



6<sup>th</sup> Global summit on  
**Climate Change**  
November 19-20, 2018 Paris, France

**POSTERS**

# 6<sup>th</sup> Global summit on Climate Change

November 19-20, 2018 Paris, France



## Ali Abbas Abdeldjalil

National Superior school of  
political science, Algeria

### Climate change and desertification in Algeria: strategies and policies for achieving sustainable development

This paper will focus on strategies and policies to combat desertification to ensure sustainable development in Algeria in the context of climate change and will present a long-term perspective of rational management of natural resources and a set of scenarios on climate change and its impact in Algeria. Our study analyzed the relationship between desertification and climate change in Algeria, particularly in the steppe region as a multidimensional problem: economic, social, environmental and cultural. It will showcase the most important national projects aimed at eradicating poverty and improving the life of steppe areas such as the Green Dam project, which aims to achieve ecological balance in these affected areas. Next, clarify the role of local civil society in raising awareness of the importance of protecting the environment and reducing desertification. Since the signing of the United Nations Convention to Combat Desertification (UNCCD) in 1996, Algeria has made great efforts to reduce the spread of desertification and land reclamation in arid and remote areas and in many local areas directly impacted on sustainable development in general.

### Biography

Ali Abbas Abdeldjalil had his Magister degree in political science specializing in Governance and Development at the University of Batna in Algeria in 2017 and is an enrolled third-year doctoral level student in political science specializing in Communication and Development at the National Superior School of Political Science in Algeria. He is the General Secretary of Association "Dounia of Environmental Protectors in Chlef" in Algeria since 2008. He participated in more than 10 seminars between national and international. He is a Former coordinator of the national organization for the protection of the environment and tourism exchange in Algeria during the period 2015-2016 and a founder member of the Algerian forum of young executives in Algiers in 2018.

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**Mohammad Nadri**Aristotle University of Thessaloniki,  
Greece**Activity concentration and annual effective dose estimation of  $^{210}\text{Pb}$ ,  $^{40}\text{K}$  and  $^{137}\text{Cs}$  in surface soil samples from southern Algeria**

The level of radioactivity from naturally occurring radioactive material (NORM) depends on geological conditions and geographical locations. NORM may be present in water, food, soil, rocks, concrete, and other building materials in considerable amounts. The origin of natural radioactivity in rocks and building material is the earth's crust, while the soils' radioactivity often originates from soil minerals containing natural  $^{238}\text{U}$  and  $^{232}\text{Th}$  parent series and natural  $^{40}\text{K}$ . Further sources of radioactivity in nature are technically enhanced natural occurring radioactive material (T-NORM), mineral extraction facilities, extensive use of phosphorus rich fertilizers in agriculture, releases from installations of the nuclear fuel cycle, use and tests of nuclear weapons, and fallout from nuclear accidents. The specific levels of terrestrial environmental radiation are related to the geological composition of each pathologically separated area, and to the content of natural radionuclides in rocks from which the soils originate in each area. Man-made radionuclides have been introduced in the environment since the beginning of the 20<sup>th</sup> century, but more significant since 1940 with the first nuclear weapon tests and after the 60s from a variety of other nuclear activities. In the early 1960s, France conducted a series of nuclear tests in the Sahara Desert of south Algeria. During these tests, radioactive materials were released to the environment. Several observations of have shown that  $^{137}\text{Cs}$  deposition reached a peak of about 4.8 GBq/km<sup>2</sup> during 1965–1966. The radionuclides deposited on the soil by radioactive fallout due to nuclear weapon tests or nuclear accidents can enhance the radiation dose to human directly via external radiation and indirectly by ingestion of plants which were contaminated due to uptake of radionuclides from soil through roots. Understanding the mechanisms of sorption and migration of radionuclides in the soil and their transfer into the food chain is necessary in order to reduce effectively the external and internal exposure of human. The long-term transfer of radionuclides from fallout via terrestrial pathways depends considerably on the residence time of radionuclides in the root zone of agricultural and grassland sites. The radionuclides that are deposited in the sandy soil of the desert are brought to the surface by the movement of the dunes and could be re-suspended by wind. Some detection of high concentrations of  $^{137}\text{Cs}$  and  $^{40}\text{K}$  in the Mediterranean area were related to winds coming from Africa. A high level dose can cause deterministic and stochastic effects in short and long exposure times respectively. This study determines the activity concentration and estimate the dose of 16 sand samples collected from two different nuclear test sites. Radionuclides were determined in Algerian soil samples from different regions where the highest activity concentration of  $^{210}\text{Pb}$  was detected for the highest value in sample three and the minimum value in sample eight, the highest activity concentration of  $^{40}\text{K}$  was detected in sample two and the lowest value in sample 11 and finally, the highest concentration of  $^{137}\text{Cs}$  was detected in sample 15 and the lowest value in sample 13. The soil surface and soil properties differently affect mobilization of natural radionuclides.

**Biography**

Mohammad Nadri is an assistant professor in Physics Department, ENS, Algeria, from 2006 till now. Currently, he is preparing for his PhD degree in Environmental Physics, Aristotle University of Thessaloniki, Physics Department, Nuclear Physics Laboratory, Thessaloniki 54124, Greece. He has completed his Master's degrees in Nuclear Physics from Physics Department, Baghdad University Iraq and Alexandria University Physics Department, Egypt. His projects include: Development of Traditional Poultry Farming Sahara Young's People Algeria; Culture of Medicinal Plants Sahara Young's People Algeria and Plant Medicinal and Asian Vegetables in Algeria.

