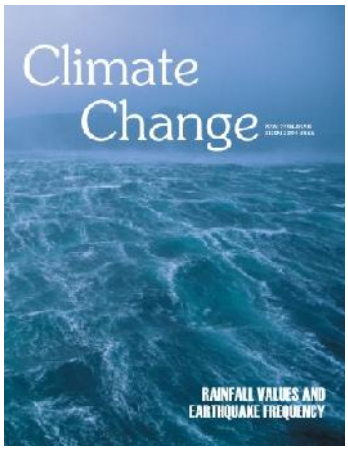
Volume 1, Number 2, Pages 54-157 & cc1-cc184 1, April 2015

Climate Change

About the Cover



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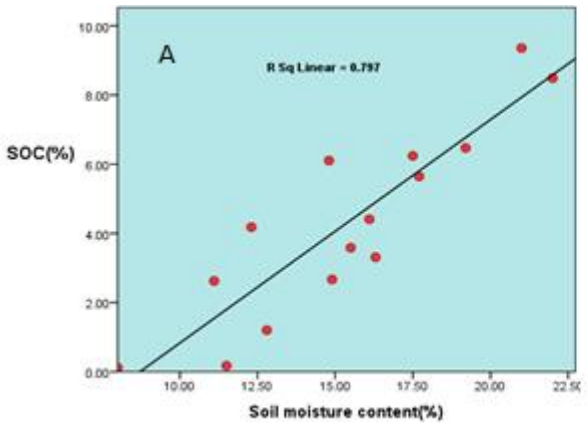
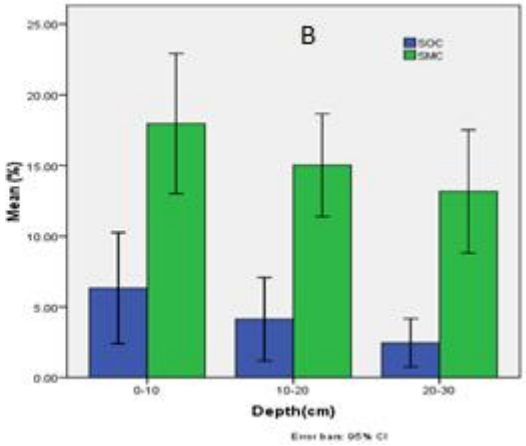
RESEARCH

SOIL CARBON

Evaluation of Soil Carbon Pool potential under different Land use system and Its Correlation with different Soil Properties in North Wales, UK

Kasahun Kitila Hunde





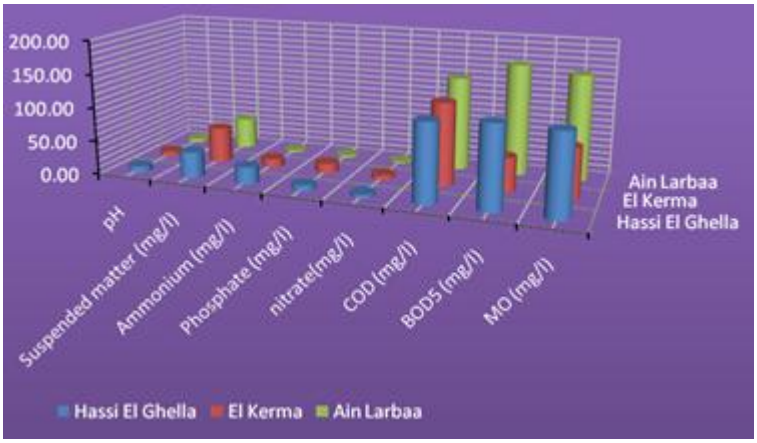
The study was conducted at Henfeas research center in the north Wales, UK where Sycamore (Acer pseudoplatanus L.) and Red alder (Alnus rubra) were planted in integration with the grasslands. It was aimed to determine the soil organic carbon pool under different land use system. The soil samples were collected to the depth of 30cm at different depth intervals (0-10, 10-20 and 20-30cm) having five treatments: under and outside the canopy of both Sycamore (Acer pseudoplatanus L.) and Red alder (Alnus rubra) and under the control grassland. The concentration of soil organic carbon (SOC %) under each treatment were analyzed using LOI (loss on ignition method) where soil samples were burned at 450 ^{o}c. It was identified that SOC concentration were significantly different at ($P<0.05$) between the treatments and along the soil profile. In addition to SOC, soil pH, bulk density and soil moisture content of the soil under each treatment were determined to investigate the correlation between these soil properties with the SOC contents. It was identified that, soil pH and bulk density were significantly ($P<0.01$) and negatively correlated with SOC content under the treatments. SOC content decreased with the increased in soil pH and bulk density. On the other hand, soil moisture content and SOC concentrations were significantly ($P<0.01$) and positively correlated indicating that SOC pool increased with the increased in soil moisture content**.**

