

ಕನ್ನಡ ರಾಜ್ಯೋತ್ಸವ ೨೦೧೧ ರ ಶುಭಾಷಯಗಳು

# NEWS LETTER

The Institution of Engineers (India)

ESTD : 1964



Mysore Local Centre (ESTD : 1964) Jhansi Laxmibai Road, Mysore, 570005, India

Web Site: [www.ieimysore.org.in](http://www.ieimysore.org.in) e-mail: [ieimysore@sancharnet.in](mailto:ieimysore@sancharnet.in)

Telephones : 0821-2421168, 2421515 Fax: 2421894

*"46 Years of Relentless Journey towards*

Vol. 05 / No. 12

*Engineering Advancement for Nation-building"*

October - 2011

Er. A. S. Satish. FIE

Chairman

Er. T. Ananthapadmanabha. FIE

Honorary Secretary and Editor

## From the Chairman's Desk



Dear Member,

Greetings to you all on the occasion of Kannada Rajyotsava Celebrations November- 2011

An appeal from the chairman organising committee IEC-2011 is reproduced below with a request to all the members to extend their fullest co-operation and support for the success of the Indian Engineering Congress. Kindly register and participate in all the activities of the congress.

With warm regards

A.S. Satish

Chairman IEI, Mysore

**26<sup>th</sup> INDIAN ENGINEERING CONGRESS**

The Institution of Engineers (India), is organising **26<sup>th</sup> Indian Engineering Congress** between **15 - 18 December 2011 at Bangalore Palace Grounds**. Initiated in 1957, Indian Engineering Congress is a leading forum and platform that prepares and promotes engineers of all industries to related technologies. Its platform embraces all engineering sectors and its allied services.

Technical programs of 26<sup>th</sup> IEC will see some of the best industry speakers covering topics related to challenges, solutions and futuristic technologies. Engineering Colloquiums will cover the related topics of 15 different engineering divisions. **IEC attracts over 4000 delegates** who are mainly engineering professionals from industry, academia, and government departments, will witness series of workshops and technical sessions over a 4-day period, with **150 engineering** related companies showcasing and demonstrating their products and services at **IEC Exposition**.

On this occasion a Special Souvenirs of 26<sup>th</sup> IEC will be published which will capture and bring out the entire event information along with glimpse of the event. This souvenir will be distributed to all participating delegates and the partnering institutions of Hill, **reaching more than 6000 Engineering professionals** and Industries in India and abroad. 26<sup>th</sup> IEC - Souvenir is a great opportunity for companies industries based into engineering field of work to podcast their achievements, products and services before engineering professionals, thus making it a right medium to reach your targeted audience / clients.

26<sup>th</sup> IEC Organising committee requests and solicits your valued patronage by way of advertisements in the souvenir. This will be an ideal occasion for your esteemed organization / enterprise to get the

widest coverage for your products and services, while also supporting the noble cause of encouraging the engineers in their quest for knowledge.

**Looking forward for your whole hearted support and co-operation.**

With Best Regards

L. V. Muralikrishna Reddy

Chairman-Organising Committee

**The Institution of Engineers (India), Karnataka State Centre**

# 3, Dr. B. R. Ambedkar Veedhi, Bangalore - 560 001

080-22261144 / 22261188 :Telefax : 080-22256191

E-mail : [Chairman@iec2011.in](mailto:Chairman@iec2011.in) ; [www.iec2011.in](http://www.iec2011.in)

## WORKSHOP ON

7<sup>TH</sup> OCTOBER 2011

Approved Research Proposals R & D Projects Grant-In-Aid Schemes PAN India Campus Connect Programmes, Rapid Proto-Typing Facility



Padmashri.Prof. R. M. Vasagam, FIE Interacting with the students

## A BRIEF ON THE PRESENTATION :

**DIGITAL MANUFACTURING & RAPID PROTOTYPING TECHNOLOGIES FOR ENGINEERING STUDENTS**

by **Dr. U. Chandrasekhar**, FIE,

Chairman RDC, IEI, Scientist G & Additional Director GTRE, Bangalore

Outline of the Program

IE – project Funding for Engineering Students

Digital Manufacturing / Rapid Prototyping

Project Ideas for Mechanical / Industrial Design / Production / Bio Medical / Aeronautical / Automotive Student Projects

National Satellite Programs & Pico Satellite Project for Engineering Colleges

• Micro Air Vehicles / Unmanned Air Vehicles / Embedded Systems

### Funding Details

- All branches of Engineering • UG, PG and PhD level
  - All Zones of the Country • Open throughout the Year
  - Rs 50,000 to 1.2 lakh • Preference to Contemporary Themes & Industrially Supported Projects • Online Process
  - Review by Expert Committee and Award of Grant-in-aid
- Digital Manufacturing Technology & Engineering Student Project Ideas

### What is the method of manufacturing in conventional mode ?

Industrial Design Project of a Consumer Products by Young Engineers – Can you identify them ?, Packaging Studies, Functional Study on Missiles, Micro Air Vehicles, Student Project Ideas, Project by : Aero / Mech/ Civil Departments, Jain / NIT Domains : CAD / RP / MAV / DO, Project Duration : 6 months. Project Cost : 50,000

### Rotor Design

Design Iterations

1. Blade made from ABS plastic using FDM machine and coated with Araldite. It was heavy.
2. Blade made using polyamide. It was fine but did not produce enough lift. Design Iterations ...