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## Ragab Abd Eltawab

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### Colloidal stability of eco-friendly sustainable asphalt binder prepared using different waste polymers for different climates

Eco-friendly and sustainable asphalt can be obtained using waste polymers recycled industry and cause severe environmental and climatic problems. In this paper, we studied the effect of waste polymers of different nature and different composition on the colloidal stability of environmentally friendly asphalt for application in different climatic environments. The waste high density polyethylene (WHDPE), waste polypropylene (WPP) and waste polystyrene (WPS) were added in 10% and 15% wt after their evaluation to study the effect on the colloidal stability of the asphalt formed using the chromatography column and HPLC for detecting SARA fraction of prepared modified asphalt. The results showed that the use of polymers of different nature leads to different results. Aliphatic polymers contribute to the increase of colloidal stability due to the increase of saturates and asphaltene, conversely, polymers of aromatic nature contribute to the decrease of colloidal stability due to increasing the proportion of aromatic in the mixture in line with solvent like as like. The research concludes by recommending the use of polymers of aromatic nature to improve asphalt specifications more in cold climates while aliphatic are used in hot climatic zones. This reduces costs and environment problems of waste polymers by using in the preparation of eco-friendly asphalt, according to the principles of sustainable development and climate change.

#### Biography

Ragab Abd Eltawab is a PhD researcher in Asphalt Lab in Petroleum Applications Department, Egyptian Petroleum Research Institute (EPRI). He has completed his PhD in the department of Chemistry, Faculty of Science, Ain-Shams University (2016). He was a board member in Asphalt and Polymer Services Center from 2012 till 2015 and Board Member in Chemical Services and Development Center from 2015 till now. He is a key member of the project "Enhancing Sinai population: Novel modification of soft asphalt for use in roadway network development and infrastructure applications". He has published a book entitled "Environmentally Friendly and Economical Road Construction. "Manufacture of Specific Asphalt Binder for Use in Paving by using waste and low cost materials" LAP LAMBERT Academic Publishing (2014). He has a publication of a chapter in a book entitled "using of waste and low cost materials in manufacture of specific Asphalt binder for use in paving Vol.2: Petrochemical of Adv. in Petroleum Engineering, Studium Press, LLC, USA. (2014). He also published a chapter in a book entitled "Asphalt modified with biomaterials as eco-friendly and sustainable modifiers" publication in the book "Modified Asphalt", under the editorship of Dr. Jose Luis Rivera-Armenta 2018.

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**Felix Gyawu Addo**

Hohai University, China

## Distribution and relationship between antibiotic resistance genes and heavy metals in surface sediments of Taihu Lake, China

The use of antibiotics accelerates the development of antibiotic resistance genes (ARGs) in bacteria which pose health risks to both humans and animals. Research has proved that increasing antibiotic resistance (AR) results from overuse of antibiotics in medicine, therapeutic and nontherapeutic applications in agriculture. Heavy metals, pharmaceuticals, and other wastes released into the environment can significantly influence environmental antibiotic resistance (AR). Over the years, Taihu Lake has become one useful site as it receives discharge from various sources mainly industrial pollution and aquaculture; antibiotics are used sparingly in medicine and agriculture. Within this context, 22 antibiotic resistance genes were quantified, to analyze and know their physicochemical characteristics and 10 heavy metals at seven sites, mainly to determine the distribution and relationship of antibiotic resistance genes and heavy metals in surface sediments along Taihu Lake located in the Yangtze Delta, owing to the rapid development of industry, agriculture, and fishery production. Significant correlations ( $p < 0.05$ ) were found between sediment ARGs level, especially for tetracycline and sulfonamides (e.g., tet(A), tet(D), tet(E), tet(O), sul I, sul II, int-1) and specific heavy metals in the lake. In the surface sediments, heavy metals had a close relation to the resistance genes, but their interaction was abated with an increase in depth. For most of the heavy metals, the concentration of elements in the top sediments was higher than that in other depths. All ARGs tested were detected in the collected samples except tetJ, tetK, tetL, tetQ, tetS, tetX and tetY. They had a trend which inferred a statistically significant increase and then decreases in the relative abundance of these ARGs (normalized to 16SrRNA genes) with increasing depth. This study revealed that tetA, tetO, TEM, OXY, int-1, sul I and sul III were universal in surface sediments with high abundance, indicating that these genes deserve more attention in future work.

### Biography

Felix Gyawu Addo has completed his MSc at Hohai University, China and will start his PhD at the same University. He is also a research assistant to professor Songhe Zhang of the College of Environment and has helped publish several papers among which include "Responses of bacterial community structure and denitrifying bacteria in biofilm to submerged macrophytes and nitrate". His goal is to develop his own skills in the field and contribute immensely to the community of environmentalists to help tackle challenging problems. His field of interests includes Environmental Biotechnology, Water Resources Management and Pollution.

