JUNE 23–26, 2019

ABRAHAMIC TRADITIONS & ENVIRONMENTAL CHANGE

RHODES, GREECE

ACKNOWLEDGEMENTS

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ABOUT THE WORKSHOP

Taken together, the three Abrahamic traditions include nearly half of the world's population. These religions have particular claims to 'truth,' which have sometimes led to past conflicts. Yet they share common cosmologies and ethics and provide many similar teachings in their respective sacred texts. They have each developed particular worldviews regarding the value and meaning of life. However, to a large extent they have comparable doctrinal and normative teachings: a belief in one God beyond the known and the observable; a commitment to social justice; and a sense of wonderment toward the universe and Earth, among others.

The Abrahamic religions have exhibited shared sensibilities of global awareness and responsibility and have worked as inspired catalysts for social change. The history of Judaism, Christianity and Islam indicate clearly that these traditions have consistently represented a genuine moral force, while exhibiting strong spiritual energy. Despite secularization and the one-sided criticism of their supposed outdated, ineffective ideologies, the Abrahamic religions remain foundational to how people of these faiths think, feel and act to this day.

Another important element that distinguishes the Abrahamic traditions from other religious ones: all three originate from a similar ecological setting—the dry lands of southwestern Asia—a fact that functionally contributed, at least in early times, to shaping the human-environment relationship and patterns of interaction.

Current environmental challenges in the Middle East/North Africa (MENA) Region and beyond suggest an urgent need for cross disciplinary debate and an understanding of the causes and consequences of environmental change as a prelude to successful mitigation and adaptation. Thus, one of the main tasks of this workshop is to explore how the Abrahamic traditions impact the ways in which humans perceive and interact with nature and the potential to translate those perceptions and interactions into positive social and ecological action. More than twenty years ago Harvard University's Center for the Study of World Religions initiated multiple conferences on issues pertaining to religion and ecology that resulted in the publication of 10 seminal books between 1996 and 1998. Today, the *Forum on Religion and Ecology* (www.fore.yale.edu) at Yale University continues this work and is "the largest international multi-religious project of its kind" aimed at broadening understanding of the relationships between religious worldviews and environmental issues, in part by promoting scientific dialogue between the fields related to religious studies and other academic disciplines.

This *Abrahamic Traditions and Environmental Change* workshop builds on these academic conversations with the aim of looking for a means through which the three Abrahamic faiths can help understand and counteract contemporary environmental change in the MENA region. It is also our intention to initiate a relevant, scalable and sustainable collaborative program between MENA scholars & practitioners and their North American and European partners.

WORKSHOP RATIONALE & OBJECTIVES

Human-induced environmental change is not new. Humans have for a very long time accessed elements of the environment to support their expanding needs and wants. The environmental changes of the present time, however, are intensifying and literally creating new environments. The urgency of contemporary environmental change calls for policies and practices that reverse current degradation trends to help produce socially and ecologically sustainable development solutions that are consistent with the broad U.N. Sustainable Development Goals.

In their "Overview of World Religions and Ecology," written in 2009, Mary Evelyn Tucker and John Grim formulated in a clear manner the need for a more holistic ethical change:

> *"Emerging biocentric, zoocentric, and ecocentric ethics are attentive to life forms, animal species, and ecosystems within a planetary context. A new 'systems ethics' of part and whole, local and global, will assist the religions in articulating a more comprehensive form of environmental ethics from within their traditions. This is a major part of the development of religions into a dialogue with the sustainability movement. Humans are seeking an ethics to respond not only to suicide and homicide but also to biocide and ecocide… Thus, religions are gradually moving from exclusively anthropocentric ethics to ecocentric ethics*."

Spirituality can and must contribute to sustainability. The Abrahamic religions, with their moral authority and grounding in ethics can instill new directions in nature-society theory and practice.

This workshop takes place with the assumption that ethical, moral and spiritual dimensions of Abrahamic religions can and must help shape cultural and value systems that impact environmental change mitigation and adaptation. Furthermore, these religions—viewed by some as part of the causation of human induced environmental change—have the potential to move societies toward ecocentric ethics. The Abrahamic traditions on human-nature relations can contribute in many ways toward the material struggle for environmental sustainability and support workable solutions that help mitigate the impacts of contemporary environmental change.

It is our expectation and hope that the workshop will be a meaningful opportunity to discuss religion and ecology in the Middle East/North Africa context with a unique group of academics and practitioners. Workshops results—if we are to be successful—should include: 1) dynamic group and individual conversations that contribute conceptually and politically to current debates; 2) concrete plans for post-workshop collaboration; and 3) the establishment of new friendships and professional relationships.

AGENDA

VENUE

RODOS PALACE HOTEL
Iraklidon Avenue (Trianton), Ixia, 85100 Rhodes, Greece

SUNDAY, JUNE 23, 2019 – OPENING CEREMONY

7:30 PM **WELCOME FROM WORKSHOP ORGANIZERS**

7:35 PM **WELCOME FROM RHODES COMMUNITY**
Ilias Tomazos, *Director, Paideia Program University of Aegean, Storrs, USA*
Nikitas Polemikos, *Paideia Program Director, University of the Aegean, Rhodes, Greece*
Carmen Cohen, *Director of Jewish Center, Rhodes, Greece*
Mariza Hatzilazarou, *Vice Mayor of Rhodes, Greece*
Gerasimos Paspatis, *Archdeacon to Metropolitan (Archbishop) Kyrillos of Rhodes, Greece*

7:45 PM **DINNER**

MONDAY, JUNE 24, 2019

8:00 AM **CONTINENTAL BREAKFAST**

8:45 AM **WELCOME & PARTICIPANT INTRODUCTIONS**
Daniel Weiner, *Vice President for Global Affairs and Professor of Geography, University of Connecticut, Storrs, USA*

10:15 AM **SESSION I: WORLD RELIGIONS & ECOLOGY**
John Grim, *Co-Director of the Forum on Religion & Ecology, Yale University, New Haven, USA*
Mary Evelyn Tucker, *Co-Director of the Forum on Religion & Ecology, Yale University, New Haven, USA*
Adil Najam, *Inaugural Dean, Frederick S. Pardee School of Global Studies, Boston University, Boston, USA*

11:30 AM **COFFEE BREAK**

11:45 AM **SESSION II: ABRAHAMIC TRADITIONS & THE ENVIRONMENT**
Jeremy Benstein, *Director of Research & Publications, Heschel Center for Environmental Learning, Tel Aviv, Israel*
Jame Schaefer, *Associate Professor, Department of Theology, Marquette University, Milwaukee, USA*
İbrahim Özdemir, *Visiting Professor of Philosophy, Åbo Akademi University, Turku, Finland*
Moderated by Abdellatif Bencherifa, *Professor, Public Policy Center, Université Internationale de Rabat, Morocco*

1:30 PM **LUNCH**

2:30 PM **SESSION III: LESSONS FROM COMMUNITY ENGAGEMENT (PART 1) – A CASE STUDY OF THE JORDAN RIVER**
Gidon Bromberg, *Tel Aviv Director of EcoPeace Middle East, Tel Aviv, Israel*
Yana Abu Taleb, *Amman Director of EcoPeace Middle East, Amman, Jordan*
Rana Al Qaimari, *Program Officer, EcoPeace Middle East, Ramallah, Palestine*
Moderated by Esti Kramarsky-Winter, *Board Member, EcoPeace Middle East, Tel Aviv, Israel*

3:45 PM **COFFEE BREAK**

4:00 PM **SESSION IV: LESSONS FROM COMMUNITY ENGAGEMENT (PART 2) – CASE STUDIES FROM MOROCCO, OMAN & IRAQ**
Iyad Abumoghli, *Principal Coordinator of Faith for Earth, Policy and Programme Division – UN Environment, Nairobi, Kenya*
Yossef Ben-Meir, *President of Operations, High Atlas Foundation, Marrakesh, Morocco*
Jenan Anwar Al Asfoor, *Coordinator, Reef Check Oman, Muscat, Oman*
Moderated by Kathryn Libal, *Director, Human Rights Institute, University of Connecticut, Storrs, USA*

5:00 PM **BREAK**

7:00 PM **DINNER AT LEISURE**

TUESDAY, JUNE 25, 2019

8:00 AM **CONTINENTAL BREAKFAST**

9:00 AM **SESSION V: ENVIRONMENTAL POLICY & DEVELOPMENT PRACTICE (PART 1)**
Ebtesam Al Ketbi, *President, Emirates Policy Center, Dubai, United Arab Emirates*
Alon Tal, *Chair, Department of Public Policy, Tel Aviv University, Tel Aviv, Israel*
Moderated by Nawal Ammar, *Dean and Professor, College of Humanities & Social Science, Rowan University, Glassboro, USA*

10:15 AM **COFFEE BREAK**

10:45 AM **SESSION VI – ENVIRONMENTAL POLICY & DEVELOPMENT PRACTICE (PART 2)**
Fazlun Khalid, *Founder, Islamic Foundation for Ecology and Environmental Science, Birmingham, United Kingdom*
Knut Myrum Næss, *Research Management Adviser and Visiting Research Fellow, BI Norwegian Business School, Oslo, Norway*
Simon Skira, *Secretary General of the French Federation of Moroccan Judaism, Paris, France*
Moderated by Khalid Sendide, *Assistant Vice President for Academic Affairs, Al Akhawayn University, Ifrane, Morocco*

12:00 PM **LUNCH**

2:00 PM **SESSION VII – GRADUATE RESEARCH**
Norah Elmagraby, *Ph.D. Student, Islamic Civilization Studies, Emory University, Atlanta, USA*
Mary Elston, *Ph.D. Student, Histories and Cultures of Muslim Societies, Harvard University, Cambridge, USA*
Munjed Murad, *Ph.D. Student, Divinity School, Harvard University, Cambridge, USA*
Zhinan Chen, *MA Student, Environmental Management, Yale University, New Haven, USA*
Moderated by Ilham Idrissi Bichr, *Ph.D. Student, Islamic Civilization Studies, Emory University, Atlanta, USA*

3:15 PM **COFFEE BREAK**

3:45 PM **SESSION VIII – GUIDED GROUP DISCUSSION ABOUT CORE THEMES**
John Grim, *Co-Director of the Forum on Religion & Ecology, Yale University, New Haven, USA*
Mary Evelyn Tucker, *Co-Director of the Forum on Religion & Ecology, Yale University, New Haven, USA*

5:00 PM **BREAK**

7:30 PM **DEPART HOTEL FOR MOUNT FILERMOS**

8:00 PM **DINNER**
Hosted by His Eminence Metropolitan (Archbishop) Kyrillos Kalogerakis of Rhodes at Mount Filerimos

WEDNESDAY, JUNE 26, 2019

8:00 AM **CONTINENTAL BREAKFAST**

9:00 AM **SESSION IX: THE WAY FORWARD**
Guided Discussion led by:
Zaid Eyadat, *Professor of Political Science, University of Jordan, Amman, Jordan*
Daniel Weiner, *Vice President for Global Affairs and Professor of Geography, University of Connecticut, Storrs, USA*

12:30 PM **TOUR OF THE CITY OF RHODES & LUNCH**
Paideia led tour of the city and Monte Smith Pass

3:30 PM **RETURN TO HOTEL**

5:00 PM **DEPART HOTEL FOR LINDOS**

6:00 PM **EXPLORE LINDOS AND THE ACROPOLIS**

8:00 PM **CLOSING GALA DINNER**
Hosted by Paideia Director Ilias Tomazos, Vice Mayor of Rhodes Mariza Hatzilazarou and Lieutenant Governor of the South Aegean Islands Ioannis Flevaris

PROCEEDINGS

MONDAY, JUNE 24, 2019

WELCOME & PARTICIPANT INTRODUCTIONS

DANIEL WEINER

Vice President for Global Affairs and Professor of Geography, University of Connecticut, Storrs, USA

Daniel Weiner called the workshop to order and welcomed the participants to Rhodes. He provided a brief introduction to the UConn Abrahamic Programs for Academic Collaboration in the Middle East/North Africa (MENA) Region initiative. This workshop, Weiner explained, would focus on Abrahamic traditions and environmental change, in the context of the MENA region. Weiner described how the degradation of our ecosystems and stressors on social systems are not only the greatest challenges of our time, but also deeply interconnected. He further posited how difficult it is for the social science and environmental science communities to come together with coherent explanations and solutions. The workshop, with its focus on Abrahamic religions, nature and society, was an attempt to help bridge this gap.

Weiner went on to argue that that while mitigating and adapting to climate change is very important, it is only one piece of the puzzle. Climate change is too often viewed as the cause of poverty and this 'naturalization of poverty' is very problematic. Climate change, of course, is a factor that exacerbates poverty and disproportionately impacts the poor, but it is not the cause of mass poverty locally, regionally or globally. Weiner suggested that the naturalization of poverty is re-igniting old and discredited forms of environmental determinism.

Weiner cited Daniel Hillel, author of *The Natural History of the Bible and Biometric Exploration of the Hebrew Scriptures* and described Hillel's documentation of how the natural environment in the MENA region contributed to biblical scripture. The texts are based on the interrelationships between nature and society. According to Hillel,"…some critics have ascribed our civilization's abusive treatment of the environment to a fundamental tenant of the Bible's first creation, the purported appointment of humans as unrestrained masters of all forms of life on earth permitted to use all of its resources for their own benefit" (p.6). Weiner noted that this broad notion of a basic contradiction in Abrahamic traditions was very important and would be a topic of conversation throughout the workshop. He explained that on the one hand, Abrahamic texts separate humans from nature, while on the other, they appoint humans as earth's guardians.

Weiner also discussed how the workshop would explore Abrahamic religions in the context of environmental ethics and evaluate current forms of unsustainable development that strive for and give privilege to mass consumption. There is a core contradiction that we observe on a daily basis that must be resolved: reduced consumption—essential to mitigate destructive climate and environmental change—threatens the contemporary form of global capitalism. The clergy have been leaders on the need for ecological stewardship, sustainability, and reevaluating mass consumption as a 'natural' evolution for humanity.

Weiner reviewed the program agenda, noted the experience in the room and encouraged everyone to enjoy, listen and learn from each other in order to have a successful workshop and, more importantly, to devise concrete plans for future collaboration. He then invited everyone to give brief introductions before beginning the program.

SESSION I: WORLD RELIGIONS & ECOLOGY

AN OVERVIEW OF WORLD RELIGIONS AND ECOLOGY

John Grim
Co-Director of the Forum on Religion & Ecology, Yale University, New Haven, USA
Mary Evelyn Tucker
Co-Director of the Forum on Religion & Ecology, Yale University, New Haven, USA

Mary Evelyn Tucker gave an overview of world religions and ecology, outlining the development of both a field within academia and an engaged force within the larger society. Those working in this area acknowledge that there are both problems and promise with religions, historically and at present. Nonetheless, moral force and institutional resources can be brought to bear on solving environmental problems along with science, policy, law, economics, and technology.

The field of religion and ecology has emerged over 25-year periods from 1970-1995 and from 1995-2020. The first period was inspired by the Stockholm Conference in 1972 and the second by the Rio Earth Summit in 1992. The initial period saw the emergence within Christian theology and institutions like the World Council of Churches of an incipient realization that destruction of the environment was a moral issue. This was also recognized in the Islamic tradition with the writings of Seyyed Hossein Nasr and the work of Fazlun Khalid. The second period involved the beginning of a range of new movements in 1995 including: the Harvard Conferences on World Religion and Ecology; the Religion, Science and the Environment Conferences of the Ecumenical Patriarch Bartholomew; and the Alliance of Religion and Conservation in the UK. There arose from these a large body of theological reflection and religiously engaged projects. The Forum on Religion and Ecology website illustrates the rich materials now available for this work. http://fore.yale.edu

John Grim discussed one method used in the study of religion and ecology, namely, retrieval, reevaluation, and reconstruction. Retrieval involves the careful study of a religious tradition for environmental interactions by individuals and communities evident in the earlier scriptures, rituals, commentaries, and practices of these religions. These are then brought forward for further examination and reevaluation in light of modern environmental challenges. There is an awareness here that environmentally enlightened ideas did not necessarily lead to environmentally wise practices. Most cultures have deforested or overgrazed their lands, for example. Indigenous peoples, however, have had more nature-inclusive cosmovisions that have generally led to more sustainable practices. After retrieval and reevaluation, the third process is to re-envision or reconstruct a religious tradition to be more ecologically conscious and environmentally active. This final stage can also be described as regeneration of an inspirational orientation, or redetermination, of a particular understanding within a tradition. Grim highlighted an inherent tension in this method of retrieval, reevaluation, and reconstruction, namely, that these traditions claim timeless truths that cannot be changed. Yet, the histories of the Abrahamic traditions also demonstrate ongoing retrieval, reevaluation, and reconstruction that allow these institutions to accommodate change-in-continuity.

DISCUSSION

Moderated By Adil Najam

Inaugural Dean, Frederick S. Pardee School of Global Studies, Boston University, Boston, United States

Adil Najam outlined the discussion in four major points: nature, religion, people, and values. The first point hinged on the fact that indigenous and non-Abrahamic faiths are bound to the earth, that their traditions are also told through the lens of interactions with water and plants, underscoring a more universal tone for a global issue. Secondly, Najam pointed out that there has been conflict between the secular sciences and legal communities, and religion; namely, firm beliefs on both sides of the conversation prevent meaningful and impactful dialogue from moving forward. Scientists often discredit the religious community, while religion holds on to its values and traditions in spite of proven trends and realities. Najam made the comparison that environmentalism could be seen as a pseudo-religion in and of itself, and is often treated as such with assumed dress codes, narrative, rhetoric, prophets, and value systems (perhaps incorrectly) ascribed to those who identify as "environmentalists". Najam concluded the discussion of the second point by noting that the tension between these two communities is not necessarily bad, but that it cannot be breached without confrontation and thoughtful discourse.

Najam continued on to discuss the role of people and their values in environmental change and sustainable development. In each of the Abrahamic traditions, the relationship between humans and their environment is one in which people have dominion over the earth, which differs in comparison to indigenous and other traditions where humans are viewed as part of the nature, rather than separate from it. This is not to say that one view is inherently better, but it does demonstrate that there are tenets of faith that each tradition may learn about how others steward their natural habitat. Keeping in line with Abrahamic traditions, humans have used science, regulations, policy, politics, and money as a set of currency to guide their relationship with nature.

Najam argued that the fourth discussion topic should be values, to be guided by the fact that humans can perish either at the end of a gun, or at the end of a tap releasing contaminated water. Given humans' propensity to concern themselves with financial gain, scientific discovery, and legislative regulation, the value of human life should also factor into the discussion to move the conversation around ecological stewardship forward.

Tucker and Grim echoed Najam's sentiments surrounding the inclusion of indigenous and other traditions. Abrahamic faiths tend to believe that other religions' relationship to the environment is separate from their concept of God and faith. This incorrect notion silences useful teachings and practices and can lead to human rights tragedies when marginalized communities are then criminalized and persecuted.

The discussion raised a number of questions. Mary Elston inquired about the role of political and religious authorities who legitimize contemporary thinking about environmentalism. İbrahim Özdemir asked about the reason for lack of societal interest and engagement around discussions as basic and essential as access to clean water, citing historical and scriptural passages to highlight that this has been a continuing issue since the Qur'an's inception. Another point was raised that under the Bush administration, a visit to the Jordan River by a Christian official sparked a collaborative effort to clean the water source to steward a sacred place. Therefore, the connections between religion, policy, science, and ecology are happening. The Second Encyclical of Pope Francis might not have happened without scientific evidence. How can the discussion be continued forward?

SESSION II: ABRAHAMIC TRADITIONS & THE ENVIRONMENT

A JEWISH PERSPECTIVE

Jeremy Benstein
Director of Research & Publications, Heschel Center for Environmental Learning
Tel Aviv University, Tel Aviv, Israel

Jeremy Benstein's talk was structured around five themes: 1) shared teachings, 2) beliefs versus behavior; 3) policy versus lifestyle; 4) "Shemitta"; and 5) "Think Eternally, Act Temporally".

The first, shared teachings, explored ideas that Benstein believes we all have in common. These teachings (gifts) of our faith traditions to the world include:

a. That the natural world is a purposeful creation of a beneficent Creator, there is intrinsic good in it, and that mass extinctions are an affront to the Creator;
b. That we are a part of, and apart from, that world, which is the basis for the biblical stewardship ethic: the human being is essentially in the middle, a divine image on Earth, responsible *to* the Creator, *for* the Creation.
c. That words like *wonder, awe, amazement, blessing, praise, gratitude* from our traditions, from Creation, from the Psalms and other places, inform a spiritually grounded environmentalism.
d. That trenchant critique of consumerism must emphasize spiritual quality over material quantity, communal well-being, inter-personal relationships and a morally upright spirit, rather than possessions and the pursuit of them.

The subsequent two sections of the talk focused on beliefs versus behavior and policy versus lifestyle. Regarding the former, Benstein asks what is the root of the conflict between the two, and what needs to be changed? Here he looked at two classic essays, Lynn White's "The Historic Roots of Our Ecologic Crisis" and Garrett Hardin's "The Tragedy of the Commons." White's claim is that the historic roots of the crisis are grounded in our Biblically based belief in the superiority of the human race over the rest of creation. White argues we need to change our story, our values, and our beliefs. Hardin argues that the trouble stems from inherent incentives (private profit) to behave badly in the commons of our lives (atmosphere, oceans, resource extraction, etc.). Hardin argues that we need to legislate and de-incentivize pollution and overuse. Values are irrelevant. Benstein notes that Christian thinkers have engaged White and ignored Hardin. The Jewish legal tradition, though, has quite a bit to contribute to the social, economic, and spiritual questions of how to manage the commons. Several examples were presented and discussed.

With respect to the conflict between policy and lifestyle, Benstein explained that religious language in the public sphere can be inspirational, compelling us to uphold a higher ideal. But it is important to recognize the perils involved. When it comes to personal lifestyle choices, religious sources can be bountiful resources, there for the taking for all who are interested, no matter their faith commitment or institutional affiliation.

However, when it comes to policy, we enter a different realm, a politicized arena of discourse where not everyone is comfortable with citing Scripture or other confessional approaches as relevant to policy debate and legislation. Referencing religion when discussing important issues (from slavery to reproductive rights to the environment) can make some people uncomfortable. This dilemma was presented and explored.

The last two themes related to one idea, an ancient tradition that is finding renewed life in today's Israel. The concept of “Shemitta,” or Sabbatical, offers compelling insight that could be a unifying point. The Sabbatical idea in the twenty-first century is a unique and inspiring Jewish institution of great social-environmental import that is being revived and reclaimed by this generation. The biblical year that represented rest for the land from cultivation and release of debtors from their debts is finding inspiring new interpretations and applications in things like a collective government-sponsored and privately-supported charitable fund to help people pay back debts, moratoria on over-fishing in the Sea of Galilee, and widespread discussions of recalibrating work-life balance.

Benstein coined a new adage "think eternally, act temporally", and encouraged the group to think of environmentalism as taking care of the world and things in space. He went on to note that the slogan of "think globally, act locally" is helpful but it ignores the crucial dimension of time. The pace of our lives, including the growth rate of economies and the rate of fossil fuel uses part of the problem. The “seventh generation principle” followed by some Native Americans takes into account the needs of the later generations. It solidifies their commitment to posterity. The current generation must likewise endeavor to "think eternally" and to do so now.

CHRISTIAN MOTIVATION FOR COLLABORATING WITH JUDAIC AND ISLAMIC COMMUNITIES TO ADDRESS ENVIRONMENTAL ISSUES IN THE MIDDLE EAST AND NORTH AFRICA

Jame Schaefer

Associate Professor, Department of Theology, Marquette University, Milwaukee, USA

Christianity shares with Judaism and Islam an unequivocal faith in God, who willed the existence of a world with many diverse creatures, one which actively sustains the totality in existence, and one with a purpose that can be experienced and known to some extent through it. The three religions also share an understanding that human beings are accountable to God for how we function in relation to one another, as well as with other living and inanimate creatures that constitute God’s creation. Though each religion has a specific way of identifying humans in relation to God and the world—covenant partners according to Judaic traditions, caretakers according to Christian traditions, and trustees according to Islamic traditions—the human role is understood as delegated by God who remains sovereign over all. Their shared exemplar of faith in and obedience to God is the patriarch Abraham. This is the reason that Christianity, Judaism, and Islam are collectively referred to as Abrahamic faiths.

Building upon and expanding the traditions of Judaism as conveyed in the Hebrew Bible and, for some Christian traditions, the larger Old Testament, Christianity adds to this basic Abrahamic perspective the belief that humans are redeemed of their transgressions through their faith in Jesus the Christ and by following his teachings to live lovingly in the world. Christians believe that opening themselves to the presence of the Holy Spirit will strengthen and guide their capacity to live responsibly within God’s creation.

A vast body of literature has developed, from early Christianity to the present, in which theologians have reflected on the nature of God’s creation and the human role therein. Recent reflections have addressed the relation of humans to one another, to other species, to abiota and to Earth. These are all God’s creations and are entirely dependent upon God for their continuing existence. Among theologians’ most common focuses are the goodness, beauty, sacramentality, and integrity of God’s creation. These concepts can be helpful in assessing environmental issues, especially when their historical contexts are

studied with the objective of informing current scientific understanding of the world and changing global behaviors.

For example, the goodness of creation advocates valuing one another, other species, abiota, and systems of Earth both intrinsically for their innate goodness and instrumentally for how they should be used by the faithful to achieve a goodness that is common to all. The beauty of creation advocates appreciating the beauty of individual creatures as well as their cumulative, harmonizing beauty. The sacramentality of creation advocates venerating one another, other species, and Earth systems because the presence of God can be experienced through them (e.g., God's goodness, wisdom, empowering power, generosity, mercy, compassion and patience). The integrity of creation advocates co-operating with one another, other species, abiota, and Earth systems in ways that assure the flourishing of our temporal home.

Moral theologians encourage those who believe that God is the ultimate source and active sustainer of the world to emulate certain characteristics. Key among these characteristics are virtues that Christian theologians have promoted throughout the centuries: *Justice* toward current generations and generations to come; *self-restraint* in this life while anticipating eternal life with God; *prudence* and informed decision-making that is based on scientific knowledge about the world; *compassion* for the most vulnerable in our midst; and, *humility* before God in relation to other creatures.

Thinking about the world as God's gift has new prominence in recent teachings by influential Christian prelates, especially the Eastern Orthodox Patriarch Bartholomew I of Constantinople and the Roman Catholic Pope Francis. Though implicit in the Hebrew Bible, the Old and New Testaments, and the Qur'an, this renewed emphasis on creation as God's gift carries a special urgency as the rate of extinction accelerates, ecological systems are destroyed, and threats to the sustainability of the Earth loom. Recognizing the Earth community, with all its living and inanimate creations, as God's gifts should prompt the faithful to cherish these gifts and to express gratitude by living responsibly in relation to them. God's followers, it is hoped, will seek to know more about these gifts and how human action (or inaction) is jeopardizing them. This, then, should move them to take action, individually and collectively and at all levels of government, to mitigate adverse effects on Earth.

Perhaps the most profound teachings of Christianity relate to the sinfulness of degrading ecological systems, of endangering and extinguishing species, of forcing changes in the global climate, of over-consumption by some while others struggle to survive, and of throw-away lifestyles that result in immense accumulations of waste for which adequate disposition is impossible. Recognizing these manifestations of the ecological-social crisis as sins against God should motivate Christians to reflect on their actions, become ecologically conscious, and convert to lifestyles that reflect their faith in God as the purposeful creator and sustainer of the world to whom they are responsible and in whose presence they hope to enjoy eternal life.

Scientific evidence of real and predicted changes in the global climate caused by fossil fuels has prompted collaborative action by Christian, Jewish and Muslim leaders. For several decades, Christian prelates published documents and faith-based organizations acted to promote sustainable practices. These documents and actions laid the groundwork for more educational endeavors regarding practical energy efficiency and renewable energy applications in parishes and congregations. They also served to spark advocacy at the local, national, and international levels of governance. The culmination of these efforts was most evident at the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change held outside of Paris, France in 2015. It was there that Pope Francis's *Laudato si', On Care for Our Common Home*, the *Rabbinic Letter on the Climate Crisis*, and the *Islamic Declaration on Global Climate Change* were issued. Christian, Muslim, and Jewish leaders are currently gearing up to

commemorate the 5th anniversary of these three documents on the 50th anniversary of Earth Day in 2020.

