



CONFERENCE PROCEEDINGS



National Conference on
Global Retaliation against the Exploitation of Environmental, Natural and Ecological Resources

GREENER - 2015

5th & 6th June - 2015



Organized By Civil Dept, H & S Dept.
In Collaboration With CEC - ISTE Faculty Chapter AP - 141



CHIRALA GROUP OF COLLEGES

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FOREWORD

Mother Earth is our first Mother and a natural giant ecosystem enveloped by the environmental layers. Mother Earth has taken its own course until recent years by satisfying needs and greed's of all life forms. Living within planetary boundaries is the most promising strategy for ensuring a healthy future. On this globe everything is related to everything else. Though man can create nothing he exploits everything in the nature for his selfish solitary survival since from the beginning. Man created his own malafide parasitic system of exploitation by swallowing his own and fellow species. It is evident that human activities are responsible for the acceleration of frequency and severity of natural disasters.

Man and his mindless activities have transformed this green garden globe into a garbage graveyard globe. The dynamic dancing ball Mother Earth turned to a deadliest burning bush in the planetary system. Now-a-days there is an immediate reaction from the Earth for all the human activities even at spiritual, social and industrial places on the globe for example Kedarnath floods, J & K floods, Hudhud cyclone and Earthquakes in India & Nepal recently.

The hostile life of human has distanced him to understand the Mother Earth and its action plan. Man should get rid of this trance situation and try to co-exist with the nature from its exploitation. Hence it is the responsibility of every human being to protect the damaging natural resources as well as disappearing ecosystems and depleting environment as he is only responsible for the destruction of nature. It is time for all of us to learn intrinsic lessons from the Mother Earth that development without destruction, progress without pollution and existence without exploitation.

This national Conference guides the participants to understand about the key factors influencing Mother Earth and its Natural, Environmental and Ecological aspects contrasting human socio-cultural, traditions, religious and scientific issues. **Live and Let live.**



Profile 's about Management



PRESIDENT:

Sri K Nagamalleswara Rao – A man of conviction and commitment aged 63 years served the Indian Railways for three decades and retired from service in the year 2011. Visits the college daily and supervise various activities personally. Take care of infrastructural facilities and welfare measures.

VICE-PRESIDENT:

Sri P Sambasiva Rao – Born in 1944 completed Post Graduate degree in Public Administration from Kakatiya University. Served AP State Electricity Board for about three and half decades and retired from service in the year 2002 in the capacity of FACCA (Financial Advisor and Chief Controller of Accounts). Able administrator and Financial Advisor advises the group colleges on financial matters

SECRETARY:

Sri K. Ravikumar – A Civil Engineer promoted SRR Projects Ltd. Hyderabad. A 300 Crore. annual turnover unit mainly engaged in construction activity. Erected Power Projects for variety of customers in different states in India and Abroad. Constructed Commercial and Office Buildings in the city of Hyderabad. Take care of the overall activities and responsibilities of the colleges and instrumental in improving the status and stature of the group colleges.

JOINT SECRETARY -1:

Sri T Ashok Kumar - A 30 year young and energetic Post Graduate in Engineering, doing Ph.D. in computer science engineering is Joint Secretary, Who looks after the day-today administration of the colleges. Stays almost 12 hours in the college and direct the goings on in the college and monitor closely each and every development.

JOINT SECRETARY -2:

Sri K Raghavendra Rao – A septuagenarian Veterinary Doctor served the Department of Animal Husbandry as Veterinary Doctor, worked as Veterinary Project Officer in ITDA and also worked as Mandal Development Officer and retired from service in 1997. Adviser to the college on operational matters and welfare measures.

TREASURER:

SRI ALUURI SRINIVAS - An Engineering Graduate, Director of SRR Projects Ltd. instrumental in establishing and smooth running of the college, monitors the developments of the college very keenly and constantly. A trouble shooter and dynamic in implementing various policies of the college.

Executive MEMBER:

Sri P Sunil Kumar – An young and dynamic Computer Science Engineering Graduate from Bangalore University, worked for some time as Software Engineer and later elevated to the cadre of Manager Operations for a Software Company in London for over 8 years. Returned to India in the year 2010 and now General Manager for SRR Projects Ltd., Hyderabad. Think on objective lines for the development of the college and constantly advises on the day-to-day matters of the college.