Climate Change, 2015, 1(2), 54-61

WASTE WATER

New approach: Exploitation of non-conventional water in irrigation

Boualla Nabila



Among the most common problems and currently rocking the world, quoting the reuse of raw wastewater, particularly in agriculture, which consumes more than 80% of water resources exploited. The reuse of untreated wastewater in irrigation for plants provides a source of nutrients that can reduce the purchase of fertilizers and organic materials. But it poses serious risks to health such as untreated sewage is a factor of transmitting pathogens and hazardous chemicals in the human body. The main constraints are then posed about the health risks, adapting the proposed use and the psychological and cultural barriers attached to the water deemed to be dangerous. The main objective of this work is to characterize the urban wastewater of Oran and recommend an appropriate treatment for their future use and reducing their harmfulness to the workplace receptors. Unfortunately uncontrolled industrial activities have created serious pollution of many natural water resources significantly degrade the quality thereof. The physicochemical characterization of wastewater has the support of different treatment plants studied in the watershed revealed that the liquid waste loads are very organic matter in terms of: DBO_5 with average of 146 mg O_2 / l, DCO averaged 300.25 mg O_2 / l pH 7.1, ammonium an average of 23.33 mg / l phosphate an average of 9.86 mg / l a nitrate average of 3.10 mg / l suspended solids averaging 111.06 g / l.

Climate Change, 2015, 1(2), 62-67

PUBLIC vs. CLIMATE

Understanding Cooperative Behavior against Climate Change through a Public - Goods Game

Medha Kumar, Varun Dutt

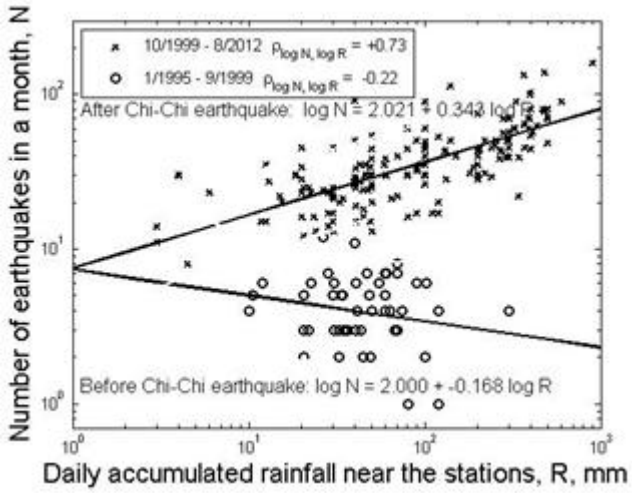
Atmospheric carbon-dioxide (CO_2) emissions are increasing at an alarming rate. If this increase remains unchecked, then it would lead to disastrous consequences like temperature change, sea-level rise, and diseases world over. Therefore, it is important to study how global cooperation emerges against climate rechange. A public-goods game, a popular economic device, could be used to study cooperation behavior against climate change. In this paper, we study the emergence of global cooperation against climate change using a modified form of a public-goods game. In this game, four players from different world economies (based upon wealth) decide to invest an amount into a public fund for averting climate change. The invested amounts are multiplied by economy-specific return-on-investment factors and the total return-on-investment is then divided equally among all players. Players' payoffs are also influenced by probabilistic losses due to climate change, where the magnitude of the loss and its probability are a function of investments made by all players to the public fund. In future, we plan to use this game to study people's cooperation behavior against climate change.