These collaborations have significance for Jewish, Christian, and Muslim communities in the Middle East and North Africa. Their joint efforts address freshwater and energy availability, water pollution, desertification, and loss of biological diversity that are adversely affecting the lives of many people. Grounded by their faith in God and inspired by Abraham as their shared exemplar of obedience to God, members of these communities are motivated to work together while returning to the traditions that deepen their commitments. Hopefully, their joint environmental efforts will help stimulate peaceful cohabitation in the area.

AN ISLAMIC PERSPECTIVE

İbrahim Özdemir

Visiting Professor of Philosophy, Åbo Akademi University, Turku, Finland

Although the world's greatest problems are not all environmental, many of them are byproduct of current environmental challenges. Environmental problems are arguably the root cause of deforestation, erosion, floods, drought, hunger, racism, migration, international and domestic terror, human rights violations, human trafficking, and even nihilism. Distinguished economist Sir Anthony Atkinson in his recent book argues that "the world faces great problems" and the greatest one is inequality (Atkinson 2015: 1-2). Even in the most developed places like the United States and Europe, "concerns about inequality trump all other dangers". But Atkinson also believes that "collectively we are not helpless in the face of forces outside our control" (Atkinson, ibid). Here, therefore, we need the advice of our religious leaders and respective traditions to respond to this challenge.

Environmental, social, and economic threats do not discriminate. The question is whether religious communities, conscious of preserving their identities, can work together to respond to these modern challenges to humanity. Modern society cannot solve "new problems with old concepts." Previously effective concepts and tools "do not respond." In other words, "ideas and beliefs that were reasonable and productive at one time become irrational and nonproductive at another time." (Laszlo 2005: 2). Interestingly Einstein similarly warned that "problems generated by one way of thinking cannot be solved by that same way of thinking."

Today, to understand the messages of sages like St. Francis of Assisi (1181/1182-1226) and Rumi (1207-1273), new frameworks and perspectives are required to understand and then to solve our problems.

Abrahamic teachings, therefore, may sharpen our ability to see that we have more in common than previously believed. Mitigating the effects of climate change and saving our planet must be our first priority. The Abrahamic Family, representing more than half of all humanity, is in a unique position to effect change.

As al-Kindi, the First Muslim philosopher, reminded us in the 10th century "we should never be ashamed to approve truth and acquire it no matter what its source might be, even if it might have come from foreign peoples and alien nations far removed from us. To him who seeks the truth, no other object is higher in value". Therefore, the Qur'anic worldview, as shaped by the birth and formation of Islamic Civilization, can help us articulate an environmental perspective that leads us to sustainable development and mitigates the effects of climate change.

Islamic perceptions of the universe and the place of humans within it commences in the first verse of the Qur'an. (Qur'an 96: 1-5). Muslims believe that the Qur'an gives meaning to the world and to believers' journey in this life. It is the fundamental source and reference point for Muslims. Accordingly, the Qur'an has been a source of inspiration, illumination, and guidance for Muslim philosophers, theologians, Sufi masters, scientists, jurists, and average Muslims who have accepted it as the sacred revelation. The impact of these early verses in the Qur'an are critical in shaping Muslims' worldview and their relationship to the environment as opposed to a pagan perception of nature. The Qur'an present a unique perspective of nature and our place in it.

The Qur'an teaches that God created the universe and adorned the skies with the sun, moon and stars; the face of the earth with flowers, trees, gardens, orchards, and animals; and the waters with coral reefs and millions of creatures. God makes the rivers flow, suspends the skies without support, sends the rain down and creates a boundary between night and day. The universe is the work and the art of God, who creates and sustains all plants and animals as pairs, ensuring their procreation.

The Qur'an presents a vivid and rich portrayal of the environment, full of meaning, purpose, order and sacred beauty. Nature is seen as a balanced, just, peaceful, unified pattern, created by and functioning according to God's design. Each part has its role within the interlocking whole. It is sacred and valuable. It reveals God being a cosmic Qur'an and is thus a way to cleanliness. This complex design of nature and universe, which assigns a unique purpose to each part in relation to every other part implies that humans must consider this interconnectedness when dealing and interacting with the natural environment. We must live a sustainable lifestyle to avoid jeopardizing the life of future generations and other species.

Although God created this world and entrusted it to human beings alone, they are not the owners and masters of the natural environment. Rather they are trustees and stewards of the earth. More importantly, this stewardship requires humans to maintain and utilize the natural environment in accordance with what God's plan, and to consider the order and the ecological balance of nature.

In summary, environmental awareness and activism—caring for the environment and working to combat climate change and its frightening consequences—remains our moral responsibility. We must find solutions in the light of the Qur'an and the life of the Prophet.

DISCUSSION

Moderated by Abdellatif Bencherifa

Professor, Public Policy Center, Université Internationale de Rabat, Morocco

Nawal Ammar began the discussion by positing that in Islam, there is not a contradiction between humanity and nature, but a duality. As a tradition, Islam does not recognize that humans are superior to other beings, rather they act as trustees of the natural environment. Ammar also mentioned the complicated relationship between competing viewpoints regarding Islam's approach to environmental change. One belief is that whatever happens is God's will. Others believe that the Qur'an is newly revealed with each reading. Regarding the latter, Ammar pointed out that personal interpretations of the Qur'an are limited to those who can read Arabic—a figure which comprises 20% of Muslims, of which only 60% are literate. This raises separate (but important) questions of equity in education and standards of living, but it also creates an urgent need to ensure access to education and resources so that more Muslims are able to understand a Qur'anic interpretation of current environmental issues. Other participants responded that they are looking at the same issue in their work with Swahili-speaking communities in

Zanzibar and with Indonesian-speaking communities in Indonesia. That work was focused on teaching four pillars of Islam in host languages to incorporate those themes into the local worldview.

Other points were raised about the need to instill humility into the discussion and to question how religion can be used to reign in the one species that has had the most powerful impact on the environment. Although there are leaders in each of the Abrahamic traditions who are speaking out to inject this notion into public discourse, like Arthur Wescott or Pope Francis, there is a need for more advocates to take up the call.

Additionally, a question was raised about the gap that exists between religious and environmental discourse. There is a perception that policy change and climate action exist solely in the realm of governments and non-governmental organizations. Another participant said that it was the role of academia to address the issues and to translate theoretical concepts into rational and workable solutions. This can involve collaborations between the scientific and religious communities, with the latter communicating the message to people at the ecumenical level. This underscores the need for religious communities to listen to science and to invoke religious traditions that motivate communities to collaborate with scientists around resolving shared ecological and moral dilemmas.

SESSION III: LESSONS FROM COMMUNITY ENGAGEMENT (PART 1) – A CASE STUDY OF THE JORDAN RIVER

FAITH BASED EFFORTS TO REHABILITATE THE JORDAN RIVER

Gidon Bromberg
Tel Aviv Director of EcoPeace Middle East, Tel Aviv, Israel
Yana Abu Taleb
Amman Director of EcoPeace Middle East, Amman, Jordan
Rana Al Qaimari
Program Officer, EcoPeace Middle East, Ramallah, Palestine

Only in recent decades have faith-based communities engaged with local and global environmental groups, becoming joint champions for the rehabilitation of the world's natural heritage. Numerous faith-based leaders have become vocal advocates for environmental stewardship and repair, calling on their communities to support environmental causes.

Faith-based communities often have strong symbolic associations to the Jordan River. The Jordan River runs through the heart of Abrahamic spiritual traditions. Some of the founding stories of Judaism, Christianity, and Islam are set along its banks, and the valley contains sites sacred to half of humanity.

Despite that, over the past fifty years, the Lower Jordan River has been destroyed. Ninety-six percent of its historic flow has been diverted. What little water remains is polluted with saline and effluent, including untreated sewage. The valley's wetlands have dried up, its springs are failing, and half its biodiversity has been lost. This is not just a tragedy for wildlife. Families have seen their fields turn to dust, not from a lack of water but from the injustice of its distribution.

The demise of the Jordan River and the collapse of the valley's eco-system represents a failure of our most basic responsibility toward the species whose habitats have been destroyed and the ecological systems that sustain life on earth. It is a neglect that leaves us impoverished, that cripples the growth of an

economy based on tourism, and that exacerbates the political conflicts that divide the MENA region. It also exemplifies a wider failure to serve as custodians of the planet: if we cannot protect a place of such exceptional value, what part of the earth will we hand on, intact, to our children?

It is with this focus that EcoPeace Middle East is undertaking a campaign to raise awareness of the problems of the Jordan River, of its goal is to spark community discussion and encourage action-based responses on this issue, including faith-based efforts, educational programs and otherwise.

By engaging Muslim, Christian and Jewish communities in Jordan, Palestine and Israel as well as internationally, EcoPeace aims to advance the creation of larger stakeholder circles who support the rehabilitation of the Lower Jordan River.

EcoPeace has a vision for this valley: a vision in which a clean, living river flows from the Sea of Galilee to the Dead Sea; in which the valley's plants and animals are afforded the water they need to flourish; in which the springs flow as they have for millennia; and in which the water extracted for human use is divided equitably between the nations that share the valley and the people who live here. Realizing this vision will not be easy, but difficulty cannot be an excuse for inaction.

As part of this effort, EcoPeace has developed materials to help faith-based communities advance understanding, awareness and action surrounding the Lower Jordan River's rehabilitation.

Sourcebooks for educators and community leaders bring together a rich collection of scripture, sermons, essays, poems, songs and other tools to help leaders engage their communities on the need to rehabilitate the Jordan River.

Muslim sourcebook (English)/(Arabic) | Jewish sourcebook (English)/(Hebrew)
Christian sourcebook (English)/(Arabic) | Multi-faith sourcebook

For more information or to learn how you can get involved please contact EcoPeace at info@ecopeaceme.org

DISCUSSION

Moderated By Esti Kramarsky-Winter

Board Member, EcoPeace Middle East, Tel Aviv, Israel

A question was raised about the issue of the Jordan River Valley viewed through a political lens, in contrast to the religious context. Some lawmakers in the region view conservation of the river as an issue of national sovereignty and borders. Meanwhile, there have been calls for the European Union and the United States Senate to offer aid and support to rehabilitate the ecosystem of the region. While a masterplan is in place, it has only been accepted by the government of Jordan, not by Israel or Palestine. However, there is a conference each year on the shores of the Dead Sea that does bring ministers together to discuss this shared critical resource. Water insecurity hinders development and is responsible for high rates of unemployment in the Valley, which can raise concerns regarding national security.
The panelists were asked about EcoPeace's funding model and they explained that a major donor is the Swedish International Development Agency, but they continuously seek new funding. They have donors from Germany, and, formerly, USAID.

EcoPeace, found inspiration in a similar case from Europe. The Rhine River Valley was at one point equally polluted. A group of mayors from France, Switzerland, and Germany jumped into the river to highlight the need for conservation efforts. EcoPeace similarly organized local mayors from Jordan, Israel and Palestine to jump into the Jordan River. In so doing, EcoPeace and the local communities brought attention to people's right clean water and better sanitation. There is still much to be done to allow access to this basic human need.

Another participant asked about EcoPeace's grassroots approach and whether the subject of religion is openly discussed in the communities in which they serve. Yana Abu Taleb noted that most of their work is secular, as they are advocating to change laws on the secular level. However, the issue of water is important to members of all three Abrahamic traditions, so this is a vehicle to bring them together. EcoPeace has also hosted events where religious leaders representing all three faiths have been present. Gidon Bromberg noted that this seemingly small act demonstrates their leadership and commitment because they know they may be condemned by members of the community for simply being present in the same room.

The group discussed another example of climate change's impact on religion is the fact that there is no longer any water at the purported site of the Baptism of Jesus. The river has narrowed and shifted, to the disappointment of pilgrims who journey to the site to be baptized. Bromberg note that they recognize that they will not be able to recapture the full historical flow, but perhaps they can regain some of the historical flow through building trust and rehabilitating the river together through creative means.

Abu Taleb restated their main mission of bringing together municipal leaders, ministers, high-level officials and helping them to understand the need for cooperation. By presenting solutions that appeal to all stakeholders, they build trust and foster peace. These efforts start at the ground level, in the communities, and progress to policymakers with the power to effectuate change. EcoPeace is committed to improving the livelihood of those living in the Jordan River Valley,

SESSION IV: LESSONS FROM COMMUNITY ENGAGEMENT (PART 2) – CASE STUDIES FROM MOROCCO, OMAN & IRAQ

UNITED NATIONS ENVIRONMENT PROGRAMME VISION ON ENGAGEMENT WITH FAITH-BASED ORGANIZATIONS: THE FAITH FOR EARTH INITIATIVE

Iyad Abumoghli
Principal Coordinator of Faith for Earth, Policy and Programme Division
UN Environment, Nairobi, Kenya

Mobilizing partnerships is an important strategy for the implementing of the 2030 Agenda. This can only be achieved by engaging and partnering with stakeholders from diverse backgrounds. Because traditional stakeholder engagement strategies have sometimes shown limited effectiveness, innovative ideas to bring together like-minded networks are required.

Faith-Based organizations have been recognized by the UN system as key players in eradicating poverty, improving people's health and achieving sustainable development. Increasingly, they are also seen as important partners in the field of environmental protection. Many citizens see faith-based organizations and faith leaders as being trustworthy and capable of outreach that enables them to operate and achieve

practical results where and when needed. For more than 85% of the people living on Earth, spiritual values drive their behaviors and are the main pillars for cultural values, social inclusion, political engagement, and economic prosperity.

Conserving the environment has been a focus of faith-based organizations. In fact, more than 250 environmental faith-based organizations have been working at all levels to address climate change, energy conservation, sustainable use of biodiversity, and reforestation, among others.

UN Environment facilitates the integration of religious and cultural values to ensure inclusive green and transformative development through adopting value-faith-based lifestyles and behaviors. The integrated approached coupled with cultural and religious values can promote innovative nature-based solutions, respect for traditional knowledge and cultural diversity, exercise environmental stewardship and duty of care.

The UN Environment's vision for its engagement with faith-based organizations is "a world where all creations live in balance." Its mission is to "inspire, empower and engage faith-based organizations to innovatively deliver on the 2030 Agenda." The aim is to make an impact on local communities' livelihoods through common spiritual values.

UN Environment's Faith for Earth focuses on three overarching goals: empowering leadership, mobilizing faith-based investments and providing faith-science evidence. These goals are supported by a system of knowledge management encouraging south-south cooperation and empowering its own staff.

The goals of the strategy are linked—i.e. empowering and partnering with global leaders requires scientifically based knowledge and networking on key thematic areas. Similarly, mobilizing faith-based investments requires empowered leadership to change policies based on credible examples of successes elsewhere.

The Faith for Earth approach is grounded in the link between religious concepts of stewardship and environmental sustainability that improves socio-economic conditions for all. Religion and culture can address climate change and related issues by fostering fundamental changes in attitude. They can do so through their own institutions and communities, as well as cooperating with other cultures to pursue the initiative's goals

Goal 1: Strengthen faith-based organizations leadership for policy impact
Religious leaders play many important roles. They often participate in governing community affairs, in providing socio-economic and cultural services to the needy, and in engaging in public policy debates. Religious and spiritual leaders have a powerful impact on local communities because their teachings from sacred texts speak to the beliefs of their followers. No other types of advocacy have such an impact on homes, particularly in remote communities.

To ensure a focused approach, the aim of Faith for Earth is to engage faith leaders and their institutions to tackle issues of mutual priority. Issues for prioritization are food waste and pollution, with a focus on changing individual behaviors and to achieve the targeted outcome.

Goal 2: Green faith-based organizations assets and investments
Religious institutions hold enormous financial assets which they use to build schools, hospitals, and infrastructure as well to support the poorest and most marginalized. These assets are mainly contributions by donors; however, faith-based organizations do own investment corporations, holdings, pension funds,

private sector businesses, as well as land and real estate. Religious organizations are arguably the third largest group of investors in the world.

Different religious organizations' investments are governed by their beliefs and religious laws. Islam for instance, uses the Sharia law of finance including Mudaraba (profit and loss sharing) which places equal emphasis on ethical, moral, social and religious dimensions to ensure equality and fairness for the good of society. Similarly, Catholic financial activities are based on moral principles from the interpretation of Christian religious texts and from Roman Catholic doctrine (the Treaty of Virtues and Vices). And Jainism strictly adheres to the principle of "ahimsa" or non-violence in their investments. In the USA alone, religious contributions in the year 2000 amounted to $335 billion about 32% of all charity. Private faith-based investments are rising, particularly in developing countries.

Some faith-based organizations have also adopted policies to encourage corporate social responsibility. Some organizations use what is known as socially responsible investment or faith-consistent investment. These types of investments aim at making a positive impact on the social welfare of their followers.

Faith for Earth hopes to see more faith-based investments that integrate environmental considerations.

Goal 3: Science- and faith-based evidence

Almost all faiths have linked scientific discoveries to religious scripts, seeking to prove that God created all things in a balance. For example, to Muslims, the discovery of other suns and planets revolving around them was mentioned in the Qur'an 1500 years ago. Similarly, the Zabur of David says, "Your kingdom is a kingdom of all worlds." Faith-based leaders have been using scientific findings in their teachings to reach the hearts and minds of their followers. Pope Francis, reflecting on hurricanes Harvey and Irma said: "You can see the effects of climate change, and scientists have clearly said what path we have to follow."

While climate change has received most of the attention from scientists and religious organizations, other environmental challenges, such as biodiversity loss, desertification, and sand and dust storms have not garnered the same media headlines.

Our aim is to create a broader mass of faith-based institutions that have the relevant scientific information available to answer their followers' questions or to encourage activism. Initially, Goal 1 will be prioritized to ensure feedback loops between this and Goal 1 (possibly pollution and food waste).

THE MOROCCAN APPROACH: INTEGRATING CULTURAL PRESERVATION AND SUSTAINABLE DEVELOPMENT

Yossef Ben-Meir, Ph.D.

President of Operations, High Atlas Foundation, Marrakesh, Morocco

The purpose of Ben-Meir's talk was to present: (1) the Moroccan model for cultural preservation and recommendations for its improved implementation; (2) the ways this multidimensional strategy unfolds in a Moroccan experience; and (3) a pathway for other nations for multicultural action that improves people's livelihoods, education, health, and empowerment.

Morocco aspires to integrate sustainable livelihoods, health, and education with its multicultural identity. The restoration of the Jewish cemeteries in Morocco adjacent to community fruit tree nurseries, provides a vivid example of this model. Another example involves the restoration of the historic Mellah neighborhood in Marrakesh and presents the need to better galvanize community participation. Project

experiences in the city of Essaouira help to further illuminate themes. Finally, Ben-Meir's talk made recommendations to improve the application of Morocco's cultural-development integrated model.

In Morocco, there are a number of human development programs and policies that are innovative and promote social solidarity. These democratic initiatives are designed to catalyze development that prioritizes human needs. The preservation of cultural institutions, locations, and artifacts in Morocco also includes the intention to enhance the lives of people in measurable ways, such as in education, income, and health. The Kingdom's position in regard to the United Nations Alliance of Civilizations, for example, embodies the nature of actions that are both multicultural and developmental, to improve cooperation among nations. King Mohammed VI explained in 2008, "That vision consists in making sure culture serves as a driving force for development as well as a bridge for dialogue."[1] It is the dialogue across communities that drives development and promotes cross-cultural cooperation.

REEF CHECK OMAN

Jenan Anwar Al Asfoor

Coordinator, Reef Check Oman, Muscat, Oman

Jenan Anwar Al Asfoor shared with the group that what began as a hobby has become a lifelong passion and commitment not only to furthering environmental causes in her home country of Oman, but worldwide. As a scuba diver, Al Asfoor was curious about coral reef systems. Due to limited information on their maintenance in Oman, she began volunteering for an organization called Biosphere Expeditions to learn how to monitor the reefs and identify issues related to their maintenance worldwide. She built a global network of individuals who are concerned with preservation of these underwater organisms and ecosystems. She then applied her new-found knowledge to the waters of her home country. Her newly established volunteer group generated a great deal of interest in the past year, motivating more Omanis to get into the water to discover and help protect this precious natural resource.

DISCUSSION

Moderated by Kathryn Libal

Director, Human Rights Institute, University of Connecticut, Storrs, USA

Alon Tal pointed out that, despite vast scientific evidence of climate change, there are many who remain skeptical about the issue. He asked Iyad Abumoghli to comment on the acceptance of climate change by religious leaders and whether these groups could be utilized to promote public awareness and change perceptions. Abumoghli noted that while addressing consumption issues in the Global North, he disseminated different types of awareness materials to various faith leaders, framing what the Bible and Qur'an have to say regarding climate change. He noted that he has not seen skepticism from the religious community and has met with several faith leaders who have contacted the American administration, encouraging attention to pressing environmental issues.

Kathryn Libal noted that challenges of over-consumption are driven by actors outside the MENA region, which has a great impact on those who have the least resources. Libal asked about messaging strategies that could be employed, beyond the token "plant a tree" projects. Skepticism around climate change remains high in the United States, for example, where consumption is also very high, making it one of the

[1] King Mohammed VI, "Royal Message to Participants to a Symposium on Alliance of Civilizations," Maghreb Arab Press, 3 August 2008.

largest contributors to the problem. Daniel Weiner echoed Libal's comments by noting that the problems created in the Global North often have devastating consequences in the Global South, often ignored by the former to the detriment of the latter. As an example, Weiner pointed to Americans who have seven cars and/or four thousand square foot houses, a rate of consumption that is unprecedented in other parts of the world.

Ben-Meir raised the issue of carbon credits which could be beneficial for countries like Morocco who do not produce a lot of carbon. However, administering a system of carbon credits is difficult and time consuming—even a system for planting trees involves several questions regarding regulations. It would be difficult to ensure that the credits benefit the originating country and that the money paid for them aids in sustainable development. Libal noted that while the symbolic act of planting a tree can foster a sense of civic pride, often, those planting trees fail to consider the greater historical, societal, and environmental ramifications of the natural space they inhabit.

Tal inquired whether society has set the bar too low, and whether too little has been asked of the faith community? To reverse the trend of environmental change, humans must change their lifestyles almost completely. Technology is viewed as a means to maintain one's lifestyle, switching a pickup truck for a Tesla, for example, but that will not solve the problem. There are more McDonalds in the world than synagogues, a symbol of the priorities of modern society's lifestyle. Having every church or mosque or synagogue plant a tree won't fix the environmental problem, it's a question of teaching humility to encourage lifestyle changes.

Abumoghli stated that in the last 50 years, the "American dream on steroids" has been marketed and consumed globally. This culture of materialism has drawn us away from understanding our place in the natural environment, and as the discussion shifts toward lifestyle changes, communities must be persuaded to reexamine human's connection to the earth. The greatest obstacle will be translating this goal into tangible action.

Concluding the discussion, Weiner agreed that a holistic approach, adopted by people of all faiths, is required.

TUESDAY, JUNE 25, 2019

SESSION V: ENVIRONMENTAL POLICY & DEVELOPMENT PRACTICE (PART 1)

IMPACT OF ABRAHAMISM ON ENVIRONMENTAL POLICY AND DEVELOPMENT PRACTICE: THE EXPERIENCE OF THE UNITED ARAB EMIRATES

Ebtesam Al Ketbi
President, Emirates Policy Center, Dubai, UAE

Ebtesam Al-Ketbi outlined the challenges confronting societies, states, and regional and international organizations, including extremism, violence, poverty, climate change, civil crises and deficient environmental public policies. Abrahamism is a call for peace among faiths and a convergence of common denominators and values as in the Qur'anic term "equitable world." Abrahamism also recalls the initiative by the Catholic intellectual Hans Kung, who, during an international conference of faiths in 1991, noted that there would be, "no peace among the nations without peace among the religions" and that there would be "no peace among the religions without convergence among the religions on global ethics of peace, justice, freedom, and tolerance." By exploring the convergence of the major religions, finding a peaceful solution to global challenges is possible.

The UAE has undertaken a number of unprecedented initiatives to tackle the issue of environmental change. In recent years, it established a Ministry of Climate Change and the Environment. According to the Dubai Future Foundation, the UAE has already embarked on planning to shift to smart and green cities that achieve sustainable development for future generations.

Signs of this shift are manifested in the Emirates of Abu Dhabi and Dubai. For example, authorities in Abu Dhabi built Masdar City a sustainable, planned project, designed to absorb rapid urban expansion, curb pollution through clean energy and recycle waste with modern technological methods. In Dubai, the Sustainable City is the first housing project that produces clean energy in the Arab World. It is a practical embodiment for social, economic, and environmental sustainability. Dubai has launched this project in 2014 and the first stage was accomplished in 2017 and includes 500 residential villas, 89 apartments with a green belt around them to preserve air quality. In addition, the project included a farm of 11 domes to manage climate and produce plants, distribute them to residents and market them commercially.

In Dubai, Sustainable City produces its energy entirely from renewable resources. It converts solar energy to generate electricity on top of residential and commercial units. In addition, Sustainable City has implemented a number of programs for recycling and limiting waste. It is a member of international environmental organizations and provides educational and training opportunities to raise awareness and transform the concept of sustainability into a reality. Dubai recently launched an international award for the best practices toward sustainable development of human settlements and protection of the environment as part of an official program to promote innovative development and solutions to environmental challenges.

One of those challenges is that severe pollution is likely to double the impact of climate change in the region. UAE suffers, according to its government portal, from 80 tons of carbon dioxide emissions per capita per year, compared to 14 tons per capita per year in the United States. Cars usually produce these emissions. UAE sources officially recognize that carbon dioxide in the air prevents solar heat from escaping the Earth and increases global warming. While measures have been taken to increase renewable

technologies and implement sustainable measures throughout the country, the UAE still has large numbers of air conditioners, desalination and energy plants that run on carbon-based fuels.

According to the official portal of the UAE government, UAE is among countries that are most vulnerable to the growing impacts of climate change, including higher temperatures, less rainfall, drought, higher sea levels, and extreme weather conditions. The portal also notes that climate change would have grave consequences on infrastructure, human health, and the natural environment, affecting all development sectors and policymaking. Additionally, economic prosperity and population growth will necessarily lead to an increased demand on natural resources, increasing UAE's carbon footprint, and contributing to climate change globally.

Accordingly, the UAE has adopted several policies that support efforts to counter the weak international response to climate change. These include economic diversification policies, a focus on the green economy, energy diversification with a focus on renewable and clean energy resources, improving power efficiency, sustainable transportation and urban planning. The UAE Ministry of Climate Change and the Environment works closely with its partners in public and private sectors to combat climate change through the National Climate Change Plan that was approved by the UAE Cabinet in June 2017, and the National Climate Adaptation Program that was adopted by the UAE government, also in 2017.

The UAE has ambitiously implemented smart services, with its major cities ranking high in the global Smart City Index. According to MasterCard Enterprise Partnerships, countries gain five main benefits from transforming to smart cities: lower costs, better quality of life, rapid access to services, and longer life of city assets and an increase in their utility. A study by the UAE Ministry of Economy in 2018 examined the investment required of federal entities to transition to smart government services. They noted that these measures, coupled with artificial intelligence technologies, could result in up to 35% growth in GDP by 2031. Such measures could also reduce government expenditures by 50% annually through a reduction in paperwork waste or hours in processing paper-based transactions.

Abrahamic traditions must seek a universal and conciliatory moral ground that promotes moderation in consumption and moral agency in dealing with the environment and people. These Abrahamic values should prompt humans to build societies without harming the environment and humans or negatively affecting the future of this earth.

AN UNADDRESSED DRIVER OF ENVIRONMENTAL DEGRADATION IN THE MENA REGION

Alon Tal

Chair, Department of Public Policy, Tel Aviv University, Tel Aviv, Israel

While the monotheistic religions share a rich tradition of stewardship and commitment to a harmonious relationship with the natural world, they also share a fundamental "pro-natal" inclination which in recent years has come to contribute to considerable ecological damage. Beginning with the Bible's call to "Be fruitful and multiply and fill the land" (Genesis 1:28), Abrahamic religions encourage procreation and large families. The book of Exodus suggests that in the land of Egypt, the most heinous policy associated with the evil Pharaoh was enforcing limits on the family size of the Israelites. The Qur'an views children as a blessing that should be pursued fervently. And of course, the traditional Christian discomfort with contraception has strong theological underpinnings. But it is time that this age-old support of large families and procreation be reconsidered by Abrahamic religious leaders and theologians. With the planet's population racing toward a projected 11 billion by the end of the century, there is increasing awareness that high fertility levels constitute a significant driver of environmental destruction. The

present biodiversity crisis is attributed to loss and fragmentation of habitat due to human proliferation. The same is true of climate change. Several studies confirm that of all the things an individual can do to reduce their carbon footprint, avoiding a large a family is by far the most significant.