About Chirala Engineering College

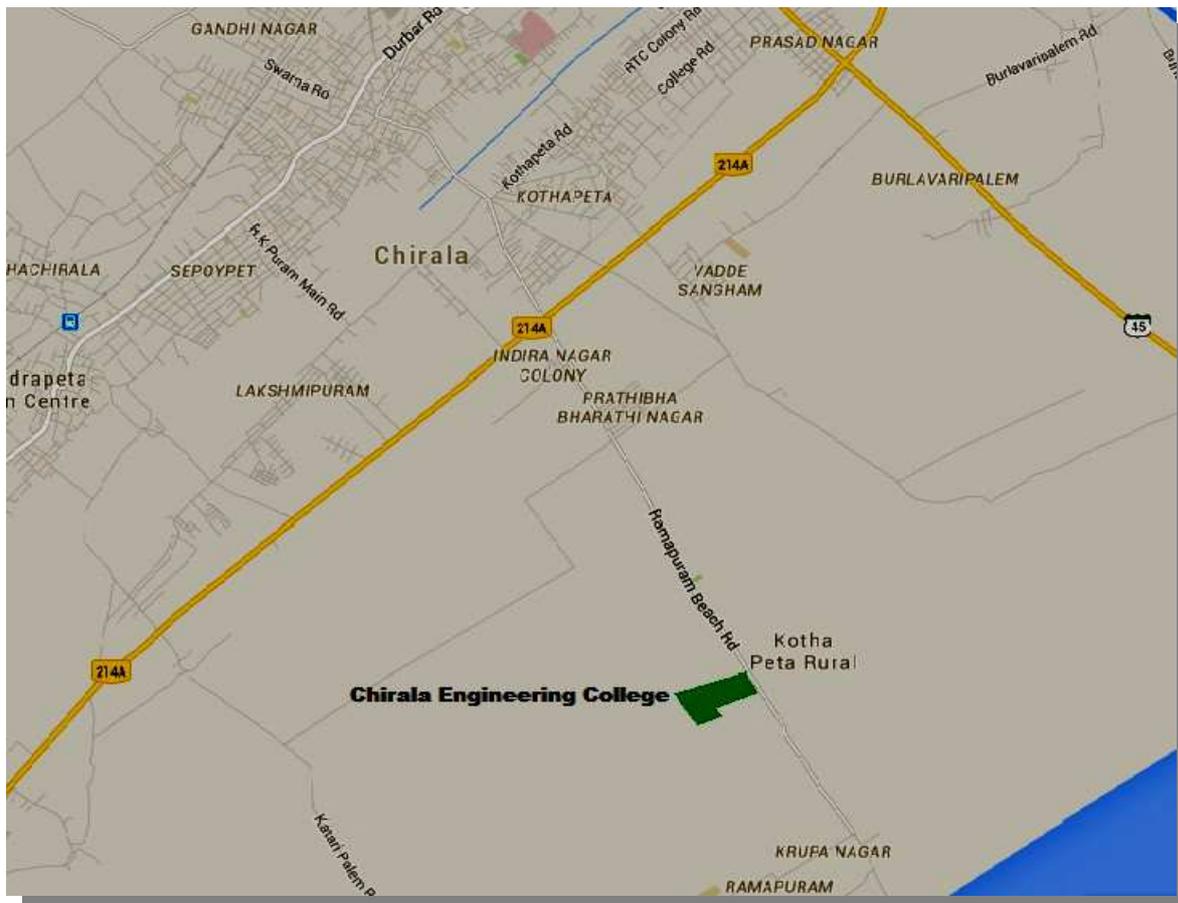
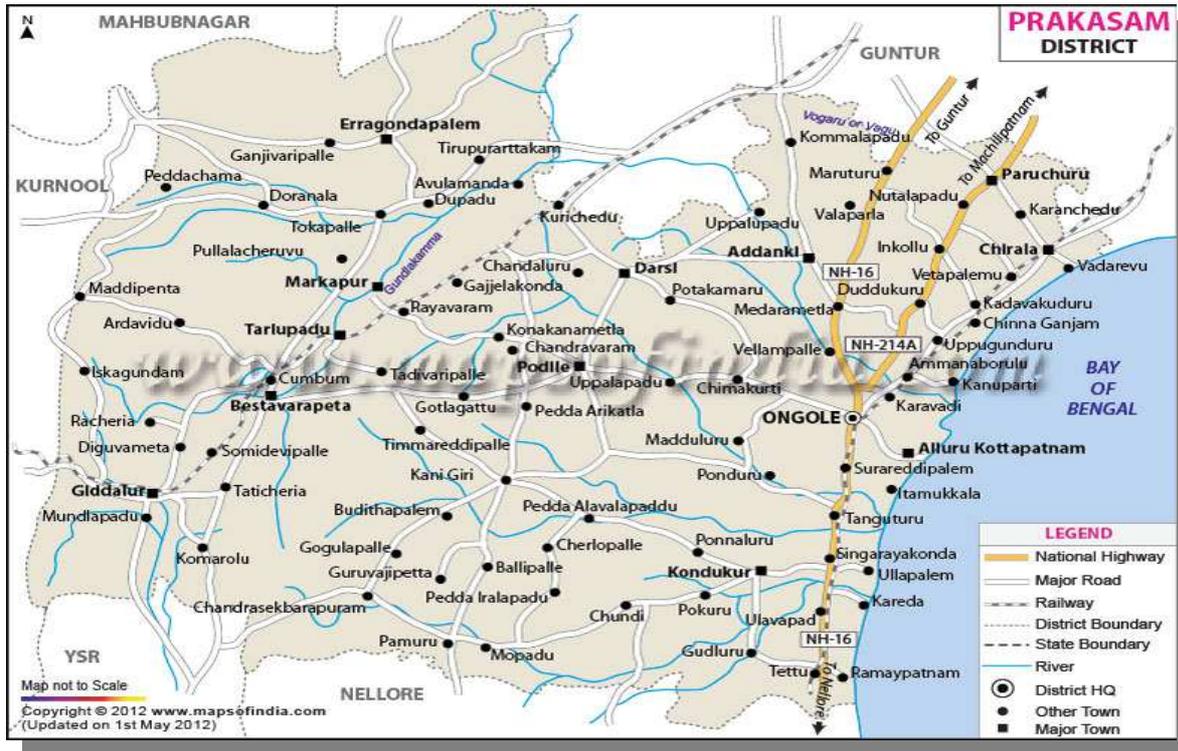
The Chirala Engineering College was established in academic year 2001 by GSR & TSR Educational society with a clear objective of providing quality technical education in tune with international standards and contemporary global requirements. The college is approved by All India Council for Technical Education (AICTE), affiliated to the JNTU Kakinada and recognised as the Jawahar Knowledge Centre (JKC) by the government of A.P. It is the first engineering college in Prakasam district to attain ISO:9001:2000 certification.

