

24th International Interdisciplinary Conference on the Environment



Conference Agenda



June 22-24, 2018

**Delta Montreal Hotel,
Montreal, Canada**

Presented by the



SCHEDULE OF EVENTS

June 21

5:00pm – 7:00pm Cocktails, Canapes and Networking Reception

Held in the Hotel's Upper Lobby

June 22

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| 8:00am – 9:00am | Registration <i>[Hotel Lobby]</i> |
| 9:00am – 10:00am | <p>Welcome and Opening Plenary</p> <p><i>[Held in the Concerto Room]</i></p> <p>- Welcome and address by Jeffrey Roberg, Immediate Past President, IEA - Welcome and introductions, Kalim Shah, Vice President, IEA</p> <p>- Inclusivity and the Environmental Sector: Are you ready for positive change? Keynote Address by Eleanor Mohammed, President of the Canadian Institute of Planners</p> |
| 10:00am-10:15am | Break and refreshments |
| 10:15am-12:00 noon | <p><i>[Held in the Concerto Room]</i></p> <p>Workshop A: Transcending Disciplinary Approaches to Education for Sustainable Human and Environmental Systems</p> <p>Presented by Richard Smardon, SUNY College of Environmental Science and Forestry; Michael Reiter, Bethune-Cookman University; Will Focht, Oklahoma State University; Kimberly Reiter, Stetson University</p> <p><i>[Held in the Mozart Room]</i></p> <p>Panel A: Philosophy, ethics and environmental values Moderator: Mai Kuha, Ball State University</p> <p>1. Unexpected Outcomes Classified as Ignorance: Through Consideration of Nothingness in Eastern Philosophy. Takashi Wantanabe, Kyushu University</p> <p>2. You're All Right: The Pressing Need for an Intercentric Ethic for Climate Change. Nathan Empsall, Yale University</p> <p>3. The Effects of Wealth on Eco-centric and Anthropocentric Environmentalism: A Statistical Approach Using the World Values Survey. Rubi Alvarez Rodriguez, University of Southampton</p> |
| 12:00 noon – 1:00pm | Lunch Break |
| | <p><i>[Held in the Mozart Room]</i></p> <p>Panel B: Pollution and natural resource management Moderator: Lorelai Hanson, Athabasca University</p> |

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| <p>1:00pm – 2:30pm</p> | <p>1. Marine Litter: The Emerging Terror at the La Pleasure Beach Resort in Accra, Ghana. Richard Antwako, William V.S. Tubman University</p> <p>2. Transboundary Natural Resource management and environmental sustainability. Case Study : TRINDOM, Cameroon. Mispa Ngefor Buriya, Pan-African Institute for Development West Africa</p> <p>3. Challenges and opportunities to bridge academia, practitioner, businesses and elected officials in the coastal adaption and resilience initiatives: A Case Study, Tampa Bay, Florida. Barnali Dixon, University of South Florida- St. Petersburg</p> <p style="text-align: center;"><i>[Held in the Ravel Room]</i></p> <p>Panel C: Knowledge generation and dissemination Moderator: Bernice Scott, Spelman College</p> <p>1. Old Testament understandings of human responsibility and the environment. Emma MacDonald, Yale University</p> <p>2. <i>Laudato Si, Gaudate et Exsultate</i>, and Catholic Environmental Justice Teaching: Potential Impacts on the American Catholic Voter. Eric Fitch, Marietta College</p> <p>3. Pollution and Sin in the Athens Riviera. Joy Charikleia Maidou, Boston University</p> |
| <p>2:30pm-2:45pm</p> | <p style="text-align: center;">Break and refreshments</p> |
| <p>2:45pm-4:15pm</p> | <p style="text-align: center;"><i>[Held in the Concerto Room]</i></p> <p>Workshop B: Implementing case study research in the field and classroom Presented by the University of California Press</p> <p>Commentator: Wil Burns, Chief Editor, <i>Case Studies in Environment</i> journal</p> <p>1. More Tourists, More Money, More Challenges: A Comparative Case Study of Pucón, Chile and El Calafate, Argentina. Jeffrey Roberg, Carthage College</p> <p>2. Case study application of the IIG framework using the example of wetland resource management in Bangladesh. Arlette Saint Ville, McGill University</p> <p>3. Dialogue for peer learning among community environmental groups caring for rivers and riverfronts: A case study from Japan. Tomomi Maekawa, Mie University</p> |

June 23

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| <p>8:00am-9:00am</p> | <p style="text-align: center;">Conference registration <i>[Hotel Lobby]</i></p> |
| | <p style="text-align: center;"><i>[Held in the Ravel Room]</i></p> <p>Panel D: Climate change: politics, policy and the press Moderator: Robin Aspmann-O'Callaghan, City University of Seattle</p> <p>1. Retreat from Climate Change Science: Policy and Regulatory Change in under the Trump Administration. Eric Fitch, Marietta College</p> <p>2. Media reports on studies linking anthropogenic climate change to specific weather events. Mai Kuha, Ball State University</p> |

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| <p>9:00am-10:30am</p> | <p>3. Everything is Connected, but How? Charles List, SUNY Plattsburgh</p> <p style="text-align: center;"><i>[Held in the Mozart Room]</i></p> <p>Panel E: Public policy, administration and the environment Moderator: Kimberley Reiter, Stetson University</p> <p>1. Addressing National Policy at the Municipal Level: The Case of F-35 Deployment. Charles Simpson, SUNY Plattsburgh</p> <p>2. Modeling a Vision for Alberta's Energy Future. Lorilei Hanson, Athabasca University</p> <p>3. Prioritizing island resiliency with new (and old) foreign investment and development partners. Kalim Shah, Indiana University Northwest</p> |
| <p>10:30am-10:45am</p> | <p style="text-align: center;">Break and refreshments</p> |
| <p>10:45am-12:15pm</p> | <p style="text-align: center;"><i>[Held in the Concerto Room]</i></p> <p>Workshop C: Interdisciplinary Environmental Applications of GIS: Demonstration of various Case Studies</p> <p>Presented by Barnali Dixon, University of South Florida–St. Petersburg</p> |
| <p>12:15pm-1:15pm</p> | <p style="text-align: center;">Lunch break</p> |
| <p>1:15pm-2:45pm</p> | <p style="text-align: center;"><i>[Held in the Ravel Room]</i></p> <p>Panel F: Justice, equity and diverse environmental perspectives Moderator: Rubi Alvarez Rodriguez, University of Southhampton</p> <p>1. Racism is the Major Scourge of the Environment in Haiti. Gregory Cronin, University of Colorado-Denver.</p> <p>2. Pillowtalk versus Black Panther. How our cultural worldview can lead to a dystopic reality or suggest a sustainable future. Robin Aspman-O'Callagan, City University of Seattle</p> <p>3. Environmental Legacy - Wangari Maathai and the Green Belt Movement. Bernice Scott, Spelman College</p> <p style="text-align: center;"><i>[Held in the Mozart Room]</i></p> <p>Panel G: Communities, livelihoods and environmental vulnerabilities Moderator: Richard Antwako, William V.S. Tubman University</p> <p>1. What We Owe to Climate Refugees. Simona Capisani, University of California – Irvine.</p> <p>2. Population Growth, Environmental Hazards and Sustainability. Case: The Buea Municipality, Cameroon. Forwang Jean Claude, University of Buea.</p> <p>3. Vulnerability of urban poor to climate change in Bamenda, Cameroon. Nixon Akoh, Enko Bonanjo International School.</p> |