Overpopulation plays a particularly strong role in the MENA region. Country's like Jordan, Israel and Egypt—whose population have grown exponentially over the past 70 years—face a steady and discouraging litany of negative environmental indicators—from mounting air pollution and species loss to increased water and natural resource scarcity. All of these are exacerbated by rapid population expansion. The contribution of demographic growth to ecological damage needs to be addressed by MENA's religious leaders as well as government policy makers, especially as the region becomes more crowded and faces more acute environmental crises. But there are encouraging signs that, with thoughtful and appropriate interpretation, a theological transformation can take place. The remarkable demographic transition and reduction of fertility to replacement levels in countries like Tunisia, Lebanon and Iran suggest that societal norms play a larger role in MENA demography than religious dogma. Jewish tradition recognizes the imperative of restraint in family size in times of ecological crisis; Islam has a strong tradition that expects parents to be responsible in spacing their children to make sure that they are able to enjoy appropriate conditions; and even Pope Francis has spoken out against large families, especially in cases where they exacerbate poverty and reduce quality of life. The taboo against raising demographic issues in religious contexts must be overcome if Abrahamic faiths are truly to fulfill their role as agents of environmental progress.

DISCUSSION

Moderated by Nawal Ammar

Dean and Professor, College of Humanities & Social Science, Rowan University, Glassboro, USA

Nawal Ammar noted that these two topics connect human behaviors and their impact on the environment. She also pointed to the difference between developing and developed countries. Specifically, the cost of one child in the United States is greater than the cost of one child in a poorer country. Ammar also invited discussion on the empowerment of women and their impact on population.

Iyad Abumoghli agreed that population growth is an important issue. The disparity in the distribution of natural resources, climate justice, and ecosystem justice are issues that need serious attention. One way to approach the problem is to treat all resources as shared by one common people and to examine the link between population growth and consumption—one goal cannot be achieved without understanding how it is linked to the others. Poverty cannot be eliminated without considering climate change, sustainable consumption and gender empowerment. Abdellatif Bencherifa remarked that population growth was not necessarily tied to religion, but rather to standard of living, using Morocco as an example. Research suggests that countries with higher standard of living have lower fertility rates, no matter the religion.

Regarding women's empowerment, a few participants remarked on certain cultural norms across the MENA region that favor one half of the population and if this doesn't change, nothing will change. Religion has sometimes been used as a weapon to promote social stigma. Female empowerment also means giving women access to contraception, to allow them to maintain a desired family size. Some women, given the choice, will have fewer children, but in many cultures, there remains a social stigma against contraception, particularly in patriarchal societies.

With respect to population control in the 1990s, Ammar noted that the Qur'an poses a dilemma between money and children. In Islamic culture, it is a blessing to have many children. Yet in some Muslim countries, women have no voice in family planning, leading to a justice and resource issue. Although many consider population growth a colonialist notion, it is important to maintain an open mind. One participant said that some women believe that having more children will prevent their husbands from marrying another woman. Ammar replied that this is a result of a patriarchal society, where women are viewed as weaker and without recourse aside from childbearing.

Returning to population and its impact on standards of living, Bencherifa pointed out that Morocco was a country historically on the verge of draught and famine, and as a result its population remained stagnant until new technological developments in the 1960s eliminated that threat. Since then, the population has grown from four million to thirty-four million, and significant developments in education and health. And, while there might be a population capacity, some countries are not there yet. Tal agreed that there was something called optimal population and that global doesn't always translate to local. Some countries should grow more at the local level.

One participant concluded the discussion by highlighting a false correlation between population growth and the environment (that more people is worse for the environment). Yet if a country couples high fertility rates with sound environmental practices, it can still have a positive impact on the environment. It is when a country has a high fertility rate alongside a high carbon footprint that it becomes destructive.

SESSION VI – ENVIRONMENTAL POLICY & DEVELOPMENT PRACTICE (PART 2)

MAKE OR BREAK

Fazlun Khalid

Founder, Islamic Foundation for Ecology and Environmental Science, Birmingham, United Kingdom

Fazlun Khalid argued that the world is trapped in a linear process when the reality of existence is cyclical. He contended that a new narrative, based on universal traditions, is needed. The secular world, with its questionable definition of progress, ignores this reality. The world is locked in 18th and 19th European intellectual traditions, which viewed historical process as one of continual improvement. This view has brought us to the brink of a global systems collapse. Having lost their connection to the environment, faith communities survive today mainly in their private ritualized forms pointing to the massive loss of cultural diversity which preceded the loss of biodiversity in the past 500 years.

Environmentalism is deeply embedded in the matrix of Islam. It is, at its simplest level, about good manners. Islam values relationships with other sentient beings as well as with the natural world. The exemplar was Prophet Muhammad. There are core values in the Qur'an and principles in the Shariah that prescribe our relationship with the natural world. The modern world requires teachings that will produce practical solutions to yield positive change.

The global political economy leaves a heavy human footprint on the Earth. It takes twenty months for the Earth to recover from one year's economic activity. The sustainability agenda does not deal with the unsustainable behavior of the developed world because it continues to enrich the already wealthy and perpetuates poverty. The economic growth agenda is inseparable from debt. Global debt is now over $200 trillion, exceeding 200 percent of GDP. Debt and the growth agenda contribute jointly to the ecological

crisis. Debt is virus money created by the fractional reserve banking system from nothing and lives off usury/interest which it is totally forbidden in Islam.

Solutions to date merely toy with technicalities. The political economy—the struggle between capitalism and socialism—is out of date. Buzz words such as “prosperity,” “progress,” “development” and “growth” need to be replaced with “equity.” A sustainable future is to be found in a democratic and redistributive downscaling of the biophysical size of the global economy. The aspirations of the people from developing nations can only be met if the problem of over-development in wealthier countries can be resolved. Yet there are powerful forces who oppose change to current practices, and they present the main barrier to a shift in the level of consciousness.

Herein lies an opportunity for faith communities to regain the initiative they have lost. This can happen by working collectively and joining forces. There is much they can do to infuse a sense of balance and to prevent adverse manifestations of modernity within their own spheres of influence. This approach will require unprecedented levels of altruism. Faith traditions will therefore be increasingly important to negotiate the void and inevitable changes.

WHAT CONSTITUTES LEGITIMATE ACTION IN THE BLUE NILE?

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The Grand Ethiopian Renaissance Dam

The construction of the Grand Ethiopian Renaissance Dam (GERD) represents not only a physical and legal challenge to Egyptian hegemony in the Nile Basin, but also a challenge to the Egyptian framing of legitimate basin action.

In purely hydrological terms, the dam is a very significant project for the basin. It is located close to the border of Ethiopia and Sudan, and will, according to the former, be able to supply much needed electricity to the entire region. For Sudan it will regulate the annual Blue Nile floods and decrease maintenance costs for downstream dams.

In Egypt, it is regarded as a threat to the capacity of its reservoir, which at 74 billion cubic meters exceeds the full annual flow of the river. Egypt and Sudan rely on Ethiopia and Eritrea for almost 90% of their freshwater supply, with 50% coming from the Blue Nile alone. Both struggle with a lack of freshwater supply and rapidly increasing populations.

Egyptian officials are therefore worried about Ethiopian capacity to withhold and use water for their own agriculture. Sudanese officials are more positive because of the benefits mentioned above.

Egyptian Hegemony

Egypt has been the basin hegemon for a very long time. Current treaties date back to the colonial era, when two Nile Water Agreements, in 1929 and 1959, set out a legal framework for the use of and construction on the river. The parties to the first treaty were Egypt and Great Britain, and the parties to the second were Egypt and Sudan. Upstream countries, including Ethiopia, did not participate.

The current framework divides the water of the river between Egypt and Sudan with 75% for the former and 25% for the latter. Other countries may use the water for electricity generation, but not consumption

(agriculture, industry or municipal water). Electricity generation is also limited through a provision stating that Egypt has a right to veto any construction on the river which puts Egyptian interests at risk.

Legitimate Action

Egypt and Sudan frame legitimate action in the basin differently. A survey of articles by officials and experts, published in Arabic language Egyptian and Sudanese newspapers between 2013 and 2014, examined positions in support of and opposed to dominance.

Egypt – A First Among Equals

Egyptians view the basin as divided into two areas: the humid highlands of the south and the arid lowlands of the north. Egypt and Northern Sudan are positioned in the lowlands, an integrated unit shaped by common geography, hydrology and history. Claiming to be the first civilization to utilize the Nile, they frame themselves as the natural leader of the Nile, possessing technical, engineering and diplomatic superiority.

From the Egyptian point of view, the following rules dictate legitimate action in the Nile Basin:

1. The Nile Water Agreements are the basis for basin law.
2. This agreement guarantees Egypt's historical right to its share of the Nile waters.
3. This agreement guarantees the Egyptian right to veto construction on the Nile River to protect its water allocation.
4. All other Nile countries have equal rights to benefit from the river provided they do not interfere with rules 1 through 3.
5. The goal of basin interaction is mutual development through the pursuit of shared interests, understood as the equal rights established in 4.

Egyptians believe their leadership is based in natural or God-given conditions as well as scientific fact, their right to use the Nile as outlined above is their unimpeachable and legitimate right. Any opposition to this belief can only be motivated by politics, a disfavored process that works against natural/God-given order and scientific fact.

Sudan – An intermediary

Sudan argues that upstream countries deserve greater rights to construct infrastructure and utilize the Nile waters. At the same time, however, it will not agree to basin actions that harm Egypt.

Sudan seeks to subvert Egyptian hegemony by exposing Egyptian actions in the basin as hypocritical and based in self-interest. In clear contravention of the principle of solidarity used to legitimize Egyptian dominance, Sudan casts Egypt as exploitative and selfish, and its language of solidarity a meaningless tactic of dominance.

From the Sudanese point of view, the following rules dictate legitimate action in the Nile Basin

1. The Nile Water Agreements are not a valid basis for basin law due to their colonial origins and favoritism of Egypt.
2. All Nile countries have equal rights to benefit from the river provided no harm is caused to any other Nile country.
3. The goal of the basin is mutual development through the pursuit of shared interests.

Shared Interests as an Impediment to Effective Nile Basin Interaction

Both Egyptian and Sudanese views of the basin hinge on a depoliticized idea of solidarity as the governing principle of legitimate action. Both make the assumption that there exists an ideal solution to conflict in the basin which benefits all countries and harms no one.

Because the Sudanese subversion of Egyptian hegemony does not go far enough in proposing an alternative view of legitimate action the current order primarily benefits Egypt who has been able to label Egyptian interests as 'shared interest' and define legitimate action.

It may not be effective or sustainable, therefore, to frame legitimate action as depoliticized shared interests in basin interaction. In other words, it may be difficult to find common ground if both parties refuse to acknowledge the conflict.

INTERPRETING THE SUSTAINABLE DEVELOPMENT GOALS THROUGH JEWISH TEXTS

Simon Skira

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Simon Skira draws parallels between the Sustainable Development Goals (SDGs) and the ancient precepts of Judaism. Judaism is particularly relevant today if we consider the two faces of the global community. One is the despair of refugees seeking asylum and the shameful refusal of nations to offer them adequate protection. The other includes nations who have accepted the SDGs and committed themselves to taking action against climate change.

This may be interpreted through Judaism's teaching that every individual confronts tendencies to be both constructive and destructive. The ability to destroy or act aggressively is not bad in and of itself as the deconstruction process sometimes requires reserved actions that may seem aggressive at first. For example, building a city or creating a family. Therefore, if used correctly, destruction can have a positive effect.

The Jewish community is committed to the SDGs. The rabbis say, "Whoever gives a quotation in the name of its author brings the work to the redemption." Similarly, in academia, sources must be cited. To illustrate this position, each of the five selections below come from Jewish texts in the last millennium and is an example of how Judaism views the SDGs.

1. *"When you are attacking a town and the war drags on, you must not cut down the trees with your axes. You may eat the fruit, but do not cut down the trees. Are the trees your enemies, that you should attack them?"* [Deuteronomy 20:19]

This quotation dates to the twelfth century and is attributed to Moses Maimonides, the most prominent Jewish philosopher and scholar of the Middle Ages This rule does not apply only to trees. Anyone who destroys buildings, life, or food with destructive intent, in turn transgresses the command.

2. *"Consider what God has done: Who can straighten what he has made crooked?"* [Ecclesiastes 7:13]

This seventh century rabbinical commentary found in the book of Ecclesiastes in the Bible explains the requirement to preserve and protect the environment. It contemplates God explaining to humans their responsibility to Earth.

3. “Look at my work, as they are beautiful and worthy of praise. Everything I created, I created it for you. Think of it and do not corrupt or destroy my world, for if you corrupt it, then no one will settle it after you.” [Midrash Aggadah]

God spoke these words when He created the first humans and led them around the trees in the Garden of Eden. This first lesson places the current dilemma squarely in front of us: an inability to change our behavior endangers life.

4. *“Just as my ancestors planted for me, I too am planting for my descendants.”* [Taanit 23A]

The obligation of Jews to occupy the land in a responsible and a sustainable way is articulated in this sixty century Talmudic sentence, which advises the need to continually care for the environment. The author, Talmud Babylon, found a world full of carob.

5. *“Do not stand idly by when your neighbor’s life is threatened.”* [Leviticus 19:16]

Judaism in practice, as instructed by biblical commandments not to remain idle and to love one's neighbor, has led Jews and Jewish organization to become deeply involved in relief and development missions. In addition, the duty to teach one's children has strengthened the value of education, whether religious or general. In recent years, several initiatives such as the Global Interfaith WASH Alliance, GIWA, have led religious leaders to promote the establishment of basic sanitation facilities and improved access to safe drinking water. EcoPeace, a coalition of committed Israeli, Palestinian and Jordanian ecologists, is working to rehabilitate the Jordan River and provide general access to safe drinking water. These activities also advance the cause of peace in the region.

Several rabbis issued a recent statement on the climate crisis, referring to the sabbatical year concept, which states that every seventh year must be a year of rest. This seven-year cycle culminated in the Biblical Jubilee year, the year 1550, in which land was surrendered and peace ensued. This period of restoration protects the land from exertion and allows it to regain its fertility. The rehabilitation of slaves brings tranquility to society and the suspension of hostilities opens the door to negotiations for ending human conflict.

At the end of the last century, the Jubilee year encouraged Northern countries to offer debt relief agreements with countries in the South. This law of the Torah may have already been practiced in antiquity. Today, it is a powerful call for an ethical approach. This concept underlies many of the Sustainable Development Goals related to land use, the eradication of poverty and the preservation of the environment. We can turn the threat of climate change into a blessing if it prompts humankind to work together to save the earth and life on this planet. The threat of climate change has the potential to end extreme poverty if it motivates people to follow the spiritual traditions of Judaism.

DISCUSSION

Moderated by Khalid Sendide

Assistant Vice President for Academic Affairs, Al Akhawayn University, Ifrane, Morocco

The discussion began with the issue of civil engagement surrounding the problems of the dam and the Nile Basin. Knut Myrum Næss replied that it is not something that has yet been explored, but agreed it is a worthy point.

The next discussion topic related to a compilation from the three Holy books of quotations demonstrating direct support of and connections to the environment. Mary Evelyn Tucker noted that she and John Grim, in collaboration with other scholars and practitioners, have been working on such a project for the last twenty years. They have compiled a ten-volume series of books on each of the traditions from around the world and their teachings on the environment. The Forum on Religion and Ecology at Yale also has numerous resources on its website and a partnership with the UNEP, which uses science to complement what the world's religions say about the environment. Tucker noted the importance of applying ethics and values of religions, which have historically been anthropocentric, to the environment.

Another participant argued that the larger issue is that countries need to stop viewing rivers as bodies of water to be divided amongst people or states. Bodies of water must be regarded as entities in themselves and perhaps even considered a party to negotiations. If nature is not seen as an equal and integral party, it will not be possible to sustainably manage that resource. But when nature is regarded as an individual entity, with equal interests, it could compel cooperation and created a different mindset. Abrahamic traditions can help advance this idea because Abrahamic traditions speak of mother nature and people's custodial duties and obligations. Næss agreed that this is an ideal goal but noted that the difficulty in reconciling the conflict between nature and anthropocentrism citing. It would be difficult, for example, to prioritize nature if there is too little water for agriculture. Issues of water stress need to be reevaluated as consumption and availability vary greatly across the globe.

The discussion turned to the political economy and the fact that economics is not present in many of the discussions. In particular, the practice of fractional reserve banking needs additional scrutiny. The fact that it is banks, and not countries, that create money, through loans and interest, is troubling and contrary to religious teachings. Islam, for example, takes a strong stance against using interest as a leverage in economies. Perhaps Islamic institutions could inspire global finance reform. Fazlun Khalid noted that everybody wants to develop, move, and progress, but there is a shift in focus to the capacity of the planet, and the planet can no longer take this economic model. One solution may be the nationalization of banks, and for the state to issue money. Khalid emphasized that it is important to understand that economics is the root of these environmental discussions, and that economics are intrinsically tied to political systems who promote consumption.

Another participant noted that some anthropologists are discussing the idea of a new Islamic market, one that has taken on a neoliberal perspective that it is more consumptive, more exclusive, and much more profit oriented. There may be a fear that if an Islamic economic system were implemented, we would fall into a pit of neoliberalism in banking and corruption, as seen in Egypt. Khalid noted that historically, there has been a tendency for Muslims in the Middle East to Islamicize everything. As a Muslim himself, Khalid resisted the idea of Islamicizing the environment noting that he believes Islam is the environment just as Buddhists would say Buddhism is also the environment. Khalid also noted that Islamic banking is an oxymoron, it doesn't exist. Rather it is intrinsically connected to the global economy through Wall Street and other banks. Therefore, the trend of a "new Islamic market" is a reflection of the same trend in the global economy.

Finally, another participant expressed that many Islamic environmental activists face a dilemma in the Arab world. There are currently large development projects in Arab countries, but those who criticize these projects for their negative environmental impacts can be labeled as anti-state and anti-development. These opponents risk imprisonment. Khalid said that all Muslim nations, including Turkey and Saudi Arabia want to progress and emulate the success the developed world has achieved. At one level it may be a natural human phenomenon, but it's also part of the current global economy. Khalid closed by stating that in the end, all of us must change in order to see progress.

ISLAMIC ENVIRONMENTALISM IN THE MIDDLE EAST

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Islam's view of nature and how its related ethical ideals evoke environmental stewardship have been discussed by numerous Islamic Studies scholars. Islam and Ecology as an academic field of study has been championed by Muslim scholars, mostly in the Western academy. Their work often involves reflecting on Qur'anic verses and prophetic traditions to emphasize the ways in which Islam is inherently environmentally conscious.[2] Contemporary scholarship on Islam and Ecology has also led to international initiatives to address environmental issues. As recently as 2015, an international collective of Muslim clergy and academics from several Muslim majority countries endorsed the Islamic Declaration on Climate Change (IDCC).[3] This declaration calls on Muslims to phase out greenhouse gas emissions by 2050 by adopting a 100% renewable energy strategy. Consistent with contemporary scholarship on Islam and Ecology, verses from the Qur'an are utilized throughout the declaration to highlight the importance coexisting with nature. Several notable Qur'anic verses that are used in the declaration include:

> He raised the heaven and established the balance.
> So that you would not transgress the balance.
> Give just weight – do not skimp in the balance.
> He laid out the earth for all living creatures.[4]
> He Who has perfected everything He has created.[5]
> And We did not create the heavens and earth and all that is between them in jest.
> We have not created them but in truth.[6]
>
> Assuredly the creation of the heavens and the earth
> Is a greater (matter) than the creation of men
> Yet most people understand not.[7]
>
> Corruption has appeared on land and sea by what people's own hands have wrought, that He may let them taste some consequences of their deeds, so that they may turn back.[8]

According to the IDCC, these verses recognize the anthropogenic influence on climate change, stating that mankind, "though selected to be a caretaker or steward *(khalifah)* on the earth, has been the cause of such corruption and devastation on it that we are in danger of ending life as we know it on our planet."[9]

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[2] Richard Foltz, Frederick Denny and Baharuddin Azizan, *Islam and Ecology: A Bestowed Trust* (Cambridge: Center for the Study of World Religions, 2003); Seyyed Hossein Nasr*, Man and Nature: The Spiritual Crisis in Modern Man* (Chicago: ABC International Group, 1997); Munjed Murad, "Inner and Outer Nature: An Islamic Perspective on Th Environmental Crisis," *Islam and Science* 10, no. 2 (2012): 117-37.

[3] "Muslim Leaders Deliver Islamic Climate Change Declaration | Islamic Relief Worldwide," accessed February 12, 2019, https://www.islamic-relief.org/muslim-leaders-deliver-islamic-climate-change-declaration/.

[4] Qur'an 55: 7-10.

[5] Qur'an 32:7.

[6] Qur'an 44: 38-39.

[7] Qur'an 40: 57.

[8] Qur'an 30:41.

[9] "Islamic Declaration on Global Climate Change," IFEES Eco Islam, accessed January 2, 2019, http://www.ifees.org.uk/declaration/.

The IDCC warns that the current rate of climate change cannot be sustained and that the earth's equilibrium (*mizan*) may soon be lost.

Yet when examining the state of environmental sustainability in Muslim majority countries, particularly in the Middle East, it becomes clear that these Islamic environmental values are not widely advocated for or implemented. It is important, therefore, to examine Islamic religious discourses and ideologies of the environment in the Middle East to study how Muslims in the region reconcile environmental degradation, extreme-weather events and climate change with their faith. This will help to understand why a dichotomy exists between religious authority and practitioners in their views regarding Islam and the environment.

There are two main inquiries in this research. The first is identifying the environmental issues that concern Middle Eastern Muslims. The second is to identify the theological, cultural and political themes that underlie environmental thinking in the Middle East. Interviews with environmental activists and an examination of online environmental discourse, including electronic fatwa websites, serve as a starting point. Electronic fatwa banks are a rich source of information, in that they combine questions from citizens of Muslim countries, as well as rulings and juridical opinions from trusted religious leaders.

Regarding religious and environmental discourse in the region, two main themes emerge. The first theme is that there is a common perception that climate change is a sign of the end of times or Judgment Day. The majority of environmental questions Muslims ask on electronic fatwa websites are related to end of times eschatology. This misunderstanding leads some to point to Islamic theological beliefs to justify ignoring climate change because the end of times is near.

The second theme relates to the lack of Islamic sources in materials used by environmental organizations. The majority of environmental activists based in the Middle East often opt to use only secular language when promoting environmental practices, refraining from using verses from the Qur'an in their awareness materials. Their justification for this is that they do not want to be seen as a religious organization or be associated with a government's religious agenda.

These themes point to a much-needed examination of the Muslim environmental worldview, a field that remains marginal today. Scholars of Islam working on environmental questions have largely focused on normative sources of Islamic views of the environment, highlighting how the Qur'an and the Prophetic traditions may be used to stimulate eco-friendly behaviors. However, there is a paucity of studies on the Middle East which address public interpretations of Islamic environmental principles and their application by religious and political authorities. Incorporating both secular and religious sources in future studies would allow for a fuller comparison of modern interpretations of Islamic environmental discourse in the region.

ISLAM AND THE ENVIRONMENT: THROUGH THE DISCOURSES OF SHAYKH ALI GOMAA

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Muslim religious scholars of al-Azhar, the preeminent institution of Sunni learning located in Egypt, have been working to articulate the relationship between Islam and the environment. The former Grand Mufti of Egypt, Shaykh Ali Gomaa (b. 1952), is one of the few scholars who has explicitly addressed this issue in his writings and verbal discourses. Gomaa argues that the Islamic approach to the environment represents an ideal balance between the exploitation (*taskhīr*) of the natural world for human benefit, and the cultivation (*'imāra*) of it for future generations. While this Islamic ideal previously governed Egyptian

society's engagement with the natural world, Gomaa avers that today, the predominance of western materialist values has led to the destruction (*takhrīb*) of the environment, to the exclusion of cultivation.

In a series of videos published on YouTube, Gomaa explains that the human relationship to the environment in Islam is defined primarily through two related concepts: the Qur'an and the Sunna. These concepts are *taskhīr***,** which refers to the idea of subjugation or exploitation of the natural world, and *khilāfa*, which refers to the idea of viceregency. For Gomaa, these concepts are inextricably linked. He argues that in Islam the subjugation (*taskhīr*) of the natural world (*al-kawn*) for human benefit is balanced by the concept of *khilāfa* (viceregency) or *imāna* (trusteeship). *Khilāfa* and *imāna* refer to human responsibility to care (*'imār*) for the natural world (*al-kawn*). Humans are viceregents or deputies (*khalīfa*) of God, thus they are mandated to preserve and cultivate the natural world. In Islam, Gomaa argues that Muslims have a legal duty (*wājib*) to take care of the environment.

However, in modern Egyptian society, Gomaa argues that this Islamic approach ceased governing how Muslims interacted with the natural world. Before the modern period, for example, Egyptian Muslims used to save the water left from the ritual ablution of their animals. However, in the nineteenth century, the Islamic priority of conservation was replaced by western materialism (*al-mādīya*). The human approach to the environment came to be defined by interest (*maṣlaḥa*) and the generation of wealth, rather than preservation for the future. Gomaa argues that the domination of Western materialism, rather than Islamic principles, was evident in many aspects of Egyptian society. For example, under the rule of Khedive Ismail (r. 1863-1879), Egyptians started wearing European style clothing, such as socks and starched dress shirts, which made it more difficult for people to perform the ritual ablution. When the Opera came to Cairo, the upper classes started staying up late into the night and sleeping through the dawn prayer, as did their servants. The result, Gomaa says, is that people stopped praying. Eventually, society stopped functioning according to Islamic principles, and a gap emerged between the way society was organized and the religion.

In his discourses on the environment, Gomaa gives an idealized perspective of the Islamic approach. He argues that if society were organized around Islamic principles, as he suggests was the case in Egypt prior to Western influence, then humans would respect and preserve the natural world, and use only what is necessary to meet basic needs. His position, essentially, is that to protect the environment, society needs to be Islamicized. The way forward for him is a call (*da'wa*) to Islam to counter the deleterious influences of western modernity, and with it, materialism.

The fact that a scholar as influential as Gomaa is promoting environmental awareness is encouraging, as is his argument that Islam as a religion balances the need for human use of the natural world and a mandate to preserve it. However, Gomaa's understanding of current environmental destruction casts blame solely on the West. By deflecting blame from Egyptians, Gomaa misses an opportunity to persuade them to take responsibility for the current environmental crisis.

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THE SIGNIFICANCE OF TREES IN ISLAM & CHRISTIANITY

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Of the many remarkable trees in the histories of Islamic and Christian traditions, there are two that are particularly significant. One is the tree that is said to have sheltered the Prophet and that still lives today. The other is the tree that became the Cross. Muslim pilgrims still visit the former tree and consider it a sahabi (a companion of the Prophet), and the latter tree has a shrine in Jerusalem and is remembered in what is likely the strands of Christian poetry as a co-martyr in the Crucifixion.

Religious followers attribute animate qualities to these two trees. Jalal al-Din Rumi, a 13th-century Persian poet, and Origen of Alexandria, an early Christian theologian, explain that scriptural portrayals of the cosmos reveal that it is not their particular roles in religious history that makes these trees animate, but rather the fact that they are trees. The cosmologies of their traditions appear to present the cosmos as a universe of selves, all worshiping God. What is remarkable about these particular trees, however, is that they reveal their animateness through their interactions with the central figures of their traditions. Studying them today not only reveals a universe that is alive, but also the foundation interacting with the natural other. Origen's portrayal of the cosmos offers an ethics of compassion, in which both humanity and nature are fallen, and both painfully await their return to God. Rumi's portrayal offers an ethics of reverence and aspiration, in which the spiritual development of a human being unveils the spiritual reality of nature. Reading this in the context of the ecological crisis today, these trees, along with the writings of Rumi and Origen offer a view of the natural other that can help humans fruitfully renew their relationship with the natural environment.

THE ROLE CULTURAL DIPLOMACY PLAYS IN ACHIEVING A SUSTAINABLE BELT AND ROAD IN THE MENA REGION

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The Belt and Road Initiative (BRI) is a top-down strategy proposed by China in 2013, aimed at increasing connectivity and improving cooperation between China and countries involved in the initiative. Typical Belt and Road projects include investments in transportation, infrastructure, power plants and the establishment of economic zones. Until April 30, 2019, there had been 131 countries that signed BRI cooperation agreements with China, 21 of which are located in the Middle East and North Africa.[10] The

[10] https://www.yidaiyilu.gov.cn/xwzx/roll/77298.htm

name, “Belt and Road”, derives from the Silk Road and Maritime Silk Road, which connected China with its important trade partners in the Middle East. Just as people with commodities traveled between China and Islamic countries in past centuries, so do they today. Ancient Chinese style porcelain can easily be found in museums in Oman, while in the markets outside the museum, modern day Chinese products and souvenirs are sold.