The management's commitment to excellence and relevance in technical education is reflected in the marvelous infrastructure that is comparable to the finest institution of its type in the country. The imposing multi-storied buildings housing state-of-the-art computer laboratories, spacious classrooms, well equipped laboratories, workshops, computer centre with server room, a well-stocked library, wide and well lit clean corridors and a large canteen has set new standards in providing facilities at an international level.

The 31 acre sprawling campus with lawns, gardens, playgrounds and a parking lot ensures the right academic ambience essential for a center of higher education.

Application of modern technology in teaching- learning process and effective day-to-day governance of the college makes CEC unique. Thus, within just 11 years of its existence, CEC has carved out a niche for itself as one of the leading engineering colleges in A.P.

Chirala Engineering College Route Map



Chirala Engineering College Campus:



About ISTE

The Indian Society for Technical Education (ISTE) is the leading National Professional non-profit making Society for the Technical Education System in our country with the motto of Career Development of Teachers and Personality Development of Students and overall development of our Technical Education System. At present, ISTE has a very large and an effective membership base consisting of more than 1,02,985 Life Members, 5,54,094 Student Members, 2410 Institutional Members (including IITs, IISc., NITs and other leading technical institutions), 1214 Faculty Chapters and 1322 Students' Chapters and 17 Sections throughout the country.

The major objective of the ISTE is to provide quality training programmes to teachers and administrators of technical institutions to update their knowledge and skills in their fields of activity and to assist and contribute in the production and development of top quality professional engineers and technicians needed by the industry and other organisations.

The major objective of the ISTE are:

- providing quality training programmes to teachers and administrators of technical institutions to update their knowledge and skills in their fields of activity.
- to assist and contribute in the production and development of top quality professional engineers and technicians needed by the industry and other organisations.
- providing guidance and training to students to develop better learning skills and personality.

Department of Civil Engineering Profile:

The Department of Civil Engineering was established in the year 2011 (UG) & 2014 (PG) with a sanctioned intake of 60 in the year 2011. The annual sanctioned intake was increased to 120 in the academic year 2014-15 and further intake sanctioned of 24 M.Tech structural seats in the academic year 2014-15.

The department aims to enrich the knowledge of students in both theory and practice with a team of qualified faculty with rich experience in the diversified streams of Civil Engineering. The department of Civil Engineering is equipped with laboratory facilities having advanced equipments and machineries operated by concerned technicians.

Students are encouraged to actively participate in co-curricular and extra-curricular activities in reputed institutions all over India and will be suitably rewarded by the management. The department conducts various placement activities and certified value added training programs like Total station training course, Estimation and costing, Planning and Design of structures by experts. The Department is very happy to conduct GREENER-2015 A Two Day Environmental National conference on the occasion of World Environment Day, 5th & 6th June, 2015 for the sake of common Good.

It has been beautifully said that, “**Civilization** is through **Civil Engineering**”. This statement speaks volume about importance of Civil Engineering in everybody’s day to day life. Be it Housing, Transport, Industry, Irrigation, Power, Agriculture, Education or Health. Construction programmers are interwoven in a large measure in all sectors. Civil Engineer not only fulfills the basic Human needs but also sets the foundation for Development.

The Department is always actively busy in imparting good quality and value based education to the students. The department is committed to the advancement of the healthy academic culture and a symbiosis between the teachers and students. The present and future expectations of the learning process, experimentation and exchange of ideas are continuously occurring.

Civil Engineering Department is having student friendly, qualified and well experienced Faculty and staff to cater the needs of undergraduate technical courses. The department has got its own collection of books, reference material, projects and seminar reports, manuals in its departmental library.