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| 2:45pm-3:00pm | Break and refreshments |
| 3:00pm-4:30pm | <p><i>[Held in the Ravel Room]</i></p> <p>Panel H, Environmental impact assessment, science and technology Moderator: Penny Seymoure, Carthage College</p> <ol style="list-style-type: none"> 1. Isolation of bacteria from drinking water tanks of houses in Riyadh City. Muneera Al-Kahtani, Prince Nourah Bin Abdulrahman University 2. Pyocyanin and potential roles in sustainable agriculture. Areej Bashaen, King Abdulaziz University 3. Study of Gas Emissions Reduction of N₂O, CO₂, CH₄, and CO from Eco-Friendly Waste Burner in Sungai Kakap District, Kubu Raya Regency. Restu Wijayanti, Diponegoro University |
| | <p><i>[Held in the Concerto Room]</i></p> <p>Roundtable A: Security issues associated with our natural environment Presented by Demetri Kantarelis and Kevin Hickey, Assumption College</p> |

June 24

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| 9:00am-10:00am | <p><i>[Held in the Concerto Room]</i></p> <p>IEA General Meeting and Annual Report (Open)</p> <ul style="list-style-type: none"> - Annual reporting by Kevin Hickey - KAO reporting - <i>Interdisciplinary Environmental Review</i> journal - Election of Officers |
| 10:00am-10:15am | Break and refreshments |
| 10:15am-11:15am | <p><i>[Held in the Mozart Room]</i></p> <p>IEA Executive Board Meeting (Closed)</p> |
| 11:15-12:00 noon | Registration and logistics for Montreal City Field Trip <i>[Assemble at Registration Desk]</i> |
| 12:00 noon-4:00pm | <p>Montreal City Field Trip (walking tour)</p> <p><i>Leisurely, guided walk between the hotel and the hilly area of McGill University known as Mount Royal. There is a 2 km walk from the hotel to the park, and the park offers beautiful vistas of Montreal, as well as a well-loved cafes, and places to sit, and enjoy.</i></p> <ul style="list-style-type: none"> - Coordinated by Robin Aspman- O'Callagan |

Conference End

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Keynote Speaker

Inclusivity and the Environmental Sector: Are you ready for positive change? Keynote Address by Eleanor Mohammed, President of the Canadian Institute of Planners

BIO: Eleanor Mohammed, RPP, MCIP, is the President of the Canadian Institute of Planners, the General Manager of Integrated Growth and Infrastructure at the Town of Beaumont, Alberta, and an Instructor at the University of Alberta. As an Executive with over thirteen years of public and private sector experience, having worked for local and provincial governments, and the consulting industry, she has led a variety of projects including the preparation of statutory and strategic planning documents, policy and guideline development, stakeholder engagement, subdivision management, and environmental planning. She has served as the President of the Alberta Professional Planners Institute and is highly experienced in organizational governance, communications, and proactive strategy development. Eleanor is an Avenue Magazine #Top40YEG award recipient and regularly presents at international events on planning; most recently, the 2018 United Nations World Urban Forum 9 in Kuala Lumpur, Malaysia. She holds a Master of Arts with Distinction in Town and Country Planning from the University of the West of England, Bristol, U.K. and has an Honours Bachelor of Arts from the University of Toronto with a specialization in Environmental Management.

Conference Abstracts

Unexpected Outcomes Classified as Ignorance: Through Consideration of Nothingness in Eastern Philosophy. Takashi Wantanabe, Kyushu University

We examine how unexpected outcomes classified as ignorance (UOCI) link eastern philosophy to western philosophy in the process of undertaking the criticism of science and technology. This objective necessitates indicating: first, the fact that western philosophy and science share the concept of evidence and therefore oust UOCI from the academic field by characterizing it as non-evident, i.e., non-science; second, the fact that actual impact of UOCI on the environment materializes the thoughts of the nothingness of eastern philosophy. UOCI, in the context of environmental conservation, was discovered and defined, through stringent and to some extent extortionate scientific investigation, as nonbeing, unidentifiable, and therefore non-scientific. Therefore, it can no longer be investigated as either a scientific or philosophical subject in the Occident, even though it has yet to be dealt as an actual danger because there is no evidence to confine the danger in a domain of identifiable phenomena. However, Zhuangzi, for example, criticizes such an evidence-based intellectual operation that divides what essentially cannot be divided into individuals, denoting that such operation aggravates the confusion and disorder, and never reach the truth. However, such criticism impedes him from establishing a foothold in dealing with environmental problems in association with scientists. Interestingly, UOCI, discovered at the margin of scientific research, has an aspect of nonrealistic-reality because it is scientifically unidentifiable, which implies that UOCI has close relation to the notion of nothingness in eastern philosophy, and therefore, with the characteristics as such, UOCI gives itself a potential to connect unrealistic nothingness with scientific topics such as environmental problems. In other words, Zhuangzi's criticism against the intellectual operation of identification can also be a criticism towards scientific measurements in environmental conservation.