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**Lokendra Bhatta**

Tribhuvan University, Nepal

## Livelihood vulnerability due to climate change: a case study of Sirdibas and Samagaun of Manaslu conservation area, Gorkha district Nepal

The climate change affects almost all the sectors of livelihood and is inevitable. At the context, this study was to access the livelihood vulnerability in the context of local climatic parameters and experience of locals at VDC level in two different VDCs of Manaslu conservation area. A composite index approach was chosen to combine survey data into single index. Method of calculating LVI is based on the Intergovernmental Panel on Climate Change framework of vulnerability. Climatic data acquired from DHM were assessed using statistical tools and focal group discussion, key informant interviews; questionnaire surveys were carried out to collect information about impact of climate change on livelihood. After calculations, results showed that Samagaun (-0.063) was relatively more vulnerable than Sirdibas (LVI: -0.073). The trend analysis of annual average precipitation showed that precipitation was increasing at the rate of 2.84 mm/year at Jagat station and was decreasing at the rate of 2.02 mm/year at Larke station. Analysis of temperature data showed that annual maximum temperature was increasing at the rate of 0.103°C/year and 0.08°C/year similarly annual minimum temperature was found increasing at the rate of 0.06°C/year and 0.03°C/year at Chame and Gorkha Station respectively. Local agricultural productions supported the denizens of Samagaun for 3-4 months and Sirdibas for eight months. Apple and Mayal was reported flowering one month earlier, Karu was replaced by Wheat 15 years ago due to high decrease in production. Production of potato was decreasing, and heavy infestation of pest was also reported. In order to overcome the situation, autonomous and planned adaptation practices are recommended to be adopted. Improved variety of food crops and plantation orientation should be conducted in the area. Drought and pest resistant varieties should be promoted, and delineation of landslide and flood prone area is necessary. Slope protection measures should be adopted in high risk zones and resettlement to safer areas should be done at Sirdibas. Further study should be done to develop and weather forecasting system, early warning system and agriculture technologies to cope with the negative impacts of emerging climate change.

### Biography

Lokendra Bhatta has completed his Master's degree in Environment Science from Tribhuvan University, Kathmandu, Nepal. He is the Far Western Nepal Regional Representative of GeoHazards International, a social development organization. He has worked in Disaster Risk Reduction and Climate Change Sector for eight years in Nepal.

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**Rozita Zare**

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Agriculture and Natural Resources Engineering  
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## The significance of soil in the increasing carbon sequestration of urban forests

**Introduction:** Regarding the climate change, the priority can be bestowed to the fact that soil hold pivotal position combat, such phenomenon through carbon sequestration, and the lack of plants on land may havoc the loss of carbon.

**Aim:** The aim of this study was to survey the effects of urban forests on soil carbon sequestration in three stands including Robinia-Fraxinus, Robinia, and Cupressus.

**Methods & Results:** The research was done at forest Pardisan Park in Tehran, and its result was compared to a control land (barren land). With measuring organic carbon in both 0-15 cm and 15-30 cm depth, the results demonstrate that carbon sequestration is significantly the highest value ( $p < 0.01$ ) in the soil of mixed Robinia-Fraxinus stand (18.96 ton per ha) by comparison to Robinia and Cupressus (14.86 and 9.69 ton per ha) and barren land (6/97 ton per ha), respectively. Moreover, organic carbon in the 0-15 cm depth of soil in forested stands is more than the 15-30 cm ones; while a reverse trend is observed in the arid land. Also, stepwise regression is shown that organic material and nitrogen are the most important components affecting carbon sequestration. As a consequence, the aforementioned stands are of a tremendous help towards an increase in the amount of carbon sequestrated into soil (11.99, 7.89, and 2.72 ton per ha) against that of control land.

## Biography

Rozita Zare has completed her MSc in Natural Resources major from Islamic Azad University, Science and Research Branch, Tehran. She is a Lecturer as well as scholar in both Environment Faculty of Applied Science and Technology University of Agriculture and Natural Resources Engineering Organization. She has published more than eight papers in reputed journals and also presented papers in national and international conferences.

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ABSTRACTS**

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## Analyzing spatio-temporal precipitation variability and trends over Ethiopia

**Mammed Mohammed Gedefaw**  
University of Gondar, Ethiopia

The spatial-temporal variation of precipitation significantly affects the hydrological processes and the proper management of surface water resources. This study analyzed the spatio-temporal variability and trends of precipitation over Ethiopia by using a non-parametric Mann-Kendall test from 1980 to 2016. The results show that the annual precipitation was 758.504 mm. Monthly precipitation revealed an upward trend in summer season (June to August) and a downward trend in winter season (December to February). The results also showed an increasing trend in the eastern and southwestern parts of Ethiopia and decreasing trend in the northeastern part. The spatial variability of annual precipitation was observed with a CV averaged of 3.03%. The trend analysis of the annual precipitations showed a dramatic decreasing trend in 1984. However, no statistically significant trend was observed in the annual precipitation but increasing and decreasing seasonal trends were observed. The increase in precipitation during rainy season along with the decrease in number of rainy days leads to an increase of extreme rainfall events over the country during 1980-2016. The consistency in precipitation trends over the country confirms the robustness of the change in trends. Studying the precipitation trends serves as a basis for understanding the changes in climate.