Department of Humanities and Basic Sciences Profile

The department of Humanities and Basic Sciences of Chirala Engineering College, Chirala since its inception in 2001 has been striving hard to focus on the regional problems. It was started as a co-ordinated department with 3 Engineering disciplines. Later on elevated as an individual department.

The department treated equally as Engineering Departments in the college and received sophisticated scientific instruments.

The Department is playing a vital role in the educating and nurturing the life skills to all the branches of Engineering students and PG students in the college by maintaining its peace and unending dignity of labour. The faculty of H & S Department has organized many curricular, co-curricular and extra-curricular activities. And also participated in many workshops, Seminars and Faculty Developmental Programs.

The Department regularly conducts several Environmental awareness camps like clean and Green programs, save water camps, save energy camps in and around the campus in association with NSS, NCC, Lions Club, Rotary Club, Indian Red Cross society, National Foundation of Communal Harmony and with reputed NGO's.

The Department has been engaged in research in thrust areas like Biodiversity, Social Aspects, Environment and Health etc., The Department will continue its efforts in bringing together the elite about the regional environmental problems and work hard for the overall development of the students as well as faculty.

The Department is very happy to conduct GREENER-2015 A Two Day Environmental National conference on the occasion of World Environment Day, 5th & 6th June, 2015 along with Civil Engineering Department in collaboration with CEC-ISTE Faculty Chapter – AP 141.

World Environment Day – 5th June, 2015

About the World Environment Day theme – Seven Billion Dreams. One Planet. Consume with Care.

The well - being of humanity, the environment, and the functioning of the economy, ultimately depend upon the responsible management of the planet's natural resources. Evidence is building that people are consuming far more natural resources than what the planet can sustainably provide.

Many of the Earth's ecosystems are nearing critical tipping points of depletion or irreversible change, pushed by high population growth and economic development. By 2050, if current consumption and production patterns remain the same and with a rising population expected to reach 9.6 billion, we will need three planets to sustain our ways of living and consumption.

The WED theme this year is therefore Seven Billion Dreams. One Planet. Consume with Care. Living within planetary boundaries is the most promising strategy for ensuring a healthy future. Human prosperity need not cost the earth. Living sustainably is about doing more and better with less. It is about knowing that rising rates of natural resource use and the environmental impacts that occur are not a necessary by - product of economic growth.

About WED World Environment Day (WED) is the United Nations' principal vehicle for encouraging worldwide awareness and action for the environment. Over the years it has grown to be a broad, global platform for public outreach that is widely celebrated by stakeholders in over 100 countries. It also serves as the 'people's day' for doing something positive for the environment, galvanizing individual actions into a collective power that generates an exponential positive impact on the planet. We believe WED will be an excellent opportunity to raise a call for sustainable lifestyles at every level

Every Action Counts

Whether it is to organize clean-up campaigns, walk-to-work days, plastic purges, art exhibits, tree-planting drives, concerts, dance recitals, switching off the lights, recycling drives, social media campaigns and different contests — every action counts. When multiplied by a global chorus, our individual voices and actions become exponential in their impact.

The Zero Hunger Challenge United for a sustainable world Complementing these five pillars, the issue of women's empowerment and gender equality will also be a key focus area at Expo Milano 2015.

Is it possible to ensure that all people at all times have access to sufficient, safe, nutritious and sustainable food? This is the question that will open and challenge the World Exposition in Milan in 2015. A question that was answered in a definitive manner by UN Secretary General Ban Ki-moon when he launched the "Zero Hunger Challenge": we can eliminate hunger in our lifetime. Launched in 2012 during the Conference on Sustainable Development, Rio+20, The

“Zero Hunger Challenge” presents the vision of a world free from hunger, where at the same time, it is possible to face the growing demand for food and meet new environmental challenges head on.

Expo Milano 2015 falls in a crucial year for the United Nations: not only will we review overall progress in meeting the Millennium Development Goals (the first of which is to eliminate extreme poverty and hunger), the new Post-2015 Development Agenda will also be adopted. Expo Milano’s theme, “feeding the planet, energy for life” will provide an ideal opportunity to foster dialogue and raise public awareness about food security and nutrition, rural development and the sustainable management of natural resources. In order to maximize this impact, the UN has chosen the theme “The Zero Hunger Challenge · United for a sustainable world”, to make visitors understand that together we can build a world where everyone has access to safe, sufficient, and nutritious food, and can lead a healthy and productive life without compromising the needs of future generations.