You're All Right: The Pressing Need for an Intercentric Ethic for Climate Change. Nathan Empsall, Yale University

Anthropogenic climate change is often described as a "wicked" problem. It has many causes, has no single solution, transcends all artificial political boundaries, and makes demands of both individuals and larger communities. It is humanity's first truly global problem, and therefore transcends all traditional ethical systems designed for the individual and national levels. Current environmental ethics are also inadequate: Anthropocentric ethical models helped create the climate crisis, while biocentric ethical models often fail to make adequate room for humanity to address its own needs. A more holistic

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environmental ethical approach is needed, one that centers the interconnected reality of humanity's place in ecology. This interconnected reality is both an ecological fact, reflected in the way that earth's systems and species impact one another in ways big and small, and a spiritual truth, recognized by many Buddhist, American Indian, and Christian teachers. This paper draws on the work of environmental ethicists and spiritual leaders such as Willis Jenkins, Larry Rasmussen, Holmes Rolston III, Buddhadasa Bhikku, Vine Deloria, Jr., Pope Francis, and others to create a new intercentric environmental ethic. The intercentric ethic builds on elements from existing biocentric and anthropocentric ethics, learns from the lived experience of billions of religious humans, and sees value not only in all human and non-human levels of the environment but also in the intractable relationships between those levels.

The Effects of Wealth on Eco-centric and Anthropocentric Environmentalism: A Statistical Approach Using the World Values Survey. Rubi Alvarez Rodriguez, University of Southampton

Traditionally, eco-centric and anthropocentric forms of environmentalism have been seen as mutually exclusive. Research suggests that different values predict each type of attitude, and that eco-centric attitudes, in particular, are strongly correlated with higher wealth. The objective of this paper is to characterize the relationship between eco-centric and anthropocentric attitudes across 43 countries. This study analysed secondary data from the 2005 World Values Survey, using a standard linear regression approach. It is shown that eco-centric and anthropocentric attitudes are not mutually exclusive, and that the predominance of one over the other is best predicted by a country's level of wealth.

Marine Litter: The Emerging Terror at the La Pleasure Beach Resort in Accra, Ghana. Richard Antwako, William V.S. Tubman University

The applicability of structural functionalism to understand systems has suffered varying limitations, including undermining the roles of the micro-components in a system. However, this proposal invigorates the structural functionalism's relevance to discern the growing marine litter and its effects at the La Pleasure Beach Resort, as well as offering a sustainable approach to enhance public health and environmental integrity. Literature reviews complemented questionnaire surveys and field observation. The data covered marine litter sources, visitors' perception, employee conditions and solid waste management (SWM). Data were extracted from the La Pleasure Beach Resort's management, beach goers, beachcombers and the various stakeholders. Structural functionalism remains prominent in the ecological realms, and it is employed to explicate the aquatic ecosystems and their functional contributions to the marine litter deposition at the La Pleasure Beach Resort. The structural functionalism being credited to the works of Auguste Comte (1853), Diaz et al. (2007) and Danovaro et al. (2008); provides a broader understanding on how the separate parts holistically work together toward a systemic equilibrium. Mouillot et al. (2011) reiterated that structural functionalism plays a pivotal role in deciphering the human-ecosystem imbalance. Thus, this proposal offers an extensive work to underscore the under-exploration of structural functionalism, leading to the unsightly scattering of marine litter at the La Pleasure Beach Resort. To optimize the structural functionalism, there is a need to ensure balanced functionality between the physical structures (marine, coastal, riverine ecosystem) and non-physical structure (regulation, SWM, education and norms), as well as the agents linking the structures together. Findings revealed that the structural functionalism remains fully unexploited, resulting in dysfunctional structures and subsequent deposition of marine litters. Additionally, the interplay between the structures is not well-coordinated to embrace absolute ecological functionality. Lastly, the monitoring agencies are resource-constrained and furthering dysfunctions within the aquatic ecosystems.

Transboundary Natural Resource management and environmental sustainability. Case Study : TRINDOM, Cameroon. Mispa Ngefor Buriya, Pan-African Institute for Development-West Africa

A complex issue that concerns natural resource management centres on its transboundary nature. This is the case with the TRINDOM which cuts across Cameroon, the Republic of Congo and Gabon, TRINDOM gets its name from the initials of Dja, Odzala and Minkébé - three famous protected areas, each in a different country covering a total forest area of 178,000 km² (10% of the Congo Basin rainforest). It is covered by a 2004 agreement, by which the three governments commit to a coordinated approach and sustainable development of the inter zone in between protected areas. There is a heavy dependence on forest resources of the TRINDOM for subsistence and raw material provision, as a complement to agricultural activities. With increasing human population and associated development, traditional resource management systems have been strained. This is further exacerbated by variations in the national management systems. With the clarion call for a sustainable management of this contiguous

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forest landscape, the concept of Trans- boundary natural resource management and environmental sustainability was introduced. This concept relates to a comprehensive and integrated action which leads to the resolution of shared resource problems and which seeks to bring about a lasting improvement in the physical and social environment and peace building across borders. International borders and boundaries are generally quite recent in the African continent and have most of the time been drawn upon political motivations rather than on the basis of physical, cultural or ecological specifications. However, natural environments are not limited by borders and this very often results in artificial boundaries across water bodies, catchments, ecological zones, migratory routes, ethnic groups and many more. The current study seeks to examine the role played by member countries in the sustainability of the TRIDOM and their impact on the socio economic and ecological development to the region. In this light the study sheds light on possible recommendations to improve transboundary resource management.

Old Testament understandings of human responsibility and the environment. Emma MacDonald, Yale University

Throughout the Old Testament's account of the ancient Israelites' relationship with God, the Israelites are plagued by literal plagues: drought, disaster, locusts, etc. — and are frequently forewarned of these coming assaults by the prophets. Reading these dramatic predictions of ruin and destruction bring to mind the dire warnings of climate scientists and environmentalists worldwide. Importantly, some of the Hebrew prophets turned out to be right! The destruction they prophesied, though thought to be the judgment of God, was more visibly due to the threat of the Assyrian and Babylonian empires. Through direct political conquest, these world powers quashed the kingdoms of Israel and Judah, fulfilling some of the prophecies announced much earlier. Nowadays, however, the “prophecy” echoing across the globe is one of natural destruction (which also appears in the Hebrew Bible alongside political conquest) — but most identify climate change as a result of human action and ignorance that has irreparably damaged the planet. How different is the current situation to the political tumult facing the ancient Israelites and their wild-eyed prophets? Though the theological understanding of human agency and divine involvement in the world may have changed since the Hebrew prophets were active, the ignorance and sinfulness of humanity have persisted. Just as the Israelites failed, according to the prophets, to keep their covenant with God, we have failed to be stewards of the Earth. I will connect a passage from Jeremiah 4 to Pope Francis' encyclical *Laudato Si'to* explore how Old Testament understandings of human responsibility and culpability can inform contemporary religious rhetoric on climate change to galvanize communities to act before it is too late.