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## **Migrants' remittances and financing adaptation to climate change at the local level: Experiences from Ghana**

**Albert Ahenkan, Musah J and Bawole J**

University of Ghana, Ghana

The much-trumpeted Green Climate Fund and several other official financial mechanisms for financing adaptation to climate change under the UN Framework Convention on Climate Change have fallen short in meeting adaptation needs. Many poorer people are still grappling with the scourge of climate change impacts. Consequently, there has been a dominant research focus on climate change financing emanating from official development assistance (ODA), adaptation fund, public expenditure and private sector support. However, there has been little attempt to examine how migrants' remittances can close adaptation financing gaps at the local level, ostensibly creating a large research gap. This paper aims to argue that migrants' remittances provide a unique complementary opportunity for financing adaptation and have a wider impact on those who are extremely vulnerable to climate change. The paper is aligned to the qualitative research approach. Both secondary and primary data acquired through interviews and focus group discussions were used for the study. Multiple sampling methods were also used to select the respondents. The findings show that remittances are used to finance both incremental costs of households' infrastructure and consumption needs, as well as additional investment needs to be occasioned by ongoing or expected changes in climate. In the wake of dwindling government/public revenue, ODA and poor commitment of Annex II countries to fulfill their financial obligations, the study makes the following recommendations: Firstly, the financial infrastructure underpinning money transfers in both sending and recipient countries should be improved to make transfers attractive. Secondly, significant steps should be taken to reduce the fees on remittance services, especially for the small transfers typically made by poor migrants. Finally, adequate climatic information should be made available to local people to ensure that remittances are applied to the right adaptation option to avoid maladaptation.

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## Climate change impacts and vulnerability assessment of selected municipalities and agroecosystems to support development of resilient communities and livelihoods in Nueva Ecija, Philippines

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Central Luzon State University, Philippines

In the last decade, the Philippines has been hit severely by natural disasters brought about by climate change which caused great damages to agriculture. The objectives of the study were to assess climate change impacts and vulnerability of Bongabon, Gabaldon and Cabanatuan city, Nueva Ecija; to assess the vulnerability and suitability of growing various crops, goats and chicken; to generate vulnerability and suitability maps; and to validate the maps produced. A comprehensive scoping, profiling, vulnerability assessment of crop, chicken and goat suitability assessment of the municipalities and agroecosystems of the study sites were done. Generation and validation of the vulnerability and suitability maps were also conducted. Results revealed that Bongabon obtained moderate vulnerability to floods and typhoon while low vulnerability to drought and soil erosion. Gabaldon had moderate vulnerability to floods, soil erosion and drought while low vulnerability to typhoon. Cabanatuan city attained moderate vulnerability to floods and drought while low vulnerability to typhoon. There were four crops suitable to grow in the current condition with flood and landslide hazards and in the two projected future scenarios (RCP 4.5 with good conditions and RCP 8.5 with the worst conditions). Only three crops are highly suitable to grow in Gabaldon for the future conditions, while in Cabanatuan city, four crops are very suitable for the three situations. Native chicken and goats are highly suitable to raise in the three study sites for the three conditions. There were 16 vulnerability maps developed and generated in Bongabon, 16 in Gabaldon and only 12 in Cabanatuan city. Furthermore, 21 crops, chicken and goat suitability maps were produced in Bongabon, 27 maps in Gabaldon and 21 maps in Cabanatuan city. Overall, validation of the maps in the study sites had high accuracy.

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## Mainstreaming climate change for sustainable mega water projects in Egypt

**Ayman F Batisha**

National Water Research Center, Egypt

Egypt and other participating countries in United Nations Framework Convention on Climate Change (COP 21) have reached agreement for the first time ever, to limit global temperature increases below 2°C. Egypt has an ambitious 1.5-million-feddan project to set up new communities. The project should improve irrigation at new and will depend on solar energy for water pumping. Conventional energy resources establish a significant commitment on the environment and economy. Providing energy demand should be without adding to climate change. Significant reductions in greenhouse gas (GHG) emissions are necessary to limit the magnitude and extent of climate change. This paper aims to reach sustainable climate targets. Environmental performance of solar photovoltaic for water pumping in 1.5-million-feddan project is examined. The study identifies the effectiveness of Clean Development Mechanism as a tool for assessing environmental impacts of this mega project. Relative to baseline, project scenarios of the utilization of the fossil fuels and the solar photovoltaic technology have been assessed. The net difference in GHG emissions between scenarios due to existence of the project has been estimated. The greenhouse gas (GHG) emissions throughout all stages of the life of PV technologies have been determined. Results compared with GHG estimates by fossil fuel heat indicated that life cycle GHG emissions are higher in conventional sources as compared to Solar photovoltaic (PV). The results indicated that the examined solar photovoltaic technology offer substantial contribution to climate change by effectively producing limited amounts of GHG emissions, which are close to zero. Significant reductions in life cycle GHG emissions are achieved in the operation of the 1.5-million-feddan project. PV technologies are considered “Clean Development Mechanism” because their operation does not generate any carbon dioxide. The paper concludes that the solar photovoltaic technology is a sustainable renewable energy option to mitigate climate change. PV combats greenhouse gas emissions and contributes to mitigating climate change and to promote sustainable development (SD) in Egypt. In this regard, solar photovoltaic (PV) appear to be the most efficient and effective solutions for clean and sustainable energy development for 1.5-million-feddan project in Egypt.