The challenge was not envisioned as a plan but rather as a call to action: eradicating world hunger is a goal that concerns everyone. The objective of our presence at Expo Milano 2015 is to ensure that when discussing food and food production, the catastrophe of 805 million people who still suffer from hunger is not forgotten or left unmentioned. At least one in nine people worldwide go to bed hungry each day including over 160 million children who are stunted. Children, who will not be able to develop and learn at the same rate as their peers who were properly nourished in the first fundamental one thousand days of life. This is a scandal that to many seems destined to last, while in reality it can end. When talking about hunger, the only acceptable number is zero. In order to achieve this goal, the Zero Hunger Challenge has proposed five elements:

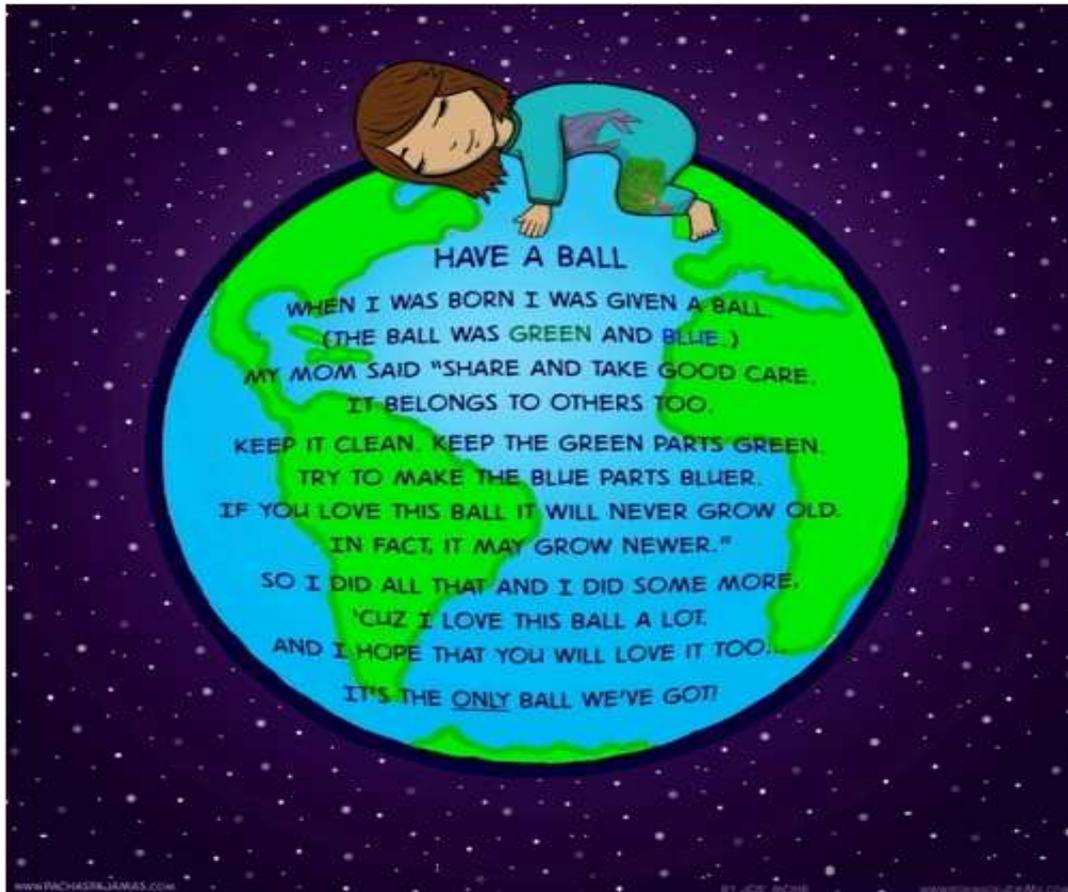
1. Zero stunted children less than 2 years
2. 100 percent access to adequate food all year round
3. All food systems are sustainable
4. 100 percent increase in smallholder productivity and income
5. Zero loss or waste of food.

An integral part of all five elements, we have chosen to highlight the issue of women’s empowerment considering the fundamental role that they play in the fight against hunger and malnutrition.

In many countries, women represent the backbone of the agricultural sector and food systems and make up the bulk of the work force in the primary sector. Women also play a key role in guaranteeing food security for the whole family: when women suffer from hunger and malnutrition, so do their children. Over 19 million children are born underweight each year. This is often a consequence of their mothers’ inadequate nutrition before and during pregnancy. Despite this, around 60 per cent of those who suffer from chronic hunger are women. This is due to the fact that women often do not have equal access to resources, education and income generation along with having a minor role in decision-making.

More information

United we can build a world within our lifetimes where all people, at all times, have access to sufficient, safe and nutritious food and lead healthy and productive lives, without compromising the needs of future generations. This concept is summed up in the Zero Hunger Challenge launched by UN Secretary-General Ban Ki-moon in 2012. The UN will bring this vision to Expo Milano 2015, demonstrating to visitors how it is possible to end hunger in our lifetime, how this can only be achieved if we work together and how they can and need to be part of the solution.



MESSAGES

“LET US LIVE MORE SIMPLY SO THAT OTHERS CAN SIMPLY LIVE”

Mahatma Gandhi.