***Laudato Si, Gaudate et Exsultate*, and Catholic Environmental Justice Teaching: Potential Impacts on the American Catholic Voter.** Eric Fitch, Marietta College

A key aspect of the papacy of Pope Francis has been to emphasize Social and Environmental Justice in the faith lives of Catholics throughout the world. He has exhorted the faithful to take action in their lives to protect Creation, succor the poor, heal the sick and respect and protect the Seamless Garment of life. This action should not be limited to personal action, but also in their lives as citizens. In the United States, there has been pushback from Socially and Religiously Conservator Catholics. In recent decades. Many of these Catholics have forged political/ecumenical alliances with fundamentalist, evangelical Protestants which have led to single issue voting behaviors revolving around Abortion to the exclusion of other Social Justice issues. In fact, issues revolving around Climate Change and Environmental Sustainability have often been delegitimized and rejected as invalid by a fraction of the American Catholic electorate. A battle for the conscience of the American Catholic voter is actively underway to move them away from this narrow range of consideration back to what the late Joseph Cardinal Bernardin called the “Seamless Garment of Life” and to include Environmental Stewardship in the array..

Pollution and Sin in the Athens Riviera. Charikleia 'Joy' Maidou, Boston University

It was an early Sunday morning in September 10, 2017 when the oil tanker Agia Zoni II sank close to the island of Salamina, which is in the Saronikos Gulf across from Athens' main port of Pireaus and the Athens Riviera. The oil freighter was 45 years old carrying 2,500 tons of fuel oil and marine gas, and it was anchored during moderate weather conditions. Three days later, the entire coast of the Athens Riviera was covered with black fuel oil. Additionally, birds, turtles and other animals were covered with the black fuel. Some of the birds were unable to fly or to leave and so died as well as did many fish. I am

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interested in how the negligence and lack of (or inappropriateness of) response of the authorities contributed to the tremendous ecological catastrophe that took place due to the oil spill. In this presentation I will first explain the incident itself in terms of its societal and environmental consequences, and then engage this tragic event through a theological perspective and using the lens of ecological sin. On the one hand, there is the oil tanker company and the legitimacy of the fuels it carried. On the other hand, there are the authorities' late response to the incident and their fatal error in underestimating its seriousness. Both of them show the importance in their self-interests, and depravity and lack of ecological consciousness for the sea.

Challenges and opportunities to bridge academia, practitioner, businesses and elected officials in the coastal adaption and resilience initiatives: A Case Study, Tampa Bay, Florida. Barnali Dixon, University of South Florida – St. Peterburg

Initiative on Coastal Adaptation and Resilience (iCAR) started by the faculty from USF to engage stakeholders to facilitate adoption of policies and practices focused on coastal adaptation and resilience. This transdisciplinary initiative brings perspectives from climate/physical sciences, engineering, policy and social sciences to examine interactions between climate change and coastal environments. iCAR also engages in research and education to provide the understanding and ideas needed to make critical decisions regarding our changing and vulnerable coasts. Among other endeavors, iCAR hosts an annual workshop to bring together professionals, policy makers, elected officials, businesses, scientists, scholars and community leaders to work toward resilience and adaptation strategies across silos. The titles of the past three workshops are: Coastal Adaptation and Resilience in Tampa Bay (2015), Solutions for Coastal Cities: Resilience and Adaptations in Tampa Bay, (2016), and Social Aspects of Resilience: identifying key areas of social vulnerability and enhancing resilience, (2017). Along with a community advisory board consisting of federal, state and local government, NOGs and businesses, we identify workshop themes for structured panel discussion and presentations as well as open facilitated discussion forums to identify current and future needs. iCAR strives to engage elected officials ranging from city/county commissioners to state and US Senators, and Congressman. This presentation will discuss lessons learnt from this transdisciplinary efforts. Some of the key challenges include: organizations' mission and jurisdictional conflicts, lack of resources that prevent key agencies' representatives to provide sustained efforts toward transdisciplinary initiatives, lack of knowledge of local elected officials about climate change related needs and their short-term vision tied to election victory; while key opportunities include: putting resiliency related efforts in the context of economic cost and benefit analysis to generate interest and support, providing simple solutions to elected officials in soundbite to garner support and tax \$\$ toward adaption and resiliency.

More Tourists, More Money, More Challenges: A Comparative Case Study of Pucón, Chile and El Calafate, Argentina. Jeffrey Roberg, Carthage College

In many countries today, tourism is being put forth as a means to improve the lives of local inhabitants. While tourism may lead to an improved economy, increased employment and even the availability of potable water and sanitation for some less developed communities, other communities or even members of the same community may not be so fortunate. Moreover, the increase of tourism may have unintended consequences for both the local inhabitants and the local environment. At a time when countries are seeking to increase their share of the tourist market, it is worth taking another look at the challenges that come with the increase of tourism to environmental hotspots like Pucon, Chile and El Calafate, Argentina.

Case study application of the IIG framework using the example of wetland resource management in Bangladesh. Arlette S. Saint Ville, H.M. Tuihedur Rahman, June Y.T. Po, Kazi Newaz Mustafa, Hugo Melgar-Quirñonez, and Gordon M. Hickey, McGill University

The Inter-Institutional Gap (IIG) is a newly developed analytical framework used to understand interactions in natural resource governance between formal and informal institutions. This gap is one of the persisting yet often-overlooked challenges facing sustainable natural resource governance, which results in rule incoherence, resource base degradation and conflict. In this paper, we operationalize the IIG framework using a typical case of wetland management in north-eastern Bangladesh. From April to May 2011, we held three focused group discussions with fisher folk, conducted interviews with 58 fisher households at the village level, and at the district and sub-district level (Sylhet) we interviewed 21 key informants that included: governmental officials, elderly residents, village leaders and political leaders. Additionally, we reviewed policy and peer-reviewed secondary documents. Using the IIG framework to

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conduct our analysis, we develop a matrix to identify the interconnectivity between formal and informal institutions. We show their corresponding rule-based actions at the constitutional and non-constitutional choices levels and explain how these rules govern action to unpack the interplay between formal and informal institutions. Findings show that inter-institutional gaps are arising because formal institutions (e.g., government fisheries resource management agencies) have guidelines and rules for developing community based fishery organizations, a mandatory requirement for community members to obtain fishing rights. In contrast, community members have their own informal rules and regulations guiding member selection. As a result of the incongruence between government rules and those of local institutions, local elites are able to capture wetland user rights. The IIG framework enables a systematic analysis of the multi-level governance structures in the case of wetland management. It points to the need for improvements in shared rule making, and development of common understanding between formal and informal actors to better guide collaboration and improve natural resource governance.