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## Remembering the Anthropocene: a future human's long view of climate change

**Daniel McMurray**

The Climate Reality Project, USA

We live in a new epoch in which the impact of human behavior, industry, agriculture and civilization is having a profound and far reaching impact on the atmospheric, geologic, hydrologic, biospheric and other earth system processes. Whilst geologists differ over the precise dating of the epoch, whether it be from the presence of radioactive isotopes from the creation and detonation of nuclear weapons, or the mountains of plastic waste created in our linear take-make-waste economic system, or the hyper-acceleration of human generated atmospheric greenhouse gases, or even the proliferation of domesticated chicken bones in the geological record – what is clear is that humanity has already altered the world in fundamental and likely irreversible ways. We stand now at an inflection point in human history. With atmospheric CO<sub>2</sub> levels, around 410 ppm and rising fast, rapid thawing at the poles and mountain glaciers, rising sea-levels and acidification, growing intensity of storms, droughts and floods, and with significantly more warming already locked into the system, the trajectory we are on now must change and it must change fast. This talk will project forward 200 years, told from the perspective of a future human, reflecting on the Anthropocene and where it all went wrong or right? Will the Anthropocene end up as little more than a thin, radioactive, plastic-choked, oily smear in the geological record, littered with the bones of countless dead species? Or will humanity finds a way to stem global warming, move from a linear destructive and extractive economic model to a more circular, sustainable and regenerative model?

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## The socio-economic impact of 'green' buildings policy: A Franco-Israeli comparative analysis

**Elise Machline**

Ben Gurion University of the Negev, Israel

This study considers the socio-economic impact of 'green' building in Israel and France and examines the extent to which social aspects are integrated in their different approaches to sustainable urbanism. We compared 'green' building policy contexts and instruments in each of the two countries and considered whether the provision of affordable housing and social diversity are part of the declared policy and implemented in practice. We also inquired whether 'green' buildings foster gentrification - inadvertently or intentionally? As observed in other countries, we found that there is a 'green premium' in Israel, whereby certified apartments tend to be systematically more expensive for homebuyers than similar noncertified apartments. 'Green' building certification was found to raise apartment sale prices by between 3% and 14% - which is significantly higher than the additional construction costs required to build them. We found in our three case studies (in Tel Aviv, Yavneh and Dimona) that 'green' building is being used to attract middle class households to previously poor neighborhoods. In France, 'green' building is mainly practiced in middle-class urban areas – and in low-income areas of wealthy cities like Paris, to attract middle class residents. As in Israel, we do not find 'green' neighborhoods in rich areas of wealthy cities, but in contrast to Israel, we do find 'green' housing in poor French localities (like Reims). The French policy promotes social diversity and the construction of 'green' public social housing in the eco-districts, and thus there is an ostensible effort to build housing that is both 'green' and affordable. However, in affluent and average municipalities, the share of 'green' social public housing that is actually available to low income groups is minimal - since most public social housing is ultimately allocated to higher-income groups.

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## Communities level resilience from climate change in dry zone of Myanmar

Lian Khan Sum

BRACED Myanmar Alliance, Myanmar

Communities in the dry zone regions in Myanmar are increasingly undergoing climate shocks and stresses. Higher temperatures, shorter and more intense rain falls, and more frequent storms and cyclones mean that the communities are in high risk areas and are increasingly at risk of loss of livelihoods. As climate extremes have worsened over the past years, communities have had to rely on coping strategies and mechanisms such as migration, the sale of assets, community support structures and support from family networks in order to manage and adapt to pervasive shocks and stresses. The rainfall is major source of the water here. Since there is forest degradation, there is huge impact on climate change. The government staff of Department of Conservation and Forestry went to the village and shared the knowledge on degradation of forestry, impacts on the environment and biodiversity along with the importance of forests and the causes and effects of soil erosion. In order to reduce deforestation because of firewood cutting, the special project distributes firewood saving efficiency stoves with the partnership of a private stove company. Education programs were conducted on multiple crop and subsidiary crop for the communities for better resilience. The villagers are applied for community forest for their region. When there is less production of seeds in the farming land, the villagers started going to work in oil camps and moved to another region (Yangon) to work for more income. Some of the villagers, who are working outside, decided to send money back to their family in village and some villagers sell their gold for short term resilience for their family.

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## Impacts of global warming on Jammu and Kashmir (India)

**Maheshwar Vishwakarma**  
Samajic Environmental Welfare Association, India

The climate change is the biggest environmental emergency that the earth faces today. This inevitable disaster has a multitude of serious implications for both environment and human society. Efforts are being made to develop a better scientific understanding of this complex problem by generating better future projections of climate change. The climate change has potential implications on different sectors including glaciers and permafrost, rivers, forests, soils, ecosystems, society and economy etc. The state of Jammu and Kashmir is predominantly a mountainous state with all the major Himalayan ranges and Trans-Himalayas adequately represented. Falling in Himalayan region, Jammu and Kashmir has a geographic area 2,22,236 sqkm. Around 20230 sqkm, which comprises 19.95 percent of the geographical area of Jammu and Kashmir, is under the forest cover. The state is divided into three regions: Ladakh, Kashmir Valley and Jammu. The higher regions of the state are covered by Pir Panjal, Karakoram, Zaskar and inner Himalayan ranges of mountains. The increase in temperature has to do with the topography and high altitude. We have seen that warming is higher in Himalayas and other mountainous regions of the globe. Temperature varies from place to place and it is basically a function of location, longitude and altitude. Effects of climate change are already being felt on the ground. Erratic snowfall and snowfall pattern and unusual warm winters are some of the characteristics of the climate change in Jammu and Kashmir. The diverse types of ecosystems and communities, especially the poor rural people, living in the mountains across the state are among the most affected by the climate change. As part of its social responsibility our NGO, “Samajic Environmental Welfare Association” (Sewa) working since 1997, conducts many outreach activities/campaigns/camps on regular basis.