Climate Change, 2015, 1(2), 68-71

EARTHQUAKE

Earthquake triggering rainfall in Taiwan

Jyh-Woei, Lin



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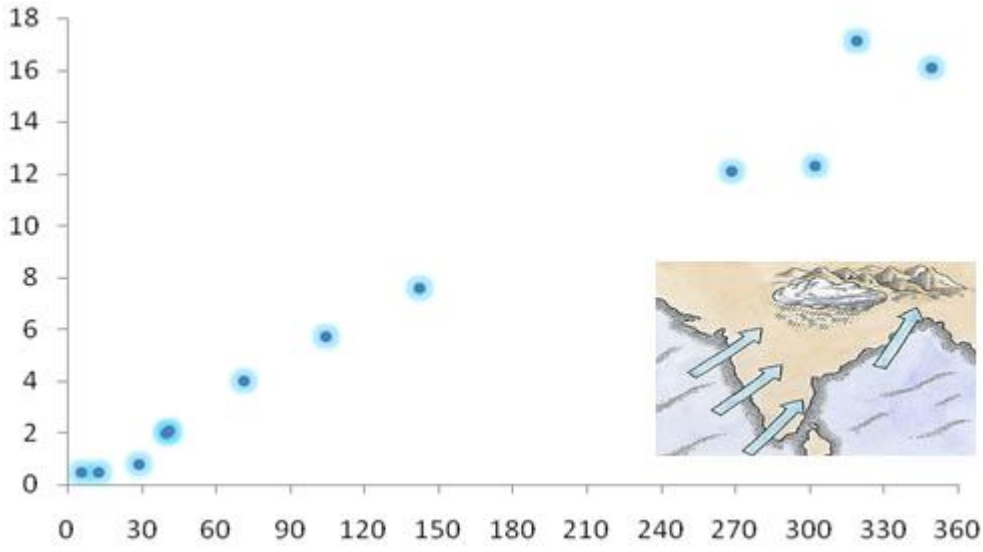
Climate Change, 2015, 1(2), 72-82

WEATHER

Weather Aberration and its Impact on Agriculture of Habra Block, North 24 Pgs, West Bengal

Biswas Roy M, Bose A, Roy PK, Mazumdar A



Like other parts of the country south west monsoon is the main feature in the climate of West Bengal as well as North 24 pgs. It is the principal denominator of the prosperity of the state and the agro economy. The objective of the present paper is to evaluate the withdrawal of monsoon is far more gradual process than its onset. Monsoon normally withdraws from the state after some intermittent action by 10th October. But the dates of its withdrawal vary considerably (for a period of about one month) from one year to the other. During the period of last 43 years (1971-2013) the earliest and latest dates of withdrawal of monsoon from the state were 27th September, 1984 and 26th October, 2010 respectively. As the season is a period of transition this set pattern of expected average weather condition is disturbed frequently when