Different options of width, thickness and number of blades were tried. Finally we arrived at a four-bladed version with a hub

Design Iterations ... Present LH & RH blades

Quad-Copter: RP Rotors Team Fateh-Thapar University, India Formula SAE Student Competition U.K.-July 2010. Team Fateh is an idea that took birth 3 years ago in Thapar University, Patiala, India. It comprises of dynamic young engineers of the university, who share the ambition of taking India to the top 20 Best Formula SAE teams in the world. Multiple Modules – Static & Dynamic Segments – Various CAE tools Team Fateh-Thapar University, India Formula SAE Student Competition U.K.-July 2010

### PROJECTON SOLAR ROBOT HARVESTER SCOPE

- It is a project “INTEL India Embedded Challenge” winner
- Mechanical Engineers – Computer Science Engineers
- Electronic Engineers – Electrical Engineers
- Requires knowledge in embedded systems and fabrication. ( Obstacle Avoidance / RC Steering / 0.02X/ Hands-free / user defined path / SMS )

### IE (I) - Pico Satellite Program

(Consortia – Space’ Scientists – Seed Fund – Multi Campus – Mission Mode – Multi Disciplinary R&D & Innovation – High Visibilty – Mission and Project Management )

### IE I – PICO SATELLITE PROGRAM

Each Sub system provides learning opportunity – Telemetry What can you learn

- Different subsystems of the satellite - Interfaces of these subsystems.
- Integration of the payload. , • Power system design aspects.
- Mission Planning. • Image acquisition and processing techniques. • Orbit maintenance. , • Satellite Attitude control
- Satellite tracking techniques. , • Construction of small ground stations. • Testing and simulation studies.
- Extending the ideas of integrating multiple payloads. Develop custom made prosthesis for the total replacement of a tumor affected Pelvic Girdle

### RAPID PROTOTYPING

- § Surgical planning/mock surgery § Touch & feel
- § Similar to bone properties § Can cut,file,screw,glue

§ Can serve as a pattern for Rapid Tooling IMAGINEERING INDIAN EXAMPLE

- Totally Indian Design • No components can be imported
  - No machine to be imported • Prototype must be certified by ARAI • 40% of production to be exported from 3rd year
- Imagination in Engineering - IMAGINEERING 3D Printing on your desktop • Print 3-D models from the desktop
- Communicate design intent ThermoJet Patterns - How does it work?
  - Deposition of molten wax (Tm~80°C) through printer head
  - build on supports • remove from platform and remove supports • push button system

### STUDENT PROJECT IDEAS

Project by : Industrial Design / Mechanical

Domains : Casting / Simulation / Design Eng

Project Duration : 12 months

Case Study : Ganesha

- Solid modeling > Rapid prototyping > Investment casting.
- Traditional CAD systems inadequate for intricate freeform shapes.
- Haptic/touch-based system (Freeform+Phantom, Sensable Technologies)

### Digital clay, virtual space

- The 2D pictures/drawings are overlaid on two perpendicular planes.
- Clay is added in globules to get the rough shape.
- Extrusion, rotation and mirror functions help in faster modeling.

### AICTE TO LAUNCH PORTAL ON ENGINEERING RESEARCH PROJECTS BANGALORE, SEP 16, 2011

In an apparent bid to create a live database of the efforts poured in by students who do research work or prepare projects as part of their curriculum, AICTE will launch a web portal of these projects by October-end , said Chairman AICTE Mr. S. S. Mantha, during the inaugural function of Chief Innovation Officers held at Bangalore. “The portal will also help students to network and promote research culture among students,” he said.

Mantha criticised the ‘copy and paste method’ used by students in research and claimed that there was lack of innovation in them. Quoting the example of global , IBM, where they continue to emphasise on their internal research with as much as 60 per cent of their earnings poured into it, he hoped students realise research should make difference to the way something is manufactured or a concept is

Mantha said that teachers and professors in technical colleges must return to their roots in the industry and update themselves with the current technological advancements. He said that the AICTE had plans to identify around 100 engineering institutions across the country and provide at least 2,500 to 3,000 sq ft of work space where industries can outsource their research and development department to these campuses.

Campuses are preparing Engineers for Solving Tomorrow’s Problems

### Globalization in services

Rise beyond ordinary. Utilise the opportunities (More than 23 Govt. Bodies are providing funding – ARDB, NRB, BRNS, MHRD, DIT, RESPOND, DST, NRB, NPMICAV, ER&IPR, AICTE, UGC, CSIR etc. )