MESSAGE

Ban Ki-moon



The United Nations Secretary-General
Message on World Environment Day, 5 June 2015

The theme of this year's World Environment Day is "Seven Billion Dreams. One Planet. Consume with Care". The goal of sustainable development is to increase the quality of life for all people without increasing environmental degradation, and without compromising the resource needs of future generations. We can do this by shifting our consumption patterns towards goods that use less energy, water and other resources, and by wasting less food. In this year of transformation, when we hope to see great advances on sustainable development and climate change, let us celebrate World Environment Day by becoming more conscious of our ecological impact. Let us think about the environmental consequences of the choices we make. Let us become better stewards of our planet.

MESSAGE

Achim Steiner



UN Under-Secretary-General and Executive Director
UN Environment Programme

Living in an increasingly globalized world, inhabited by 7 billion people, it is easy to underestimate the power of individual action. The annual World Environment Day reminds people across the globe that it is our personal choices that shape the world around us. Our daily decisions as consumers, multiplied by billions, have a colossal impact on the environment – some of them contribute to the further depletion of natural resources, others help to protect fragile ecosystems. Every time - the choice is ours. The theme for this year's celebrations, *Seven Billion Dreams. One Planet. Consume with Care*, emphasizes that personal responsibility each one of us bears for enabling inclusive and sustainable economic development while stabilizing and reducing the rate of resource use.

Today, unsustainable patterns of consumption and production are one of the major causes of the continued deterioration of the global environment. There is no doubt that the "great acceleration" of the last 50 years has seen a rapid transformation of the human relationship with the natural world – more so than in any other period in our history – with escalating use of natural resources leading to environmental degradation.

We must ask ourselves what the consequences of this pace of consumption and trajectory of population growth—forecasted to reach nine billion by 2050—will be. Under current trends, global extraction of resources is set to reach 140 billion tonnes by 2050, compared to around 7 billion tonnes in 1900. This will probably exceed the availability and accessibility of resources, as well as the carrying capacity of the planet to absorb the impacts of their extraction and use.

We simply cannot afford the waste, as resources are diminishing and prices are rising. But there is still time to transform the challenges of dwindling and finite resources into opportunities that will promote prosperous economies and a healthy planet for generations to come. I would like to invite everyone to imagine what the world would be like if each of the 7 billion people made one change towards a more responsible consumption of resources. I would like you to hold on to that vision and strive to make it reality—be it refusing to buy single-use plastic bags or riding a bike to work.

MESSAGE



I am happy that the department of Civil Engineering and H & S in collaboration with CEC-ISTE Faculty Chapter – AP 141 organizing a two day National Conference on i.e. GREENER-2015 by selecting an appropriate theme suitable to the present day context. The environmental challenges emerged due to human interventions can be overcome only when we develop appropriate strategies to handle different situations. I believe that this National Conference i.e. GREENER-2015 has brought the scientists, engineers, technologists and NGO's together to discuss on various environmental issues. I hope that the outcome of the Conference would definitely be useful to the mankind to protect our nature. I appreciate the organizing committee for its untiring effort to make this Conference a success. I am sure that the deliberations of the conference will further our knowledge on eco-friendly environmental activities. I wish you all a Happy World Environment Day - 5th June, 2015.

Dr. V. Ranga Rao,

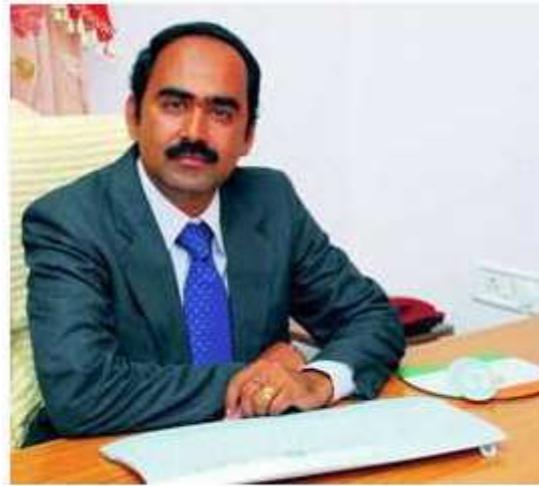
Principal

Chirala Engineering College, Chirala



MESSAGE

Prof. G.P. Saradhi Varma



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It gives me immense pleasure to hear that as a pioneer event CEC-ISTE Faculty Chapter (Indian Society for Technical Education was inaugurated by Dr. G. P. Saradhi Varma, National Executive Council Member, A.P.) organizing a two day National Conference on “Global Retaliation Against The Exploitation of Environmental, Natural and Ecological Resources (Greener)” on 5th & 6th June 2015, is a relevant theme of the day. The quotes “Think globally and work locally” and “God creates the world and engineers build the world” which give unflinching inspiration to budding engineers. I wish the objective programme “GREENER – 2015” will provide environmental awareness for administrators, teachers and students to update their knowledge and skills for sustainable society.

I wish Civil and H&S Dept. Of Chirala Engineering College conduct more such socially responsible conferences in future.