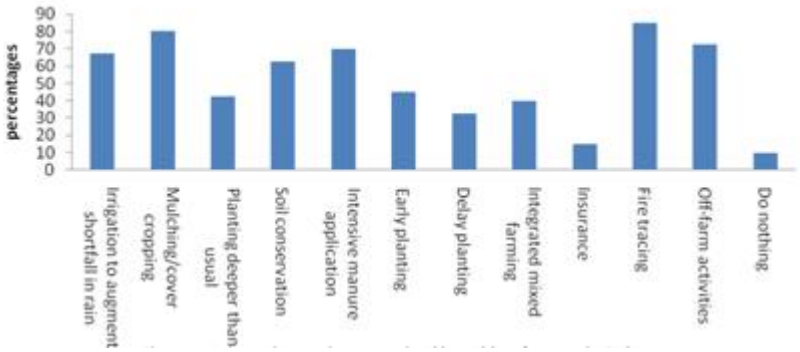
monsoon withdraws early, withdrawal of monsoon is delayed, wet spell continues even after the usual dates of withdrawal of monsoon almost up to the end of October. With this backdrop this paper has selected the agricultural practices of Habra block, N 24 pgs. Because agriculture is the most weather sensitive activities of man each of above climate variability's have their individual impact on agriculture.

Climate Change, 2015, 1(2), 83-97

ADAPTATION TO CLIMATE CHANGE

Adaptation to climate change among rubber farmers in delta state, Nigeria

Mesike CS, Ugwa IK, Esekhade TU



The study analyzed the adaptation to climate change among rubber farmers in Delta state, Nigeria. A multistage random sampling technique was used to select 50 rubber farmers. Data were analyzed using descriptive and inferential statistics. Results revealed that 40% of the respondents were 56 years of age and above. Majority were male and married and 46% had secondary school education. The result of the adaptation measures employed includes fire tracing (85%), mulching/cover cropping (80%) and off-farm activities (72.5%). Analysis of the relationships between some selected socio-economic variables and the use of climate change adaptation measures revealed that age, years spent in school, household size, extension visit and distance of farmers' residence to farm land had significant relationship with coping strategies employed. The main constraints to the use of climate change adaptation measures by farmers in the study area were poor financial resources (95%) and poor access to weather information (90%). The study concluded that there should be awareness creation of climate change and possible adaptation method to be used by rubber farmers. Also, extension service should be strengthened through organizing adult education programmes for rubber farmers to expose them to climate change coping strategies.

Climate Change, 2015, 1(2), 98-104

REVIEWS

FOOD SECURITY

Climate Change and Food Security: Nepal Perspective

Pabitra Aryal

Global warming induced heat waves, drought, and flooding constitute a global food security emergency for us all today. Negative impacts of climate change on crop and terrestrial food production have been more common than positive impacts. Climate change is posing a threat on present and future food security in low income countries. But, the actual effect of the climate change on food security is not known. Climate change will affect all four dimensions of food security, namely food availability, access to food, stability of food supplies, and food utilization.

The percent of the emission of greenhouse gases that are held responsible for the climate change is very negligible in Nepal which is only about 0.025% of annual greenhouse gas emissions. However, Nepal is highly vulnerable to climate change impacts. Increase in temperature cause more damage on agricultural sectors in terai region and will be more favorable to agriculture in the hills and mountains of Nepal. Number of food deficient population has increased remarkably in the recent decades due to various reasons. Global predictions show slight increase in the food production with respect to estimated climate change but our food production which is based on the rain fed depending on the weather pattern, even small and short period weather extremities will badly effect the production and supply.Nepal being a least developed country, it is moving towards vulnerable situation due to climate change. As it is known, its effects cannot be completely controlled but effective planning and change in human habit towards a low carbon economy can slower down possible disasters.

Climate Change, 2015, 1(2), 105-109

FOOD SAFETY

Effects of climate change on food security and food safety

Harshal Tukaram Pandve

Global climate change is having its adverse effects on everything around us. Food security as food safety component is one which will be affected extensively over period of time due to climate change. This article reviews various effects as well as the pathways through with climate change will affect food security and food safety.