Knowledge – Power

## EVOLUTION OF INDIAN SPACE RESEARCH PROGRAMS & BUILDING PICO SATELLITES- R & D INTERACTION PROGRAM

By Prof. R. M. Vasagam, FIE

Chairman, NDRF, Former Vice Chancellor, Anna University

### PROJECTS OF INTEREST IN SPACE AREA

- High efficiency Solar Cells, • Fuel Cells / Batteries for space craft, • Power handling, - High Voltage bus, - AC Bus
  - Ultra light weight Structures / honey comb panels/ Cylinder
  - Titanium pressure vessels / fuel tanks, • Mechanisms, - Deployment, - Drive, - Solid Lubrication, - Pyrodevices
  - Stepper motors, - DC driven motors for reaction wheels / momentum wheels, • Sensors, - Sun, - Star, - Earth, • Thermal
  - Multilayer blankets, - OSR, - Heat pipes, • Communication
  - Dual polarization reflectors-Solid State power amplifiers- Scanning spot beams, - On board regeneration, -Inter satellite optical links, • Command, - Encryption, -Pseudorandom code, • Tracking, - GPS, - Range and range rate, - Interplanetary missions, • Mission Operation. - Formation Flying.
  - Space Servicing
    - Rendezvous and docking, - Refueling in orbit. - Replace failed equipments, - Replace batteries / solar panels. - Place and collect samples for space environment damages, -Space station / space platform construction and maintenance
  - Human Space Flight
    - Space Crew habitat, -Space Suit, - Space Food, -Recycling of waste, • Space Material Processing, - Microgravity experiments - Crystals / Pharmaceuticals
  - Space Para -Solar Power Satellites, • Space Tethers
  - Space interferometry for Astronomy,
- For more information visit [www.ndrfindia.org](http://www.ndrfindia.org)

ಪದ್ಮಶ್ರೀ ಡಾ. ದೇ. ಜ. ಗೌ. ಅವರು ಪತ್ರಿಕೋದ್ಯಮ ವಿಭಾಗಕ್ಕೆ ನೀಡಿದ ವಿಶಿಷ್ಟ ಕೊಡುಗೆ ಕುರಿತು ವಿಶೇಷ ಉಪನ್ಯಾಸ.

೨೮.೧೦.೨೦೧೧



ಉದ್ಘಾಟಕರು ಮಾನಯ ಶ್ರೀ ಡಿ. ಪಿ. ಪರಮೇಶ್ವರ, ಅಧ್ಯಕ್ಷರು, ಕರ್ನಾಟಕ ಮಾಧ್ಯಮ ಅಕಾಡೆಮಿ. ವಿಶೇಷ ಉಪನ್ಯಾಸ ಮಾನ್ಯ ಶ್ರೀ ಕೃಷ್ಣವೆಟ್ಟಿಂ, ಹಿರಿಯ ಪತ್ರಕರ್ತರು, ಉಪಸ್ಥಿತಿ ಪದ್ಮಶ್ರೀ ಡಾ. ದೇ. ಜ.ಗೌ, ಗೌರವಾಧ್ಯಕ್ಷರು, ಚುಟುಕು ಸಾಹಿತ್ಯ ಪರಿಷತ್ತು ಕೇಂದ್ರ ಸಮಿತಿ, ಅಧ್ಯಕ್ಷತೆ ವೈದ್ಯರತ್ನ ಡಾ. ಡಿ. ತಿಮ್ಮಯ್ಯ, ಅಧ್ಯಕ್ಷರು, ದೇ.ಜ.ಗೌ. ಜ್ಞಾನವಾಹಿನಿ ಅಕಾಡೆಮಿ ಟ್ರಸ್ಟ್, ಮುಖ್ಯ ಅತಿಥಿಗಳು ಮಾನ್ಯ ಶ್ರೀ ನಿರಂಜನ ವಾನಳ್ಳಿ, ಖ್ಯಾತ ಅಂಕಣಕಾರರು, ಮಾನ್ಯ ಶ್ರೀ ಶೈಲೇಶ್‌ರಾಜ ಅರಸ್, ಮುಖ್ಯಸ್ಥರು, ಸಂವಹನ ಮತ್ತು ಪತ್ರಿಕೋದ್ಯಮ ವಿಭಾಗ, ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮುಕ್ತ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

## TECHNICAL LECTURE ON EMBEDDED HAZARDS IN DRINKING WATER

By Dr. K. GopalaKrishna

28th October 2011

Faculty (Retd), Environmental Engineering Division Dept. of Civil Engineering, IIT, Madras



Guest Speaker being Introduced by Dr. H. S. Dayananda

### A BRIEF ON THE PRESENTATION : AIRBORNE

- Tuberculosis – Bacterium Tuberculae, • Common Cold – Cocksackie Virus, Viral Fever – Enteric Virus Others, Incubation is in the vector, Mosquito Malaria, Dengue Fever, Encephalitis\*Chickengunya \* Japanese Encephalitis killed more than 800 persons in UP in Sep 2004

### LIVE MICROORGANISMS SEEN THROUGH HIGH POWER MICROSCOPE

Activities

- Metabolism, • Reproduction by binary fission
- Locomotion, Change in chromosomes mutations Energy Source, (O<sub>2</sub>) Oxidized products + • Substrate
- Cell Synthesis Reduced products + • Substrate
- Cell Synthesis Water borne diseases
- Cholera – Vibrio Cholerae or Vibri eltor, • T y p h o i d – Salmonella Typhi, • Para typhoid – Salmonella paratyphi
- Gastro enteritis – Salmonella group • Bacillary dysentery – Shigella group • Leptospirosis - Leptospirae, Detection Coliform Test, Gas formation test Plate Count test, MPN – Most Probable Number

### VIRAL DISEASES

- Polio Virus (Poliomyelitis) \* • Adeno virus (Hepatitis)\*
- Cocksackie Virus (Common Cold)\*\* • Echo Virus (acute diarrhea)\* • Enterovirus (Viral fever) \*\* • \* -Water borne
- \*\*- Air borne Hap A & B • Infection hepatitis – (Cataharl jaundice) Hap E, F are from infected blood
- One drop of infected blood can infect 1000 persons
- Viral Count – only on host cel Plate count test with endo media Monkey kidney cells ?

