

ISSN No. 0974-4134



# ENVIS NEWSLETTER

Centre for Environmental Studies (CES)  
Dept. of Forest & Environment, Govt. of Odisha



Vol-33, April - June, 2013



**Supported by :**  
**Ministry of Environment & Forests,**  
**Govt. of India, New Delhi**

## From the Director's Desk...



The Environmental Information System (ENVIS) has been providing a base for information dissemination issues related to State of Environment of Odisha. Publication of newsletter is one of the major components of the ENVIS Programme; other being information dissemination through web-enabled system and query services. The Centre has been responding to various queries on environmental issues.

We have discussed on various issues in our earlier publication. This issue covers various abstracts on "**Impact of Climate Change on Biodiversity & Food Security**".

**Dr. Sailabala Padhi** , M.Phil, Ph.D., D.Sc.  
Director, Centre for Environmental Studies

### Abstracts of Impact of Climate Change on Biodiversity & Food Security

#### ENHANCING DRAFT BULLOCK UTILIZATION THROUGH MATCHING AGRICULTURAL IMPLEMENTS AND POST HARVEST MACHINERY FOR SUSTAINABLE

**M.K. GHOSAL, P. PRADHAN, D. BEHERA AND N. SAHOO.**

Professor, Department of Farm Machinery and Power, CAET, OUAT, Bhubaneswar  
Assistant Professor, Department of Mechanical Engineering, SOA University, Bhubaneswar  
Professor & Head, Department of Farm Machinery and Power, CAET, OUAT, Bhubaneswar  
Associate Professor, Dept. of Soil & Water Conservation Engineering, CEAT, OUAT, BBSR

#### ABSTRACT

Bullocks are the main source of power in Indian agriculture. Use of bullocks for agricultural work is limited to tillage, sowing and transportation in the state of Odisha, India. The Total annual use of bullocks is less than 300 hours. But the potential use of bullocks in a year is nearly 800 hours. To enhance the utilisation of bullock in the state, there is the need of suitable matching implements and bullock power operated stationery machines requiring around 1 hp(0.8 kW) power for doing various post harvest operations like threshing, chaff cutting, sugarcane crushing, oil expelling, pulses milling and dehusking etc. This would ultimately reduce the economic burden of owning a pair of bullocks and also to decrease the use of non-renewable energies in agricultural post harvest operations. With this aim, a study was conducted for operating a paddy thresher with the help of a rotary gear complex driven by bullock power. The mechanical power is transmitted to the thresher with the help of belt pulley arrangement with the provision of stepping up or stepping down the speed ratio as per requirement. The experiment was conducted continuously for three hours with the measurement of physiological responses like respiration rate, heart rate, body temperature etc. of the medium sized non-descript breed of bullocks(pair weight of bullocks 620 Kg) of Odisha

at half an hour interval and calculation of fatigue score to know their comfortable working without inflicting any health hazards. The bullocks were loaded with 9.8% of their body weight and their speed was measured. The paddy thresher was run with a pair of bullocks in rotary mode of operation and three persons were employed for threshing. The output capacity in rotary mode thresher was observed to be 200 kg of paddy grain/hour, where as 250kg/hour in electrically operated thresher and 40 kg/hour in traditional bullock treading method. The cost of operation through bullocks, in electrically operated thresher and with traditional practices was observed to be Rs.33.28, Rs.21.71 and Rs.32.82 per 100 kg of grain respectively. The energy saving of electrical energy for threshing of paddy for 1 hectare of land is about 10 kWh.