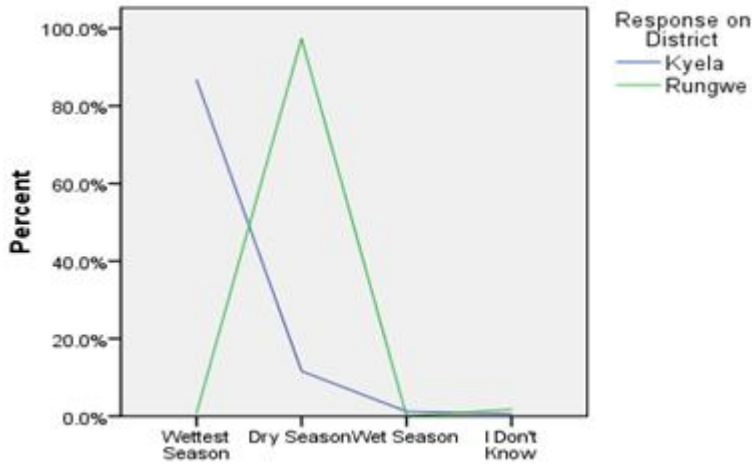
Climate Change, 2015, 1(2), 110-111

SPECIAL FOCUS by Institute of Law, Nirma University, India

CLIMATE JUSTICE INITIATIVE vs. FARMERS

Analysis of Seasonality Variations and Copping Strategies among Cocoa Growers: A Case of Kyela and Rungwe Districts

Magreth Bushesha



The study investigated how cocoa farmers cope with seasonality variations in Kyela and Rungwe districts in Mbeya Region Tanzania. The study had two specific objectives; to identify main buffer sources of income at times when cocoa produce go down; and to identify challenges that face cocoa growers in the study area. The study adopted a descriptive research design. Simple random sampling was used to select 224 sample population. Data was collected through questionnaire administration, in-depth discussion with key informants, focus group discussion, observation, and documentary review. Thematic data analysis was adopted to analyze qualitative data whereas simple descriptive statistical analysis was adapted to analyze quantitative data. The study identified such crops as maize, beans, groundnuts, paddy, watermelon, banana, oil palm, and cassava to be major buffer crops at times when income from cocoa go down in both districts. Off farm activities including livestock keeping, fishing, selling of forest products, and petty business also add income among farmers. Off-farm activities including food vending, selling of forestry products and petty business also play an important role in income generation among cocoa growers. The study

suggests that farmers should be encouraged to invest not only on farming rather in off-farm activities too especially because rainfall for agricultural production is no longer reliable. The government should also assist farmers to regulate prices.

Climate Change, 2015, 1(2), 112-121

Strengthening Climate Justice Initiatives: Livelihood Challenges at the Local Level with a Focus on Farmers

Kirit N Shelat, Gopichandran, Nisha Shah


The objective of the present note is to strengthen the call to reduce “climate – burdens” faced by farmers. We emphasize the fact that all farmers face such burdens with equal intensity and the small farer however is exposed to greater spread and depth of risks due to inherent multiple vulnerabilities. A recap of some natural and induced calamities stresses the need to expedite and synthesize preventive and remediation strategies. Justice has to be delivered in a timely and holistic manner. This is possible due to the continually evolving evidence centered knowledge backing and thus the need for precautionary approaches. The present note cites such evidences from within the State of Gujarat and a wide variety of institutional mechanisms that can complement access to justice; only to re – emphasize the scope for locally adapted action within the purview of public policy measures.

Climate Change, 2015, 1(2), 122-128

Climate Resilient Rainfed Systems

Ch. Srinivasarao

Knowledge of potential impacts of climate change on agriculture is recently important aspects in scientific community. Many studies showed that climate change lead to agricultural vulnerability, which increases the problems of future food security. Rainfed agriculture covers 58% of net sown area in the country.

Climate Change, 2015, 1(2), 129

The need for Gender sensitive response to the effects of Climate Change: a step towards Climate Justice through Science and Technology

Kinkini Dasgupta Misra, Vigyan Prasar

Climate change and extreme weather affect men and women both, but its adverse effects are likely to be more acute for women, especially economically weak and marginalised rural women. Directly or indirectly village women are largely depends on agriculture and informal sectors for their sovereignty, which are vulnerable to extreme weather.