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## Climate-change adaptation as a critical approach to minimizing disaster risk: examples from the field in the Global South

Melanie Robertson and Michele Leone  
Ben Gurion University of the Negev, Israel

There is a growing evidence of the fact that disaster risk is increasing worldwide and is compounded by climate change. Disaster risk reduction (DRR) strategies are well established in the international development community and address a variety of hazards. Climate change also contributes to seasonal fluctuations that have a severe negative effect on natural resource-based livelihoods, both long and short term. Despite being backed by evidence, this two-way links between vulnerability to disasters and lack to long term adaptation and resilient development have received limited attention. Development policy is needed to address climate change at the community level by helping those most affected through climate change adaptation (CCA) strategies; however, there are no standard, internationally agreed-upon guidelines for the integration of climate-change adaptation and DRR, and while individual countries have developed various guiding frameworks, these frameworks remain untested. We argue that DRR and CCA have evolved largely along parallel paths, and better integration of DRR and CCA can help with the creation of climate-resilient development both in pre and post disaster situations. This presentation highlights the differences and similarities between DRR and CCA by analyzing climate-related DRR in 55 projects funded through the International Development Research Centre in climate change and natural disasters hot spots. We will also examine lessons learned, gaps, and opportunities by analyzing CCA and DRR strategies emerging from these projects. Finally, we identify ways forward for international development policy and international practice, supporting all forms of risk reduction by integrating DRR and CCA strategies.

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## **Evaluation of seasonal pollution impact on the morphological tests of *Ammonia tepida* (Cushman) at the Manzala lagoon, Egypt**

**O H Orabi<sup>1</sup>, A M Badr-ElDin<sup>2</sup> and A A El-Badry<sup>3</sup>**

<sup>1</sup>Menoufia University, Egypt

<sup>2</sup>Alexandria University, Egypt

<sup>3</sup>National Institute of Oceanography and Fisheries, Egypt

The present investigation clarifies that the modes of test deformation of *Ammonia tepida* rely primarily on the degrees of pollution particularly concentration of trace metals (Cu and Zn) in the Manzala lagoon sediments. The degrees of deformation in *Ammonia tepida* range from mild (Group A) during both spring and autumn seasons, moderate (Group B) during winter to the extreme (Group C) during summer, where the copper and zinc contents in these three groups are low, moderate and high respectively during seasonal variations of 2017. Zinc pollutant in the sediments affects the cytoskeleton, which defines the shape of the foraminiferal test during growth and forms the template for each additional chamber that is formed. The presence of Cu and S in X-ray spectra analysis in deformed tests of *A. tepida* suggests exposure to Cu and S may inhibit calcite formation resulting in deformed tests and not changes in environmental parameters.

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## An assessment of the level of awareness of climate change and variability among indigenous people living around four protected areas in Nigeria

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There is need to examine climate change awareness and perception among indigenous people. This will greatly reduce the failures in measures to develop a wide effective monitoring, adaptation and mitigation measures to climate change. This study examines the way indigenous people living around parks perceive climate change, their adaptation strategies to climate change, the impacts of climate change on their various activities and any perceive hindrance to its adaptation. This study was conducted in four national parks; Old Oyo National Park (OONP), Kainji Lake National Park (KLNP), Cross River National Park (CRNP) and Okomu National Park (ONP). Questionnaire was administered to 531 respondents from villages through multi-stage random sampling. Data obtained were analyzed using descriptive statistics such as frequency, percentage, mean, etc. Chi-square analysis was used to determine the relationship between the respondent's demographic characteristics and their level of perception of climate change. Majority of the respondents were male; OONP (57.7%), KLNP (75.5%), CRNP (73.7%) and ONP (63.6%). In terms of age, majority of the respondents in CRNP, KLNP and ONP were between the ages 21-30 (35.8%, 36.8% and 36.4% respectively). Majority of the respondents 66.4%, 52.6%, 48.1%, 60.0% in OONP, CRNP, KLNP and ONP strongly agreed that the climate is changing due to diverse human activities. The result shows that age, qualifications and gender have significant relationship ( $p < 0.05$ ) with the respondent's awareness and perception of climate change. The result of the multiple regression analysis to determine the socio-economic factors contributing to the awareness of climate change shows that age, sex, religion and occupation were found to have contributed the level of awareness of climate change in the study area. There is need to develop policy on combating climate change and also improve the people's adaptive capacity to cope with climate change.