Emulsified frozen cells are available now Protozoa

Amoebic dysentery – Cysts of Entamoeba histolytica

- Liver abscessis, acute diarrhea – Long term effects on brain cells – As per WHO 30 % of Asians are carriers

Balantidiasis- Balantidium protozoa

Giardiasis – also known as flagellate dysentery

Good Water - pH 7.2 to 7.5

☐ Should retain bicarbonate alkalinity for taste, ☐ pH is an indicator of pollution, ☐ pH above 9 indicates industrial pollution Cluster of septic tanks Excess Nitrates Agricultural run off

• > 50 ppm – Mathamoglobinemia (blue baby syndrome – Infant disease )

Fluorides – from minerals & Ind. Wastes

Upto 1 ppm – preserves enamel of teeth  
 >1.5 ppm – dental fluorosis >10 ppm – skeletal fluorosis  
 Fluoride map of India – 150 potential risk zones Dental Fluorosis

**SKELETAL FLUOROSIS**

Heavy metals & Toxic inorganics  
 • Lead (pb) • Copper (cu) • Zinc (zn) • Mercury (Hg)  
 • Phenols • Cyanide (CN)  
 Carcenogenic effects Arsenic (As)  
 Mainly in ground water due to arsenic leaching  
 Cumulative toxin above 0.1 mg/L  
 -Lead to Secondary Arsenosis  
 Levels upto 4mg/L are detected in ground water of West Bengal & East Bengal (BanglaDesh)

**Arsenosis Mutations**

• HIV Virus, • Bird flu • Chickengunya ???  
 General Problems :- Third World  
 • Eutrophication of Navigation canals & lakes  
 • Plastics chocking Sewers (Mumbai ??)  
 • Excessive use of pesticides and fertilizers – ground water contamination  
 • After pollution of water pipes needing replacement  
 • Abuse of water courses

**General Problems :- Third World**

• Eutrophication of Navigation canals & lakes  
 • Plastics chocking Sewers (Mumbai ??)  
 • Excessive use of pesticides and fertilizers – ground water contamination, • After pollution of water pipes needing replacement, • Abuse of water courses

**WORLD HABITAT DAY**

**31ST OCT 2011**

Theme : Cities & Climate Change

The theme Cities and Climate Change was chosen because Climate change is fast becoming the preeminent development challenge of the 21st Century Indeed, no-one today can really foresee the predicament in which a town or city will find itself in 10.20 or 30 years time. In this new urban era with most of humanity now living in towns and cities, we must bear in mind that the greatest impacts of disasters resulting from climate change begin and end in cities. Cities too have a great influence on Climate change.



**Guest Speakers Interacting with the audience**

Technical Presentations by **Er. Ms. Sahana Jagannatha**

**SUMMARY : Spaceship Earth**

Ability of human beings to cognize finiteness of life supports  
 Global Warming – A Reality Science & Technology capability to monitor & quantify impacts Global Warming Impacts in India

*Eco-systems, Agriculture, Industries, Human Settlements & Service Sectors Vision, Policy & Agenda In India Eight Sector Initiatives by PMOs office Localizing a Global Issue, Individuals & Community are making a Difference, So what ? & What Next ? Networking, Information & Action, Spaceship Earth Ability of human beings to cognize finiteness of life supports*

- Big Bang : 15 Billion Years ago
- Milky Way Galaxy : 9 B.Y.A
- Solar System : 5 B.Y.A
- Planet Earth Formed : 4.5 B.Y.A
- Life on Earth : 3 B.Y.A
- First of Mammals : 200 M.Y.A
- Home Sapiens : 1 M.Y.A
- Civilizations : 10,000 to 2,500 Y.A
- Agriculture, end of Ice age : 10,000 Y.A
- Alphabet : 3,500 Y.A
- Origins of Science/Religion : 2- 3000 Y.A
- Industrial Revolution : 200 –100 Y.A
- Modern Science : 100 Y.A
- World War I & II : 80- 50 Y.A
- Atomic & Space ages : 50 Y.A
- Man’s destruction of Environment : NOW

**GLOBAL WARMING- A REALITY**

**SCIENCE & TECHNOLOGY CAPABILITY TO MONITOR & QUANTIFY IMPACTS SPACESHIP THE EARTH :**

- Man’s Future in Space will be determined more by Socio-Cultural Imperatives rather than Science & Technology alone.....
- Individual Liberty & Democracy along with deep and active concern for all living beings on Earth are essential features of a Civilized Society....
- The world’s first view of Earth taken by a spacecraft from the vicinity of the Moon. The photo was transmitted to Earth by the United States Lunar Orbiter I and received at the NASA tracking station at Robledo De Chavela near Madrid, Spain. This crescent of the Earth was photographed August 23, 1966 at 16:35 GMT when the spacecraft was on its 16th orbit and just about to pass behind the Moon

**Global Warming- A Reality**

**Science & Technology capability to monitor & quantify impacts Population & Global Warming**

- The Geometric progression of population growth is the root of all converging crises
- Too many people using too much of our planets finite & non-renewable resources causing irreversible damage
- The true danger posed by our exploding population is not our absolute numbers but the inability of our environment to cope with so many of us doing what we do

**Global Warming – A Reality**

**Science & Technology capability to monitor & quantify impacts Causes Of Global warming :**

- Rising levels of green house gases together with Sulphur dioxide(SO2) and Suspended Particulate Matters such as dust, etc in the environment of our living planet i.e. earth are the cause for climate change.