Climate Change, 2015, 1(2), 130-131

Critique of Environment Public Hearing process in India with Special Reference to Rights of the Farmers

Madhuri Parikh

India has adopted the concept of sustainable development. Many new development projects are given permission in India after Environment Impact Assessment of the projects. But still due to the advent of the projects many people are displaced and rehabilitated. Many farmers lose their fertile land. It indicates that effective participation of farmers in domestic environmental compliance and enforcement efforts is very essential, as it is one of the effective ways of protecting their human rights, right to environment.

Climate Change, 2015, 1(2), 132

Global Climate Change and Biodiversity

Muthuchelian K

Climate is an integral part of ecosystems and organisms have adapted to their regional climate over time. Climate change is a factor that has the potential to alter ecosystems and the many resources and services they provide to each other and to society. Human societies depend on

ecosystems for the natural, cultural, spiritual, recreational and aesthetic resources they provide. In various regions across the world, some high-altitude and high-latitude ecosystems have already been affected by changes in climate.

Climate Change, 2015, 1(2), 133-134

Environmental Issues: Environment Protection Act, Challenges of Implementation and Livelihood Security

Dagar JC, Shakuntla Devi Dagar

The decline in environmental quality has been evidenced by increasing all kinds of pollution, loss of vegetation and biodiversity, excessive concentrations of harmful chemicals and green house gases in the ambient atmosphere causing climate change, growing risks of environmental accidents, and threat to food chain and life support systems. Although there are existing laws dealing directly or indirectly with several environmental matters and even the Environment Protection Act, 1986 received the assent of the President and published in the Gazette of India followed by several rules handling environmental problems from time to time till 2013.

Climate Change, 2015, 1(2), 135

Climate Justice though Regeneration of Common Property Resources (CPRs) for Income and Employment Generation for the: A Case Study

Maheshwari RC

An integrated approach has been made to develop a wasteland falling under classes IIIes and VIes of land capability classification in watershed management plan, for achieving fuel and fodder security in an adopted village Islamnagar under Operational Research Project on Integrated Energy and Nutrient supply System. An Energy Census and resource Assessment Survey of this village (Maheshwari, et al, 1981) showed that the village was in deficit of fuel wood by 98.8 tons (20.8% shortfall annually) and cattle feed by 812 tons (30% shortfall annually).

Climate Change, 2015, 1(2), 136

'Bio – Rights' As New Paradigm in Empowering Commons for Environmental Justice

Gopichandran R, Dipayan Dey

'Bio-rights' is based on the principle of Environmental justice that all people have a right to be protected from environmental pollution to live in and enjoy a clean and healthful environment. Bio-rights are financial mechanism to compensate opportunity costs of local stakeholders and assist commons of global south in reconciling poverty alleviation and sustainable use of natural resources. It could contribute to poverty alleviation by direct payments to compensate for poverty related costs and distribution of payments to communities on the basis of nature conservation.

Climate Change, 2015, 1(2), 137-138

Widening Participation for Social Justice: Poverty and Commons Access to Environment

Dipayan Dey

In this international Year of Sanitation, one in five of the world's population, which includes two-thirds as women, live in abject poverty; on the margins of existence, without adequate clean water, sanitation or healthcare, without food and education. This enormous mass basically depends on the natural resources of the environment around them. The loadstone of urbanization though doesn't consider them as stakeholders neither partner the poverty.

Climate Change, 2015, 1(2), 139

Justice Education as Sustainability Instrument for Reducing Interest Conflicts in Development in Global South

Amrita Chatterjee, Dipayan Dey

Justice Education happens to be the empowerment panacea for the commons in the global south. Right to participation and socio-economic justice is the only sustainability instrument for reducing interest conflicts in global south. In developing countries, social impact assessment studies continue to be applied as tools for impact minimization and mitigation. Optimally, this approach should aim to ensure social justice and maximize development options and opportunities consistent with internationally agreed principles of sustainability.