Though the Middle East was not initially regarded as a top BRI investment location, it has come to play a more crucial role in recent years. In 2018, Chinese investments declined in every region except for the Middle East. Last year, the region became the second-largest recipient of Chinese foreign investment in the world after Europe.[11]

The cooperation presents environmental challenges as well as opportunities for the region. Infrastructure and transportation projects change land use patterns and threaten biodiversity. China has become the top buyer of Middle Eastern oil. The global climate actions ask for structural transitions in China’s energy industry and in the oil producing countries’ economies.

In addition to these challenges, BRI offers opportunities for green development in partner countries. The Middle East is one of the top recipients for China’s renewable energy investments, especially solar power. Several Chinese solar giants are planning solar power plants in Saudi Arabia that bring economic and environmental benefits for both countries. In response to the environmental concerns and opportunities, China launched the Belt and Road Initiative International Green Development Coalition (BRIGC) with UN Environment in April 2019.[12] Israel, the UAE and Iran are participants in this coalition. Although China is cognizant of the environmental impact of the Belt and Road Initiative, there is still a great need for stricter and more specific laws, policies, and regulations, as well as actions that turn them into ground-level practices.

It is important to see the Belt and Road as something more than memoranda of understanding and investment data on paper. These concepts come with managers, workers, reporters and investors and their cultural backgrounds. The initiative defines five priorities: policy coordination, facilities connectivity, unimpeded trade, financial integration and people-to-people bonds.[13] The last one, which is crucial in order to achieve a more sustainable initiative, is often neglected. Abrahamic traditions profoundly impact people’s daily behavior and their interactions with nature. Understanding the role religion plays in local laws and ethics will help China connect people with its investment goals. Though some people argue that trade is purely secular, a socially and environmentally sustainable Belt and Road won’t be achieved without building religious and cultural bridges.

There are two ways that cultural diplomacy can help achieve a sustainable Belt and Road in the MENA region. First, understanding local religious traditions helps define better international development values and ethics that guide investment projects. Environmental system analysis should be carried out in collaboration with local communities to understand their impact on daily life. Second, the Belt and Road Initiative could serve as an opportunity to reduce unemployment and create shared working spaces for

[11] https://foreignpolicy.com/2019/05/16/chinas-global-investments-are-declining-everywhere-except-for-one-region/

[12] https://www.unenvironment.org/regions/asia-and-pacific/regional-initiatives/belt-and-road-initiative-international-green

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Chinese and local workers, especially in those Middle Eastern countries with large, young, unemployed populations. Chinese familiarity with local religious thoughts and practices will help companies better accommodate the needs of local workers and manager and include them with project operations. Additionally, though Chinese Muslim workers account for a small number of the total Chinese expatriates in Middle Eastern countries, they play an important role in promoting mutual understanding as well as facilitating businesses.[14] Abrahamic values and traditions are crucial to forging that human connection. Engaging religious authorities and communities in decision-making and project implementation with sustainable standards will serve to create an inclusive and productive work environment.

DISCUSSION

Moderated by Ilham Idrissi Bichr

Ph.D. Student, Islamic Civilization Studies, Emory University, Atlanta, USA

Iyad Abumoghli discussed the United Nation's role in ensuring that the Belt and Road initiative is sustainable and green. Since the United States does not support the initiative, funding for many NGOs that support the BRI has been threatened. Given that the initiative will continue to develop despite US opposition, many NGOs need to remain involved in order to secure the environmental aspects of the plan. Zhinan Chen pointed out that while the US sees the initiative as a threat to economic security, roughly 40% of NGOs supporting its development are US-based. These NGOs face the delicate task of contributing to the sustainability of the project without offending the US government. Chen also raised the plight of Muslim minority populations in Western China and their treatment by the government, noting Muslim BRI countries have not objected to China's treatment of this population in the name of countering extremist terrorism. Chen said it is hard to predict if these objections will occur in the future.

One participant noted that in some indigenous traditions, animals possess human bodies under their animal exterior. They shed their fur or their feathers when they come among themselves. This metaphysical belief serves as a bridge between the human and animal world. Munjed Murad agreed and noted that in Islam, God is called "Al Dhahir Al Batil," or, the manifest and the hidden. Everything has both an exterior and interior reality. This view of reality informs our relationship with nature. To overcome the environmental crisis, we need to turn not just to religious moralism and ethics, but also to religious theories of knowledge. Sufi epistemology, according to Murad, is defined by unveiling phenomena to see their spiritual realities, which are located in God.

Abdellatif Bencherifa noted similarities in the presentations of Murad and Mary Elston regarding the authentic versus the popular interpretation of Islam. For example, Morocco's King is the commander of the faithful and is the only one permitted to give fatwas, whereas in Egypt, that role is held by Al-Azhar Mosque.

Elston noted that the 21st century has seen a rise in literacy rates, mass education, and new technologies that have made religious texts more accessible to a wider population. The resulting democratization of knowledge is a positive development for many people, but it has also led to a fragmentation and challenge to the authority of the *Ulema*. At the same time, they are also seeking to counter the problem of religious extremism and are currently questioning their own authority.

[14] https://blogs.lse.ac.uk/mec/2019/04/03/chinese-muslims-in-the-era-of-belt-and-road/

Nora Elmagraby concluded the discussion by talking about the issue of climate change as a political one in Saudi Arabia. Rather than changing governmental policies, she'd like to see more emphasis placed on local and community change. Some environmental problems in Saudi Arabia are not due to a lack of government regulation, rather individual beliefs that require change at the community level. With this small change, perhaps a bigger difference can be made.

SESSION VIII – GUIDED GROUP DISCUSSION ABOUT CORE THEMES

JOHN GRIM
Co-Director of the Forum on Religion & Ecology, Yale University, New Haven, USA

MARY EVELYN TUCKER
Co-Director of the Forum on Religion & Ecology, Yale University, New Haven, USA

Mary Evelyn Tucker emphasized the need to be aware the problems and the promise of the Abrahamic Traditions. Nowhere outside the MENA Region are these traditions so vital, so clear, so alive. To move beyond differences to see the similarities in values and ethics is critical not only for survival, but to keep these traditions flourishing. Tucker outlined some of the dilemmas in the Abrahamic Traditions; the notion that God is above nature, that humans are separated from nature, and the belief of human supremacy. Tucker described Abrahamic premises that the notion of God can be opened up, and that a new language to talk about the sacred as "whole and holy" should be defined. Tucker concluded by encouraging participants to think through these rich, ancient, complex traditions and examine the shared values to help face the complex problems ahead of us. These include water use, population, the challenges of patriarchal societies, development, political economy, values and ethics.

John Grim listed eight environmental ethics most religions share, including the Abrahamic traditions:

1. The natural world has value in itself and does not exist solely to serve human needs.
2. There is a significant continuity between human and non-humans; and even though humans have a distinct role, this continuity can be felt and experienced.
3. Non-human living beings are morally significant in the eyes of God and in the cosmic order, with their own unique relation to God.
4. The dependence of human life on the natural world can and should be acknowledged through ritual expressions of appreciation and gratitude.
5. Moral norms such as justice, compassion and reciprocity, apply to human beings and to non-human beings – their wellbeing is inseparably connected.
6. There are legitimate and illegitimate uses of nature.
7. Greed and destructiveness are condemned, restraint and protection are commended.
8. Human beings are obliged to be aware and responsible, to live in harmony with the natural world and to follow specific practices as prescribed by their traditions.

Daniel Weiner added that starting with a common set of beliefs enables and empowers dialogue, not only among followers of the Abrahamic faiths, but also among activists who may not practice but who hold the same values. This workshop is the link to join them together.

Jeremy Benstein discussed the issue of dominion through the two creation stories in Genesis, which call humans to lead through service and stewardship. Benstein noted that kingdoms do not exist solely for kings, rather it is the duty of kings to ensure their kingdoms flourish. Humans were charged with caring

for the Garden of Eden. The Earth is today's Garden of Eden and humans must approach it as such. But in the Garden of Eden, no external threat was present. In today's "garden" humans must guard against our own greed.

Alon Tal added that the three Abrahamic faiths evolved in a region of deserts and dry lands. This vast desert environment instills a sense of humility, in that people are so dependent on the scarcity of water and life around them. It is a reminder of what can happen if we do not steward our own environment.

Ebtesam Al Ketbi argued that humans' attitude toward nature is also one of culture, not just religion. Respect for nature and the rights of others is taught through families and through educational institutions outside of the religious context. There can be both civic and religious instruction on the environment; ultimately the matter is not solely a religious issue.

Kathryn Libal challenged participants to consider the enormity of the themes discussed in the workshop and to think about the radical changes humanity must be willing to make for the sake of safeguarding the environment, from the amount of energy that was used to air condition the conference venue, to far-ranging questions of human rights, politics and economics.

Gidon Bromberg pointed to EcoPeace's efforts to divert nine million cubic meters of freshwater from the Sea of Galilee to the Jordan River. Many believed it would not happen and that it was futile to release such a small amount of water. By leveraging spiritual, economic and cultural connections to the river, however, this goal was reached. The Sea of Galilee and the Dead Sea may be tiny lakes surrounded by desert, but their cultural importance and significance to the region commands respect and enables change.

In closing, Weiner stated that the while the themes discussed here are profound, it is only the beginning. Water was a major theme, to the exclusion of energy, soil and air. A larger framework is needed to connect these issues to both the larger, governmental level and the local level in community mosques, synagogues, and churches.

Weiner also noted that it often takes crises to create change. Some change is evident today only because people's material lives are deteriorating, in some cases very rapidly. This group is charged with making incremental progress using its varied experiences in other regions and in other traditions around the globe. Successful faith-based projects like EcoPeace serve as models to for change in the MENA region.

Participants were invited to sign a covenant recognizing the Jordan River Valley as a landscape of outstanding ecological and cultural importance.

WEDNESDAY, JUNE 26, 2019

9:00 AM SESSION IX: THE WAY FORWARD – GUIDED DISCUSSION

Zaid Eyadat
Professor of Political Science, University of Jordan, Amman, Jordan

Daniel Weiner
Vice President for Global Affairs and Professor of Geography, University of Connecticut, Storrs, USA

The group agreed to the following action items:

1. *Workshop Proceedings* – UConn Global Affairs will begin working on the workshop proceedings, and Daniel Weiner and Zahra Ali asked that all the speakers provide brief abstracts for their talks.

2. *Post-Workshop Projects*
   - **a.** ***An Abrahamic Guide/Charter to Environmental Ethics*** will be produced by Nawal Ammar, Jeremy Benstein, Yossef Ben Meir, Fazlun Khalid, Ibrahim Ozdemir, and Jame Schafer. See Appendix 1.
   - **b.** ***A Paper on Environmental Change in the MENA Region*** will be produced. See Appendix 2 and 3.
   - **c.** ***A Paper on Population & Fertility*** will be produced by Alon Tal, Kathryn Libal and Zaid Eyadat. They will work on collating questions, demographic patterns and projections. Zaid Eyadat will help identify additional experts from the Arab world to join this group.
   - **d.** ***Best Practices on Water Management in the Region –*** This will highlight three of the major river basins in the region: 1) Nile 2) Jordan River 3) Tigris & Euphrates and use the EcoPeace model as a best practice to try to replicate it in the other river basins. Gidon Bromberg, Yana Abu Taleb, Esti Kramarsky-Winters, Knut Myrum Naess, Iyad Abu Moghli and Iraqi colleagues identified by EcoPeace will explore next steps. There was the suggestion for a workshop on water management issues and best practices in the Jordan, Nile, Tigris and Euphrates River basins.
   - **e.** ***POST WORKSHOP ADDITION: Patriarchy & Environmental Sustainability –***Nawal Ammar provided the following proposal:

     Our workshop-- *Abrahamic Traditions and Environmental Change in the MENA Region* (Rhodes-Greece, June 2019) -- solidified the need to critically assess the ability of the Abrahamic Traditions to influence outcomes relating to protecting and conserving the environment. One topic that requires more attention is the relationship between the Abrahamic practice of patriarchy and the domination of nature. This relationship includes the oppression of women (sexism), the various hierarchies of imbalance (e.g. rich over poor, mind over body), speciesism, neglect of girls, racism, and other characteristics of social and cultural inequities.

     Ammar proposes an *Abrahamic Traditions and Environmental Change* working sub-group to explore the issue of Abrahamic Traditions, patriarchy and environmental sustainability in the MENA region. She will initiate the formation

and functioning of the working sub-group. This working group would undertake the following tasks:
1. Identify key issues or questions, time horizons, and boundaries/categories of exploration;
2. Curate a useful and accessible information repository to include an update of pertinent information from a range credible sources (academic, theological traditions, advocacy works and programs, newspapers, case studies, stories, best and worse practices, policy, etc.);
3. Identify indicators (practices, programs, etc.) of positive and negative change; and
4. Develop dialogue, advocacy and policy processes and strategies.

3. *Education Initiatives*

a. ***Curricula Integration –*** Ebtesam Al Ketbi committed to working with the Ministry of Education in the United Arab Emirates to help integrate 'religion and ecology' in local curricula.

b. Mapping Environmental Change Mitigation in the MENA Region – Norah Elmagraby suggested creating a map of environmental change in the region and overlay projects to combat the change. This may already exist, participants agreed to look at resources they were aware of and to share. EcoPeace just finished a project with Oregon State with Aron Wolf (looked at Gaza-Israel area mapping environmental change, all web-based). The group proposed to start with an inventory of interreligious models of community-engaged work that has a longstanding history (Faith for Earth, High Atlas Foundation, EcoPeace, story of greening of mosques, etc.)

4. *Consortium Structure* - Zahra Ali will begin to build a website and create an online platform to share ideas, events, etc. All the member institutions and individuals will be listed on the website and a process will be implemented to accept new members. There will be a space for success stories (focus of the inventory/mapping project). The consortium will require support in the form of funding and human capital – UNEP Faith 4 Earth will provide an intern for six months to help with the mapping project (see #3) and to work with the consortium to connect with faith-based NGOs and mobilize them. Norah Elmagraby, Ilham Idrissi Bichr and Zhinan Chen volunteered to help with operations, event planning, blog posts, and other administrative matters. Mary Elston volunteered for discreet tasks. EcoPeace welcomes interns in its three offices. Details are available at http://ecopeaceme.org/ecopeace/internships.

PARTICIPANT BIOGRAPHIES

YANA ABU TALEB

Yana Abu Taleb is the Jordanian Director of EcoPeace Middle East, a unique regional organization that brings together Jordanian, Palestinian and Israeli environmentalists to promote sustainable development and advance peace efforts in the Middle East. The organization has offices in Amman, Ramallah and Tel-Aviv.

As the Jordanian Director, Abu Taleb leads EcoPeace activities concerning the Jordan River, the Dead Sea, the Good Water Neighbors and the Water Energy Nexus Projects. Her responsibilities include supervising international project development and management, serving as a liaison to and lobbying governmental and private sector figures and organizations on major regional policy issues relevant to environmental protection and transboundary water. She is heavily involved in solar energy projects in the region and promotes renewable energy initiatives in Jordan. She co-authored many reports and policy papers and speaks regularly at local and international conferences.

Before becoming the Jordanian director of EcoPeace Middle East, Abu Taleb was the Deputy Director and Regional Projects Manager of the organization. She also managed a program aimed at modernizing the educational system in Saudi Arabia implemented by the British Council. She received a degree from the University of Jordan in 1996.

IYAD ABUMOGHLI

Iyad Abumoghli has more than 35 years of experience with international organizations, the private sector and scientific institutions. Abumoghli's expertise is in strategic planning, sustainable development, water resource management and knowledge and innovation. Currently, Abumoghli is the Lead Principal Advisor on Engaging with Faith-Based Organizations at UN Environment and the founder of #Faith4Earth. Previously Abumoghli held several leading positions including the Regional Director and Representative of UN Environment in West Asia 2012-2017, Director of Knowledge and Innovation at UNDP's Regional Office in Cairo 2009-2012, Senior Environment Advisor at UNDP's Sub-Regional Resource Facility in Beirut 2006-2009, Global Practice Manager for the Energy and Environment Group in New York 2003-2006, Assistant Resident Representative of UNDP in Jordan 1997-2003.

Abumoghli adopts a holistic multi-sectoral approach to development ensuring cross-thematic integration with internal and external partners.

Abumoghli holds a Ph.D. in Bio-Chemical Engineering from the University of Bath, UK, an outstanding graduate of the Virtual Development Academy – Johns University and a BA in Chemical Engineering from University of Jordan.

ZAHRA ALI

Zahra Ali joined the University of Connecticut's Office of Global Affairs in August 2013 as the Partnerships & Communications Coordinator and became the Director of Global Partnerships & Outreach in March 2015. Prior to joining UConn, she worked at New York University since 2008. Zahra holds an MS in Global Affairs, with a specialization in energy and environmental policy from New York University, and a BS in International Business from the University of Rhode Island.

At UConn, she and her team collaborate with faculty, university administrators and partners around the world to advance UConn's global initiatives. In her role as director, she builds and maintains strategic alliances and fosters collaborations with universities, community partners, government institutions, and NGOs globally. She oversees data collection and reporting on UConn's global endeavors for dissemination to senior administration, donors, government officials, and the broader community. Her team coordinates outreach events, promotes engagement in global networks and supports Global Affairs' units with communications and marketing. She serves on the Abrahamic Steering Committee and the Norian Armenian Programs Committee.

NAWAL AMMAR

Nawal H. Ammar is a Professor of Law and Justice and the Dean of the College of Humanities and Social Sciences at Rowan University, New Jersey. Ammar's areas of research and teaching focus on minorities and social justice. She has researched battered immigrant women in the US and Canada; Muslims in US and Canadian prisons; Muslim women and the law; and environmental justice in Islam.

Ammar has an extensive administrative record and has served in numerous capacities including Women Studies Department Chair, Graduate Studies Director, Program Director of Paralegal Studies and Associate Dean. Before coming to Rowan, she spent nine years as the Dean of the Faculty of Social Science and Humanities at the University of Ontario Institute of Technology. Prior to that, she was a professor at Kent State University, Ohio for fifteen years. Before her tenure at Kent State, Ammar worked in a variety of organizations in the United States and abroad.

Ammar has participated in a number of United Nations Conferences, served as a consultant and authored or co-authored several reports for the organization. She is a frequent speaker at conferences with close to 150 presentations both invited and refereed. She has served on review panels for the Soros Foundation (Open Society Institute), National Institute of Justice, Social Science and Humanities Council and the Department of Justice evaluating research proposals addressing violence against women and underserved communities. She also served as a participant in or consultant to the governments of Bahrain, Lebanon, Oman, the United Arab Emirates and the USA on gender issues, development and victimization.

Ammar received her Bachelor of Science (Honours) and Master of Science degrees in Sociology from Salford University, Greater Manchester University, United Kingdom and she earned her Ph.D. degree in Cultural Anthropology from the University of Florida in Gainesville, USA.

JENAN ANWAR AL ASFOOR

Jenan Anwar Al Asfoor is currently working at an environmental NGO in Oman. She established Reef Check Oman with the support of the international non-profit organization, Biosphere Expeditions, and became the first Omani Reef Check EcoDiver Trainer in the country. Reef Check Oman is a volunteer group with a mission of conserving Oman's coral reefs, natural marine beauty and local livelihood.

Her passion for nature and the environment, specifically the marine environment, directed her toward environmental conservation where she volunteered to protect marine life in Oman. Since 2010, she has explored marine life in Oman as a scuba diver and participated as a volunteer on Coral Reef Expeditions in Musandam/Oman and the Maldives with Biosphere Expeditions. She also took part in an expedition studying whales, dolphins and turtles around the Azores archipelago in the Atlantic Ocean.

ABDELLATIF BENCHERIFA

Abdellatif Bencherifa is an expert in the fields of social geography, arid land and mountain geoecology, rural development and social/institutional change in North Africa and the Mediterranean region. As a senior faculty member, Bencherifa currently holds the position of Advisor to the President and Director of the Public Policy Center (PPC) at the International University of Rabat.

Bencherifa holds a Ph.D. in Cultural-Social Geography from the Graduate School of Geography at Clark University (1986). He was Professor of Geography at Mohammed V University in Rabat from 1976 and until 1994. From 1994 to 2005, he held senior executive management positions in higher education including Vice-President at Al Akhawayn University (1994-2002), President of Meknes Moulay Ismail University (2002-2005). Subsequently, he served for 12 years in high profile public administration roles—as a Wali of the Region of Kenitra, then as a Wali Director General of Local Governments in Morocco, Ministry of the Interior.

Bencherifa's research interests revolve around various matters, including agricultural development and pastoral nomadism; Arid land development; Mountain Geo-ecology and Resource use systems; Social change in the rural areas; Institutional impact on development; and Moroccan International migration. He has been a post-doctoral fellow of the Alexander von Humboldt Foundation; a visiting Professor at the University of California in Berkeley (Geography Department and Middle Eastern Studies Center, Spring 1991); a former President of the African Mountains Association, 1990-1993; and a Member of the Advisory Board of the Middle East Awards (Population Council Regional Bureau, Cairo), 1998-2002. Bencherifa has published four books, edited seven books, and published more than 40 articles in Academic Journals (in French, English, German, Spanish and Arabic).

YOSSEF BEN-MEIR

Yossef Ben-Meir is President of the High Atlas Foundation, a Moroccan-US nongovernmental organization founded in 2000 and dedicated to sustainable development. He has been working and researching in the field of international development since joining the Peace Corps in Morocco (1993-1995). Ben-Meir was a faculty member at the School of Humanities and Social Sciences at Al Akhawayn University (2009-10). In

2003, he was a research fellow at the American Institute of Maghrib Studies, and earlier, an Associate Peace Corps Director (1998-99) managing the agriculture and environment sector. He writes on the subject of promoting human development in the Middle East and North Africa. Ben-Meir holds a Ph.D. in sociology from the University of New Mexico (2009) where he also taught, an MA in international development from Clark University (1997) and a BA in economics from New York University (1991).

JEREMY BENSTEIN

Jeremy Benstein is the co-founder and Deputy Director of the Heschel Sustainability Center in Tel Aviv, and former director of the Center's Environmental Fellows leadership program. He holds an AB degree from Harvard, a master's degree in Judaic Studies from the Schechter Institute and a doctorate in environmental anthropology from the Hebrew University of Jerusalem.

He works extensively in leadership development and capacity building with environmental activists and educators in Israel, and has lectured widely (US, Canada, England, Italy, Spain, Turkey) on Judaism, Israel and the environment, including the environment as a focus of shared citizenship between Jews and Arabs in Israel. Benstein's interests focus on the interplay between religion, culture and values with the environment, topics he explored in his book *The Way Into Judaism and the Environment* (Jewish Lights, 2006). He also teaches environmental ethics at Tel Aviv University's Porter School for Environmental Studies.

He is married and lives with his spouse, Prof. Annabel Herzog, and their five children and two cats in Zichron Yaakov, Israel.

GIDON BROMBERG

Gidon Bromberg is a co-founder and co-director of EcoPeace Middle East, an Israeli-Palestinian-Jordanian environmental peacebuilding organization. Together with his Palestinian and Jordanian co-directors he was honored by TIME Magazine as an Environmental Hero of 2008 and was granted the prestigious Skoll Award for Social Entrepreneurship in 2009, in addition to numerous other awards over the years.

Bromberg is an attorney by profession and previously worked in public interest environmental law. He holds a bachelor's degree in economics and a law degree from Monash University in Australia. As a fellow of the New Israel Fund, he completed a master's degree in international environmental law at the American University in Washington D.C. and has published over twenty academic and popular publications concerning Middle East environmental policy and water security issues.

Bromberg speaks regularly on water, peace and security issues in various forums. He has presented before the UN Commission for Sustainable Development, the United States House Committee on Foreign Affairs, the European Parliament and the advisory meeting to the UN High Level Panel on Security. In 2007, Bromberg was invited to join the prestigious East West Institute's International Task Force for Preventive Diplomacy. In 2007 he was awarded a Fellowship at Yale University on global leadership and was in invited by Yale University in 2009 to serve as an Advisory Board Member for the World Fellows Program.

ZHINAN CHEN

Zhinan Chen is currently a first year Master of Environmental Management candidate at Yale School of Forestry and Environmental Studies. Prior to Yale, Chen received her BA in Arabic and economics from Peking University in China. She is now combining her undergraduate expertise in Middle Eastern studies with her graduate focus on environmental management to understand the relationship between Islam and ecology, as well as the various dimensions of water and energy resource management in the Middle East. Chen is also interested in the relationship between traditional culture and modern environmental activism in China as well as the environmental impacts of China's foreign investments. This summer, Chen is working with the Energy Security and Climate Initiative at the Brookings Institute in Washington D.C on environmental issues relevant to the Middle East and China. Outside school, Chen has spent months studying and travelling in Oman, Morocco, UAE, Jordan and Israel while documenting and reporting the political, ecological and religious culture in these countries.

NORAH ELMAGRABY

In 2010, Norah Elmagraby co-founded the first environmental social enterprise in Saudi Arabia, Naqaa Sustainability Solutions, with the aim of promoting environmental initiatives in both public and private sectors. As part of her work as an environmental consultant she managed local sustainability initiatives. In her two years working with Naqaa, Elmagraby cultivated an interest in broader issues of the environment and respective social and political perceptions in the Middle East. Subsequently, she pursued training in Sustainability Management and received her master's degree from Columbia University in 2014. Currently, Elmagraby is building on her academic and professional experiences as a Ph.D. candidate in Islamic Civilizations Studies at Emory University with a specialization in Islam and Ecology.

Her current research examines the perception of the environment in Saudi Arabia and includes insight into transnational discourses drawing from religious sources. This work is an interdisciplinary effort that examines the intersection between politics, environmental activism and Islamic theology. Elmagraby has presented her preliminary work at regional and international forums, including the American Academy of Religion, the World Economic Forum and The Leadership and Multifaith Symposium at the Candler School of Theology. As an extension of her scholarship, she is investigating environmental sustainability in the Middle East and the ways in which Islam influences attitudes toward the environment – with long term goals in sustainable development, environmental protection and social activism.

MARY ELSTON

Mary Beinecke Elston is a Ph.D. candidate in the Department of Near Eastern Languages and Civilizations at Harvard University. She holds an MA in Social Sciences with a focus in Anthropology from the University of Chicago (2012) and a BA in Middle East Studies and Development Studies from Brown University (2007).

Elstons's research interests include the anthropology of Islam, the history of modern Egypt, Islamic educational institutions and religious authority. She is currently working on her dissertation, which explores how the religious scholars of al-Azhar – the preeminent institution of Sunni learning –

conceptualize, practice and debate the meaning, form and relevance of traditional Islamic knowledge (*turāth*) in contemporary Egypt. Through a combination of ethnography and historical analysis, her dissertation argues that the revival of traditional Islamic knowledge at al-Azhar reflects a critique of the reforms set in motion by the Islamic modernists of the late nineteenth century. As such, the present revival represents a new answer to a question that has concerned Muslim intellectuals since the nineteenth century: how to be modern and remain Muslim. Mary's research in Egypt has been supported by the Loeb Dissertation Research Fellowship, the Frederick Sheldon Traveling Fellowship and the American Research Center in Egypt. At Harvard University, Mary has taught classes on Islam and Politics and the History of the Modern Middle East.

ZAID EYADAT

Zaid Eyadat is a Professor of Political Science and Human Rights, an expert on international and comparative politics and the chairperson of the board of trustees and the advisory board of the Arab Rennaissance for Development and Democracy (ARDD). He is the founding chairperson of the Department of Human Rights – which later became the Department of Political Development – and the founding Dean of the Prince al-Hussein School of International Studies at the University of Jordan. His training and research interests are in the fields of international politics, comparative politics, international political theory, modelling and game theory. He is a leading and distinguished expert on Middle East politics, Human Rights, Islamic thought and Islam & Human Rights. His research has been published in many leading scholarly journals.

Some of his published articles and book chapters include "Minorities in the Arab World: Faults and Fault Lines," "Islamic Feminism: Roots, Development, and Policies," "The Calculus of Consensus: an Alternative Path to Arab Democracy," "Fiqh Al-Aqalliyyât and the Arab Spring: Modern Islamic Theorizing," "Public Reason and Islamic Reason in the Post-Secular," "The Rationality of Political Violence: Modelling Al-Qaeda vs. the United States," "A Transition Without Players: The Role of Political Parties in the Arab Revolutions," and "Arab Revolutions of 2011: An Explanatory Model." He is also the co-editor of the book *Migration, Security, and Citizenship in the Middle East* and the co-translator of Count Bernadotte's *Mediation to Palestine 1948: Mediation and Assassination*. He has just completed the translation of a book entitled *Global Justice: Towards an International Theory of Human Rights*.