Dialogue for peer learning among community environmental groups caring for rivers and riverfronts: A case study from Japan. Tomomi Maekawa, Mie University

Dialogue is a tool for communicating with others, and it is implemented in a variety of ways depending on the situation, such as with family at home, with friends at school, and with colleagues at the office. We don't usually pay much attention to the style of dialogue in our daily lives. However, dialogue plays an essential role as a tool for preventing conflicts from becoming disputes and for promoting learning among people, when it is designed and implemented in light of specific objectives, and whilst encompassing certain processes, philosophies and skills. In this study, I focus on dialogue as the fundamental method for promoting peer learning among community environmental groups. In Japan there are many not-for-profit organizations whose activities provide a forum for learning and for networking to these community environmental groups. They create beneficial opportunities for communication between these groups. However, not many NPOs and their activities focus on the intrinsic value of the dialogue from an ethical concepts perspective when conducting their forums. Here based on research conducted through interviews with relevant individuals and through participatory observation in the field, I will show the example of dialogue which promotes peer learning among community environmental groups which are caring for their local rivers and waterfronts across Japan. This is carried out in the form of an annual workshop which has already been functioning for the past 20 years, and which is organized by the *likawa-likawadukuri* Implementation Committee. Through describing the characteristics of the structure and the philosophy of this workshop activity, I will also suggest the potential for developing this method of workshop activity into a universal model.

Media reports on studies linking anthropogenic climate change to specific weather events. Mai Kuha, Ball State University

Disseminating climate science findings to the public is as challenging as it is important. One challenge is that using everyday language instead of technical terms and statistics is often necessary, but can lead to misunderstandings (see Harris et al. 2013). Another challenge is deciding whether to take a stance on environmental policy. Some climate scientists may find it appropriate to do so, but Blaum et al. (2017) warn that such statements may distract some readers, interfering with their understanding of the causes of climate change. When natural disasters occur, a particular challenge is that news reporters want to know, on behalf of the public, whether an event was caused by climate change. Scientists have been understandably wary of oversimplifying the causes of complex phenomena. This paper investigates how they meet this challenge, with particular attention to one study. On May 9, 2018, an open-source online journal published Trenberth et al.'s analysis of ocean heat causing Hurricane Harvey. They explicitly state that anthropogenic climate change makes hurricanes in general more damaging, and then go further, stating a causal link between anthropogenic climate change and Hurricane Harvey specifically: "Harvey could not have produced so much rain without human-induced climate change". The National Center for Atmospheric Research then published a press release (Snider 2018) which does not specify that climate change is human-induced. Most news organizations around the world chose to rely on the press release, which meant that they did not link human activity to this specific weather event. A few writers did consult the original article to make the link. Notably, a Washington Post editorial had the headline "We're making hurricanes worse". An analysis of these reports shows that journalists seem to convey Trenberth et al.'s findings accurately. This case suggests that we would all do well to write press releases for our research, and to spell out in them the key points that the public should know.

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Retreat from Climate Change Science: Policy and Regulatory Change in under the Trump Administration. Eric Fitch, Marietta College

Partisan wrangling over Climate Change has been taking place in American politics conservatively for three decades. The election of Donald Trump, represented a clear triumph for those who deny the science and reject any policy or regulatory steps to address it. The Trump administration, especially under the leadership of EPA Administrator Pruitt and Secretary of Interior Zinke, has undertaken a systematic course of action to not only reverse policies and regulations to address Climate Change, but also to purge information and influence of Climate Science from the government's documents. From the state intent to exist from the Paris Climate Accords, to repeal of the Clean Power Plan, to reversal of restrictions of the development of fossil fuel resources on Public Lands, the Trump administration is engaging in a divorce from the Science and the Policy Consensus that most of the rest of the world is acting upon.

Everything is Connected, but How? Charles List, SUNY Plattsburgh

Environmentalists believe that everything is connected, that there is a web of nature the strands of which tie humans to animals, animals to plants, and all living things to the nonliving world. Environmental philosophers have understandably devoted considerable attention to this idea because it warrants desirable conclusions about what is real, what we might hope to know, and, perhaps most importantly, what we ought to do. The arguments for the web of nature range from the mystical to empirical models of ecologists. As an aid to helping philosophers and non-philosophers interested in sorting out their thinking about these topics, this paper suggests what I believe is a fruitful framework. I deploy the classical Aristotelian theory of causation to help us understand the various kinds of dependency underlying claims of connectedness in the environment. My paper will proceed as follows. First, Aristotle's doctrine of the "four causes" will be modified in several respects to keep it current with environmental and ecological thinking. Second, once these changes are made, connectedness will be interpreted as causal dependency; thus to say that "plants are connected to animals" is to say that they are dependent upon one another in certain specified ways. Third, Aristotle's modified theory will be used to sort out these dependencies, giving us a chance to critically examine the general kinds of strands in the web of nature. Finally, the framework will be applied to several issues in environmental thought to illustrate its usefulness.

Addressing National Policy at the Municipal Level: The Case of F-35 Deployment. Charles Simpson, SUNY Plattsburgh

The F-35 fighter/bomber, conceived in the 1990s but only approaching deployment today, has become the world's most expensive military program. Procurement and maintenance costs are estimated to be \$1.4 trillion over the 40-year life of this plane. Given design deficiencies and emerging technical problems, it may well not reach full operational status until it has become uncompetitive compared with models currently in production by other nations. Where the F-35 excels is in "political engineering". Parts are manufactured in most congressional districts and many foreign countries where purchase is expected. As an example of U.S. industrial policy which subsidizes arms manufacturing and sales, it has become "too big to fail". One marketing aspect has been assigning it to Air National Guard units across the country. Among the first scheduled to receive the plane is the Vermont Air National Guard, based in Burlington, VT. Expected to arrive in 2019, that basing plan is supported by municipal and state officials and the entire congressional delegation. But many area residents have objected. From 2012 to the present, a protest movement has sought to cancel this basing plan and simultaneously question the plane's value. They have used public demonstrations, the courts, and most recently a voter advisory referendum which passed in 2018. Led by Save Our Skies VT (SOS VT), citizens object to the noise impact of military jets which have already forced the demolition of 200 homes, to the cost of the F-35s, and to their role in foreign policy which has become sharply more aggressive. This paper analyses the efficacy of techniques used by SOS VT and the tensions between the goal of defending community viability and challenging national policy.