Climate Change, 2015, 1(2), 140-141

Impact of Climate Change Technologies in India

Vidya Kumari T

New technologies are tools of progress and development. Innovations and technology transfers are the beacon lights that attract the developing countries to provide monopoly rights in exchange for useful products and processes that mitigate problems of public concern including climate change. It is observed that Patents are akin to fireworks-they need careful handling. The "anti common features" of the Patent system at times deter progress and pose a threat-a challenge to countries starved of new technologies. This Paper is a review of the

positive role of the Patent system in the protection of environment and climate change. The different aspects of the relationship between climate change and new technologies will be discussed.

Climate Change, 2015, 1(2), 142

Institutional Innovation in Climate Smart Agriculture

Tushar Pandey, Parth Joshi, Srijita Dutta

Indian agriculture is highly dependent upon weather since more than 60% of the cropping area is rain-fed. A recent IFPRI-CCAFS study has forecasted that India could lose 10-40% of its current crop production by the end of century due to global warming. The report estimated that 10% drought will increase the prices of rice by 23%.

Climate Change, 2015, 1(2), 143

Climate Justice: Agriculture Perspectives

Arunachalam A

Agriculture appears in the global climate change negotiations principally as a crosscutting issue – relevant to almost all of the main negotiating topics, yet for the most part appearing only incidentally. However, when it comes to ground zero, the cultural practices and traditional knowledge systems that help in adapting the communities to climate change impacts are enormous and significant; these processes also indirectly help in the mitigation processes.

Climate Change, 2015, 1(2), 144

Climate smart Agriculture: Overview of Presentation

Robert Jordan

Farming in India is a highly complex socio-economic phenomenon. Climate justice is therefore part of a much broader issue of justice for farmers, the rural poor and indigenous peoples in India. This presentation is intended to provide insights into emerging international policies and their implications for farmers in India. It outlines opportunities provided by the new Sustainable Development Goals, the Green Economy, Low Emission Development Strategies and various initiatives connected with the United Nations Framework Convention on Climate Change and the FAO Committee on World Food Security.

Climate Change, 2015, 1(2), 145

Is this justice to the saviours of the Climate?

Shalin Shah

Clean Development Mechanism (CDM) more popularly known as “Carbon credits” is no longer a new terminology. It has been introduced since beginning and well accepted in various industrial sectors to gain credits against their future emission reduction potentials.It is mainly done for offsetting the emissions of developed countries by the activities of developing countries. We are at the stage of phase out of Kyoto Protocol and new treaty will be signed when world leaders will meet next year in Paris during Conference of Parties 21 of UNFCCC.

Climate Change, 2015, 1(2), 146

Helping farmers cope with climate variability and change in the regions of South Asia and sub-Saharan Africa

Anthony Whitbread

The International Crop Research Institute for the Semi-Arid Tropics (ICRISAT) is has been in existence since 1972 with its headquarters in Hyderabad and research stations and offices in several sub-Saharan countries giving it a global outreach. Coping with climate, both variability and change, is often the No.1 challenge to farming in the semi-arid tropics. The program that I lead, Resilient Dryland Systems, uses multidisciplinary research (biophysical, social and economic sciences) to understanding the farming systems in the semi-arid regions. Our research for development (R4D) approach is at a range of scales, field-farm-watershed. These R4D approaches are used to identify technologies and intervention strategies and their entry points that that may then be applied at scale to reach millions of farmers.

Climate Change, 2015, 1(2), 147-148

Speech to be delivered by Shri O.P Kohli, Hon’ble Governor of Gujarat at the International Conference on “Strengthening Climate Justice Initiative: livelihood Challenges at local level with a focus on farmers”

Shri OP Kohli

Distinguished participants form the country and aboard research’s, academicians, ladies and gentlemen. It is a privilege for ma to address of legal luminaries opinion leaders, researchers, academicians, practitioners of law and enablers of justice. The deliberation proposed here is of paramount importance because their subjects pertain to the climate change and related justice. If we look at the modern world, we can see that during the last few decades the world has made tremendous progress in almost all the spheres. But as in everything else, this development

has cost us heavily; it has caused serious environmental damages impairing the quality of life of not only our generation, but also of future generation as well .It is in this context that concern about environment and development has become a global concern. Global warming and climate change is one of such concerns.