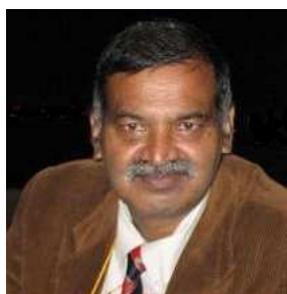
MESSAGE

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17-5-2015



I understand the Chirala Engineering College, Chirala, is organizing a two day national conference on "Global Retaliation against the Exploitation of Environmental, Natural and Ecological Resources" (GREENER) on 5th & 6th June. June 5 is celebrated as world environment day. The UNEP logo for 2014 reads "Raise your voice – not the sea level" and the UNEP logo for 2013 reads "Think-Eat-Save". The year 2015 is the time for global action for people, planet and planners. 9 billions on one planet must consume nature's capital with utmost care.

In India the solid waste generation and disposal is a serious issue. It is too late to think. Some estimates indicate that on an average 500-600 grams of waste is generated per day per adult. If the trend continues we need an area equivalent to the planet earth's surface to dump the waste.

Some selected epithets about recycling of waste are a) one aluminum used beverage can [UBC] saves enough energy to run a 100-watt bulb for 20 hours, a computer for 3 hours or a TV for 2 hours. b) 1 ton of aluminum saves 37 barrels of oil c) 1 ton of Glass saves 9 gallons of fuel (oil), d) 1 ton of news paper saves 15 mature trees and . e) Plastics require 100 to 400 years to break down in a landfill. Ecological Footprint, Economics and Environment are the three pillars of sustainable development. The **ecological footprint** is a measure of human demand on the Earth's resources

As the world's population approaches 9 billion, the stress on the planet's resources is steadily increasing. This demand can only be met by imparting education for minimization of waste, waste recycling and imparting education in green and sustainable chemistry

All educational institutions and R&D organization need to focus thinking and planning on

- Sustainable solid waste management practices
- Waste collection, segregation and characterization
- Innovative strategies for waste separation, recycling and recovery

- Sustainable waste utilization & recycling methods
- Bioenergy and bioproducts from waste (anaerobic digestion, biofuels, etc)
- Biomass production from waste & carbon sequestration (composting, brochure, etc)
- Thermal technologies for waste treatment
- Landfill management & leachate treatment
- Hazardous, industrial and special waste management
- Electronic waste management, treatment and pollution abatement
- Life cycle assessment of waste management practices
- Waste management as industry and market potential

I wish meaningful deliberations in GREENER for the benefit of mankind.



M.N.V. Prasad

Pitamber Pant National Environment Fellow - Awarded by the Ministry of Environment, Forests & Climate Change (Govt. of India)

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University of Hyderabad, Hyderabad 500 046, Telangana, India

MESSAGE

Dr. Ravi Abhilash,
Director,
Corporate Access Labs,
Humane India International
15/1/3, Paparaju Thota, Chirala – 523 155.
A.P. INDIA.

I am extremely enthralled to know that the team of civil and H&S Departments in collaboration with CEC-ISTE Faculty Chapter AP – 141 is organizing a two day national conference on “Global Retaliation against the Exploitation of Environmental, Natural & Ecological Resources (GREENER2015)”, on 5th&6th June 2015 on the occasion of **WORLD ENVIROONMENT DAY – 2015**, the topic that is deeply brooded over by the entire world not only on this particular day alone but every day every minute and every second as well. It is indeed a great effort to spread the message of our responsibility and commitment on our part to be humane towards our “Nature and Environment” which gave us birth & life on the Earth. It is truly pertinent to comprehend the significance of the programmes and conference like this so as to involve every one of the society for finding a suitable path to be followed to ensure that our next generation will have a better Environment, Nature and Eco-system. To be precise every individual ought to think of our own like which is in jeopardy due to our actions of interference in the ecosystems of nature thus facing its wrath by means of Natural calamities such as cyclones, tsunamis, floods or droughts etc. in the sense –

1. Unchecked emissions of dangerous and poisonous gases such as SO₂, CO, CFC’s etc. due to indiscretful industrialization, vehicular traffic, air conditioning and refrigeration etc.
2. Rampant urbanization and conversion of agri-lands by deforestation
3. Indiscriminate use of natural resources (water, power, soil, flora & fauna) thus causing pollution, eco imbalance and depletion only for severe reaction and retaliation from the nature, say abnormal rise in temperature melting of ice glaciers and rising sea levels resulting in imbalance of eco-systems to balance only by means of calamities.

So it is high time we realized the truth that the very existence of our own life is in the gravest peril and the mission GREENER took-off with a greater propulsion of significance, strength and stamina by each and every one of us in each every nook and corner.

Wishing you the best in your efforts and endeavors.