**Keywords:** Renewable energy, Bullock energy, sustainable energy, agricultural implements, rural livelihood.

## **THE EFFECT OF RAINFALL ON RICE (*ORYZA SATIVA*) PRODUCTIVITY IN ODISHA**

**DR. A.K. MOHANTY, DR. S. PASUPALAK & MR. A.NANDA**

Department of Agriculture Meteorology, College of Agriculture, OUAT, Bhubaneswar

### **ABSTRACT**

Agriculture is the mainstay of economic and substance of life of the people. The state odisha is an agrarian state with agriculture and animal husbandry sector contributing 21.11% of Net State Domestic Product (NSDP) in 2007-08 at 1999-2000 prices and providing employment, direct or indirect to 70% of its population as per 2001 census. The share of Gross State Domestic Product (GSDP) from Agriculture during 2007-08 at constant price (1993-94) and at constant prices 1999-2000 is 19.51%. Therefore, Agriculture plays an important role in the economy and livelihood of the people of the state. The total cropped area in Odisha is 87,46,000 hectares and out of that 18,79,000 hectares are under irrigation. Odisha is one of the largest producers of rice in India. The state grows almost one tenth of the total rice is grown in an area of 45 lakh hectare with average productivity of 15.9 quintal per hectare which is much less in comparison to national average (19.9 quintal/ha). Rice covers about 69 per cent of cultivated area and is the major crop covering about 63 per cent of total area under food grains. It is the staple food of almost entire population of Odisha; therefore, the state economy is directly linked with the improvement in production and productivity of rice in the state. In the 1950s Odisha was a leading rice producing State in the country and used to supply sizeable amount of rice grain to the central pool of food stock. But situation was very much reversed in the post-HYV period. However, during the last 35 years rice area of the state has stagnated around 4 million hectares i.e about 10 percent of total rice area of the country. Odisha's share in the country's rice production was more than 11 per cent in the pre-HYV period, which gradually declined to 7.93 percent in 2008-09. Presently rice in Odisha is grown over an area of 4.4 million hectares, which accounts for 91 per cent of the area under cereals and contributes about 94 per cent of total cereal production in the state.

## **ENVIRONMENT EDUCATION, CLIMATE CHANGE AND RENEWABLE ENERGY**

**AARTI KHOSLA**

Global Campaigner-WWF Climate and Energy Initiative  
WWF International akhosla@wwfindia.net

### **ABSTRACT**

The world is in a crucial period: according to the International Energy Agency (IEA), by 2017, the world could be locked into dangerous climate change unless upcoming global energy infrastructure is shifted to renewable energy –extended only by significant advances in energy efficiency. The decisions to build this infrastructure are being made now. In the same window of time, global emissions must peak by 2015, and the decline, to have a 50% chance of keeping the world below 2 C global average temperature rise. High carbon energy is also the primary cause of climate change yet a several countries including India must continue to develop and provide first access of energy to nearly 300 million people who are still without access to primary energy.

Clean and sustainable energy is now critical to fighting climate change-it has been demonstrating the potential to provide for the energy needs of the entire world. There is lot of inertia and barriers to move to renewable energy but we are seeing signs of a shift.

WWF has been campaigning for a decisive change in the global energy systems by asking major financial institutions and governments to make a significant move away from fossil fuels and into renewable energy. WWF-India as well works at several levels across governments, citizen, civil society and businesses, to champion renewable energy.

Our focus is on bringing transformational issues, direct advocacy and public mobilization in creating awareness and action around renewal energy. Sensitizing people, lobbying for favourable policies and demonstrating innovative examples are crucial to moving ahead for greater share of renewable energy in the global & national energy mix.

The talk will through light upon the new research in the area of renewable energy scale-up, the barriers and opportunities, and the scope of education and public engagement to achieve an energy future which has a fair share of renewables.

## **TECHNOLOGICAL INTERVENTIONS FOR MITIGATING OF CLIMATE CHANGE**

**DR. AKHILA KUMAR SWAR**

Senior Environmental Engineer, State Pollution Control Board, Odisha,  
A/118, Nilakantha Nagar, Unit-VIII, BBSR, Email: swarakhila@gmail.com

### **ABSTRACT**

The increasing trend of green house gases (GHG) in the earth's atmosphere due to rapid industrial growth resulted in global warming leading to climate change. The impact of global warming has threatened the existence of life on earth, which caused panic among mankind. It is necessary to

change our life style and minimize the activities which are expected to release abundant green house gases. Industries are required to optimize energy consumption, utilize waste heat recycle/reuse wastes, adopt clean technologies to minimise the emission of GHG to the atmosphere. Government as well as several international forums have been framing policy decisions and taking mitigation measures to combat global warming. Different aspects of Clean Development Mechanism (CDM) and climate change action plan have been also discussed in this paper.