Modeling a Vision for Alberta's Energy Future. Lorilei Hanson, Athabasca University

Like many others, the Alberta Energy Futures Lab (EFL) have developed a vision for an energy future. The vision responds to the question that has motivated the activities of the 60 fellows from diverse backgrounds that constitute the EFL: "How can Alberta's leadership position in today's energy system as a platform for the transition to the energy system that the future requires of us?" Using Canada's

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National Energy Board's (NEB's) [Energy Futures Supply and Demand Projections to 2040](#) as the baseline case study, a small group of EFL fellows have developed an alternative modeling scenario that makes projections about what would be required with respect to technology, energy and climate policies, human behaviour and the structure of the economy in order to achieve the EFL's vision. The NEB's energy future projections are intended to explore how possible energy futures might unfold for Canadians over the long term and are modeled on projections made by organizations like the International Energy Agency (IEA). Informed by Multi-Level Perspective theory (Geels 2004, 2004, 2011, 2014; Raven & Verbong 2007), I will provide an overview of the assumptions we in the EFL made in creating the model of our vision and the most significant sites of change for energy transition in Alberta highlighted through this modeling exercise. I will discuss the assumptions about energy transition this modeling exercise, as well as those of the NEB and IEA, are predicated upon and the implications of this.

Prioritizing island resiliency with new (and old) foreign investment and development partners. Kalim Shah, Indiana University

The U.S. has recently initiated renewed policy positions on Caribbean relations and the EU, UK and Canada continue to be reliable development investment partners. Japan has recently turned its attention to the region and Chinese-Caribbean economic relations have deepened over the past decade. This discussion provides an overview of this relationship landscape is attentive to areas of potential benefits, risks and implications for the future of new cooperation ties. In particular, the focus is on the implications of these investment flows in relation to national development strategies, sustainable development goals and expected impacts of climate change. It is put forward that government positions to date have been to welcome investment to advance political agendas, which sometimes intersects national development needs but only per chance are strategic decisions to forward long term sustainability and resiliency. How then should Caribbean nations manage such new partners and also leverage longstanding ones?

Racism is the Major Scourge of the Environment in Haiti. Gregory Cronin, University of Colorado - Denver/ Yon Sel Lanmou 501(c)3, NGO operating in Haiti

Racism occurs when one group of people is oppressed at the benefit of another group with power, based on race, skin color, or ethnicity. Racism ranges from individual actions to institutional structures. Haiti is the world's first black republic and has the most impoverished economy and ecosystems. These facts are related by racism. Racist colonizers eliminated the indigenous Taino (i.e., nearly total genocide). Needing labor to work the land, the racist colonizers imported kidnapped Africans under brutal, inhuman conditions. Revolutionaries such as Mackandal, Louverture, and Dessalines led a slave revolt, culminating in the Haitian Revolution. Haiti declared independence on January 1, 1804. Racism continued to harm Haiti after her independence, resulting in international debt, invasion and occupation, exploitation, political meddling, poor infrastructure, poor public health, poverty, and environmental degradation. These hardships also resulted in tough, resilient people who are proud of their country's African roots, historical importance, cultural richness, and natural beauty. Racism at CU Denver is the major scourge of my scholarly pursuits in Haiti. The day after the devastating January 12, 2010 earthquake, CU Denver banned faculty, staff, and students from traveling to Haiti to assist victims. After I started restoring ecosystems in Haiti, my department stopped rewarding accomplishments in Applied Ecology. My research was 'below expectations' for the first time in my career. I first failed to meet teaching expectations the year I co-taught a course with a Haitian presidential candidate and advised the first Haitian to earn an MS in Marine Conservation. My supervisor refuses to discuss racism, even after being informed that silence about racism is racist. Racism must end for Haiti to reach her full potential.

Pillowtalk versus Black Panther. How our cultural worldview can lead to a dystopic reality or suggest a sustainable future. Robin Aspman-O'Callagan, City University of Seattle

In the 1959 movie, *Pillowtalk*, starring Doris Day and Rock Hudson, the character played by Doris Day is a business person who is having problems getting access to vital communication because of another party using the access. When stated this way, we can easily see the ethical dilemma, but when we watch the movie, we see that the person using the resource is a man who writes songs for a living and is using this skill to charm multiple women on the phone, the communication access in question. When questioned about his overuse of the access, he insults and degrades Doris Day's character—that is, until he finds out the woman is a beautiful woman, one 'worthy' of pursuit. From here on we find the

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character played by Rock Hudson 'catfishing' Doris Day by pretending to be a person totally different than who he is. There is the classic reveal, that sets up the comedic payback scene, but in the end, the character played by Rock Hudson, through the use of force, makes his feelings known. This is all that Doris Day needs to forgive and forget everything that happened in the past. This 'liberated' woman, with all the innate biases demonstrated in the film, has helped to create the problems today expressed by #MeToo. But then there's *Black Panther* (2018) and the country of Wakanda - a country where women are equals, in positions of power, innovation, and wisdom. Wakanda treats all citizens equally and enjoys a worldview free of colonialism. The portrayal of the women characters, from their roles, to the costumes and choreography, depicts the women characters as strong, creative, ingenious equals. The message of this movie runs counter to the mis-information of last century's programming. How do we help the *Black Panther* worldview succeed?

Environmental Legacy - Wangari Maathai and the Green Belt Movement. Bernice Scott, Spelman College

This paper explores the life and legacy of Wangari Maathai (1940-2011), Kenyan environmental activist, university professor, and creator of the Green Belt Movement (GBM). Initially a small tree-planting project, the GBM has grown into an environmental force, with the mission, in 2018, "...to strive for better environmental management, community empowerment, and livelihood improvement using tree-planting as an entry point."¹ Since its founding, in 1977, the GBM has planted millions of trees across Kenya, and continues to provide economic opportunities for rural Kenyan women. The GBM has also expanded its activities to include climate change and mainstream advocacy. Professor Maathai, who died in 2011, was awarded the 2004 Nobel Peace Prize. In its official statement on the award, the Nobel Committee lauded Professor Maathai for her contribution to sustainable development, democracy and peace, and commented that her methods have been adopted by other countries.