### Notes:



# 6<sup>th</sup> Global summit on Climate Change

November 19-20, 2018 Paris, France

## Effectiveness of conservation planning for endangered *Garcinia gummi-gutta* species on the Western Ghats: predicting habitat suitability under current and future climate

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Climate change is continuously affecting the ecosystem, species distribution as well as global biodiversity. The assessment of the species potential distribution and the spatial changes under various climate change scenarios is a significant step towards the conservation and mitigation of habitat shifts, and species loss and vulnerability study. The present study aimed to predict the influence of current and future climate on an ecologically vulnerable medicinal species, *Garcinia gummi-gutta*, of the south Western Ghats using Maximum Entropy (MaxEnt) modelling. The future projections were made for the period of 2050 and 2070 with RCP scenario of 4.5 and 8.5 using 84 species occurrence data, and climatic variables from three different models (HadGEM2-CC, GFDL-CM3, and NorESM1-M) of IPCC fifth assessment. Climatic variables contributions were assessed using Jackknife test and mean value of AOC 0.888, TSS 0.698, and kappa 0.733 indicate the model performs with very high accuracy. The major influencing variables will be annual precipitation ( $32.51 \pm 1.4\%$ ), precipitation of coldest quarter ( $16.57 \pm 0.6\%$ ), precipitation seasonality ( $12.56 \pm 1.3\%$ ), and precipitation of driest quarter ( $11.73 \pm 0.73\%$ ). The model result shows that the current high potential distribution of the species is around 1.90% of the study area, 7.78% is good potential; about 90.32% is moderate to very low potential for species suitability. The results based on future prediction of all model represented that there will be a drastic decline in the suitable habitat distribution by 2050 and 2070 for all the RCP scenarios. Moreover, the suitability results also shown that the species shifted downward (equatorward), which may cause local extinction from the south Western Ghats under all climate change scenarios. The current and predicted suitability maps and climatic understanding that could be a significant guide for a non-governmental organisation, the government responsible for the management and conservation of vulnerable medicinal plants as well as forest resources.

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## Climate change effects on groundwater resources (case study: Doroodzan dam basin)

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In order to study climate change effects on ground water basin, especially to study the drought condition of the Doroodzan dam basin, the Standardized Precipitation Index (SPI) has been used. In general, to study the draught condition with SPI, different factors should be considered. The study focuses on the longest drought period, the number of drought months and drought magnitude factors. Furthermore, SPI diagrams in periods of 12, 24 and 48 months, piezometric head and its mean value have been studied to determine the effects of drought on groundwater resources. The results revealed that in a statistical period of 36 years in all three time scales, the studied area is affected by numerous draughts with different length and severities. In all three time scale, weak droughts had the most and very severe droughts had the least occurrences. Besides, piezometric data also showed the reduction in groundwater resources shortly after the draught in the specified region. In addition, piezometric data also shows the reduction of groundwater resources shortly after the drought in the specified region. Another finding of this study is more correlation between the piezometric head amounts and SPI on the 48-months scale in more than 55% stations compared with other time scales.

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## Sustainable development indicators on water resource management in the Liberian district of Costa Rica

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The Liberia district is located in Guanacaste in Costa Rica. The purpose of the study was to determine the current situation of Liberia in terms of its water resource and climatic situation in order to elaborate a proposal of the sustainable development plan for the Liberia district. Analyzing existing information from climatic measurements, a given course of actions on the environment, human population, level of consumption per person and the quality and quantity of water in the study area and a diagnosis was made of the water and climate situation of the district. Taking into account that in the last 15 years the city of Liberia has undergone an increasing transformation of socioeconomic activities, as well as being an important center of transport, agricultural trade and the core of services related to tourism. It is necessary to guarantee a quality and quantity access to the water resource, so it is very important to know its climatic situation and the water resource. So, during this project, we have conducted interviews, field visits, compilation and generation of climatic information and quality of the different water sources in the study area. The systematization of this information was to prepare a proposal for a sustainable development plan to climate change in the Liberian zone and to serve as an input to incorporate these results into the different action plans. In order to analyze the climatic change of the zone, three indicators were used: Average monthly hourly temperature, average monthly precipitation per hour and cumulative monthly precipitation per hour. The collection of existing information, quality and quantity of water, and the generation of climate measurements in the district of Liberia allow a diagnosis of the climatic conditions and water situation of the study area. The study indicates that the rate of urban growth is uncontrolled and relationship between consumption needs and their effects on water disponibility is not consider. The district is at high risk of being harmed by the impact of drought and is necessary take action to prevent environmental and economic damages.

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## Attitude-based behavioral conflict analysis of global environmental governance for climate change

Sharafat Ali, Haiyan Xu and Waqas Ahmed

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There has been a heated debate on the United States' withdrawal from the Paris accord and its consequences on the global environmental governance. The back out of second-largest global emitter has been believed to undercut the efforts to reduce greenhouse gas emission and transition from fossil fuel consumption to renewable energy sources. The pro-environment collective wisdom also believes that it would also lock the future climate measures. The US exit from the agreement would affect the carbon prices, emission space, and macroeconomic conditions of the member countries. It is a serious conflicting situation between the member countries especially between the larger economies in the world. It may affect the mitigation and adaptation efforts to combat global climate change. The present study is an attempt to design a negotiation strategy to analyze the Global Environmental Governance conflict. Having realized the behaviors of the decision makers is important in decision-making; this study considers behaviors of the decision makers while analyzing the impact of attitude(s) of the major players in global environmental decision-making. The alternative strategies of the decision makers are considered and analyzed. It is traced out how the negative and strong negative attitude of the decision maker(s) leads to adverse outcomes. Moreover, it is also unveiled how the suitable and acceptable solution could be found if the decision makers have positive/neutral attitude(s) towards each other. The analysis suggests some equilibrium policy alternatives for the effective leadership in global environmental regime.