Eyadat holds a Ph.D. and MA in Political Science (both with distinction) from the University of Southern California, an MA in Political Science (honors) and a BA in Political Science and Economics (honors) from the University of Jordan.

JOHN GRIM

John Grim is a Senior Lecturer and Research Scholar teaching in the joint MA program in religion and ecology at Yale University School of Forestry and Environmental Studies and Yale Divinity School. He is co-founder and co-director of the Forum on Religion and Ecology at Yale with his wife, Mary Evelyn Tucker. With Tucker, Grim directed a ten-conference series and book project at Harvard on "World Religions and Ecology."

Grim is the author of *The Shaman: Patterns of Religious Healing Among the Ojibway Indians* (University of Oklahoma Press, 1983) and editor of *Indigenous Traditions and Ecology: The Interbeing of Cosmology and Community* (Harvard, 2001). Grim and Tucker are co-authors of *Ecology and Religion* (Island Press, 2014). Together they edited Thomas Berry's books and published *Thomas Berry: A Biography* (Columbia University Press, 2019). They have edited the following volumes: *Worldviews and Ecology* (Orbis, 1994); *Religion and Ecology: Can the Climate Change?* (Daedalus 2001); T*homas Berry: Selected Writings on the Earth Community* (Orbis, 2014); and *Living Cosmology: Christian Responses to Journey of the Universe* (Orbis, 2016), and with Willis Jenkins the *Routledge Handbook on Religion and Ecology* (Routledge, 2016). Grim is the co-executive producer of the Emmy award winning film, *Journey of the Universe*. He is the President of the American Teilhard Association.

Grim holds a Ph.D. and MA in the History of Religions from Fordham University and BA in Theology and History from St. John's University.

ILHAM IDRISSI BICHR

Ilham Idrissi Bichr is an experienced former diplomat and trade negotiator with leadership experience establishing a sustainability and corporate social responsibility program in a major overseas private bank. She has been a member of the steering committee of the UConn Abrahamic initiative since 2015.

Idrissi Bichr served as project manager in the Sustainable Development Department at the Banque Marocaine du Commerce Exterieur (BMCE Bank), Casablanca, Morocco. BMCE Bank is the first Moroccan financial institution to commit to sustainability and corporate social responsibility, and the first bank in North Africa to adopt Equator Principles. Prior to joining BMCE Bank, Idrissi Bichr was a Moroccan diplomat for ten years. In her position as Counsellor of Foreign Affairs to the Permanent Mission of Morocco in Geneva in charge of World Trade Organization (WTO) issues, she managed Doha Round negotiations on agricultural products, market access for goods and trade in services for the Government of Morocco. She was also lead negotiator for the WTO African Group in Trade Facilitation and Trade in Services Negotiations.

As Counsellor of the Embassy of the Kingdom of Morocco in Washington D.C., Idrissi Bichr directed Moroccan diplomacy with the Millennium Challenge Corporation (MCC). She was also principal point of contact with the Office of the United States Trade Representative (USTR) on the implementation of Morocco/US Free Trade Agreement. Idrissi Bichr tracked US/Europe bilateral cooperation with State Department contacts. She served as a member of the Moroccan delegation's second round of negotiations on a Plurilateral Anti -Counterfeiting Agreement (ACTA).

Idrissi Bichr holds a master's degree in diplomacy from the University of Malta's Mediterranean Academy of Diplomatic Studies, Malta, a master's degree in international relations from the International School for Humanities and Social Sciences at the Universiteit van Amsterdam, The Netherlands, and a bachelor's degree in social sciences from Al Akhawayn University, Morocco, with a major in global interdependence and a Minor in women and development. She also holds international professional training certificates from the WTO, UNEFI and GRI London Lodestar Marketing Limited. She is fluent in English, French and Arabic.

EBTESAM AL KETBI

Ebtesam Al Ketbi is the President of the Emirates Policy Center (EPC), which she founded in Abu Dhabi, the United Arab Emirates (UAE) in September 2013. EPC undertakes the task of studying and foreseeing future regional and international geopolitical projects and their impact on the Gulf region based on the region's self-perception of its concerns and interests. The center also focuses on exploring current and future issues that have an impact on the security of the UAE and the region as a whole. EPC provides strategic analysis and policy papers on these issues that serve the UAE and Gulf governments. The center is a renowned think tank in the region. Abu Dhabi Strategic Debate, which is organized annually by EPC, has also become one of the key platforms for dialogue in the world to discuss regional and international security.

In recognition of her role as a leader of one of the most important think tanks in the Arab world and the great respect she enjoys as part of the distinguished elite in the entire Gulf region, Al Ketbi was appointed in 2015 as member of the Consultative Commission of the Cooperation Council of the Arab States of the Gulf (GCC). She was also chosen by *Arabian Business* magazine on July 2018 in its list of 50 Most Influential Women in the Arab World for her leadership at the EPC.

Before she founded EPC, Al Ketbi was a professor of political science at the United Arab Emirates University. She also held several posts, such as the General Coordinator of the Gulf Development Forum, and served as a member of the Executive Committee of the Arab Association for Political Science and as a member of the board of trustees for the Center for Arab Unity Studies, the Arab Thought Foundation and the Arab Anti-Corruption Organization.

Al Ketbi published a number of research papers on Gulf Security, US-GCC relations and War on Terrorism. Moreover, she has participated at many conferences that address regional and global affairs and frequently appears on Arab news channels as an expert in the Gulf and Iranian affairs. She holds a Ph.D. in Political Science from Cairo University.

FAZLUN KHALID

Fazlun Khalid has a worldwide reputation as an indefatigable advocate of environmental protection that is rooted in religious traditions and is now recognized as one of fifteen leading eco-theologians in the world (Grist magazine, USA 24 July 2000). He appeared on the Independent on Sunday's list of the top 100 environmentalists in the UK in 2008 and was also listed amongst the "500 Most Influential Muslims in the World" by the Royal Islamic Strategic Studies Centre of Jordan. He was also the recipient of the Muslim News Awards for Excellence in Engineering, Science and Technology in 2004 for developing a scientific approach to Islamic environmental practice. Khalid founded the Islamic Foundation for Ecology and Environmental Sciences which is now established as the world's leading Islamic environmental NGO.

He was the convener and chairperson of the drafting committee that produced the Islamic Declaration on Global Climate Change launched in Istanbul in August 2015.

Most recently, Khalid published *Signs on the Earth – Islam, Modernity and the Climate Crisis,* a major study of environmentalism and Islam in practice and theory, with an historical overview that sets out future

challenges, including reformulating the *fiqh* (Islamic legal tradition) to take the ecological dimension seriously.

ESTI KRAMARSKY-WINTER

Esti Kramarsky-Winter is a Board Member of EcoPeace Middle East and an environmental consultant working with academic, government and non-governmental sectors. American born and educated (B.Sc.), she holds an M.Sc. and a Ph.D. from Tel Aviv University in Marine Ecology. Kramarsky-Winter worked as a research associate at Tel Aviv University for over ten years, leading numerous studies regarding environmental issues in the Gulf of Aqaba/Eilat. She has worked with numerous agencies and universities in Israel and in the US (including USAID, EPA, NOAA and private NGOs) on matters concerning water pollution, emerging contaminants and aquatic animal disease and pathologies. Her studies have been instrumental in changing policies including:

- The environmental effects of in situ intense fish farming on the Gulf of Aqaba. This resulted in the net pens being removed from the Gulf by government decree.
- The effects of emerging toxicants on aquatic organisms. This resulted in legislation regarding the ban of sunscreens containing oxybenzone and its derivatives in a number of US states including Hawaii, Florida, the US Virgin Islands and California as well as a ban in several countries, including Mexico, Belize and Palau.

Kramarsky-Winter is currently involved in studies assessing microbial and toxic contaminants in aquatic and land based natural and industrial regions. She is also involved in studies searching for natural solutions for preventing or remediating development of destructive biofilms in natural and industrial environments.

KATHRYN LIBAL

Kathryn Libal, Ph.D., is Associate Professor of Social Work and Human Rights at the University of Connecticut. She directs the university's Human Rights Institute. She received her doctorate in cultural anthropology at the University of Washington. Since 2007, she has taught at the School of Social Work and Human Rights Institute, specializing in human rights, humanitarianism and migration and social welfare in the Middle East and United States. Libal is currently conducting qualitative research on the politics and practices of voluntarism and refugee resettlement in the United States and Canada. She has co-edited *Human Rights in the United States: Beyond Exceptionalism* and co-authored *Human Rights-Based Approaches to Community Practice in the United States*. Her latest book is a co-edited volume on *Refugees and Asylum Seekers in the United States: Interdisciplinary Perspectives* (forthcoming in 2019). In addition, Libal serves on the USA Steering Committee for Scholars At Risk and serves on the Human Rights Committee of the Council on Social Work Education's Global Commission.

MUNJED MURAD

Munjed M. Murad is a Jordanian-American doctoral student at Harvard University. He studies Islamic and Christian traditions in the field of religion and ecology. He has published on topics in Islam and ecology,

and he is currently studying the works of Jalal al-Din Rumi and Origen of Alexandria for their potential to contribute to contemporary ethical environmental discourse.

KNUT MYRUM NÆSS

Knut Myrum Næss is Research Management Adviser and Visiting Research Fellow at BI Norwegian Business School. He is a contributor to a forthcoming book exploring challenges to civic space in the Nordics and co-author of three forthcoming articles on the Nordic biofuel markets, biofuel industry and biofuel policy. He is Programme Coordinator for the Arne Næss Programme on Global Justice and the Environment at the Center for Development and the Environment, University of Oslo.

Næss holds an M.Phil. in Culture, Environment and Sustainability from the University of Oslo, with a master thesis on hydropolitics in the Nile basin. The work is a semiotic study of the ideological conflict between Egypt and Sudan over the construction of the Grand Ethiopian Renaissance Dam (GERD). His BA is in Arabic and Middle Eastern Studies, with coursework on cultural history and environmental studies. He has lived three years in Cairo, learning Modern Standard Arabic (MSA) and the Egyptian dialect and completing an internship at the Ministry of Water Resources and Irrigation (MWRI) during the eventful summer of 2013. He recently completed an executive program on the Foundations of Leadership at BI Norwegian Business School.

His main fields of interest are political culture, regulation and market design for environmental and social sustainability. He has worked on the Nordics and the Nile Basin. Aside from sustainability he concerns himself with democracy and surveillance capitalism. He is an avid mountain biker and swimmer and is known to fall off his bike on occasion. He is registered with the Norwegian National Registry of Interpreters for Arabic-Norwegian.

ADIL NAJAM

Adil Najam is the Inaugural Dean of the Pardee School of Global Affairs at Boston University, where he is also a professor of international relations and of earth and environment. The Former Vice Chancellor of Lahore University of Management Sciences (LUMS), he has also been a professor of negotiation and diplomacy at the Fletcher School of Law and Diplomacy at Tufts University, the Director of the Boston University Frederick S. Pardee Center for the Study of the Longer-Range Future, and a professor at MIT.

He is the author of over one hundred scholarly papers and is the author or editor of over a dozen books. Najam was a lead author for the third and fourth assessments of the Intergovernmental Panel on Climate Change (IPCC), for which the IPCC was awarded the 2007 Nobel Peace Prize. His areas of specialization include global climate change and sustainable development in developing countries and human development and human security, particularly in Muslim societies. He was on the Advisory Board of the 2011 UNDP Human Development Report and was Lead Author for the 2017 Pakistan Human Development Report.

Najam holds two master's and a Ph.D. from MIT, a Specialization in Negotiation from Harvard Law School, a civil engineering degree from University of Engineering and Technology, Lahore, and one honorary

doctorate. Najam was elected to the International Board of the World Wide Fund for Nature (WWF), is a Trustee of The Asia Foundation, is the chair of the Board of the Switzerland-based Luc Hoffmann Institute, has been a Council Member of the International Institute for Applied Systems Analysis (IIASA) in Vienna, was the Board Chair of the South Asia Network of Development and Environmental Economics (SANDEE), served on the Academic Council of the South Asia University in New Delhi, and was former Chair of LEAD-Pakistan.

He was awarded the Sitra-i-Imtiaz in 2009 and is a past winner of MIT's Goodwin Medal for Effective Teaching, the Fletcher School Paddock Teaching Award, and the Stein Rokan Award of the International Political Science Association. In 2019 he was appointed by the Prime Minister of Pakistan to his Advisory Council on Foreign Policy.

İBRAHİM ÖZDEMİR

İbrahim Özdemir is a professor of philosophy and the Founding President of Hasan Kalyoncu University, Gaziantep Turkey. Currently, he is a visiting professor of philosophy at Abo Akademi University, Turku, Finland. He holds a doctorate degree in philosophy from the Middle East Technical University, Ankara and a bachelor's degree in Islamic Theology and Islamic Philosophy from Ankara University, Turkey.

His most recent publications include *The Ethical Dimension of Human Attitude Towards Nature*, 2nd edition, Insan Publications: Istanbul, 2008; *Jalaluddin Rumî and Confucius: Messages and Visions for a New Century*, Tugra Books: New Jersey, 2013; and *Globalization, Ethics and Islam*, editors: Ian Markham and Ibrahim Ozdemir, Aldershot: Ashgate. 2005.

He has traveled widely in the Muslim world and the West. He was a visiting professor of Islamic Studies at Hartford University and Hartford Seminary (2001-2003). He lectures in Turkey, Europe, the United States and other countries. After returning from the USA, he was appointed Director-General for International Relations, Ministry of National Education. He represented Turkey at EU, UNESCO and OECD educational programs. (2003-2010).

In August 2015, he was part of the drafting team of the "Islamic Declaration for Global Climate Change," which called on the world's 1.8 billion Muslims to play an active role in combatting climate change and has urged governments to conclude an effective universal climate change agreement in Paris in 2015. The declaration was welcomed by environmentalist groups and major media outlets such as Newsweek, The New York Times, Al Jazeera, Nature Magazine, and The Guardian. He was a consultant at UNEP (United Nation Environmental Program), 2015–2016, New York, USA.

He was selected as a jury member to The Higher Committee of The Award of The Kingdom of Saudi Arabia for Environmental Management in The Islamic World, 2014–July 2018.

RANA AL QAIMARI

Rana Al Qaimari is the Education Programme Manager at EcoPeace Middle East, Palestine Office. Originally from Ramallah, Palestine, Qaimari holds an MA from Birzeit University in Water Science and

Technology. Qaimari has fifteen years of professional experience in education directly related to water and environmental education. Additionally, she has three years of experience working as a Program Officer for the EU Erasmus+ Office in Palestine. Qaimari has been an Environmental Coordinator for youth environmental awareness programmes for the Palestinian Academy for Science & Technology, the Royal Society for Protection of Nature, Latin Patriarchate Schools and the Hellen Medien Projekte/ Peter Maffy foundation. Qaimari worked as deputy principal for Al- Ahliyyah College School, Catholic High school in Ramallah from 1998-2014.

JAME SCHAEFER

After several years serving in various environmental policy positions by appointment of local, state, federal and binational governments, Jame Schaefer embarked on an academic career at Marquette University (Milwaukee, Wisconsin, USA) where she earned a Ph.D. in Religious Studies (1994) and where she continues her research and teaching on constructively relating theology, the natural sciences and technology with special attention to religious foundations for ecological ethics. From 2001-2017, she directed the Interdisciplinary Minor in Environmental Ethics that she developed with faculty of other pertinent disciplines, advised Marquette Students for an Environmentally Active Campus, and co-steered the Albertus Magnus Circle. Her publications include *Theological Foundations for Environmental Ethics: Reconstructing Patristic and Medieval Concepts* (Georgetown University Press, 2009); *Confronting the Climate Crisis: Catholic Theological Perspectives* (Marquette University Press, 2011); *Environmental Justice and Climate Change: Assessing Pope Benedict XVI Ecological Vision for the Catholic Church in the United States* (Lexington, 2013); essays in several edited volumes; articles in *Anglican Theological Review, Cistercian Studies Quarterly*, *Environmental Ethics*, *Journal of Moral Theology*, *Theological Studies*, and *Worldviews: Religion, Culture, Science* and the inaugural "Animals" entry in the *New Catholic Encyclopedia* (Gale, 2013). In *Frontiers in Marine Science*, *Geosciences*, and the *International Journal for Climate Change Strategies and Management* articles, she discusses theological and practical contributions by the Abrahamic religions singularly and collaboratively for addressing complex biodiversity and biospheric problems. She serves as the Handling Editor of manuscripts submitted to *Conservation Biology* that incorporate religious, ethical and values perspectives, she spearheaded the Best Practices Project of the Society for Conservation Biology that yielded *Guidelines for Interacting with Religious Leaders and Communities: A Proposal by and for Members of the Society for Conservation Biology* (2018), and she participated in interreligious dialogue on the United Nations' Sustainable Development Goals in Vatican City (2019) at the invitation of the Pontifical Council for Interreligious Dialogue and the Dicastery on Promoting Integral Human Development.

KHALID SENDIDE

Khalid Sendide holds a Doctorate in Biotechnology from the University USMBA, Morocco (1995) and a Ph.D in molecular immunology from the University of British Columbia in Vancouver, Canada (2005). Sendide started his professional career as Assistant Professor at University Mohammed Ben Abdellah in Fez, Morocco in 1996, where he taught courses and conducted research both at the school of sciences and the school of medicine. In 2006, he joined Al-Akhawayn University as an Associate Professor.

Sendide was a post-Doctoral fellow at UBC, Canada, and a Fulbright Scholar at the National Institutes of

Health, Bethesda, USA in 2009. Sendide's teaching interests are in molecular biotechnology, environmental biology and environmental chemistry. He also taught courses on evolution and faith. Sendide's current research interests are in the field of bioactive molecules and their applications in health and in bio-industries. He also works on education and sustainable development and supervises many masters and Ph.D. students. His work has been patented and published in prominent journals. Sendide was the coordinator of the Science and Engineering programs at Al-AKhawayn University from 2011-2015. In 2016, he was appointed the Assistant Vice President for Academic Affairs in charge of research and graduate studies at the same University, a position that he still occupies today. In the past ten years, Sendide has been involved in school and university quality assurance and accreditation processes at Al-Akhawayn University.

SIMON SKIRA

Simon Skira is Secretary General of the French Federation of Moroccan Judaism and in 2018 was elected Vice President of the World Union of Moroccans Abroad. In 2018, he started Smartpoint Group, a company based in Casablanca which operates in the fields of advanced technologies by offering Moroccan companies innovative solutions for smart cities and IT security.

Skira is a speaker on relations between Muslims and Jews in Morocco and has worked for more than twenty years for various educational institutions in developing cities with strong Moroccan majorities in France and Israel. He taught Jewish history in Morocco and directed one of Israel's most prestigious boarding schools.

Skira is involved in several immigrant associations in Morocco, France and Israel, an experience he documented in the film "Jewish Moroccans, thwarted destiny". In his testimony for the film on Jewish-Muslim relations in Morocco, he discussed the disappearance of 280,000 Jews from Morocco between 1948 and 1968.

In 1996, Simon Skira was the Founding President of the Israel-Morocco Friendship Association in Tel Aviv. The association has organized numerous delegations and exchanges with Moroccan specialists in agriculture, medicine, technology and other fields. Skira has also been appointed Deputy Director of the Beer Sheva and Ashdod Engineering School (5500 students), for French-speaking European countries.

ALON TAL

Alon Tal is the chair of the Department of Public Policy at Tel Aviv University. Tal has held faculty appointments at Ben Gurion and Hebrew Universities in Israel and was a visiting professor at the University of Otago in New Zealand and Stanford University in California. Between 1990 and 1998 he was an adjunct faculty member at Harvard University. Between 2004 and 2016 Tal was a member of the international board of directors of the Jewish National Fund where he oversaw forestry and land reclamation as well as the Committee for Sustainable Development. Between 2010 and 2013, he served as chair of Israel's green party – "the Green Movement."

Tal was the director of Adam Teva V'din, the Israel Union for Environmental Defense, a leading public interest law group, from 1990 to 1997. Subsequently, he was chairman of Life and Environment, an umbrella group of eighty environmental organizations in Israel from 1998 to 2003. There he established and launched an outreach initiative "A Place For Everyone" to expand participation of Arab Israeli environmental organizations and activists. In 1996, Tal founded the Arava Institute for Environmental Studies, a regional graduate studies center for Israeli, Jordanian and Palestinian students. He has served as head of the Israeli delegation to the United Nations Convention to Combat Desertification and oversaw the international conference on desertification at Sede Boqer, along with the UNCCD, for ten years. In 2006, he was awarded the Charles Bronfman humanitarian prize for environmental leadership. In 2008, in honor of Israel's 60th anniversary, the Ministry of Environment granted him a life achievement award.

Tal has published over one hundred academic articles and book chapters as well as eight books. His most recent book, *The Land is Full* was published by Yale University Press and won the Haiken prize for best geostrategic book in Israel for 2017. Previously, the University of California Press published *Pollution in a Promised Land*, considered to be the definitive environmental history of Israel. His research focuses on issues of water policy, climate change mitigation and adaptation, natural resources management and conflict, risk analysis, conservation and park management as well as overpopulation and the environment. Tal received a degree in political science and economics from the University of North Carolina and a law degree from Hebrew University in Jerusalem. He completed his master's and doctoral degrees from the Harvard School of Public Health in Environmental Health Policy. Tal is married with three daughters and enjoys long distance running, tennis and playing bluegrass fiddle in the Arava Riders band.

MARY EVELYN TUCKER

Mary Evelyn Tucker is a Senior Lecturer and Research Scholar at Yale's School of Forestry and Environmental Studies, the Divinity School, and the Department of Religious Studies. She directs the Forum on Religion and Ecology at Yale with her husband, John Grim. She received an Inspiring Yale Teaching Award in 2015.

She earned her Ph.D. from Columbia University in Asian Religions. Since 1997 she has been a Research Associate at the Reischauer Institute of Japanese Studies at Harvard and has published five volumes on Confucianism. She also served on the International Earth Charter Drafting Committee.

Her concern for the growing environmental crisis, especially in Asia, led her and Grim to organize a ten conference series on World Religions and Ecology at Harvard (1995-1998). They were series editors for the ten volumes from the conferences. After these conferences she and Grim founded the Forum on Religion and Ecology. They wrote *Ecology and Religion* (Island Press, 2014) and with Willis Jenkins they edited the *Routledge Handbook on Religion and Ecology* (2016). They also are series advisors for the *Ecology and Justice Series* at Orbis Books.

Tucker and Grim studied with Thomas Berry and worked closely with him for 30 years. Tucker edited Berry's books and with Grim she wrote *Thomas Berry: A Biography* (Columbia, 2019).

Tucker created a multi-media project with Brian Thomas Swimme and John Grim called "Journey of the Universe", which includes an Emmy award-winning film, a book from Yale (2011), *Journey Conversations*, and online classes.

DANIEL WEINER

Daniel Weiner joined the University of Connecticut (UConn) in 2012 as Vice Provost for Global Affairs and Professor of Geography. In February 2016, he was promoted to Vice President for Global Affairs. Prior to joining UConn, Weiner spent four years as Executive Director of the Center for International Studies at Ohio University and eleven years as Director of the Office of International Programs at West Virginia University. He earned a B.A. in 1979, an M.A. in 1981 and a Ph.D. in 1986, all in Geography at Clark University.

In his role as Vice President, Weiner serves as the University's Senior International Officer (SIO) and leads the UConn Office of Global Affairs. With more than two decades as a public research university SIO, he is one of the longest serving SIO's in the United States.

Weiner is a development geographer with area studies expertise in Eastern/Southern Africa and Appalachia. He is a specialist in the theory and practice of participatory geographic information systems (GIS). His research areas include agricultural geography, climate and society, energy, GIS and society, land reform and political ecology. He has received 15 externally funded grants totaling over $2.5 million, published three books, 59 journal articles and book chapters. Weiner lived in Kenya, South Africa and Zimbabwe for almost three years during the 1980s.

APPENDIX 1

JUDAIC, CHRISTIAN, AND ISLAMIC PERSPECTIVES ON SHARED MORAL PRINCIPLES

Authors: ***Jame Schaefer****, Associate Professor, Department of Theology, Marquette University, Milwaukee, USA;* ***İbrahim Özdemir****, Visiting Professor of Philosophy, Åbo Akademi University, Turku, Finland;* ***Jeremy Benstein****, Director of Research & Publications, Heschel Center for Environmental Learning, Tel Aviv, Israel;* ***Fazlun Khalid****, Founder, Islamic Foundation for Ecology and Environmental Science, Birmingham, United Kingdom; and* ***Nawal Ammar****, Dean and Professor, College of Humanities & Social Science, Rowan University, Glassboro, USA*

Using eight common principles identified in prior research on the environmental views of world religions,[1] colleagues[2] who participated in the Abrahamic Traditions and Environmental Change Workshop in Rhodes, Greece, 23-26 June 2019[3] volunteered to indicate the extent to which their traditions—Judaic, Christian, or Islamic—agree with each principle and to provide a citation to a valued source that supports the principle. The outcome of this compilation provides succinct theological grounding for motivating members of their respective communities in the Middle East and North Africa (MENA) to address ongoing problems of water availability, biological diversity loss, ecosystem degradation, and human-induced climate change. Members of their respective communities are strongly urged to return to the sources of their traditions and to reflect on them for meaningful motivation for their actions, including their efforts to collaborate with one another in addressing shared concerns.

Principle #1: The natural world has value in itself and does not exist solely to serve human needs.
Reflection on Judaic sources yields strong agreement with this principle. From a biblical perspective, the Genesis story of creation depicts God as valuing each entity created as "good" (Gen 1: 4, 10, 12, 18, 21, 25), a term that implies the intrinsic, inherent value of each type of creature independent of human needs, and God's valuing the totality of creation as "very good" (Gen 1:31), thereby implying its intrinsic, inherent value. The notion that goodness is a function of its essence and not its utilitarian exchange

[1] Research supporting these principles can be found in Kusumita F. Pedersen's "Environmental Ethics in Interreligious Perspective" in *Explorations in Global Ethics: Comparative Religious Ethics and Interreligious Dialogue*, eds. Sumner B. Twiss and Bruce Grelle, 253-290 (Boulder: Westview Press, 1998).

[2] Jeremy Benstein, The Heschel Sustainability Center, Tel Aviv, Israel, jeremy@heschel.org.ill; Fazlun Khalid, Islamic Foundation for Ecology and Environmental Sciences, Birmingham, United Kingdom, fazlun.khalid@ifees.org.uk; İbrahim Özdemir, Åbo Akademi University, Department of Philosophy, Turku, Finland, ib60dmr@gmail.com; Nawal Ammar, Dean, College of Humanities and Sciences, Rowan University, Glassboro, NJ USA, ammar@rowan.edu; and Jame Schaefer, Marquette University, Department of Theology, Milwaukee, WI USA, schaeferj@marquette.edu, who also compiled and edited the contributions.

[3] Sponsored by the University of Connecticut's Abrahamic Programs for Academic Collaboration in the MENA Region, Al Akhawayn University, and The Forum on Religion and Ecology at Yale University, the workshop was held in Rhodes, Greece, 23-26 June 2019; https://abrahamicprograms.uconn.edu/abrahamic_traditions_and_environmental_change.

value according to some human calculus is supported by Rabbinic reflections that discourage thoughts that any creature is superfluous (e.g., flies, fleas, mosquitoes, snakes and scorpions) because they are constituents of God's purposeful creation (Talmud Shabbat 77b and parallels). Maimonides also encouraged valuing all creatures intrinsically when reasoning from the first chapter of Genesis that God purposefully willed the existence of creatures for their own sakes and not for the sake of humans (*Guide to the Perplexed* 3:13).