Isolation of bacteria from drinking water tanks of houses in Riyadh City. Muneera Al-Kahtani, Prince Nourah Bin Abdulrahman University

One of the biggest concerns for water consumers regarding the quality of water is known as water contaminants that may lead them to a number of diseases transmitted through water and the spread of epidemics, the objective of this study was to know the extent of the spread of bacterial contaminants in the water tanks. Were collected 30 sample to isolate the bacteria from five areas in the city of Riyadh (north, east, south, west, center) has been used three environments in isolation (Blood agar, MacConkey agar and Sabouraud agar) using traditional methods in agriculture and planning, was incubated samples for 24 hours then took swabs from the colonies clean and put it in VITEK2 for 6 hours to get to know them, which resulted in the results for the isolation of 9 species of bacteria from 15 samples (Kocuria kristinae, Raoultella planticola, Granulicatella elegans, Kocuria rosea, Streptococcus pneumonia, Kocuria varians, Erysipelothrix rhusiopathiae, staphylococcus intermedius, Acinetobacter lwoffii). It also resulted in the results of a survey conducted by the publication of a questionnaire to residents of Riyadh (513) random sample, 85% do not they clean the water tank on a regular basis every 6 months 15% of whom are cleaning the 0.26% Not clean it never, recommendations this study, the development of programs to educate and activate people and make them aware of the importance of maintaining the quality of water in the reservoirs of the house by cleaning the tank every 6 months to ensure the safety of the water.

Pyocyanin and potential roles in sustainable agriculture. Areej Bashaen, King Abdulaziz University, Saudi Arabia

P. aeruginosa is more widely known as an opportunistic pathogen for humans and animals than as soil bacteria, for this reason it was used as fertilizer in many crops as well as against root rot without harmful action. It is Pyocyanin pigment may consider as plant growth promoting, and can act as a cheap source of fertilizers to crop plants. Pyocyanin production by the selected *P. aeruginosa* isolates L. 12, L. 16 and L. 17 was determined in different media. The crude Pyocyanin was taken as control and other treatments were done by adding distilled water, viz., 5%, 15% and 25%. *E. sativa* seedlings were irrigated every other day using these solutions. Measurements of leaf area, biomass Water content, photosynthesis pigments and essential and heavy elements were taken. Results revealed a pronounce increase in low Pyocyanin concentration (5%) treated plants compared to control in all measured parameter. On the other hand, high Pyocyanin concentration treated plants achieved the highest elements constituents. Pyocyanin may be further improved with the optimization and familiarization according to the current soil conditions. In future, it may replace the chemical fertilizers and help in sustainable agriculture. Further research and understanding of mechanisms of Pyocyanin is urgently needed.

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Study of Gas Emissions Reduction of N₂O, CO₂, CH₄, and CO from Eco-Friendly Waste Burner in Sungai Kakap District, Kubu Raya Regency. Restu Wijayanti, Diponegoro University, Indonesia

Solid waste treatment and management has not run optimally in Sungai Kakap District located in Kubu Raya Regency which covers 13 urban villages with 114.161 total population in the year of 2016. Unoptimized management has led people to manage their waste by open burning. Percentage of that garbage in Sungai Kakap District is 66,4% with 2 times per week burning frequency. Open burning has a big potential to produce harmful gases that influence either directly or indirectly the greenhouse effect that causes earth's temperature increase which affects climate elements. Over long period of time, the earth must release energy at the same rate as energy which is received, forcing the climate to adjust to restore a balance between energy input and output that are chaotic resulting in climate change. One way to reduce greenhouse gas emissions from open burning waste is creating eco-friendly waste burner. Eco-friendly waste burner consists of 2 reactors. The first reactor is a burning furnace for organic waste and the second reactor is a smoke control tool. How to reduce combustion smoke in eco-friendly waste burner is passing combustion fumes to activated carbon with water spray. Based on the research results, the emission load from open burning waste in one year reaches CO₂ gas equal to 6061,605 ton/year, CH₄ gas equal to 91,59237065 ton/year, N₂O gas equal to 0,905194 ton/year, and CO gas equal to 7,7825 ton/year. After using the technology of eco-friendly waste burner, the highest and the lowest value of greenhouse gas emission load from combustion process is CO₂ gas equal to 4738,627 ton/year, CH₄ gas equal to 71,3891281 ton/year, N₂O gas equal to 0,375091 ton/year and CO gas equal to 2,998177 ton/year.

What We Owe to Climate Refugees. Simona Capisani, University of California – Irvine

With the onset of ecological instability, by the middle of this century millions of people will be at risk of displacement due to anthropogenic climate change. Consequently, populations will be compelled to migrate both internally and across international borders. The status of these so-called "climate-change refugees" is uncertain both as a moral issue and as a matter of international law. Currently, the international protection regime lacks sufficient normative grounds for such a challenge. I address this lack of normative grounding and answer the question of what we owe to "climate refugees." I argue that we do indeed owe something to those displaced by climate change, and such obligations are associative in nature. In this paper I claim that given an exclusive and all-encompassing territorial state practice, each person has the moral right to be somewhere livable. In other words, each person has the moral right to the effective means of being in a livable space if he or she lacks one in his or her country of citizenship, where a "livable space" requires at least (a) social integration and (b) a path to socio-political membership. "Climate refugees" bring to light the moral implications of neglecting to include climate change as a new presupposition of the system. My argument draws from normative presuppositions of the state system but directly addresses this shift in empirical conditions.