**Global Warming- A Reality**

**Science & Technology capability to monitor & quantify impacts**

### Causes & Impacts

- Global warming is caused by an increase in the temperature of the Earth's lower atmosphere.

Global warming lead to climate changes resulting from alterations to regional climatic events such as rainfall patterns, evaporations and preventive measures.

Climate induced natural disasters (CINDs) like drought , flood and cyclone become serious problems to coastal areas.

### Global Warming – A Reality

*Science & Technology capability to monitor & quantify impacts*

The frequency and intensity of natural disasters are also growing rapidly worldwide.

A recent analysis of great natural catastrophes since 1960 shows an increase in the 1990's by a factor of three and this seems to be directly correlated with global warming.

### Global Warming – A Reality

*Science & Technology capability to monitor & quantify impacts*

Poverty makes people more vulnerable to climate changes as they lack the resources to adapt to climate changes.

It is ironical that the poor contributes the least to carbon emission but are most vulnerable to climate change.

Global Warming- A Reality

*Science & Technology capability to monitor & quantify impacts*

The climatic changes likely affect water supply, quantity and demand and may have ramifications for decision makers.

Climate change may either increase or decrease water availability through precipitation, temperature, cloud ness and humidity, increasing the level of uncertainty, which can result in increased recurrence of hydrologic hazards such as floods and droughts.

### Global Warming- A Reality

*Science & Technology capability to monitor & quantify impacts*

On February 2,2007 the United Nations Scientific panel Studying Climate Change declared that the evidence of a warming trend is 'unequivocal' and that human activity has 'very likely' been the driving force in that change over the last 50 years.

Global Warming – A Reality

*Science & Technology capability to monitor & quantify impacts*

Indian Mitigation Policy On Climate Change

Climate change is having an impact on India as well. These changes may include decrease in crop productivity, water availability, increase in vector borne diseases, extreme weather events like floods, cyclones and droughts and changes in perception patterns. In order to advance the preparedness of the country to deal with climate change, at present, the following activities are being undertaken:

- Capacity building, – Impact assessment
- Promotion of scientific and technological research and systematic observation
- Education , training and public awareness
- Enhancement of International Cooperation

Global Warming Impacts in India

*Eco-systems,Agriculture,Industries,Human Settlements & Service Sectors*

India has prepared a 'National Action Plan on climate change'(June 30,2008 ) which is in line with the International communities and contains eight missions on climate mitigation and adaptation.

The Plan identifies eight core "National Missions" running

through 2017 and directs ministries to submit detailed implementation plans to Prime Ministers's Council on Climate Change by Dec 2008

Global Warming Impacts in India

*Eco-systems,Agriculture,Industries,Human Settlements & Service Sectors*

Human Settlements

MSW Rules 2000

. Segregation at Source target Dec 31st 2003

. Rs 100 to Rs 500 fine

. Over 3,800 ULBs generate every day 1,20,000 Tonnes of MSW

. Every ton of MSW gets billed for Rs 500-Rs 1,500

" Unity does not posses Strength – The Only Example is MSW mixed

### Prof V Jagannatha

Scientist Engineer-ISRO HQ on Deputation, HUDCO Chair, SIUD ATI Campus Mysore & Er. Sahana J, IS,SJCE),VTU India : MS, ISU France

### Global Warming Impacts in India

*Eco-systems,Agriculture,Industries,Human Settlements & Service Sectors*

In developing countries like India, climate change could represent an additional stress on ecological and socio-economic systems that are already facing tremendous pressures due to rapid urbanization, industrialization and economic development.

With its huge and growing population an 8000 km long densely populated and low lying coastline, and an economy that is closely tied to its natural resources base.

India is considerably vulnerable to the different natural disasters induced by climate changes

Vision, Policy & Agenda In India

*Eight Sector Initiatives by PMOs office*

Indian's Preparedness

In order to advance the

preparedness of the country to

deal with climate change, at

present, the following activities are

being undertaken:

- Capacity building
- Impact assessment
- Promotion of scientific and technological research and systematic observation
- Education , training and public awareness
- Enhancement of International Cooperation

Vision, Policy & Agenda In India

*Eight Sector Initiatives by PMOs office Indian figures among the top ten contributors to greenhouse gas emissions.*

– However current per capita gross emissions in India are only one-fourth of the world's average.

India is highly vulnerable to climate change as its economy is heavily reliant on climatic sensitive sectors like agriculture and forestry and its low lying densely populated coastline is threatened by a potential rise in sea level.

Global Warming Impacts in India

*Eco-systems,Agriculture,Industries,Human Settlements & Service Sectors*

India is highly vulnerable to climate change as its economy it heavily reliant on climate sensitive sectors like agriculture and forestry and its low lying densely populated coastline is

threatened by a potential rise in sea level.