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## **An assessment into the effects of climate change on smallholder farmers of Chivi district in Masvingo, Zimbabwe**

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This study was discussed about the findings of the research that was carried out in Chivi district of Masvingo, Zimbabwe among predominantly smallholder farmers. The main aim of the research was to assess climate change impacts and adaptation policies used. These farmers are vulnerable to the effects of climate change due to marginal location, low levels of technology and lack of essential farming know-how and technology. The researcher used information from interviews of agricultural extension officers, desk based research, literature review and questionnaire surveys administered to smallholder farmers. The majority of the farmers indicated that prolonged heat wave, hot and dry weather conditions causes hunger and starvation. Some specific impacts of these conditions include crop damage, soil erosion, poor plant germination, pests, lower incomes and reduced yields leading to food insecurity. Some farmers professed ignorance about climate change and how it will affect future farming. Other farmers pointed out high frequency of floods, drought, precipitation with hailstorms, drying up of rivers, dams and wells, changes in timing and pattern of seasons as evidence of climate change. Suggested climate change strategies include: strengthening and improving indigenous land and water management practices, use of decision support tools such as seasonal weather forecast data, growing resistant small grains and conservation farming. It is therefore concluded that there is need to educate farmers about climate change and design adaptation strategies. There is also needing to avail agricultural research results relevant to the smallholder farmers and train them on how to use the results to make informed on-farm investment decisions.

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## Effects of elevated atmospheric CO<sub>2</sub> and nitrogen fertilization on nitrogen cycling in experimental riparian wetlands

Theresa Oteng Apreku  
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Studies on the relationship between plant nitrogen content and soil nitrogen reduction under elevated CO<sub>2</sub> conditions and with different nitrogen additions in wetland ecosystems are lacking. This study was meant to assess the effects of elevated CO<sub>2</sub> concentrations and inorganic nitrogen additions on soil and plant nitrogen cycling. A cultured riparian wetland, alligator weeds, and two duplicated open top chambers (OTCs) with ambient (380 μmol/mol) and elevated (700 μmol/mol) CO<sub>2</sub> concentrations at low (4 mg/L) and high (6 mg/L) nitrogen fertilization levels were used. The total plant biomass increased by 30.77% and 31.37% at low and high nitrogen fertilization levels, respectively, under elevated CO<sub>2</sub> conditions. Plant nitrogen content decreased by 6.54% and 8.86% at low and high nitrogen fertilization levels, respectively. The coefficient of determination (R<sup>2</sup>) of soil nitrogen contents ranged from 0.81 to 0.96. Under elevated CO<sub>2</sub> conditions, plants utilized the assimilated inorganic nitrogen (from the soil) for growth and other internal physiological transformations, which might explain the reduction in plant nitrogen content. A reduction in soil dissolved inorganic nitrogen (DIN) under elevated CO<sub>2</sub> conditions might have also caused the reduction in plant nitrogen content. Reduced plant and soil nitrogen contents are to be expected due to the potential exhaustive use of inorganic nitrogen by soil microorganisms even before it can be made available to the soil and plants. The results from this study provide important information to help policy makers make informed decisions on sustainable management of wetlands. Larger-scale field work is recommended in future research.

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## Estimation of SOM-stock after 35 years of critical land rehabilitation using *Pinus merkusii* in Aripan, West Sumatra, Indonesia

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Soil OM content can be used as an indicator of soil quality. Disappearance of OM from the top soil causes land degradation. Soil SOM is mostly determined by the vegetation growing on it, if the other environmental factors are homogeneous. A research on OM stock estimation was conducted on degradation land after being rehabilitated using pine (*Pinus merkusii*) for approximately 35 years in Aripan, Solok Regency, West Sumatra, Indonesia. Soil samples were taken from three different ranks of slope (15-25%, 25-45%, and >45%) and from secondary forest for comparison from the top 40 cm soil depth with 20 cm interval. The result showed that, generally SOM stock at the top 20 cm was higher than that at 20-40 cm soil depth. Total OM content at the top 40 cm soil depth linearly decreased ( $r=-0.97$ ) by increasing slope grade from slightly steep (15-25%) to highly steep (>45%). The highest OM stock at rehabilitated land was 88.93 t/ha at 0-20 cm soil depth (for slope 15-25%). It was about 131% compared to the OM stock at slope grade >45%. However, the value was still lower than the OM stock (115.63T/ha) under forest land use, it was still approximately 77% of that at forest land use. Soil OM stock at 0-40 cm depth was about 67%, 79%, and 97% of that at forest land use for slope >45%, 25-45%, and 15-25% respectively. Soil OM content in this rehabilitation land linearly affected soil bulk density ( $r=-0.74$ ) but not soil aggregate stability.

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