Christian theologians highlight in commentaries on the first book of Genesis that God's attribution of intrinsic value to each created entity and their cumulative goodness should propel the faithful to also value them individually through words and actions. Dwelling on the text's depiction of God's declaring each type of creature "good," John Chrysostom criticizes those who, "bursting with arrogant folly," would contradict God's valuation and urges his listeners to show gratitude to God for all creatures, whether beneficial or harmful to humans (*Homilies on Genesis* 10.12). Augustine of Hippo reflected on the goodness of each creature according to its God-given nature (*Nature of the Good* 3) and profusely extolled the goodness of the earth, mountains, fields, air, animals, and other creatures (*On the Trinity* 8.3.4), all of which manifest God's goodness. Aquinas identified gradations of goodness in creatures according to God-given natures whereby all inanimate and animate creatures constitute an instrumental "order of conservation" in which plants use soil, animals use plants, and human use animals to internally maintain the functioning of the universe (e.g., *Summa contra Gentiles* 3.22). Within this order, all creatures are essential, all are good according to their natures, and all are vital for the functioning of the universe (*Summa theologiae* 1.65.2). Pope Francis reflects this theological tradition in *Laudato si', On Care of Our Common Home* (2015) in which he underscores the intrinsic value of all creatures apart from their use for humans (#118), the intrinsic value of ecological systems (#140), and the intrinsic value and dignity of the world (#115). It is important for Christians to remember the traditional understanding of the sacramental quality of the physical, visible world and that it mediates God's presence to us, tells us about God's character, and, in its entirety, best manifests God's goodness.

Islam views the natural world as valuable in its relation to God as a totality (*tawḥīd al-khalq*) in which all creatures are dependent upon God for their existence. Their purposeful creator provides sustenance for them (*Qur'an* 11:6) in a world governed by the principles of unity, balance, and harmony that penetrate every dimension of personal and social life. All creatures praise God according to their nature and declare God's glory *(Qur'an* 17:44). From this Islamic perspective, the world does not exist solely to serve human needs (e.g., *Qur'an* 55:10-12). Humans are creatures among other creatures and dependents among other dependents who should be able to recognize other creatures—animate and inanimate—as signs of God (*e.g., Qur'an* 41:53, 51:20-21, 10:5-6) that display God's skill and perfection (*Qur'an* 16:66).

Principle #2: There is a significant continuity of existence between human and non-human living beings; even though humans have a distinctive role, this continuity can be felt and experienced.

To a great degree, reflections on Judaic sources agree with this principle. Collectively, humans and other species are *adam* made from *adamah*—the earth. The Torah inculcates in us a sense of modesty and lowliness because we are comprised of the same matter as the ass and the mule, the cabbage and the pomegranate, and even the inanimate stone (Ibn Kaspi, Adnei Kesef on Deuteronomy 22:6).

Christian reflections also agree with the principle that the world of living creatures was made by God and would not exist if God had not willed and continued to sustain its existence. All living creatures are related to one another, they are dependent on God for their existence, and they function with one another to sustain their shared existence. They also are reliant on non-living creations (e.g., soil, air, water, sun) that God made possible for their sustenance. Some Christian writers (e.g., Celtic wanderers, English hermits,

and Francis of Assisi) underscored the kinship of all animate creatures based on their experiences. Scientific knowledge about the spewing from the furnaces of stars, about elements that are essential for organic bodies like ours to form, about the emergence of life on Earth from single-celled organisms, and about the evolution of species strengthen the Christian sense of the continuity of humans with other living beings. These realizations should prompt awe and gratitude to God for how life emerges and spur Christians to do that which distinguishes humans among creatures: to make and execute informed decisions about living in ways that are beneficial for the Earth.

In the Islamic tradition, a continuity exists among diverse creatures wherein humankind is given the dignified position of "trustee on earth" (*khalifa*) (*Qur'an* 2:30). "The creation of the heavens and the earth is far greater than creation of humankind" (*Qur'an* 40:57). The humblest of God's creation is given the weightiest responsibility; it is the price we pay for the intelligence that God bestowed on us. We are accountable to God on the Day of Judgment for how we exercised our special responsibilities as trustees. We are not owners and masters of the natural environment; we are trustees to whom God has delegated the responsibility of maintaining and utilizing the natural environment in accordance with His intentions. The *Qur'an* and the prophetic traditions prescribe a criterion for responsible human trusteeship of Earth to refrain from actions that corrupt the environment: "Do no mischief on the earth after it hath been set in order" (*Qur'an* 7:56). The Prophet Muhammad is the perfect role model for all Muslims when striving to fulfill their responsibilities.

Principle #3: Non-human beings are morally significant to God and the cosmic order; they have their own unique relations to God, and their own places in the cosmic order.

As indicated in Psalm 145, God's "tender mercy is over all His creatures." Jewish traditions support the understanding that creatures who are not human are morally significant to God as His creations, all have their own unique relation to God, who cares for them according to their natures, and all have essential roles to play within God's creation.

Reflections by Christian theologians about God's love for all creatures and how He cares for non-human living creatures by providing for their needs and capabilities implies that they are morally significant for God and should be morally significant for the faithful. Also supportive of this principle are prominent theologians who proclaim the goodness, beauty, and integrity of non-human and inanimate creatures, from tiny insects to large mammals, plains to mountain valleys, trees to forests, and streams to wide rivers. For example, when giving homilies on the first chapter of Genesis, Basil of Caesarea urged his listeners to pay attention to all creatures, to never cease admiring them and to give glory to God for them (*On the Hexaemeron* 2 and 5).

The traditional Islamic view maintains that all animate creatures constitute communities willed into and sustained in existence by God and conduct themselves in ways that assure their continuity. The great whales who navigate the oceans, elephants of the tropical forests and the ants and bees are examples of creatures forming complex, efficient, multi-generational communities. Annual mass migrations, like the birds that fly each year from one climate zone to another, the movements of reindeer in the tundra and the wildebeest in the African Savannah are striking examples of animals cooperating among members of their species to survive. All have moral significance for God, who cares and loves them. As God's trustees, Muslims have a special responsibility to maintain and utilize the natural environment in accordance with God's intentions.

Principle #4: The dependence of human life on the natural world can and should be acknowledged in ritual and other expressions of appreciation and gratitude.

Jewish traditions exemplify a deeply embedded range of rituals and other expressions of gratitude to God for the dependence of human life on the natural world. *Eretz Yisrael*, the Land of Israel, is the distinct homeland that is always present and central to traditional Jewish consciousness. This is demonstrated in liturgies, observances and commandments (mitzvoth) that are applicable only in the Land (e.g., tithes on produce and the entire *shemitah* year—a year of release and renewal). Judaism also has a universal spiritual language pertaining to the environment that is accessible everywhere, as manifested in the Jewish calendar that connects the major Jewish holidays to natural cycles and makes these cycles felt in the life of every Jew. They mark the harvests and the seasons—Passover (*Pesach*) in spring, the Feast of Weeks or Pentecost (*Shavuot*) in early summer, the Festival of Booths (*Sukkot*) in fall, and, the later instituted Festival of Lights (Hanukkah) in winter—all of which provide occasions for Jews to express their gratitude to God for the natural world in which they live.

Though the Easter Vigil has been the one annual ritual over the centuries in which Christians recall their dependence on the natural world and express gratitude to God for this gift, the initiation of the Day of Prayer for the Environment in 1989 by His All-Holiness Ecumenical Patriarch Demetrios began a tradition that his successor Patriarch Bartholomew continued from the inception of his patriarchy in 1991. His sermons and trips with other religious leaders, scientists and reporters to endangered areas took place against the backdrop of statements from Popes John Paul II and Benedict XVI. Those popes preached that it is the moral responsibility of Christians to address the ecological crisis during rituals in various Christian denominations, interfaith prayer services, and participation in the Environmental Sabbath in the late 1980s and early 1990s. In 2015, Pope Francis joined the Patriarch in designating the first of September as a World Day of Prayer for the Care of Creation. Together they called on Christians and the faithful of all religions to reflect on their traditions and what they can do to care for Earth. When contemplating appreciation of and gratitude to God, it helps to recall Psalm 148, in which all creatures are depicted as giving praise to God in their own "voices," and Francis of Assisi's reworking of the psalm with familial language to yield *The Canticle of Creation.* We must now ask ourselves: Will we join the chorus praising God for the world, or will we continue to cause and allow this ecological crisis?

Muslims recite at the beginning of each of the five daily prayers, "I have turned my face to Him who originated (*fatara*) the heavens and the Earth" (*Qur'an* 6: 79). This is followed by the Opening (*Fatiha*) of the first chapter of the *Qur'an*: "In the name of God, Most Gracious, Most Merciful. Praise be to God, the Cherisher and Sustainer of the worlds, the Most Gracious, Most Merciful Master of the Day of Judgment. You we worship. Your aid we seek. Show us the straight way, the way of those on whom You have bestowed Your Grace" (1:2-6). This *Fatiha* is recited seventeen times a day in the observation of the five daily prayers. These verses have shaped and formed Muslims' perception of the universe and humanity. The *Qur'an* portrays young Abraham not only as a man eager to learn, but also as a man of faith, commitment, sincerity, hospitality, and integrity. In his search for meaning, Abraham finds his God as "the Sustainer of all the worlds" who has created us and guides us. God is "the One who gives me to eat and to drink, and when I fall ill, is the One who restores me to health" (*Qur'an* 26:78-80). The whole creation belongs to God who deserves praise and gratitude from the faithful. The well-being of humankind depends on the well-being of Earth. Followers of Islam believe that the entirety of Earth is a place of prayer—a sacred space where one can contemplate God. Daily activities carried out in this space require exemplary behavior; every act is should be a prayer. Prayer and the natural world are irrevocably connected, and Muslims anticipate that Earth will one day reveal how she was treated by humans:

> "When the earth is shaken with a (violent) shaking,
> And the earth reveals what burdens her,
> And humans say: What has befallen her?
> On that day she shall tell her story..." (*Qur'an* 99:1-4)

Principle #5: Moral norms such as justice, compassion and reciprocity apply (in appropriate ways) both to human and non-human beings whose well-being are inseparably connected.

Judaic sources prescribe justice, compassion, and reciprocity toward humans and non-humans, thereby affirming their inseparable connection: helping the donkey who is struggling or has fallen under a heavy load (Deuteronomy 22:4) even if the donkey is someone else's property, including one's enemy (Exodus 23:5); refraining from yoking a donkey and an ox together (Deuteronomy 22:10) because the weaker will suffer (25:4); and allowing one's animals to rest on Shabbat (Deuteronomy 5:14) that is similar to labor laws aimed at protecting workers. The notion that animals and humans are part of the same moral community was clear to Jews in antiquity, as when Nineveh made atonement with the cattle who fast and wear sackcloth (Jonah 3:5-8) and when the ox was tried for goring (*Mishna Sanhedrin* 1:4 on Exodus 21:28-9). Characteristics of righteousness (*tzadikkim*) that Jews were urged to develop included seeking intimate knowledge of the needs and wants of animals (Proverbs 12:10), saving them in their efforts to preserve the world from natural disaster (Tanhuma, Noah 5), learning how to be kind from shepherding, and showing compassion toward camels (as Rebecca did to prove her worthiness to Isaac) (Genesis 24:14-20). Having compassion for creatures was a particularly important characteristic for a Jew: "Whoever has compassion upon his fellow creatures, upon him will God have compassion" (Tosefta Bava Kamma 9:30; Sifrei Deuteronomy 96).

Compassion, justice, and reciprocity are prominent in Christian moral norms for intra-human encounters, but less so with respect to non-human living and inanimate beings. In hagiography about and by Christian desert fathers, Celtic wanderers, and English hermits, there can be found expressions of compassion for animals of all types in diverse natural places. These holy men variously protected and fed wild animals in their midst, saved them from others' cruelty, showered affection on them, considered some animals their disciples and followers, described animals' reciprocity to them when aiding, feeding, and protecting the holy men that they interpreted as God's ways of providing for them, and depicted animals' lamenting their sicknesses and dying. Some expressed their deep appreciation for natural settings that prompted them to advocate protecting the mountains and plains from destruction. Their compassion, piety, and sense of reciprocity is exemplified in writings about the life of Francis of Assisi who was proclaimed the patron saint of animals and ecology in 1979 by Pope John Paul II. When reflecting on Old Testament sources that prohibited cruelty to animals, Aquinas explained that affection and compassion for animals are characteristics that the faithful should demonstrate and he prompted them to be compassionate toward other humans (*Summa theologiae* 1|2.102.6 ad 8). Expanding justice to apply to non-human living and inanimate creatures remains challenging for Christians to explain theologically today, though their involvement in the Society for the Prevention of Cruelty to Animals and rules proposed by the World Council of Churches to restrict the use of animals for testing products slated for human consumption have been effective.

For Muslims, justice is integral to being conscious of God in one's life. Muslims are called to "stand out firmly for justice, as witnesses to God" and to avoid deviating from justice by revering God who is aware of all we do (*Qur'an* 4:135). Justice is one of Islam's four core values, along with with love (*hubb*), humility (*khushu*), and trustworthiness (*amanah*). Though humans are required to act justly toward one another, especially the poor and vulnerable, as the Prophet Mohammad consistently taught and demonstrated, Islamic traditions also require the faithful to demonstrate justice toward non-human beings. As a universal law of God, justice should be demonstrated in all aspects of a person's life, and Muslims should never forget that God designed earth to be used by diverse creatures, not just humans (*Qur'an* 55:9-10). A close relationship exists between God and animals that requires us to make and execute decisions that do not disrupt the orderly balance (*mizan*) of the world. Because humankind was created in a state of goodness,

we can choose to use our gift of reason in all decisions we make (*Qur'an* 7:181), including decisions that relate to non-human animals and the sustainability of Earth. Muslims who act rightly will be rewarded by God (*Qur'an* 2:62).

Principle #6: There are legitimate and illegitimate uses of nature.

Judaic sources affirm this principle. Psalms 115:16, which says that "The heavens belong to the Lord, but the earth He gave over to humanity," has been cited as the basis for unbridled human use of God's creation. However, according to the 12th century Spanish Biblical exegete Abraham ibn Ezra, that interpretation of the psalm is uninformed: "The ignorant have compared humanity's rule over the earth with God's rule over the heavens. This is not right, for God rules over everything. The meaning of the phrase "the earth He gave over to humanity" is that humanity is God's steward (*pakeed*) over the earth and must do everything according to God's word. Humans are not free to do as they please with God's creation. Ibn Ezra's use of the term *pakeed* is suggestive: the root p-k-d has a variety of meanings including command, count, appoint, remember and deposit. Humans are the *pakeed*, or, the appointed, the earth is the *pikadon*, the deposit itself, and God is the *mafkeed*, the lessor or depositor. God also is the *po'kehd*, the one who commands, inspects, and remembers, both for punishment (*po'kehd avon*, "visiting the sin upon") and for rewards, including grace (as when God "remembered" Sarah and caused her to conceive). The notion of stewardship embodies a sense of responsibility in two directions: "downward" for the earth, the deposit, that thing that is held in trust for the sake of the owner, and "upward" to God (*koneh shamayim va'aretz*), the creator and possessor of the universe.

Legitimate and illegitimate uses of God's creation have pervaded Christian sources throughout the centuries. Animals, plants, land, water and air—the goods of Earth—may be used as the *necessities of life* by the faithful as they proceed in their temporal lives while hoping for eternal presence before God. Anything in excess of temporal life's necessities are proscribed; so, also, are abuse and wastefulness. As Aquinas and others wrote, God created a universe in which all components function according to their nature and purpose, but only humans rebel by making and executing decisions that disrupt its functioning through illegitimate uses and actions (e.g., *Summa theologiae* 1.49.3 ad 5, 1|2.109.3; *Compendium theologiae* 192, *Summa contra Gentiles* 3.108.6). In the New Testament and reflections by theologians, Christians are urged to be vigilant for the return of Jesus the Christ, to avoid encumbering themselves with possessions that can choke their desire for God, and to orient their temporal lives toward everlasting happiness with God (e.g., Luke 12:32-48, Colossians 3:2).

"The servants of the Lord of Mercy are those who walk gently upon the earth" (*Qur'an* 25:63). Muslims "walk gently" by sharing water equitably (*Qur'an* 54:28). They "walk gently" by avoiding extravagance as urged by the Prophet Muhammad (Sunan Ibn Mājah 425). They "walk gently" by avoiding excessiveness and wastefulness (*Qur'an* 7:31) and by not corrupting or upsetting the balance of nature (*mizan*) God established (*Qur'an* 7:56. 26:151-152, 55:7-8). Despite these efforts and aspirations, our actions have disrupted the balance of creation. We have changed the climate, melted glaciers, poisoned rivers, drained lakes, leveled mountains, corroded coral reefs, poisoned the soil, denuded the forests and caused the extinction of other species. Human presence on Earth is short-lived in terms of cosmic time and, as latecomers, we have behaved poorly. This geological epoch is coming to be known as the Anthropocene—a term used to indicate that the impact of human activity has become a force of nature.

> Corruption has appeared in both land and sea
> Because of what people's own hands have brought
> So that they may taste something of what they have done.
> So that hopefully they will turn back (*Qur'an* 30: 41).

Thus, Muslims have an ethical imperative and responsibility to maintain and preserve the balance of ecosystems and the biosphere because God "created all things in proportion and measure" (*Qur'an*: 54:49).

Principle #7: Greed and destructiveness are condemned; restraint and protection are commended.

For Jews, this principle is key and central to the Tenth Commandment, "Thou shalt not covet." Though this commandment reads as an individual precept condemning the coveting of one's neighbor's property, the word "covet" merits further consideration. A two-thousand-year-old argument among biblical commentators, both Jewish and Christian, centers around whether this mandate pertains to inner feelings or outward behavior. Philo, the great Greco-Jewish philosopher of antiquity, argued that "do not covet" applies to all forms of covetousness, including greed for money, hunger for honor, sexual lust, hedonism and gluttony. He emphasized the emotional state associated with insatiable desire and the importance of spiritual work and the ability to know how much is enough. This inner work is a necessary first step toward the ultimate goal of transforming society from its obsession with quantity to striving for quality, from outer acquisition to inner disposition, and from merely having to truly being. One rabbi explains that a wealthy person is "one who is satisfied with one's portion" (Pirkei Avot, *Ethics of the Fathers*, 4:1). Humans must think about the inner and outward dimensions of coveting. Maimonides legislated against eating or drinking to excess, wearing ostentatious clothing, or leading an extravagant lifestyle that requires going into debt or living off the largesse of others (*Mishneh Torah, Laws of Opinions* 5). Let us learn from the wisdom of our tradition.

Greed, destructiveness, and wastefulness are among the vices that Christian sources proscribe, while self-restraint and protection prompted by prudence (informed decision-making) are commended as virtues to develop in order to act promptly when seeking and using the goods of Earth. We should use them wisely to ensure their availability to others. We should protect other species so they can survive. We should protect the land, waters, and air so they can function according to their nature and provide basic needs for living beings. Throughout the centuries, Christians have been beseeched to live virtuously—to be steadfastly prudent, just, moderate, humble, and compassionate—when relating to and living within this world of many creatures. We are motivated to live virtuously, Aquinas tells us, for the love of our neighbor, for whom we wish temporal and eternal happiness, and ultimately for the love of God, whose presence we yearn to enjoy forever (*Summa theologiae* 2|2.25.2-3; *De caritate* 4 and 7).

Muslims who heed the rule "waste not by excess, for God loves not the wasters" (*Qur'an* 7:31) will not waste the goods of Earth. Nor will they be greedy or selfish, with an uncontrolled desire for possessions that denies the same goods to others (*Qur'an* 2:205). They will not endanger species, destroy their habitats, degrade ecological systems or threaten the viability of the biosphere because these actions disrupt the order and balance of the universe that God created. Instead, Muslims will honor and embrace their roles as trustees of God's creation by exercising self-restraint when using God's creation, using it for human benefit without causing damage to the other inhabitants of Earth who constitute communities of their own (*Qur'an* 6:38). They will protect its order and balance. They will "hasten to do good" (*Qur'an* 2:148). They will take seriously their appointment by God: "It is God who appointed you as trustees on the Earth" (*Qur'an* 6:165). They recognize that their Creator "offered the trust to the heavens, the earth and the mountains, but they refused to take it on and shrank from it. But humans took it on" (*Qur'an* 33:72). Muslims realize the enormity of this trust and moral responsibility. It is the weightiest of all responsibilities and the price that humans pay for the gift of intelligence. It is the exclusive privilege of humans to communicate with and change the natural world at will. Justice (*adl*) is the basis upon which we are required to execute this trust: "weigh with justice and skimp not in the balance. God set the earth

down for all beings. With its fruits, its palm trees with clustered sheaths" (*Qur'an* 55:7-11). Muslims will accept, embrace, and demonstrate their sacred duty of trusteeship with a spirit of modesty and altruism by caring for and managing Earth in ways that conform to God's intention.

Principle #8: Humans are obliged to be aware of and responsible for living in harmony with the natural world and should follow the specific practices prescribed by their traditions.

Sources of Judaism accord with this principle that we should be aware of and responsible for living in harmony with the natural world. A range of specific practices can demonstrate this responsibility. According to a 15th century commentary on Deuteronomy 22:6-7, "The Torah's intention is to prevent the possibility of untimely destruction and to encourage Creation to exist as fully as possible… 'In order that you may fare well and have length of days' means that it shall be good for humankind when Creation is perpetuated so that we will be able to partake of it again in the future…since if we are destined to live for many years on this earth, we are reliant upon Creation perpetuating itself so that we will always have sufficient resources" (Don Isaac Abravanel, ad loc.). At the core of this teaching is the covenantal model that establishes an everlasting relationship between God, Israel, and the land of Israel. This covenant is a subset of a larger God-human (*adam*)-earth (*adamah*) relationship described in the Noahic covenant (Genesis 9:8-17) that includes Earth in its entirety and obliges all inhabitants of our planet to be responsible to God for how we act in relation to Earth. This covenant can be practiced in several ways: by refraining from using labor-saving devices on Shabbat—a day of joy, rest, restoration of strength, and deflation of our arrogance, and by avoiding intervention in the creation, thereby limiting human creativity, reinforcing human creatureliness, and demonstrating humility before God as guests responsible for maintaining God's creation (Talmud, Sanhedrin 38). The accelerated rate of species extinction, degradation of ecological systems and threats to the viability of Earth's biosphere warrant following this principle in the Middle East, North Africa, and around the world.

Since 1983, the World Council of Churches has encouraged Christians to make justice, peace, and the integrity of Creation central to our lives. Popes John Paul II and Benedict XVI issued statements in 1990 and 2010 that it is our moral responsibility to live in harmony with Earth and one another. Pope Francis and Patriarch Bartholomew have urged Christians and others to be aware of their responsibilities to Earth. All Christian denominations are invited to reflect on humankind's moral responsibility to care for Earth on The World Day of Prayer for the Care of Creation, celebrated annually on September first. Though this day is an important reminder for Christians to express and demonstrate gratitude to God for our common home, one day is inadequate to address the many threats to Earth. Plans are underway through the Vatican's Dicastery for Promoting Integral Human Development, to commemorate Pope Francis's epochal 2015 encyclical. This will take place throughout 2020 and will include a variety of religious and secular organizations. They will be asked to take the *Laudato si'* Pledge to live more simply and advocate for protection of our common home at all levels of governance. More faith-based actions are needed to mitigate the effects of climate change and other environmental problems that negatively impacted society, especially the poor and vulnerable.

According to the *Qur'an*, "Corruption has appeared on land and sea because of what the hands of humans have wrought, that God may make them taste a part of that which they have done, in order that they may return [to guidance]" (30:41). Islam, through the *Qur'an* and the Sunnah, teach Muslims about God's creation, our place in the natural order, and the responsibilities we must shoulder as trustees. We need to regain the consciousness we once had of the oneness of God's creation. We must recognize that we are deeply and irrevocably interwoven into the fabric of creation, that we are causing grievous bodily harm, and that harm is hurting us. Now is the time for a reappraisal of our core sources to gain a fresh and meaningful understanding of how they guide us to live responsibly in the world as true trustees. The

Qur'an describes the Prophet Muhammad as "endowed with a noble character" (*Qur'an* 68:4) and reminds us that "in the Messenger of God you have a beautiful pattern of conduct" (*Qur'an* 33:21). He is a role model for living in harmony with the natural world. His attitude toward nature and animals is a concrete example of the *Qur'anic* spirit. He attached great importance in his own practice and maxims (*hadiths*), not only to public worship, civil law, and social etiquette, but also to planting trees, preserving forests, conserving the environment, and treating animals with compassion. He is the exemplar for us to recognize and emulate through our actions today.

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APPENDIX 2

MENA'S ENVIORNMENTAL CHALLENGES

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This paper summarizes the core environmental challenges in the Middle East-North Africa (MENA) region. It is an adapted and extended version of the Environmental Outlook for the West Asia Region (Abumoghli I. 2019), published following the conference "Environmental challenges in the MENA region: The long road from conflict to cooperation" (SOAS University, London. 2016).

There are multiple understandings concerning which countries constitute the MENA region, with no standardized definition. For this study, it is assumed to include 21 countries located in four sub-groups: the Mashreq region (Egypt, Iraq, Jordan, Lebanon, Palestine, Syria), the Maghreb region (Algeria, Libya, Morocco and Tunisia), the Gulf Cooperation Council Countries (Bahrein, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates), and a fourth cluster including Arab Least Developed Countries (Sudan, Yemen). The countries of Israel, Turkey and Iran generally stand separately, although Israel and Turkey are sometimes included in the Mashreq region (Fig. 1).

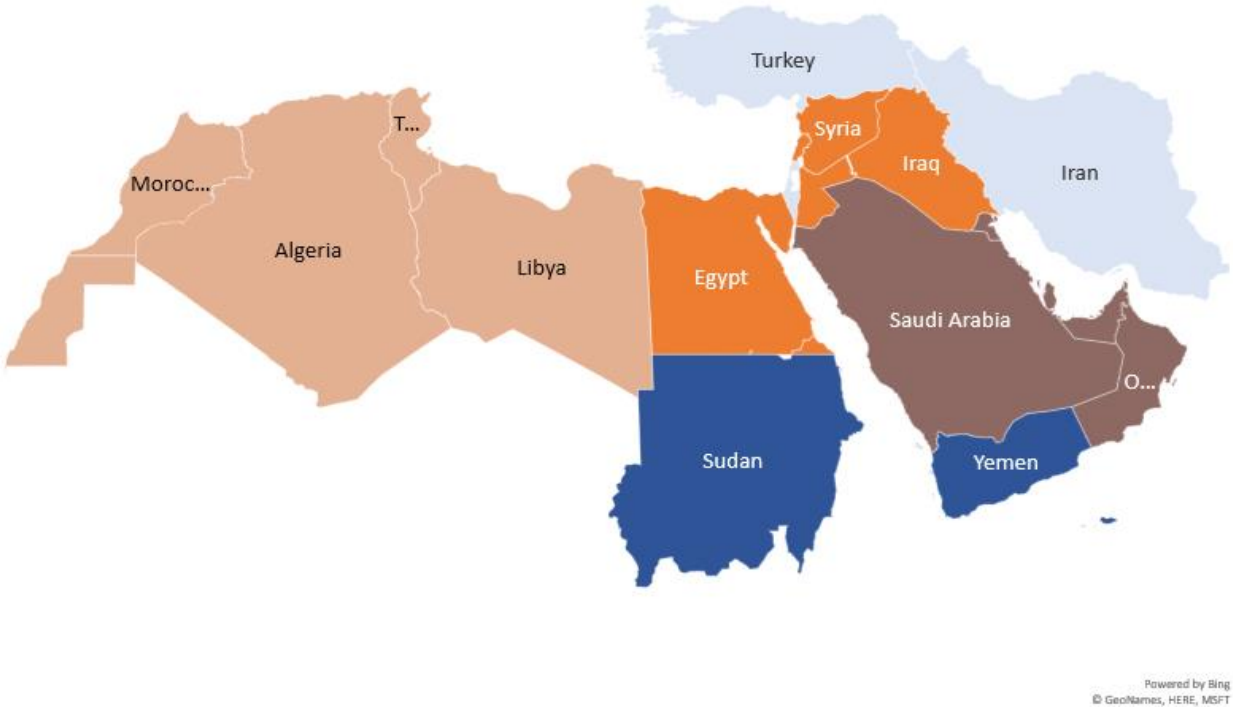

Figure 1 : MENA designation of the study, with the 5 sub-groups of countries (see colour clusters).

Despite their heterogeneous characteristics in geography, natural resources, political and social structures, and income levels, MENA countries share a common context of critical environmental challenges and trans-boundary conflicts that threaten the long-term stability of

the region. Environmental stresses - water and arable land scarcity in particular - have been an important feature of the region's history, but modern times have seen these stresses increasing in relation to development patterns. Some scholars have connected contemporary conflicts to the availability of natural resources in the MENA region. Indeed, not only can conflicts drive environmental damage and prevent concerted efforts to address emergencies, but environmental pressures themselves can become a source of crises over access to natural resources. This interlinkage was highlighted in the sixth *Global Environmental Outlook Regional Assessment* (United Nations Environment Programme [UNEP], 2016), when identifying «Peace, Security and Environment» as the priority theme on human health and well-being for West Asia (GCC and Mashreq countries).