Vision, Policy & Agenda In India *Eight Sector Initiatives by PMOs office India ratified the Kyoto Protocol in 2002*

*Being a developing country it was not required to cut emissions, but it has developed certain mechanisms to reduce emissions.*

The primary legislation in India is as follow:

- National Hydro policy, 1998–Outlined strategies for hydro power potential.
- Energy Conservation Act,2001–Established Bureau of Energy efficiency
- A National Bio diesel Policy is also being considered to encourage use of Bio diesel.

The other voluntary provisions are:

- TERE-GRIHA . Green Rating for Integrated Habitat Assessment is a rating system for rating of green buildings
- LEEDS system . Leadership in Energy and Environmental design encourages and accelerates adoption of sustainable green buildings standards.

### Localizing a Global Issue

#### **Individuals & Community are making a Difference Community Level Initiatives**

Adaptation is needed to reduce the effects of climate change , particularly for poor communities who are going to be the hard set hit.

Communities need to be made aware of risks they are facing due to climate change in order to help them to adapt.

- However, the best implemented measures will not be able to restore income levels, living conditions, healthcare and water availability to what they would have been without climate change .
- Sustainable agriculture, water management, disaster risk reduction and renewable energy are some of the areas which need concrete action and mainstreaming at community level.

### COMMUNITY EMPOWERMENT

- Action : 01 : Provide Communities and individuals with access to resources and an equitable share in managing them.
- Action : 02 : Improve exchange of information, skills, and technologies
- Action : 03 : Enhance participation in conservation and development
- Action : 04 : Develop more effective local governments.
- Action : 05 : Care for the local environment in every community.
- Action : 06 : Provide financial and technical support to community environmental action.

The first level of Environment impactHealth impact Indicators in Pollution Man The present generation in various parts of the world has already registered trends of these irreversible damages !

Global Best Practices Case study (1) Clean up the World One World, One ecosystem, one humanity

- Main Objective :

– To bring together citizens from every corner of globe in a simple activity that positively assist their local environment - Since 1993, Clean Up the World has motivated more than 40 million people each year to volunteer and make their environment a cleaner, healthier place to live. [www.cleanuptheworld.org](http://www.cleanuptheworld.org)

Earth Day Network

Eco-education Guide 2000

- 4500 Organizations world wide, 191 countries
- Almost the population of India networked
- International Citizen day 22 April every year
- [www.earthday.net](http://www.earthday.net)

### CASE STUDY(3)

Prajavani, 19th Nov'06 Complimenting 250th Week Voluntary Eco-literacy Campaign on the Kukkarahally Lake

CASE STUDY(4) Solid Waste Management (SWM) plan for 2006 by KRVP and Taluk Panchayat Channarayapatna Planning & monitoring support by CST & CED

December 5, 2005presentation to organizing committee

Goals & Objectives Achieve a non-intrusive replicable model SWM for religious mega-events in India Change local attitudes to – avoid plastics and cardboard cartons, achieve source level segregation

Establish safe, fail-proof, SW lifting, treatment & disposal system for the event After the event leave behind a place better than when started 30 lakh pilgrims, peak Feb 8th-19th (2-3 lakh/day, 75 tons solid waste /day Food wastes cleared thrice daily direct from eateries, street sweeping only at night

Two colour bins -  
dry - white) &  
wet wastes (green)

Innovative hill-top USW removal, no carry bags on hill-top – volunteers to help Committee gets “enviro” sponsors for bins and cloth bags Full compliance with MSW rules, etc. Approach and Strategy Facilitating segregation, localizing waste and minimizing wastes on walkways [wide visible plastic reusable bins, isolate food wastes zone, use biodegradable plates, etc.]

Minimizing environmental and social threats through policy and pro-active measures [allow only transparent plastic or cloth bags, intensive IEC efforts]

Cost minimization, economic efficiency and environment sponsorship Synchronized collection & transport, 2- level back-up, support by eco-wardens

[night sweeping, push carts—>tractor to landfill, 2-level back-up] Conversion to compost, recovery /reuse of segregated plastics and containers

[windrow composting, enzyme based odour control, secondary + recovery of plastics, PET-bottles, etc.]

Output and Deliverables Attitude Change from IEC activities seen as *Litter will fall into bins* (not roads), USW will appear *segregated (fermentables /dry)*, per covers, cloth bags or transparent plastic bags, existing SWM workers will guide contracted force and be in takeover readiness, *eco-wardens will guide pilgrims* in bin use. Effective and functional solid waste management system (SWM)

Street bins cleared twice daily, eatery bin (kept inside establishment) cleared 3-times daily, All roads swept once a day at night, solid wastes transported to land fill site immediately, All wet wastes composted in windrows, sprayed with odour control enzymes and plastics removed (if any). All dry wastes segregated at site to PET bottles, plastic covers, paper, etc.

All PET bottles compacted at site, others made ready for reuse. *Monitored for effectiveness and emergency preparedness and reported on a daily basis.*

**MONITORING AND DOCUMENTATION**

Unique event —> The overall effectiveness of IEC, SWM and treatment /Disposal of will be monitored e.g. total waste balance will be monitored. Documentation will touch the *effectiveness of the plan and lessons for future.*

Monitoring, reporting and evaluation Check-list [for discussion n

**Attitude Change from IEC activities**

Does >95% litter will fall into bins instead of on streets?

Does >95% of USW collected in bins appear segregated as fermentables or dry?

Do all eateries keep their wet wastes within premises for 3-times /day removal by TP and not in open?

Do all eateries use disposable plates and cups and avoid plastic ware? If not what is the problem?