**Keywords:** Global warming, impact, GHG, climate change, CDM, industry, clean technologies.

## **URBAN GREEN DEVELOPMENT AND CLIMATE RESILIENT HIGH–RISE HOUSING: A CASE OF BHUBANESWAR, ODISHA**

**DR. MAYARANI PRAHARAJ**

Department of Architecture, College of Engineering and Technology, Bhubaneswar

### **ABSTRACT**

Global warming and climate changes have become a major concern for mankind today. The purpose of this article is to provide some insight into the challenges of increasing urbanisation, climate changes and settlement planning. It presents a more strategic approach to settlement planning in climate change issues.

Wind spend 90% of our life in buildings that protect us from the extremes of nature like heat, cold rain wind etc. However our buildings use enormous amount of energy, water and material throughout their life cycle. They also create a large amount of waste and have a profound effect on ecosystem. The economic, health and environmental impact of our homes is apparent in our society. To meet the challenges of our built environment, a new way of design and construction has evolved. It is the green building technology, which significantly reduce or eliminate the negative impact of the building on the environment. Bhubaneswar is one of the planned new towns in India. The density of population per square kilometer in 1951 was only 633. This has gone up to 3300 in 1999 to 5272 in 2001. Comprehensive Development Plan (CDP) for Bhubaneswar gives the guidelines for density and recommended proposed density in different zones. As per CDP maximum density in Bhubaneswar can be 50-60 Dwelling Units (DU)/Acre with maximum Floor Area Ratio (FAR) of 2.75. This will facilitate vertical growth of the city. With the ever increasing pressure on land resources and the high cost of houses in and around the city, high-rise houses are becoming popular day by day. This resulted; high temperature and heat waves urban heat-island effect and air pollution.

Many high-rise building are proposed to be constructed in Bhubaneswar Development Planned Area (BDPA). This can lead to micro climatic change of the city. Apart from the serious increase of the absolute energy consumption of buildings, other important impacts include-the increase of the pick electricity load, environmental problems associated with the ozone depletion and global warming and indoor air quality problems.

This has made the use of air conditioning systems highly popular. However Climate responsive design such as Passive cooling/natural ventilation measures may reduce cooling loads by as much as 60 to 70 percent, even in high-rise housing. Besides, the creation of green facade and sky gardens within high-rise housing contributes to the natural environment and also provides greenery as well as natural light, and ventilation.

This article highlights the climate resilient high-rise housing suitable for Bhubaneswar city, which may reduce climate change effects and create a sustainable future for the inhabitants of the city.

**Keywords:** Climate change, Urbanisation, Global Warming, Heat-island effect, High-rise Housing settlement planning, planning measures.

## **EFFECT OF CLIMATE CHANGE ON BIO-DIVERSITY AND FOOD SECURITY**

**DR. SAILABALA PADHI, D.SC.**

Director, Centre for Environmental Studies

Forest & Environment Department, Government of Odisha.

E-mail: sailabalapadhi@gmail.com

### **ABSTRACT**

The modern industrialization and chemicalization of agriculture and fast transportation comprises a stress factor causing pollution of land, air and water. Green house gases, nitrous oxides, methane chlorofluorocarbon, carbon dioxide and other industrial gases used in industries are adversely affecting the climate. Loss of biodiversity affects both the stability and function of ecosystem. The conservation of biological resources depends on the continuous health and productivity of local ecosystems hence both biological diversity and biological resources need to be conserved. Different conservation approaches were given in this paper. In the present context ensuring food security is an issue of great importance, since one third of population is estimated to be absolutely poor and one-half of all children malnourished. To ensure health preferences for safe and nutritious food, attention needs to be focused on making them healthy choices available, attractive and affordable by adopting organic farming in a sustainable way.

Climate change poses a potential threat to the earth's biodiversity. In comparison to threats by other human-induced environmental changes (e.g., changes in land cover and use (Dale 1997), pollution, effects of increased concentrations of greenhouse gases), direct effects of recent climate change on biodiversity will be slow and difficult to measure, but the processes are global and practically irreversible. Moreover climate change will exacerbate the stresses already imposed on the environment. For example, in a fragmented landscape, species may be unable to move to a climatically more favourable environment, because their dispersal capacities are insufficient to cross the barriers between the remaining natural areas.