The MENA region already faces a wide array of environmental stresses that include water scarcity, arable land depletion, air pollution, inadequate waste management, loss of biodiversity, declining marine resources and degradation of coastal ecosystems. Future development scenarios are expected to exacerbate these challenges, especially given that MENA is one of the regions that is most vulnerable to the impacts of climate change (IPCC, 2013). Rising temperatures, heightened rainfall variability and rising sea levels (Hungate and Koch 2015), in addition to increasing population and urban growth rates, will amplify environmental stresses. The repercussions of climate risks on food and water security and ensuing conflicts are already well documented by existing case studies (Aw-Hassan A., Rida F., Telleria R., Bruggeman A. 2014, De Châtel F. 2014). In the case of Syria (Hoerling, M. et al. 2012) authors examined the role extreme droughts - possibly caused by climate change - played in the humanitarian crisis between 2007 and 2010.

According to the 2011 *Global Assessment Report on Disaster Risk Reduction* (United Nations ISDR), "since the 2007/2008 agriculture season,nearly 75% of [Syria's most agriculture-dependent] households suffered total crop failure", leaving an estimated 1 million people unsecure and forcing hundreds of thousands of them to move to urban centers. The resulting growth in pressure on urban resources, combined with other contextual factors, contributed to the political uprising in Syria. Moreover, the ensuing refugee crisis expanded beyond Syrian borders, with around 2.6 million people fleeing towards Turkey, Lebanon and Jordan, challenging these fragile ecosystems even more.

Water scarcity

The MENA region is the most water-scarce in the world, with an average renewable internal freshwater resource per capita of 444 cubic meters (calculated for all designated MENA countries, Food and Agriculture Organization [FAO], 2018), well below the UN water scarcity limit of 1,000 cubic meters per person per year (UN-Water, FAO, 2007). The semi-arid and arid countries are characterized by highly variable rainfalls. Most of the blue water resources (surface water and groundwater) are shared between several countries located along the Euphrates, Tigris and Nile rivers. Renewable water resources vary between MENA countries: Gulf Cooperation Council (GCC) countries are highly dependent on non- conventional water resources such as desalination of seawater, producing 60 % of the world's desalinated water.

Due to population growth rates, rapid urbanization, improved standards of living and increased frequency of droughts in recent decades, water demand has been increasing rapidly, surpassing the region's supply capacity. Indeed, in addition to overexploiting groundwater resources, the growing demand for water has resulted in degrading water quality, through seawater intrusion, salination of aquifers and inefficient waste and drainage water management systems. Considering that 86 % of MENA's annual freshwater withdrawals are allocated to the agriculture sector (calculated for all designated MENA countries, FAO, 2016), the lack of water available for irrigation poses a serious threat to the region's food security. Moreover, the *Global Environmental Outlook* (GEO)-6 (2016) reports that climate change projections on temperatures, precipitation patterns and sea levels predict a further decrease of water availability in the region, combined with growing demand for water.

Land resources

Recent trends such as climate change, political conflicts and changes in land-use patterns and practices resulting from rapid urbanization, underlie the desertification and land degradation that the MENA region has been experiencing over the past decades. Climate change manifestations – including reduced precipitation rates and higher surface temperatures - accelerate desertification through soil erosion, salinization and increased dust storms.

In the West Asian countries specifically, long-lasting wars are another strong driver of environmental damage, from the burning of 15 million barrels of oil and overgrazing in Iraq, to heavy deforestation rates and forest fires in Syria. Mismanagement of these natural resources further exacerbates the impacts of climate change and hinders mitigation strategies: forest fires release carbon emissions, the depletion of tress prevents carbon absorption, while the conversion of rangelands to drylands makes them more vulnerable to soil erosion and high evaporation rates in the face of dust storms and increased temperatures.

Land degradation leads to the deterioration of biodiversity and ecosystems, reduced productivity, the exacerbation of water scarcity, and shrinking arable lands (only 5 % of the MENA total area excluding Turkey and Israel, FAO-Organisation for Economic Co-operation and Development [OECD], 2018). Already, 40 % of arable land requires irrigation to be suitable for cultivation. Due to ongoing desertification processes, Iraq is estimated to lose around 250 square kilometers of arable land annually, while overgrazing in Jordan is assumed to have depleted the supportive capacity of rangelands, which cover 80 % of the country's total area. This phenomenon further jeopardizes the food security of MENA countries, hence further undermining their socio-political stability.

An example of overcoming the aforementioned land resource challenges, is Israel through its leading agricultural research and use of technology. Despite only 13.6 % of its land being naturally arable (FAO 2016), highly developed technologies, such as high-yield crops and varieties, drip irrigation systems and the use of fertilizers, allow the country to satisfy most of its own food demand and to export more than 2 billion dollars' worth of agricultural products annually (Export.gov 2019).

Air quality

The MENA region faces a serious issue of air pollution: the concentration of particulate matter (PM_{10}) is considered very high, far exceeding WHO guidelines (2006) and even legal standards (20 μg/m3 annual

mean). This causes detrimental effects to human health, livelihoods and ecosystems. In 2016, Riyadh (Saudi Arabia) reported an annual mean PM10 of 251 µg/m3, while Greater Cairo (Egypt) reached 284 µg/m3 in 2015 (World Health Organisation [WHO] 2018). Air pollution is estimated to be responsible for 176,000 premature deaths in 2013 in the region, and for the loss of more than 2 % of the regional GDP (calculated for all designated MENA countries except Syria, World Bank, 2016). Air pollutants have natural sources too: the MENA region is part of the "dust belt" where most dust storms originate (Furman, H. K. H. 2003). They carry fine sand and dust over long distances, paralyzing many activities - flights, road traffic, supply chains, crop cultures - and exacerbating respiratory diseases. Although naturally driven, their frequency and intensity have escalated in the last 30 years due to land degradation, desertification, drought and climate change, especially in the most vulnerable countries, such as Iraq.

Anthropogenic factors also drive the concentration of atmospheric pollutants: industrial emissions are the most important human-induced source of air pollution (UNEP 2017), with the presence of many petroleum refineries and fossil fuel-powered power plants in the region. Furthermore, the region's current growth rate and urbanization trend results in the intensification of fossil use for low-standard transportation, construction activities and household power generation. Most of the region's countries still practice open burning of agricultural and/or municipal waste, which is another source of air pollution. Regulatory progress can however be noticed through the international banning of leaded petrol, adopted by most of the countries.

MENA countries have considerable renewable energy potential, benefitting from some of the world's highest solar insolation levels (as part of the SunBelt), favorable wind conditions, as well as hydro and geothermal sources in certain specific locations. However, this potential is still underutilized: in 2015, renewable power production (including hydro) accounted for just 7 % of MENA countries generation capacity (calculated for all designated MENA countries except the Palestinian Authority, Ritchie H. and Roser M. 2020), contrasted by the high reliance on fossil fuels.

Waste management

The GEO-6 on West Asia (2016), supporting the report of Arab Forum on Environment and Development ([AFED] 2008), identifies waste management as a rising environmental concern in the MENA region. GEO-6 indicates a 3 % median annual increase in municipal solid waste in the GCC and Mashriq countries, that further disrupts waste management systems. Urbanization, improved living standards (consumption and production rates), conflicts and human displacements influence the solid waste generation and composition. In the case of Lebanon, 15.7 % of the country's total municipal solid waste generation is due to refugees. Despite efforts from some Arab MENA countries (GCC members, Egypt, Jordan) to develop legal frameworks and national strategies for integrative waste management, the lack of financial and technical resources to support appropriate infrastructure, monitoring information and designated entities impede their implementation. Consequently, the waste process of collection-segregation-treatment-disposal is not functional and there is no significant waste-to- energy sector. A significant portion of solid waste is not collected daily (35 % in Egypt, 26 % in Syria and 95 % in rural Yemen) and segregating waste for reuse and recycling is mainly carried out by the informal sector. Finally, about 90 % of the total solid waste in GCC and Mashreq countries is disposed into dumpsites and unlined landfills, resulting in air, land and groundwater pollution from hazardous chemicals, high GHGs emissions (up to 12 % of the national emissions, such as in Jordan) and particulates produced from burning waste. The interlinkage between peace, security and environment was especially demonstrated when long-lasting governmental waste mismanagement in Lebanon, in the backdrop of religious cleavages, spawned the 2015 protests.

As an exception, Israel has introduced substantive changes in its waste policies since the 1990s, establishing an integrated waste management system similar to those of other OECD countries. Despite the absence of official valid figures documenting the level of target achievements, regulations have been issued to close uncontrolled dumpsites, set up sanitary landfills, reduce the amount of waste produced, increase recycling rates, and discourage packaging waste through polluter-pay measures (Bösiger R. 2019).

Coastal and marine ecosystems

The MENA region comprises 3 marine sub-regions: the south-eastern part of the Mediterranean Sea, the Red Sea and Gulf of Aden, and the ROPME Sea Area. They host some of the world's most unique coastal and marine environments, with high levels of species endemism in the isolated Mediterranean (8 % of the world's marine species, International

Union for Conservation of Nature, 2017) and Red Sea, as well as remarkable habitats such as mangroves, seagrass beds, coral reefs and mudflats.

These ecosystems provide a number of goods and services: rich fisheries ensure a historical source of food and income to coastal communities, seawater resources are converted into fresh water through desalination and the growing tourism industry generates economic benefits (20 % of Lebanon's Global Domestic Product (GDP), UN-Habitat 2011). However, many pressures are exerted on these resources, threatening their future availability. Unregulated coastal development associated with urbanization and population growth has led to the modification of 40 % of the GCC coast, while the coastal regions of the Maghreb (Algeria, Libya, Morocco, Tunisia) are the most highly urbanized (AFED 2008).

Aside from physically degrading natural habitats, critical for the feeding and nursery of marine species, human activities disrupt and pollute these ecosystems. Desalination plant discharge, waste, agricultural drainage run-offs (40 % of sewage effluents in the Gaza Strip are discharged to the sea without treatment), and oil spills (5 000 estimated tons in the Red Sea) all contribute to introducing nutrients, hydrocarbons and heavy metals into marine environments. Other pressing environmental issues include bycatch, overfishing - as shown with the GCC countries doubling their catches over the two past decades - and sea level rise, induced by climate change.

Indeed, most of the MENA capitals, including several of the fast-growing cities (Abu Dhabi, Doha, Dubai), are located on coastal zones, making them highly vulnerable to the predicted sea-level rise in the next century. The latest IPCC report (2013) projects a potential global mean sea level rise of about 1 meter by 2100 (in the high emissions scenario). Such an increase would directly impact considerable surfaces of coastal areas, reducing agricultural land and destroying economic and population centers. The low-lying countries, small island states and river delta areas (Tunisia, Qatar, Libya, UAE, Kuwait, and Egypt) are particularly at risk of flooding and salination. Coastal environment degradation will further compound these damages, with the loss of mangroves and coral reefs increasing coastline exposure to waves.

Biodiversity

Terrestrial, coastal and marine ecosystems of the MENA region host a wealthy biodiversity. In the Jordan Valley, marshlands and wetlands provide essential support to 500 million migratory birds every season. The diverse habitats of GCC and Mashreq countries (mountain upland plateaus, inland, riverine and coastal plains, sand deserts and wetlands, Fig.2) host 5,500 endemic plant species, and many wild

progenitors or relatives of essential crops, cereals, pulses, oil- and fibre-yielding plants, vegetables and fruits. The research on these species' specific adaptations to their harsh environment, such as drought tolerance, offers very interesting perspectives. However, their situation is alarming: in Yemen and Oman, 220 of the endemic species assessed by the International Union for the Conservation of Nature (IUCN) Red List are threatened with extinction.

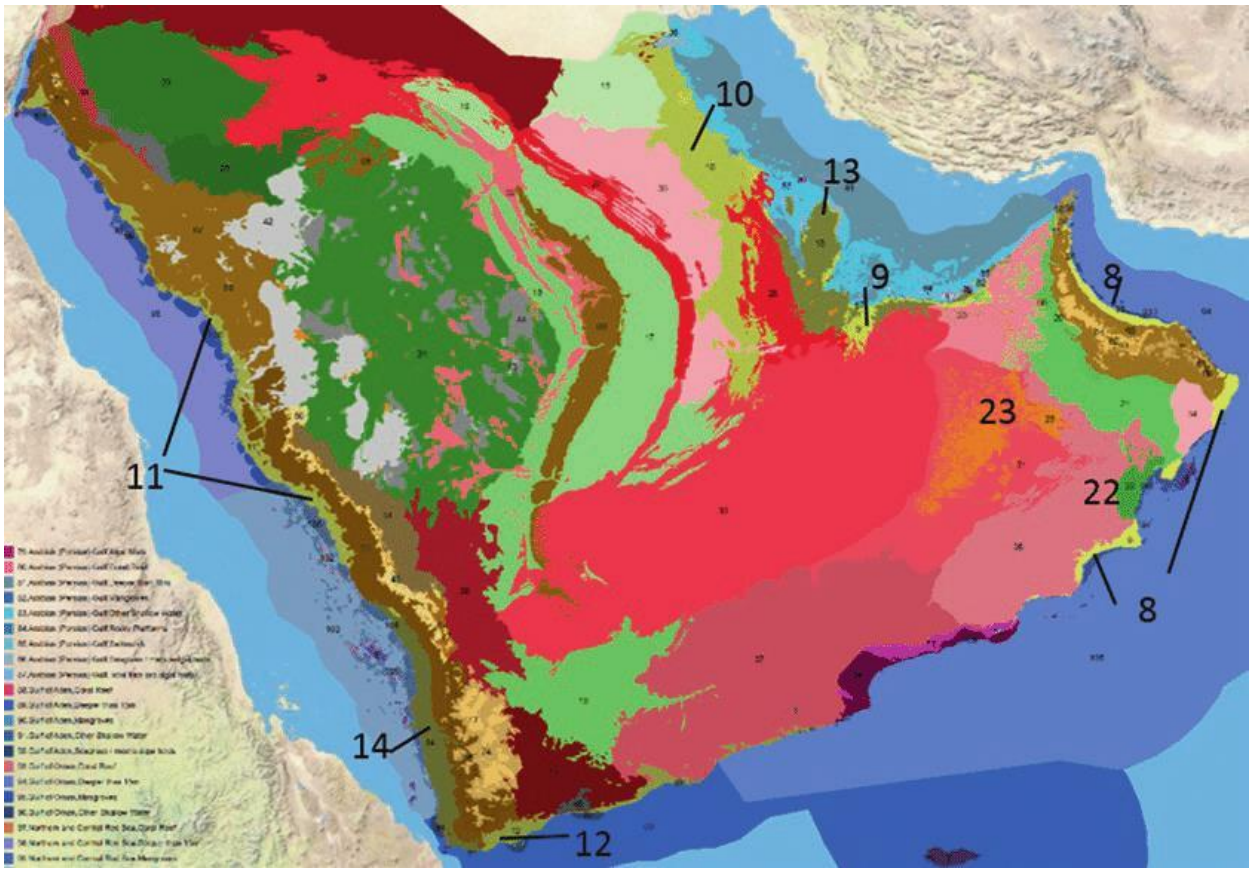

Figure 2: Plants of Sabkha Ecosystems of the Arabian Peninsula (Ghazanfar S. et al. 2019)

Remarkable marine ecosystems face the same status. Mangroves, seagrass beds and coral reefs are critically endangered in the Arabian Gulf, while they sustain rich communities, including the world's second largest population of dugongs and the endangered green turtle. Species loss and habitat decline are mainly driven by development, climate change (sea temperatures warming cause coral bleaching), conflict and inadequate policies such as insufficient protected areas coverage or conservation and restoration programs.

Transition towards sustainability

Concerted efforts towards greater sustainability are now taking place throughout the region. In the energy sector, for example, most of the MENA countries are committed to scaling-up their installed renewable energy capacity, and some countries have particularly ambitious plans: Morocco announced it intends to have a national renewable energy target of 52 % by 2030, Algeria set it at 27 %, while the UAE has a 24 % target by 2021. Morocco ranks first in total renewable generation capacity (excluding hydropower), with the largest solar photovoltaic program (AFED 2008), while Egypt occupies the leading position in wind energy. Nonetheless, almost all other countries have distributed and utility-scale PV

installations. “Over 3,000 MW of new renewable power capacity is now under construction in the region.” according to the International Renewable Energy Agency (IRENA). In the case of Turkey, a study from the SHURA Energy Transition Centre (2018) even demonstrated that the share of renewable power (10 % in 2017, excluding hydro) has the potential to double by 2026 through its existent transmission grid.

Regarding water resources, the FAO reports progress in water governance although the perverse effects of past policies persist (2018). Governments in the MENA region are seeking to change incentive frameworks for use of water in agriculture, to establish licensing and regulation systems for groundwater management, and sometimes to decentralize water resources management to the local level while increasing responsibility for water efficiency to communities. Such approaches have proven to be successful in Jordan and Egypt. Israel is recognized as a leading country in water recycling, with more than 87 % of the country’s wastewater treated and reused for agriculture (Marin, P. et al. 2017). The institutional, regulatory and technical measures underlying this achievement compose an inspirational best- practice for other MENA countries.

Conclusion

The MENA region’s mostly semi-arid and arid environment makes it one of the historically most vulnerable to natural stresses, and currently to climate change. Over the past two decades, major changes such as population growth, economic development, accelerated urbanization - especially in the coastal areas - and geo-political conflicts in some countries, have further exacerbated the most pressing environmental challenges shared throughout the region: water scarcity, arable land depletion, ecosystems degradation, biodiversity loss, waste management and air pollution. These issues are intertwined and inseparable from their socio- economic implications, as pointed out by the GEO-6 (2016) when identifying Peace, Security and Environment and the Food, Energy and Water nexuses as the 2 priority themes in West Asia.

There is progress in the region’s stride to achieve the Sustainable Development Goals, as evidenced by the ambitious national targets of Morocco, Egypt and Algeria in transitioning to renewable energy (Goals 7 and 13). New water-related technologies also have a key role to play in the sustainable development of the MENA region, as demonstrated by the pioneering achievements of Israel in water desalination, recycling and reuse. However, although some case studies reflect growing attention by MENA governments concerning environmental issues, experts warn that efforts are still far from sufficient to adequately address them (OECD 2010). Policy developments face difficulties when it comes to coherent implementation and enforcement. According to experts, the re-organisation broadly needed to achieve integrated environmental management in the MENA countries would require institutional and regulatory reforms, long-term investment, efficient governance, regional cooperation for concerted efforts and the involvement of all stakeholders.

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[i] This paper was written in response to a request by the University of Connecticut following the Abrahamic Traditions and Environmental Change Workshop held in Rhodes 23-26 June 2019 that was organized by University of Connecticut, Al Akhawayn University in Morocco and the Forum on Religion and Ecology at Yale University.

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APPENDIX 3

MENA'S COMMON AND DIFFERENTIATED ENVIRONMENTAL CHALLENGES

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Introduction to the MENA Region

MENA – the Middle East and Northern Africa is sometimes called "the Arab World" or the "Greater Middle East". The region is generally considered to be comprised of twenty-one countries, covering an area of some fourteen million square kilometers and home to 571.6 million people, as of 2018.[1] This constitutes some 8% of the world's population--roughly comparable to the percentage of Europeans. A little more than half of MENA residents live in cities. Five countries – Egypt, Turkey, Iran, Algeria, and Sudan make up 60% of MENA's population.[2]

While MENA countries include a very broad range of landscapes and climatic realities, the region can be divided into four basic geographic regions. These include:

- *The Al-Mashreq countries*, (Iraq, Syria, Turkey, Iran, Lebanon, Jordan, Israel and Palestine) which for the most part, enjoy reasonable surface and groundwater resources;
- *The Al-Maghreb countries* of Northern Africa (Libya, Tunisia, Algeria, and Morocco) whose people crowd the Southern Mediterranean coasts, away from the desert hinterlands and whose cultures continue to reflect French colonial influence;
- Egypt and Sudan make up the *Nile Basin countries*, whose vast population straddle the world's longest river.
- *The Arabian Peninsula countries* include Saudi Arabia, Kuwait, the United Arab Emirates, Qatar, Oman, Bahrain and Yemen. These lands are typically hyper-arid and frequently are imbued with prodigious petroleum resources, making it home to the most powerful economies in the region.[3]

Despite the vast differences in history, prosperity, climate and topography, the MENA countries and their people, share many common characteristics. Religion is one: More than a quarter of the world's Muslims reside in the MENA region. But then, it is also the only part of the world where the vast majority of the population is Muslim, with Arabic serving as the predominant lingua franca. Recent census data suggest that the region's populations of 13 million Christians and 7 million Jews (largely living in Israel) are growing, but they remain a trivial fraction of the region's people.[4] Relative to many parts of the world,

[1] The World Bank, Data Bank. https://databank.worldbank.org. Last visited on January 22, 2020.
[2] The World Bank, Data Bank. https://databank.worldbank.org. Last visited on January 22, 2020.
[3] Kandeel, A., 2019, *Freshwater Resources in the MENA Region: Risks and Opportunities,* Washington, D.C., Middle East Institute, https://www.mei.edu/publications/freshwater-resources-mena-region-risks-and-opportunities.
[4] Pew Research Center, 2015, "Middle East-North Africa", *The Future of the World Religions, Population Growth Projections, 2010-2050,* https://www.pewforum.org/2015/04/02/middle-east-north-africa/#fn-22818-63.

religion has a powerful role, not only as factor in conflicts, but also as a source of spiritual enlightenment and inspiring cultural heritage.

While there are varying levels of precipitation and access to hydrological resources, almost the entire MENA region can be characterized as *drylands* and its reputation for water scarcity is well deserved. For instance, all of the MENA countries are defined by the United Nations as being affected by desertification.[5] A recent report by the World Bank calls the Middle East and North Africa "the most water scarce region in the world", with 60 percent of the populating living with *high* or *very high* surface water stress. [6]

The pervasive water shortages contribute to the general ecological and economic fragility—over seventy percent of the gross domestic product is produced in areas that face chronic hydrological shortfalls. Access to water remains a particularly troublesome challenge because, notwithstanding the prodigious income generated by the region's oil sales, agriculture still provides a livelihood for some 35% of MENA residents, contributing to 13% of the regional GDP. This is far higher than the global 3.2% average. It also means that issues such as climate change and desertification constitute existential threats to the livelihoods and lifestyles of tens of millions of MENA residents.[7]

Manifestations of this vulnerability are already conspicuous. In 2019, the MENA economic growth rate is projected to be extremely subdued—with the 3.3 trillion dollar aggregate GDP only expected to increase, 0.6% less than half the rate of demographic growth.[8] Climate change actually threatens to be doubly damaging to the region's economy. Beyond projected drops in water for irrigation and household usage, the anticipated increase in renewable energy investment worldwide will almost certainly mean a reduction in oil production revenues.

This summary seeks to assess MENA's common ecological challenges and evaluate some of the primary social, physical and economic drivers behind environmental degradation and reasons why some MENA countries enjoy better conditions than others. Urbanization is increasingly defining local residential patterns, bringing with it, prodigious air pollution problems. Water resources have always been scarce in the region, but despite the promise of desalination, water shortages remain an enduring—and in some MENA countries an increasingly severe—problem. These are exacerbated by climate change, which is going to play an increasing role in the economic and recreational reality of the region. Finally, population pressures are a dominant driver in many MENA countries' environmental pathologies. But demographic dynamics in the region are not uniform, so that places like Lebanon, Morocco and Tunisia have fertility levels that are either near or below replacement levels.

The analysis posits that in an area characterized by considerable political turbulence and violence, regional environmental challenges provide an excellent basis for cooperation and for confidence building. Moreover, due to the powerful religious traditions, faith leaders have an important role to play in supporting such political ecological collaboration. If the region can continue to expand its renewable energy capacity, implement efficient water management technologies and strategies, while moving

[5] United Nations Convention to Combat Desertification, Action Programmes, last visited, December 2, 2019, https://www.unccd.int/convention/action-programmes.

[6] World Bank. 2018. *Beyond Scarcity: Water Security in the Middle East and North Africa. MENA Development Report*, Washington, DC: World Bank. https://openknowledge.worldbank.org/handle/10986/27659 License: CC BY 3.0 IGO.

[7] EcoPeace Middle East, 2019, *Climate Change, Water Security, and National Security for Jordan, Palestine, and Israel*, Amman, Jordan; Tel Aviv, Israel; Ramallah, Palestine: Carry, Inga (Ed.).

[8] World Bank, 2019, *MENA Economic Update: Reaching New Heights: Promoting Fair Competition in the Middle East and North Africa*, Washington D.C., World Bank, https://www.worldbank.org/en/region/mena/publication/mena-economic-update-october-2019-reaching-new-heights.

beyond its traditional agrarian economic livelihoods, it has the potential to build a new, shared culture of sustainability.

Air Pollution in an Increasing Urbanized Region

During the past decades, a steady "rural – urban" migration has changed the face of most MENA countries. As this phenomenon continues, paralleling trends in Europe and other continents, over half of MENA residents already live in cities and urbanization rates only increase. The World Bank projects that by 2050, the number of residents in the region's cities will double. If present trends continue, they will face a range of acute environmental problems.

With a population of over 20 million people, Cairo is easily the largest city in the MENA region. It is also the most polluted. Indeed, it is in a recent study that aggregated several environmental indicators, such as ambient air quality, noise and light pollution, Cairo ranked as the most polluted city in the world. Statistically, Cairo has more than a 10% higher aggregate pollution level than New Delhi. It is 25% more polluted than the "bronze medal" pollution champion, Beijing.[9] The sources of the atmospheric contamination can roughly be divided equally between the tremendous automotive fleet and stationary industrial sources. The fact that over half of the country's polluting, industrial infrastructure are located in the metropolitan area plays a large role in the city's pollution nightmare.

The surfeit of emissions poses meaningful health insults, especially due to the high concentrations of fine particulate concentrate in Cairo's air. One 2015 study by the *Egypt Scientific Society* attributed 2,400 premature deaths, 329,000 cases of respiratory disease and 8 million asthma attacks annually to the chronic contamination of urban air.[10] In a country with imperfect health insurance coverage, the 1.3 billion dollar price tag associated with *direct* medical expenses is largely born by the air pollution victims. When one compares these risk estimates to other countries with far lower pollution concentrations, they almost certainly constitute an understatement. An earlier, peer-reviewed study reported 15,000 excess annual deaths due to air pollution—twice the air pollution related mortality rates found in hyper-pollution havens such as Mexico City and Mumbai.[11] According to the World Bank, at 71, life-expectancy in Egypt is among the lowest in MENA countries, a full decade lower than places like Israel and Lebanon. Only in Syria, Iraq and Yemen do people live fewer years on average.[12]

Cairo's situation may be extreme, but it is hardly anomalous. The World Health Organization reports that the seven million residents of Riyadh also face extremely high air pollution exposure. Of particular concern is the egregious air pollutant, *pm 2.5* (fine particles that penetrate the lungs) whose concentrations are fifteen times higher than recommended health standards.[13] With over 3 million people, Casablanca is by far the largest city in Morocco. Not surprisingly, it is also a world leader in air pollution. In 2016, Marrakesh hosted the United Nations Climate Change Convention. Prior to the meeting, environmental commentators wondered whether this was appropriate seeing that Casablanca at the time was ranked the sixth most polluted city in the world[14] with air quality in Marrakesh not much better. As a result of modest improvements in the country's air quality standards since that time, other cities around the world

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[9] Whittaker, F., 2018, the Most Polluted Cities in the World, *The Eco Experts,* https://www.theecoexperts.co.uk/blog/most-polluted-cities.

[10] McLoughlin, P., 2015, Cairo's Deadly Environment,, *The New Arab,* July 19, 2015 https://www.alaraby.co.uk/english/indepth/2019/11/30/syria-weekly-banking-on-lebanon-is-not-paying-off.

[11] Gurjar, B.R., Jain , A., Sharma , A., Agarwala, A., Gupta , P., Nagpure , A.S., Lelieveld, J. 2010, Human health risks in megacities due to air pollution, *Atmospheric Environment* 44 4606-4613.

[12] World Bank, 2017.

[13] Ramsey, L., 2016, About 80% of all cities have worse air quality than what's considered healthy — here are the 15 with the worst air pollution. *Business Insider,* https://www.businessinsider.com/the-cities-with-the-worlds-worst-air-pollution-who-2016-5.

[14] Staff Reporter, 2016, Casablanca, Sixth Most Polluted City in the World, *Morocco World News,* September 7, 2016. https://www.moroccoworldnews.com/2016/09/196299/casablanca-sixth-polluted-city-world/.

have surpassed Morocco's metropoles. Today Casablanca and Marrakesh are now only among the world's top 50 polluted cities, with air pollution in Tunis measured at similar levels.