Do all vendors will use paper covers, cloth bags or transparent plastic bags for all merchandise?

Do current SWM workers guide contracted force? Are they in takeover readiness?

Are eco-wardens effective and help general public to use bins as desired?

**Effective /functional SWM system**

Are street bins cleared twice daily? Are bins in eateries and other green bins will be cleared 3-times daily?

Are all roads swept once a day between 1830 and 2100 hrs?

Are all solid wastes generated in the location transported to land fill site immediately?

Are fermentable wastes being placed in windrows and plastics if any removed in 8h, what is problem?

Are windrows being sprayed odour control enzymes within 8hours after falling?

Are all dry wastes reaching processing site in 24h, are they being segregated to bottles, paper, etc?

Are all PET bottles being compacted by a hand operated crusher and stored on site in manner for recycling?

Are monitoring reports reaching authorities in 24h?

Is the back-up SWM system in state of readiness? Can it take over in 8h in and emergency?

Monitoring, evaluation and Documentation

Are daily monitoring reports being prepared?

Are daily monitoring reports being read by authorities and feedback obtained?

Is monitoring and reporting adequate?

Is the evaluation fair and is there a cross check done on reports received?

Are persons /users of these reports satisfied on a daily basis?

*Contingencies and Emergencies [internal use only]*

Most street sweepers absent – *call in standby PKs from list*

USW Spillage /toppled vehicle – *use standby TP crew+vehicle*

USW more than anticipated – *use standby TP crew+vehicle*

Heavy rains /soggy USW – *Use LDPE sheet liner*

Compost yard space not enough – *Use adjacent space*

Too much plastic IEC failure – *invoke TP for fines, eco-wardens, one more round of shop-2-shop IEC activity*

Bins stolen – *replace with new + make holes in bins*

*Policy guidelines for KasaVara.*

KSPCB Guidelines and MSW rules will be followed

Banning plastic carry bags substituted by cloth bags

Cardboard cartons taken back by suppliers immediately

Green policies – use of biodegradable plates /cups

License hotels, shops and public places to follow MSW rules

Policy on security at USW bins with Police

Preparedness for various SWM emergencies /contingencies

Enviro – sponsorships for bins, hoardings,

Working group for various activities

Continuous monitoring of process, environmental impacts

Treatment and Disposal

Site for land fill /compost to be leveled and prepared

Dry waste segregation site to be leveled and prepared for crushing and storage

800m<sup>2</sup> land to be laid out as shown in picture (left) for composting (back up, 400m<sup>2</sup> site not shown)

Dry wastes segregated into 4 units - shown in picture at right – bottles, plastic, etc. crushed and stored on site for sale

Organic fraction, plastics removed, windrow composted, sprayed with enzymes to control odour.

**ECO-LITERACY**

– *the basic difference in our personal & community life*

- Eco-literacy is the ability to cognize irreversible damages on the life supports by deliberate or accidental action. It is independent of formal education, urban living or social status.

– Er V Jagannatha

**Er. Parameshu, ATI, Mysore**

**COMMUNITY BASED ZERO WASTE MANAGEMENT**

Urban Organic Waste Management Option for Climate Change Mitigation- A case study of Composting in Kumbarakoppal, Mysore city

**INTRODUCTION**

Population & economic growth Change of consumption - foods, electronic goods, etc, Change of lifestyles - out, small family with area Rapid increase of waste JB Improper management

\* Public nuisance Environmental pollution and hazards

\* Global wanning

**GLOBAL WARMING**

The indiscriminate dumping of organic wastes into landfills or open dump sites results in the generation of large quantities of methane. Methane is a GHG with 21 times greater global warming impact than carbon dioxide. Organic waste management efforts can avert landfill methane generation and reduce direct emissions

**KEY ISSUES IN SCALING UP ORGANIC WASTE MANAGEMENT**

Mixed waste.

Quality and processing standards. Community awareness. Technological issues. Environmental issues. Financing issues. Management issues. Public-private partnership. Clean Development Mechanism. Intergovernmental coordination. Marketing. Capacity building.

**Organic Waste Management and Climate Change**

- Urban organic waste accounts for 50-70% of urban solid waste.

- Landfill of organic waste is the largest source of GHG emissions from the waste sector.

- Diversion of organic waste from landfill to composting or anaerobic

- digestion can avoid GHG emissions from landfill.

- Composting and anaerobic digestion may release GHGs such as methane and nitrous oxide, but its balance is lower than landfill.

- Use of compost, biosolids and biogas can help restoring soil carbon and nutrient, and avoid GHG emissions from the industrial, energy, and forestry sectors.

Organic waste management and GHG emissions

**Negative**

- Degradation of organic waste under anaerobic condition ( e.g. landfill) release methane to atmosphere, the largest source of GHG emissions from the waste sector.
- Composting and anaerobic digestion may GHGs such as methane and nitrous oxide, but its balance is lower than landfill.

**Positive**

- Use of compost, biosolids and biogas can help restoring soil carbon and nutrients, and avoid GHG emissions from the industrial, energy and forestry sectors.

**Overview of Urban Organic Waste**

**Utilization**

- Generally, urban organic waste management is open dumping in designated area. Sometimes, open burning is applied to reduce volume of waste.
- Composting of urban organic waste is being promoted in some Wards, but its implementation is found only in project area.
- Therefore, it is essential to improve waste management practice and to enhance utilization of urban organic waste »which can contribute to the national agenda on food, energy and climate change.