**Keywords:** Biodiversity, climate change, GHG, food security, ecosystem.

## **A REPORT ON THE CELEBRATION OF WORLD ENVIRONMENT DAY (WED) ON 5<sup>TH</sup> JUNE 2013 AT JAYDEV BHAWAN, BHUBANESWAR**

On 5<sup>th</sup> June 2013, the Centre for Environmental Studies (CES) organized the World Environment Day Function at Jaydev Bhawan, Bhubaneswar. Also CES organized an eco-model exhibition on the theme of WED-2013. 55 models from eco-clubs of different districts participated in the exhibition. The exhibition was inaugurated by Shri Raj Kumar Sharma, IAS, Principal Secretary, Forest & Environment Department, Government of Odisha.



*Principal Secretary is inaugurating the eco-model exhibition*



*Principal Secretary is discussing with model participants*

The students from various eco-clubs participated in state level model exhibition in Jaydev Bhawan at 9.00 am on 5<sup>th</sup> June 2013. After valuation 1<sup>st</sup> model awarded with cash prize of Rs.3000/-, 2<sup>nd</sup> model awarded with cash prize of Rs.2000/-. Besides, all participants received Rs.1000/- as model fee. The selected students received certificates from Shri Bijayshree Routray, Hon'ble Forest & Environment Minister of Odisha State. Dr. Sudarsan Panda, Director, Nandankanan Zoological Park, Shri A.C. Dinakar, IFS, Addl. Project Director, ICZMP, Dr. D. Roy, Sr. Scientist, Forest & Environment Department, , Dr. D.K. Behera, Sr. Environmental Scientist, OSPCB were the judges for model exhibition.

Shri Bijayshree Routray, Hon'ble Forest & Environment Minister of Odisha inaugurated the state level function planting a tree inside the Jaydev Bhawan. And also he inaugurated the electronic waste bin on the occasion of WED-2013. Shri Raj Kumar Sharma, IAS, Principal Secretary, Forest & Environment Department; Shri Bhanu Pratap Singh, IFS, Director, Environment-cum-Special Secretary and Dr. Sailabala Padhi, Director, Centre for Environmental Studies were present. During the function a booklet contains on the theme of WED-2013 was released by Chief Guest.

Hon'ble Forest & Environment Minister of Odisha distributed "Prakruti Mitra" prizes to 244 organisations. Dignitaries from all Departments, Retired Officers, all staff of Environment Department, State Pollution Control Board, Chilika Development Authority, Regional Plant Resource Centre, students and general public attended this function.



Photographs of Celebration of World Environment Day on 5th June 2013

**For Subscription & Query; Please Contact to :**

**Centre for Environmental Studies,**  
 Forest & Environment Department, Government of Odisha  
 N-1/247, IRC Village, Nayapalli, Bhubaneswar-751015  
 Tel. No.- 0674 - 2551853; Fax- 0674 - 2553182  
 e-mail: ori@envis.nic.in & cesorissa@rediffmail.com  
 URL - www.orienvis.nic.in & www.cesorissa.org

**Acknowledgement :** We are thankful to authors and BERF for their co-operation in providing information for this News Letter.

*This newsletter is also available in electronic form at our website:*  
***www.orienvis.nic.in and www.cesorissa.org***

**ENVIS EDITORIAL TEAM**

Dr. Sailabala Padhi, M.Phil, Ph.D., D.Sc., Director  
 Pravat Mohan Dash, Programme Officer  
 Prashanta Ku. Nayak, Information Officer

**Disclaimer :** The views expressed by the writers do not necessarily reflect the views of the Centre for Environmental Studies or The Editor.

**BOOK POST**

*If undelivered please return to :*  
**ENVIS Centre**  
 Centre for Environmental Studies  
 Forest & Environment Department  
 Government of Odisha  
 Plot No. - N-1/247, IRC Village,  
 Bhubaneswar-751015, Odisha

To,



\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_