With 15 million people, Istanbul is the second largest city in the MENA region. Air pollution in the city has reached crisis levels, primarily due to mobile source emissions and the revived utilization of wood and coal for household heating, in the light of increases in natural gas prices. In 2015, Istanbul gained the dubious honor of being the world's most congested city, which has only grown worse with massive new development projects on the European side of the city.[15] But air quality remains a problem throughout the country, with only six of Turkey's 81 provinces meeting the country's basic air standards. The extent of the air pollution problem is not well characterized as only two of the major "criteria air pollutants" (sulfur dioxide and particulate matter) are monitored regularly, with more serious contaminants, such as air toxics, nanoparticles or even pm 2.5, not even measured in most cities.[16]

In most areas including drinking water quality, litter, noise pollution and accessibility to parks, Tehran has reasonable environmental rankings. The exception is air pollution levels, which are very high.[17] In 2019 there were an exceptional number of air pollution episodes across the country, culminating in a late December when 14,000 people were hospitalized with air pollution related ailments—about sixty five percent involving pulmonary problems and the remainder with respiratory symptoms. Roughly half of those hospitalized live in Tehran, where schools and universities were closed for five days. Some 4,000 to 5,000 premature mortalities due to air pollution were reported among the city's 7 million residents.[18]

Mobile, rather than stationary sources are behind recent increases in MENA's air pollution concentrations. The number of cars in metropolitan areas around the region is rapidly rising. For instance, in a single decade, between 2004 and 2014, the number of automobiles in Morocco almost doubled. The consistent violations of air quality standards for suspended particulates in Baghdad are also attributed to growing traffic density.[19]

Unfortunately, the increase in automotive traffic in these countries was not accompanied by meaningful improvements in the quality of gasoline sold at the pumps. Nor did the steady influx of new vehicles mean the retirement or decommissioning of older cars. Indeed, a significant contributing factor to today's air pollution crisis is the aging of MENA's transport fleet. Until recently, an average Egyptian taxi had been on the road for 32 years. Older vehicles, invariably, are more polluting than new cars, with many automobiles operating entirely without catalytic converters.[20]

The combination of poor fuel quality, old 'super polluting vehicles' and inadequate, clean public transport options in MENA cities takes its toll on the health of residents. A recent survey conducted by scientists at University of Hassan II Casablanca, reported a range of health impacts from Morocco's pollution emissions

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[15] Staff, Istanbul air may be a health hazard, Ahval, January 30, 2019, https://ahvalnews.com/turkey-environment/istanbul-air-may-be-health-hazard.

[16] Air pollution rising dramatically in Turkey's Istanbul, *SOL International,* January 30, 2019, https://news.sol.org.tr/air-pollution-rising-dramatically-turkeys-istanbul-175644.

[17] Numbeo, *Cost of Living, Tehran,* website last visited January 12, 2020, https://www.numbeo.com/pollution/in/Tehran.

[18] Tehran Times Staff, 2019, Air pollution choking Iranian cities, some 14,000 hospitalized, *Tehran Times,* December 25, 2019, https://www.tehrantimes.com/news/443416/Air-pollution-choking-Iranian-cities-some-14-000-hospitalized.

[19] Rabee, A.M., 2015, Estimating the health risks associated with air pollution in Baghdad City, Iraq. Environmental Monitoring Assessment, 187 (1) 4203.

[20] World Bank, 2015, Scrapping and Recycling Old Vehicles in Egypt, https://www.worldbank.org/en/results/2015/08/12/scrapping-recycling-old-vehicles-egypt.

associated with the growing vehicle fleet.[21] The direct costs to Moroccan society has been measured at over one billion dollars—over one percent of total GNP.[22]

There are some environmental experts who might categorize these adverse environmental conditions as an inevitable stage in MENA countries' economic evolution. The well-known 'Kuznets Curve' posits that as countries move from developing to developed economic status, pollution levels initially increase until reaching a peak and then dropping steadily as new prosperity allows for societies to address environmental challenges. According to this view, it is only a matter of time until a dramatic improvement in urban environmental quality will be observed in MENA's emerging economies. Unfortunately, the economic data do not support such a supposition. For instance, Egypt's annual per capita GDP has actually dropped during the past decade, falling to 2800 dollars/ year—while air pollution mounted. [23]

The most immediate road to improved air quality involves a transition from fossil fuel and coal-based electricity to renewable energy. Given the prodigious access to sunshine and the extraordinary drop in solar panel prices, the region needs to prioritize a cleaner, solar-based energy system. This is slowly starting to happen. Too slowly. The *Middle East Solar Industry Association* recently reported that some 15 billion dollars of solar projects will begin operation in the MENA region during the next five years. It identifies the top five markets in the MENA as the UAE (58%), Egypt (23%), Jordan (10%), and Morocco (6%).[24] Many countries, however, for now, appear to be left behind. Even Israel, internationally recognized for its technological prowess and start-up entrepreneurial culture, has a meager 5% of its electricity produced by renewables.[25]

Water Crisis

Since time immemorial, water has constituted a critical resource for people living in the MENA region. In a 2018 report, the World Bank posited that of "all the challenges the Middle East and North Africa region faces, it is least prepared for water crises."[26] Objectively, the region is recognized as the most water scarce region in the world—with most communities confronting chronic water stress. The problem is that the combined effect of massive population growth and climate change have exacerbated hydrological conditions, making new, sustainable water policies and technological advancements imperative. And things are surely going to get worse. Climate models suggest that in parts of the MENA region where population density is highest and agricultural production most significant, average precipitation has already begun to drop.

For some time, the Hashemite Kingdom of Jordan has found itself in the midst of a severe water crisis. Already ranked as the second most water poor nation in the world, per capita availability is about 88 percent below the international water poverty line of 1,000 cubic meters (one million liters) per person.

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[21] Inchaough, M., Tahiri, M., 2017, Air pollution due to road transportation in *Morocco: evolution and impacts,* Journal of Multidisciplinary Engineering Science and Technology. 4 (6) 7547-7552.

[22] Croitoru, L. and Sarraf, M. 2017, Estimating the Health Cost of Air Pollution: The Case of Morocco. *Journal of Environmental Protection,* 8, 1087-1099.

[23] Macrotrends, 2019, Egypt GNP,1967-2019,
https://www.macrotrends.net/countries/EGY/egypt/gnp-gross-national-product
https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=EG
WORLD BANK, GDP PER CAPITA (CURRENT US$) - EGYPT, ARAB REP.

[24]Proctor, D. 2019, Solar Projects Show Rapid Growth in Middle East, *Power,* January 11, 2019, https://www.powermag.com/solar-projects-show-rapid-growth-in-middle-east/.

[25] Tal, A. 2019, Israel Can Do Better: A 70-Year Report Card of Environmental Underachievement, Tel Aviv Review of Books, Winter, 2020.

[26] World Bank. 2018. *Beyond Scarcity: Water Security in the Middle East and North Afric*a. MENA Development Series. Washington D.C., World Bank.

Jordan's population has grown some 2000 percent since it became independent some 70 years ago, stretching existing water resources to the max. And now, the influx of over one million refugees from Syria has contributed to an additional 40% increase in water demand in some regions.
Jordanian Minister of Water and Irrigation, Raed Abdul Saud, recently announced a new water provision formula according to which citizens would only receive water once a week, for a maximum of eight hours.[27] Already, mounting discontent over chronic shortages boiled over into full-fledged riots in Jordan, with some communities literally ripping out water meters in protest of irregular and low quality water supply.[28] Increasingly, water shortages are recognized as a source of social and international tensions across MENA.[29]

The Euphrates River offers another case in point. In the first half of the twentieth century, hydrometric stations on the Syrian-Turkish border measured the natural flow as reaching 1200 cubic meters per second.[30] By 2010, the mean annual discharge was as low as 500 cubic meters per second. Part of the drop can be attributed to diversions that filled reservoirs and provided irrigation but climate change's contribution is increasingly cited as a factor.[31] Many experts argue that the consecutive droughts and the rise in average temperatures were the reason for the agricultural collapse that precipitated the destabilizing events that preceded Syria's civil war.[32] [33] Other experts believe that the proximate cause was the disruption of Euphrates water supply by Turkey.[34] But all agree, that drought conditions have changed the historic agronomic calculus of the region and constitute a destabilizing force in a very volatile region.

The environmental devastation found in the Jordan River offers an even more extreme example.[35] With tributaries beginning in Lebanon and Syria, this spiritually iconic waterway was once a powerful geographic and strategic landmark—so formidable that Moses chose not to cross it. Some estimates reckon that the historic annual currents of the southern segments contained 1,600 million cubic meters of rushing waters a year.[36] But those days are long gone and will probably never return; due to past

[27] JT, 2018, Water woes come to fore at Jordan, NATO meeting, *Jordan Times,* November 19, 2019, https://www.jordantimes.com/news/local/water-woes-come-fore-jordan-nato-meeting.
[28] Schwartzstein, P. 2019, How Jordan's Climate and Water Crisis Threatens its Fragile Peace, The Center for Climate and Security, https://www.preventionweb.net/news/view/67594.
[29] Givetash, L. 2018, Water scarcity fuels tensions across the Middle East, *NBC News,* November 1, 2018**,** https://www.nbcnews.com/news/world/water-scarcity-fuels-tensions-across-middle-east-n924736.
[30] UN-ESCWA.2013, *BGR Inventory of Shared Water Resources in Western Asia*; Chapte 1: Euphrates River Basin; UN ESCWA: Beirut, Lebanon,. 47–78.
[31] Bilgen, A. 2018, The southeastern anatolia project (gap) revisited: The evolution of gap over forty years. *New Perspect. Turkey*, *58*, 125–154.
[32] Kelley, C.P.; Mohtadi, S.; Cane, M.A.; Seager, R.; Kushnir, Y., 2015, Climate change in the fertile crescent and implications of the recent Syrian drought, *Proceedings of the National Academy of Science,* 112, 3241–3246.
[33] Gleick, P.H. 2014, Water, drought, climate change, and conflict in syria. *Weather Climate and Society*. 6, 331–340.
[34] Karnielli, A., Shtein, A., Panov, N., Weisbrod, N., and Tal, A., 2019, Was Drought Really the Trigger Behind the Syrian Civil War in 2011? *Water* 11(8) 1564-1575.
[35] Gafny, S. Talozi, S., Al Sheikh, B., and Ya'ari, E.. 2010. *Towards a Living Jordan River: an Environmental Flows Report on the Rehabilitation of the Lower Jordan River*. EcoPeace/Friends of the Earth Middle East, Amman, Bethlehem, Tel Aviv.
[36] Rumman, N., 2010 Managing the Jordan River – A Palestinian Perspective, in *Water Wisdom, A New Menu for Palestinian and Israeli Cooperation in Water Management*, ed. A. Tal and A. Abed-Rabbo New Brunswick, NJ: Rutgers University Press, 238–45.

diversions in Syria and Israel and reduced precipitation, present measurements show an average annual flow of 23 million cubic meters, only 1.4% of the original current.[37]

For many years, the drop in available water across MENA was primarily attributed to rising consumption and population growth—factors that drove aggregate demand. Experts, however, increasingly recognize that *supply* is also a problem, as the role of climate change as a factor that water managers can no longer ignore. In November 2018, after five years of drought, the Sea of Galilee reached its lowest point in recorded history, even though its waters had hardly been tapped during the previous years.[38]

Such profound disparities in hydrological, economic and social realities could easily become a source of enmity and ultimately conflict. But they also could provide a unique opportunity for innovation and cooperation. A combination of drip irrigation and wastewater reuse have enabled Israel to increase its agricultural production while reducing the utilization of fresh water resources.[39] Seawater desalination first came of age as a municipal water supply solution in the Arabian Gulf. Today the cost-effectiveness and energy efficiency of the original thermal, distillation processes utilized in Saudi Arabia facilities are increasingly questioned.[40]

The alternative desalination technology, reverse osmosis process, is less expensive, but the environmental impact of the brine produced after it is discharged back into the sea remains an open question. According to a recent United Nations report, Saudi Arabia, UAE, Kuwait and Qatar account for 55% of the total global share of brine discharged from energy-intensive desalination plants.[41] Israel municipal water supply today also relies almost entirely on treated seawater. The local plants produce the least expensive, desalinated water in the world, but the associated carbon footprint is considerable.[42]

The World Bank's recent report about looming water scarcity in the MENA region calls for much more conscientious and "out of the box" thinking in order to overcome what is already crisis levels of shortages: *"Now and in the future, a broader range of tools, technologies, and policies will need to be considered, debated, and implemented. Investments in water infrastructure, information systems, institutions, and technologies will be needed. Societies will need to move beyond the traditional approach to managing scarcity by augmenting supplies, and consider controversial solutions… Social inclusion must be central to the delivery of water services and protection of poor and marginalized populations from water-related risks."*[43]

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[37] Chen, A., Weisbrod, N., 2016, Assessment of Anthropogenic Impact on the Environmental Flows of Semi-arid Watersheds: The Case Study of the Lower Jordan River, Integrated Water Resources Management: Concept, Research and Implementation D. Borchardt et al. (eds.), Springer, Switzerland, DOI 10.1007/978-3-319-25071-7_12, 14:1303–1314, 59-82.

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[39] Tal, A. 2016, Rethinking the Sustainability of Israel's Irrigation Practices in the Drylands, *Water Research* 90, 387-394.

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[42] Tal, A., 2018, Addressing Desalination's Carbon Footprint: The Israeli Experience, *Water,* 10, 197-210.

[43] World Bank. 2018. *Beyond Scarcity: Water Security in the Middle East and North Afric*a. MENA Development Series. Washington D.C., World Bank.

The Challenge of Climate Change

No environmental issue reflects both the common environmental destiny of people across the Middle East and North Africa—as well as the profound disparities among MENA countries—like climate change and greenhouse gas emissions. Combined greenhouse gas emissions from within the region contribute some 8% of the global total, only slightly more than its proportion of the world population. Average individual emissions when calculated are slightly more than 6 tons per person, roughly analogous to the international average.[44] Yet such figures hide the vast contrast existing between the region's wealthier and poorer countries.

Some of the highest per capita greenhouse gas emission rates can be found in the Arabian Peninsula: Oman, Qatar, Saudi Arabia and the United Arab Emirates easily accede 30 tons of per capita CO2 equivalents, with Kuwait having the highest per capita footprint in the world—nine times the global average. At the same time countries like Sudan, Yemen and Palestine are among the world's lowest emitters, with per capita averages below 1.5, only a quarter of the global average.

While contributions to the climate crisis may vary dramatically across the region, consistent with the arguments of climate justice advocates, *everyone* living in the region is going to feel the profound changes in the weather which global warming will bring. Indeed, MENA is a "climate change hot spot", with the negative impacts of the new climatic reality disproportionately felt across the region. For instance, while the UN climate convention seeks to contain global temperature rise to 1.5 degree Celsius, one climate model projects that temperatures in July and August in the MENA region could increase by as much as 4% by the end of the century.[45] Another predicts a 7-degree increase in maximum temperatures across MENA by the end of century.[46] Precipitation may drop by as much as 25% and the intermittent heat waves are certain to lengthen.[47] Nevertheless, statistics can be numbing and do not fully express the severity of the risk posed by global warming to the region.

The Middle East and North Africa are stereotyped as hot desert lands for a reason. And the region is already getting much hotter. In the United Arab Emirates, summer temperatures now routinely exceed 50 degrees Celsius (122 degrees Fahrenheit).[48] In Iraq, recent temperatures of over 53 degrees (127.4 degrees Fahrenheit) were amongst the highest ever recorded on the planet.[49] When the human body begins to heat up to ambient levels of 40 degrees Celsius (104 degrees Fahrenheit) and exceed its normal physiological range of 37 to 38 degrees Celsius (98.6 to 100.4 Fahrenheit) we experience fever. Once the 40 degree barrier is broken, critical cellular machinery begins to break down. In other words, it is

[44] Rabinowitz, D., 2019, *Parched Future? The Middle East in the Post Normal Climate Era*, Draft Manuscript, Accepted for Publicatioon, Stanford University Press.

[45] Evans, J. 2009, 21st century climate change in the Middle East. *Climatic Change 92*:417–432.

[46] Lelieveld, J., Proestos, Y., Hadjinicolaou, P. Tanarhte, M., Tyrlis, E. Zittis, G. Strongly Increasing Het Extremes in the Middle East and North Africa (MENA) in the 21st Century, *Climatic Change,* 137 (1-2) 245-260.

[47] Bocchignani, E., Mercogliano, P., Panitz, H.J., Montesarchio, M., 2018, Climate change projections for the Middle East–North Africa domain with COSMO-CLM at different spatial resolutions, Advances in Climate Change Research, 9 (1) 66-80.

[48] Maximum, Temperature Touches 51° C in UAE, , July 11, 2018, https://www.khaleejtimes.com/news/weather/weather-maximum-temperature-crosses-51c-in-uae.

[49] Samenow, J., 2016, Two Middle Eat Locations Hit 129 Degrees, Hottest ever in Eastern Hemisphere, Maybe the World, *Washington post,* July 22, 2016, https://www.washingtonpost.com/news/capital-weather-gang/wp/2016/07/22/two-middle-east-locations-hit-129-degrees-hottest-ever-in-eastern-hemisphere-maybe-the-world/.

extremely dangerous to be outdoors for an extended period of time in heat that is significantly higher than these thresholds, even assuming that physical activity is at a minimum.[50]

When thermometers registered 40 degrees, causing some 1500 deaths in Paris during the 2003 heat wave—it was a wakeup call for Europe and the West about the risks associated with increasingly hot summers. People living throughout the MENA region, however, have been living and adapting to such "relatively moderate" summer temperatures from time immemorial. Nonetheless, the recent spikes in temperature significantly exceed previous levels and have already caused innumerable public health disasters: In 2015, some 61 people died with hundreds of hospitalizations after heat waves engulfed Egypt.[51]

High temperatures also serve to exacerbate social tensions. In the Cairo, summer conditions became so extreme that helpless elderly people, trapped in sweltering buildings, literally baked to death and riots subsequently broke out in the streets.[52] Access to air conditioning in Iraq has come to mean the different between life and death, which further highlights existing gaps between "haves and have nots".[53] Those of course constitute the immediate "acute impact". Of greater concern may be the "chain reactions" that could produce a litany of impacts involving desertification, food scarcity, forced migration, and political instability.[54]
The irony of course is that just as there are great asymmetries in greenhouse gas emissions, the ability to adapt to climate change across the region reflect the vast income disparities. Already countries like the United Arab Emirates, Saudi Arabia and Israel have begun to prepare sophisticated adaptation strategies.

Indeed, Jordan stands to benefit from Israel's climate adaptation measures, with the Israeli government openly describing the strategic significance of increasing water transfers to its eastern neighbor.[55] Israel has begun to build desalination plants and a water distribution infrastructure that will literally reverse 70 years of water policy that delivered water from the relatively rainy Galilee to its southern drylands. Today, after prolonged years of droughts, pipes are being laid and pumping stations built to draw seawater from the Mediterranean, desalinize it and discharge it into the Kinneret Lake—to the northern Sea of Galilee. With the annual addition of a few billion liters of desalinated water, the lake will once again serve as a national reservoir and even deliver substantial quantities of additional water across the border to ameliorate Jordan's acute shortages.[56]

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[50] Leahy, S., 2019. 'Off-the-charts' heat to affect millions in U.S. in coming decades, *National Geographic,* July 16, 2019, https://www.nationalgeographic.com/environment/2019/07/extreme-heat-to-affect-millions-of-americans/.

[51] Egypt heatwave leaves 61 people dead, BBC News, August 12, 2015, https://www.bbc.com/news/world-middle-east-33886557.

[52] Valentine, K. 2015, Extreme Heat Leads To Deaths, Protests In The Middle East, *Think Progress,* August 10, 2015, https://thinkprogress.org/extreme-heat-leads-to-deaths-protests-in-the-middle-east-cfdb5faf7cef/.

[53] Hall, R. 2019, In the Future Only the Rich Will be Able to Escape the Unbearable from Climate change. In Iraq, it's already happening, *Independent,* (August 19, 2019) https://www.independent.co.uk/news/world/middle-east/climate-change-apartheid-poor-iraq-effects-heatwave-a9049206.html.

[54] Tal, A., 2013, Shifting Sands, Land and Water Management in the Middle East, *Harvard International Review,* 35(2) 37-41.

[55] Tal, A., 2017, Will Demography Defeat River Restoration? The Case of the Jordan River, *The Journal of Water Research.* 111, 404-419.

[56] Lidman, M., 2019, Plan to Pump Desalinated Water to Sea of Galilee May Open Diplomatic Floodgates, *The Times of Israel,* June 27, 2019, https://www.timesofisrael.com/plan-to-pump-desalinated-water-to-sea-of-galilee-may-open-diplomatic-floodgates/.

Population Pressures

Population densities vary dramatically among countries in the MEA region. Some, like Palestine, with 827 people per square kilometer, are extremely crowded, while others, such as Algeria with 18 people per square kilometer, have vast areas of open spaces. Notwithstanding great disparities in fertility levels across the MENA countries, the World Bank reports that over the past decades, annual population growth in the region has been steady around 2 percent and that the region should double in size by 2050.[57] The associated challenges to environmental management are enormous. Like a proverbial runner on a treadmill, countries must meet close enormous socio-economic and infrastructure gaps while taking on the innumerable new environmental challenges.[58]

For many years, cultural sensitivities prevented MENA governments and experts from raising the issue of demography and population pressures.[59] Eventually, the laws of basic division became too powerful to deny; in dividing up natural resources, when the numerator increases, there is less available per capita resources remaining. Every additional person born brings with them an environmental footprint, which includes energy and transportation needs, water consumption as well as solid waste production.

Faced with unprecedented densities, many countries began to promote family planning. Egypt is a case in point; 2019 estimates count 101,213,975 residents,[60] almost a forty percent increase since the 2006 census of 72.7 million. Its present two percent annual population growth means that every year it must create 2 million more jobs, provide housing for 2 million more people and find the natural resources to support them. It is little wonder that Cairo suffers from housing[61] and unemployment crises.[62] A campaign to reduce the birth rates was launched, which included 12,000 newly trained family planning advocates focusing on the rural sector where birth rates are highest. They presumably will go to work at the 6,000 family planning clinics where check-ups are free and birth control is highly subsidized (e.g. condoms can be purchased for less than 1 US cent and intrauterine devices for 12 cents.)[63] However, it seems, thus far, to have been a largely fruitless effort. Fertility rates have actually gone up by almost 20% over the past decade—and now are back to 3.5 children per woman.[64]

A very different dynamic can be found in the Al-Maghreb with Algeria, Tunisia and Morocco all showing dramatic drops in total fertility during the past fifty years. In 1970, the average number of children born to women in all three countries exceeded 6.5. Today, they are all below 2.7 with Tunisia and Morocco

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[57] World Bank, 2019, *Reaching New Heights: Promoting Fair Competition in the Middle East and North Africa,* October, 2019, Washington, World Bank Group, http://pubdocs.worldbank.org/en/660811570642119982/EN-MEM-ReachingNewHeights-OCT-19.pdf/.

[58] Tal, A. "2013, Overpopulation is Still the Problem, *The Huffington Post,* September 27,2013.

[59] Mitsch, A., 1990, Purdah and Overpopulation in the Middle East, *World Watch 3 (6)* 10-34.

[60]World Population Review, http://worldpopulationreview.com/countries/egypt-population/, last visited December 2, 2019.

[61] Masri, L., Abdelaty, A. 2018, Egyptian housing crisis exacerbated by government policies, *Christian Science Monitor,* Novembver 27, 2018, https://www.csmonitor.com/World/Middle-East/2018/1127/Egyptian-housing-crisis-exacerbated-by-government-policies.

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[64] Radovich, E., el-Shitany, A., Shokamy, H. and Benova, L., 2018, Rising up: Fertility trends in Egypt before and after the revolution, PLoS One,13 (1)): XE0190148, 10.1371/JOURNAL.PONE.0190148.

reaching optimal "replacement levels" of 2.1. Lebanon offers the most extreme example of the profound "demographic transition" occurring in many MENA countries, with 1.72 total fertility level, its population profile looks increasingly "European". [65]

It should not be surprising to find an inverse association between environmental performance and fertility levels. Yale University publishes a ranking of environmental performance on a semi-annual basis. The rankings are based on objective indicators involving parameters such as air quality; water and sanitation; heavy metals; biodiversity and habitat; forests; fisheries; climate; and energy and water resources. Not surprisingly, at the top of its 2018 rankings list are northern European countries, such as Switzerland, France and Denmark—with the Democratic Republic of Congo, Bangladesh and Burundi at the very bottom.

The pronounced differences across the MENA region to some extent can be explained by demographic factors. Among the best environmentally performing countries are Morocco and Israel—32 and 19 respectively in the world. Notwithstanding the political turbulence (or perhaps as a result of it) Iraq still has extremely high fertility levels (4.0 children per woman) and a rapid annual population growth rate of 2.5%. Environmentally, it is ranked 152 out of the 180 countries evaluated. Libya is a similar, but somewhat different story. Because of its past baby boom, the country's population continues to grow at an annual rate of 1.45%. But like its North African neighbors, today's mothers in Libya only average 2 children per family. Environmentally, Libya ranks a low 123 worldwide. Presumably, as its population begins to stabilize, it will be able to better address its environmental challenges.

Religion and Regional Environmental Cooperation

While the Middle East is stereotyped as a region overrun by religious fanaticism, factionalism and violence, reality on the ground is somewhat different. Objectively, there is nothing in the Abrahamic religions that make them a force for destabilization and hostility. [66] On the contrary, increasingly religious tolerance and understanding is emerging as the central voice in the region. This was recently highlighted in the United Arab Emirates where in February 2019 Pope Francis was invited to convene a mass and help issue in The Year of Tolerance.[67]

The same is true with regards to Abrahamic religions' attitudes towards protecting the environment. If there is one theological principal, which is common to mainstream Islamic, Christian and Jewish leaders

[65] CIA, *The World Factbook,* (last visited, December 15, 2019). https://www.cia.gov/library/publications/the-world-factbook/fields/345.html.

[66] Schiffman, L.H., 2016, Peace and Reconciliation in the Abrahamic Religions: Sources, History and Future Prospects, Keynote Speech at the 2016 *Annual International Conference on Ethnic and Religious Conflict Resolution and Peacebuilding*, https://www.icermediation.org/news-media/meeting-coverage/peace-and-reconciliation-in-the-abrahamic-religions-sources-history-and-future-prospects/.

[67] Debusman, B., 2019, Visit by Pope Francis puts UAE's promotion of tolerance on the world stage, 2019, *Arabian Business,* February 8, 2019, https://www.arabianbusiness.com/culture-society/412826-visit-by-pope-francis-puts-uaes-promotion-of-tolerance-on-the-world-stage.

and institutions it would be a profound commitment to preserving the Creation.[68] In considering today's climate crisis, religious leaders appear to speak in one voice.[69]

MENA's present environmental challenges constitute something of a paradox. On the one hand, they can increasingly be characterized as problems, which require public participation. Progress will come from reducing fertility, meat consumption, motorization and a range of other environmentally deleterious activities that involve billions of individual decisions. In a region that remains largely traditional and faith-based, clearly, the roads chosen by MENA's diverse peoples will be informed by their religious convictions.

At the same time, many of the most critical challenges involve regional or global resources, whose management requires transboundary cooperation. Watershed protection, biodiversity preservation and even air pollution control cannot be solved by unilateral national actions. In many cases, scaling up renewable energy and desalination require regional solutions.[70] As today's environmental hazards increasingly become existential threats, local citizens and their leaders may come to realize that the threat of environmental disaster dwarfs historic political and religious conflicts. Inspired by a theology of conservation, sustainability and commitment to future generations, the peoples of the MENA region, regardless of their religious persuasion, should be increasingly willing to collaborate to resolve their ecological problems. Religious leadership has a critical role to play in supporting and encouraging such blessed collaboration.

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https://abrahamicprograms.uconn.edu/abrahamic_traditions_and_environmental_change/2019-workshop-proceedings-papers

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[69] Schaefer, J. 2016, Motivated for Action and Collaboration: The Abrahamic Religions and Climate Change, *Geosciences,* 6, 1-19, file:///Users/alontal/Downloads/geosciences-06-00031-v2.pdf.

[70] EcoPeace Middle East / Konrad-Adenauer-Stiftung, 2017, *Water Energy Nexus. A Pre- feasibility Study for Mid-East Water-Renewable Energy Exchanges,* Amman, Jordan: Katz, David and Shafran, Arkady (Eds.).

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