**Food Waste Separation at Source Should be Promoted**

Food waste is the major waste composition (> 50%) Easy to be spoiled and produces smell nuisance. Be a food source of domestic pest and disease carriers such as houseflies, cockroach, rat, dog, etc. create health problems. Reduce quality of recyclable materials.

**Co-benefit from Separation of Organic Waste**

Separations of organic waste help increase recycling of other recyclable waste  
GHG emissions reduction from recycling

**\* How to Reduce Methane Emission From Landfill?**

**1. Reduce organic waste dumped into the landfill**

‘- Reduce over food consumption 0 Reduce food waste generation

- Use the organic waste as a material for other products
- Animal feed : Pig, Chicken, Duck, Fish, etc.
- Compost for food production in urban fringe area
- Biogas production for energy use

**2. Pretreatment the organic waste before dumped into the landfill**

- Mechanical-Biological Treatment (MBT) • Compost-like products with high contamination of heavy metal (This product is not suitable for agriculture, but being use as a covering material for MBT and later dispose in landfill)
- Separation of plastic waste for energy use as a Refuse Derived Fuel • Around 30% of waste volume decreased, thus can extend the lifetime of landfill

**‘Composting: An Alternative to Waste Management and Climate Change**

- Reduce methane emission from waste sector
- Increase soil carbon storage • Potential to earn carbon credit (CDM) • Bridge the linkage between waste management and urban agriculture which important for food supply • Possible to apply in all levels: household, school, community and cities community, • Possible to manage with low cost, but labor intensive for some methods • Generate income (compost and foods) to the household, community and the city

**ಕರ್ನಾಟಕ ಸರ್ಕಾರ  
ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ ಇಲಾಖೆ**

ಸಂಖ್ಯೆ: ಇಟಿಇ/33/ಸಿಡಿಇ(2)/2011-12 ನಿರ್ದೇಶಕರವರ ಕಛೇರಿ,  
ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ ಭವನ, ಬೆಂಗಳೂರು  
ದಿನಾಂಕ: 29/09/2011.

**ಸುತ್ತೋಲೆ**

ಮಾನ್ಯರ,  
ವಿಷಯ: ಬೆಂಗಳೂರಿನಲ್ಲಿ 2011 ರ ಡಿಸೆಂಬರ್ ತಿಂಗಳಲ್ಲಿ ನಡೆಯುವ 26ನೇ ಇಂಡಿಯನ್ ಇಂಜಿನಿಯರಿಂಗ್ ಕಾಂಗ್ರೆಸ್ ಗೆ ಉಪಸ್ಥಾಪಕರು ಮತ್ತು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ನಿಯೋಜಿಸುವ ಕುರಿತು.  
ಉಲ್ಲೇಖ: ಇನ್ಸಿ.ಟ್ಯೂಟ್ ಆಫ್ ಇಂಜಿನಿಯರಿಂಗ್ (ಇಂಡಿಯಾ), ಕರ್ನಾಟಕ ಕೇಂದ್ರ, ಬೆಂಗಳೂರು ಇವರ ಪತ್ರ ದಿ: 26-9-2011.

ಮೇಲ್ಕಂಡ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ ಇಂಜಿನಿಯರಿಂಗ್ ಹಿನ್ನೆಲೆಯುಳ್ಳ ಇಲಾಖೆಯಡಿ ಬರುವ ತಾಂತ್ರಿಕ ಮತ್ತು ವಾಣಿಜ್ಯಿಕ ಕ್ಷೇತ್ರಗಳಲ್ಲಿನ ಪ್ರತಿ ವಿಭಾಗದಿಂದ ಕನಿಷ್ಠ ಒಬ್ಬರು ಉಪಸ್ಥಾಪಕ/ಸಹಾಯಕ ಪ್ರಾಧ್ಯಾಪಕರು/ಸಹ ಪ್ರಾಧ್ಯಾಪಕರು/ಪ್ರಾಧ್ಯಾಪಕರನ್ನು 2011 ರ ಡಿಸೆಂಬರ್ 15 ರಿಂದ 18 ರವರೆಗೆ ಬೆಂಗಳೂರು ಆರಮನೆ ಮೈದಾನದಲ್ಲಿ ನಡೆಯುವ 26ನೇ INDIAN ENGINEERING CONGRESS ನಲ್ಲಿ ಭಾಗವಹಿಸಲು ಅನುಕೂಲವಾಗುವಂತೆ ಸೂಕ್ತ ಕ್ರಮ ಕೈಗೊಳ್ಳಲು ಈ ಮೂಲಕ ಸೂಚಿಸಲಾಗಿದೆ.

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**ಸಂಪರ್ಕಿಸಬೇಕಾದ ವಿಳಾಸ:-**

Dr.N.H.Siddalingaswamy, Development Officer, Department of Technical Education, K.R.Circle, Bangalore-560001, E-mail: nijagalaswamy@gmail.com Mob: No: 919481859949	OR	Dr.L.V.MurakrishnaReddy, Congress Chairman, Organising Committee,26 <sup>th</sup> IEC 2011 No.3, Dr.B.R.Ambedkar Veedhi, Bangalore-560001, 080-22261144/88 E-mail: chairman@iec2011.in
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