settlements Programme and the UN Development Programme- Kuwait: workshop on "Advancing Disaster Risk Reduction and Urban Strategy in the Gulf States,"	Public Authority for Applied Education and Training (PAAET): contains an in-service training center www.paaet.edu.kw/	الكويت
Oman	Higher College of Technology in Muscat developed an eco-friendly house	Cooperation between Ministry of Environment and Climate Affairs and the Ministry of Education in: preparation of	The Sultanate of Oman and the World Meteorological Organization (WMO)	Ministry of Education developed programmes for integrating life skills education in secondary education.	سلطنة عمان

	http://www.hct.edu.om/ Sultan Qaboos Prize for Environmental Preservation http://www.sultangoos.net/article-action-s-id-21.htm	the environmental education for sustainable development programme in Omani curricula	sponsored a workshop (2014) to build capacity of forecasters on operational tropical cyclone forecasting and warning.		
Saudi Arabia	King Abdullah Bin Abdulaziz Public Education Development Programme includes several programmes that occasionally include ESD concepts: Teacher training project; Building youth skills for twenty-first century and life and work skills	Saudi Environment Society, in collaboration with the Ministry of Education and UNESCO, launched its environment awareness programme at 540 schools of all levels for two consecutive years programme, to raise youth environmental awareness under the title 'My environment - green flag green country'.	UNEP/ROWA launched the West Asia Climate Change Network http://ibri.mam9.com/t413-topic	Technical and Vocational Training Corporation http://www.tvtc.gov.sa/Pages/Root.html	السعودية
Qatar	Qatar Green Center of the Ministry of Environment	GreenGulf's 'Solar Schools' project, in association with SolarWorld and Qatar School	International Recovery Platform (IRP) initiative, supported by the United	Qatar University hosted an international training workshop (2014) on	قطر

	<p>http://www.moe.gov.qa/</p> <p>Qatar Foundation International launched Youth Ambassadors for Science and Environment (YASE) Programme</p>	<p>Technologies installed solar panels in schools</p> <p>http://www.green-gulf.com/news/press-releases/qatar%E2%80%99s-schools-go-green</p> <p>QF Education Division developed a Sustainability Education Coordination (SEC) initiative</p>	<p>Nations Office for Disaster Risk Reduction (UNISDR), organized a training programme on disaster recovery planning</p>	<p>conservation of biodiversity and ecosystem, organized by IUCN Commission on Ecosystem Management (CEM), West Asia Region and the College of Arts and Sciences in Qatar University;</p>	
United Arab Emirates	<p>Environment Agency- Abu Dhabi (e.g. Save the Planet Series: Seven Books on Climate Change ; Choose Wisely Consumer Guide. http://www.ead.ae/home/</p>	<p>Emirates Wildlife Society in association with WWF (EWS-WWF) launched the 'Heroes of the UAE Schools programme' in partnership with the Ministry of Education for addressing climate change and the UAEs ecological footprint through schools across the UAE.</p> <p>http://www.heroesoftheuae.ae/en</p>	<p>Ministry of Development and International Cooperation, the International City for Humanitarian Services and the United Nations Office for the Coordination of Humanitarian Affairs held a 5-day training workshop on emergency response.</p> <p>International City for Humanitarian Services and the Office of United</p>	<p>UNDP-UAE: Promoting Low-Carbon Development in Dubai www.ae.undp.org/</p>	<p>الإمارات العربية المتحدة</p>

			Nations High Commissioner for Refugees (UNHCR) in Dubai launched the regional training on "Emergency Management		
Yemen	Environmental Awareness Center in Adan Environmental Awareness Center in Sana'a	Yemeni Environmental Organization http://epods-ye.org/		'Biodiversity and Climate Adaptation Programme' at the Ministry of Agriculture and Irrigation and the Meteorology Department at the General Authority of Civil Aviation and Meteorology organized a 10-day training course in the field of climate modeling. http://www.althawranews.net/news-111897.html	اليمن