Population Growth, Environmental Hazards and Sustainability. Case: The Buea Municipality, Cameroon. Forwang Jean Claude, University of Buea

Buea, the regional capital of the South West and former Capital of German Cameroon has over the years witness an increasing pace of urban growth. Like any other urban areas of Cameroon, Buea has been facing rapid population growth which has fuelled its process of urbanisation resulting to unnatural environmental hazards. Urban environmental quality no doubts, is affected by environmental problems which are as a result of rapid urbanization and poor management of the urban space. Therefore poor planning has added to the problem of rapid urbanization that contribute to the numerous environmental problems in Buea thus a call for environmental renewal. Sustainable urban development implies "improving the quality of life in an urban area, including ecological, cultural, political, institutional, social and economic components without leaving a burden on future. These problems are present in Buea and threatens the possibility of the municipality to achieve sustainable urban development. To make matters worse, there seem to be total disharmony between the socio-economic and environmental institution within the Buea urban environment, Also forest loss which has exacerbated and increased the vulnerability of urbanites has increased runoff and flooding, the poor state of environmental sanitation in Buea therefore calls for the need to improve the quality of the environment and restore sustainability. However because of the problem of space, the people continue to construct buildings along slopes, thus aggravating environmental issues. Therefore, agriculture and settlement land use have to compete for the limited surface in molyko and this has resulted in land use conflict and acute environmental issues. It is for these reason the research is carried out to know how both government and the local population can contribute to sustainable environmental practices without jeopardizing the needs of the future generation.

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Vulnerability of urban poor to climate change in Bamenda, Cameroon. Nixon Akoh, Enko Bonanjo
International School, Cameroon

This study seeks to understand key aspects of vulnerability of the urban poor in Bamenda, how climate impacts upon this vulnerability, and to determine how forward looking policies and programs can be developed that reduce the vulnerability of the poor. Over 44 percent of the city's residents live in informal, unplanned settlements that lack adequate infrastructure and services, and over half of them survive on roughly a dollar per day. Vulnerability to climate variability hazards is high in urban poor communities in Bamenda. Flooding is frequent, and is a result of both heavy or prolonged rainfall and a range of non-climatic factors such as over-crowding, dumping of sewage and solid waste into rivers and channels, and blockage of storm drains with garbage or illegal construction. Apart from damage to property, factors such as inadequate or absent supply of clean water, poor sanitation provisions, widespread use of pit latrines that overflow easily, render many residents of these settlements vulnerable to disease, particularly following flood episodes. Residents of Sisia, Below Foncha, Mulang amongst others are prone to malaria, dysentery, skin infections, among other. Floods have an impact on the livelihoods of the poor. Precipitation trends are very clear, and appear to indicate an increasing number of rain days per year along with high variability. Rainfall intensity is equally on the increase. Rise in water levels would result in increased degradation along stream channels, which would exacerbate flooding. Most Bamenda's major floods over the past three decades appear to be linked to heavy rain storm events. Bamenda's urban poor are currently unable to cope adequately with existing climate variability hazards, and rapid urban growth compounds the current situation. Climate variability is likely to greatly aggravate these vulnerabilities. Against this backdrop, this study has identified examples of current policies and programs for the city that serve to both address current vulnerability and promote adaptation to climate variability hazards. These programs have been targeting infrastructure improvements in poor areas of the city and seek to nurture community-based initiatives. Such initiatives need to be supported and expanded and, importantly, their benefits sustained.

CONFERENCE WORKSHOPS

Transcending Disciplinary Approaches to Education for Sustainable Human and Environmental Systems. Presented by Richard Smardon, SUNY College of Environmental Science and Forestry; Michael Reiter, Bethune-Cookman University; Will Focht, Oklahoma State University; Kimberly Reiter, Stetson University

The Sustainable Human and Environmental Systems (SHES) Roundtable, which first met in 2009, represents an ongoing effort by academics, program directors, administrators, environmental agency personnel, and practitioners to produce a living set of recommendations concerning the pedagogical and administrative aspects of interdisciplinary and higher-order sustainability education. The Roundtable's vision is the emergence of societies that facilitate, enhance, and sustain indefinitely in that facilitated or enhanced state the well-being of human individuals, their communities, and their environments, while its pedagogical goal is to empower learners to contribute to the realization of that vision. The SHES approach to sustainability education focuses on the use of systems thinking to reveal the complexity of sustainability situations holistically as an alternative to discipline-based perspectives on sustainability, and thus enables learners to diagnose sustainability challenges, to prescribe sustainable responses, and to implement those responses in ways that are not constrained by disciplinary boundaries or limited by the subject matter context. This presentation will focus on the background and pedagogical framework of the Roundtable, its current proposals regarding faculty, program, and administrative support, and finally the use of the SHES approach in sustainability higher education and theoretical or application issues.

Interdisciplinary environmental applications of GIS: Demonstration of various case studies
Presented by Barnali Dixon, University of South Florida – St. Petersburg

This GIS demonstration will include power point presentation of interdisciplinary applications of GIS. Case studies will include applications to i) Coastal resilience and adaptation – Assessing biophysical and Socio-economic vulnerability, ii) Rethinking MPAs (Marine Protected Areas) – Linking urbanization of watersheds to water quality of coastal MPAs, iii) Assessment of Environmental impacts of wild fire: soil erosion and water quality, and iv) Ground and surface water vulnerability: an integrative assessment of septic tank density, drinking water wells and beach closures.

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Security issues associated with our natural environment: A Roundtable Discussion Presented by Demetri Kantarelis and Kevin Hickey, Assumption College

Environmental issues associated with increasing greenhouse gases, degradation and resource depletion negatively affect sustainable growth and current business models. How can we combat environmental challenges subject to peace and inclusive economic growth? Perhaps, among other, we must consider: (1) improving the effectiveness of the international community's response to environmental challenges such as climate action priorities, ocean health, deforestation, and water; (2) exploring how the 4th Industrial Revolution (the age of the robots) can be utilized for possible solutions. Undoubtedly, for desirable and non-discriminatory results, both public and private sectors - across the world - need to innovate and cooperate. In this roundtable session, we would like to attempt to stage some possible action plans that relate, not exclusively, to the following: • Interconnected Risks • Alleviation of Poverty • Environmental Justice • Enlightened Leadership • Possible Negative Impacts of Growth & Development • The 4th Industrial Revolution and how to take advantage of new technologies such as sensors, aerospace developments and the like • Going Green in infrastructure, materials, home building, consumption of food and the like.



The Interdisciplinary Environmental Association (IEA), founded in 1994, is an organization of academics and practitioners from a wide range of disciplines and perspectives who believe that environmental problems require an interdisciplinary approach that needs to be clearly reflected in an organization dedicated to enhancing the discussion of these issues across disciplinary and political boundaries. The mission of the IEA is thus to bring together all disciplines so that environmental knowledge is enhanced through interdisciplinary communications. The goals of the organization are to enhance understanding of environmental issues by educating each other in an interdisciplinary format, and to present disciplinary perspectives of environmental problems to people outside those disciplines, as well as to those outside academia, in a clear, understandable fashion.