Climate Change, 2015, 1(2), 149-150

Inaugural address of his Lordship Honorable V.M Sahai the Acting Chief Justice, High Court of Gujarat, Ahmadabad on the occasion of inaugural session of Conference on "Strengthen Climate Justice initiative; Livelihood Challenges at local Level with a focus on farmers"

Honorable VM Sahai

I am enthralled and elated in the inaugural session of the Conference on "Strengthen climate Justice Initiatives; Livelihood challenges at local level with a focus on Farmers" The reason for my elatedness is not far to seek, but lies in the fact that this conference would go in to scientific data in respect of climate change, its impact on environment in general and livelihood challenges to farmers in particular. The offshoot of the deliberation might touch upon the livelihood challenges to other segment of the society as well. This reminds me the vision of our founding father who has not only envisioned the justice from the angle of economic trait, but from the standpoint of social arena as well. This vision has found prime and prominent position in the preamble to the constitution of India in the form of "Secure to all its citizens; Justice Social, Economic and political;"This is not empty rhetoric but has very concrete substance.

Climate Change, 2015, 1(2), 151-153

Speech to be delivered by Hon'ble Chief Justice of India at the International Conference on 'Strengthening Climate Justice Initiatives at the Local Level for Sustainable Livelihood with a Focus on Farmers'

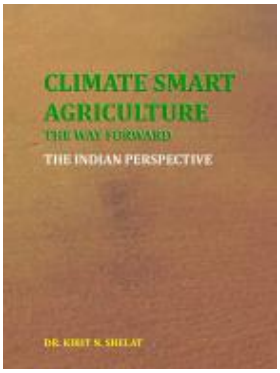
Hon'ble Chief Justice of India

We are gathered here today to reflect and discuss issues that will fundamentally shape India in the 21st century. In some senses, it is a confluence of where we come from as a nation and the direction in which we are headed. Agriculture is an integral part of who we are as a society and a nation. Mahatma Gandhi profoundly captured the relationship between agriculture and India's soul when he said that: *"To forget how to dig the earth and tend the soil is to forget ourselves."* However, the current state of Indian agriculture seems to indicate that we are forgetting our roots and our journey of over six decades of independence. Apart from all the economic and policy pressures that operate on Indian agriculture, the impact of climate change on Indian farmers requires to be tackled with greater urgency than ever before. The crisis in Indian agriculture and the incremental realisation of the disastrous impact of climate change are going to be amongst India's greatest challenges for the 21st century. Unfortunately, we do not seem to be addressing either issue with sufficient rigour and I do hope that this event will contribute to triggering efforts to address these issues in sufficient depth. These issues on their own and in relation to each other, present extremely critical questions for us a society, nation and for our role in global affairs.

Climate Change, 2015, 1(2), 154-157

Climate smart agriculture, the way forward: The Indian perspective (Book)

Kirit N Shelat



Sustainable Development is a pattern of use of natural resource that aim to meet human need while protecting the environment and simultaneously it ensure the need for resources can be met not only in the present, but also in the indefinite future. The word "Sustainable Development" has well-known implications. It is a long-term activity which involves the use of natural resources. It implies economic growth with socio-economic content. It means to provide enough of what one needs in order to live or exist and implies its gradual growth in size, quantity and quality without diminution. It envisages gradual growth in the income of people through development of wealth of an area, of a society or for that matter of the country. It endeavors to provide better quality of life to all participants, especially to poor families and remote areas. Empowerment of the poor is the key to socio-political stability. A huge divide between the rich and the poor creates political turmoil and instability in the country. Many a times, it results in the emergence of local radical and provocative groups.

Climate Change, 2015, 1(2), cc1-cc184