With warm regards

Dr. Ravi Abhilash

M E S S A G E

Prof. K. B. Reddy, M.Sc., Ph.D.,

(Retd. Professor and Head of the Department of Environmental Sciences,
Acharya Nagarjuna University, Ex-member of the State Expert Appraisal Committee),
16051, Prestige Shantiniketan, I.T.P.L Road, Whitefield, Bangalore – 560048

Email: prof.kbr@gmail.com

20th May 2015

It gives me a great pleasure to know that the Chirala Engineering College is organizing a National conference on “**Global Retaliation against the Exploitation of Environmental, Natural and Ecological Resources (GREENER-2015) on 5th & 6th June, 2015** in connection with the World Environment Day. Mahatma Gandhi was the first and foremost practical environmentalist in the world. Well ahead of his times, he realized much before the Club of Rome Report (1972) on “Limits to Growth” that the limited earth with limited resources cannot satisfy the unlimited greed of infinitely large population infinitely. He practiced utmost simplicity in life and showed how to live more simply so that others can simply live.

World Environment Day is observed every year and everywhere but not by everybody since 1972. Particularly in India, there are people and organizations who are opposed to all kinds of power plants (except solar) but want unlimited and uninterrupted supply of power. Loss of morals, ethics, values and the growing gap between what we say and do is the bane of the day. The simple and universal practice to become bigger, larger (economically) and more powerful at any cost has deeply buried the age-old principles of ‘therma, morals, ethics, values and honesty’. The technological quick fixes are no match for the unlimited demand for comforts and luxuries of the “use and throw away” culture.

The ecological balance has been altered by the decrease in per capita land, water and other nonrenewable resources and the ever increasing per capita production of non-degradable waste materials, effluents, pollution and crazy consumerism. The air we breathe, the water we drink and the food we eat are contaminated. Rapidly depleting fossil fuels and water resources are a major threat and a challenge to the future generations. Green House effect > global warming > Climate change; destruction of the protective ozone in the stratosphere and the simultaneous increase of bad ozone in the troposphere; desertification, deforestation, urbanization; loss of biodiversity are among the major global environmental issues of greatest concern.

I hope this national conference will sensitize the students and the people about the futility of business and profit oriented economic solutions that are now widely pursued for solving the present day environmental problems. Instead of blindly following the western countries for which their business and profits are more important than anything else; due emphasis and reliance should be placed on our traditional wisdom of eco-therma, ecological ethics environmental worship.

Wishing you the best in your efforts and endeavors.

With warm regards

Prof. K. B. Reddy

MESSAGE



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I am immensely happy that the Chirala Engineering College, a premier educational institution, took the initiative to celebrate the World Environment Day, and that too with a national conference on an appropriate topic like “Global Retaliation against the Exploitation of Environmental, Natural and Ecological Resources (GREENER-2015) on 5th & 6th June, 2015”. It is befitting that the august College has decided to involve all the Departments in it. I congratulate the management, convener’s, staff and the students for selecting such a valuable and thought provoking subject on the World Environment Day, as the budding engineers and technologists have to play a pivotal role in the near future.

Environment is life. From times immemorial, other creatures coexisted with environment. Even the most ferocious animals could not alter the environment. It is only the human being with his intellect, endowed with the power of memory, and with his extra ordinary brain power he could “master” the world. With the power to develop science and technology, now humans have grown to the stage of unbridled exploitation of the nature. The climate change, global warming, extinction of many species, pollution and many other threats are causing untold misery to the ordinary people and to countless animals and fauna and flora. Humans are destructors of the environment and, at the same time, they alone have the power and the ability to alter the course of present day development through green technologies.

Some of the concerned people including the scientists and technologists all over the world are seriously thinking how to alter the course development. The small, but a significant step, in that direction is the celebration of the World Environment day and the periodic earth summits to save environment. The UN decided in 1972 to celebrate the World Environment Day and since 1974 we observe The World Environment Day. Protection of environment is the collective responsibility of the Governments and the people all over the world.

Even though the developed countries pay lip sympathy to the environment protection, in reality, they are not ready to stop the unbridled exploitation of the nature which is causing environment problems. It is the people’s pressure that would bring desired change in the outlook of the developed countries. The struggles for environment protection are a cry for justice, and reminding the people and governments for collective action. Environment is also an approach to development. Environment, in essence, is a social justice issue leading to peace and security.

Mere description of the problem is no solution. What is to be done is much more important than why it is so. No amount of description is a substitute to action. The time has come to think in terms of action rather than reacting to something that has happened.

The youth are more interested in the present so that they can make a better future for themselves and for generations to come. They are ready to act and proceed further and achieve tangible results. The roots of the future lay in the present efforts for saving the environment.

Science and technology is both the precipitating factor for degradation of the environment and, at the same time, also a ray of hope for correcting the course and saving the world from the impending disaster. Conservation in nature and safeguarding the nature requires search for alternatives at every level. The starting point is the individual, but the desired goal is societal action. No one can predict for certainty what lies ahead. That is the essence of human adventure to face the challenges boldly and think critically and strive for a better future for the world.

In this democratic world, the role of the common people is crucial in changing the attitudes of government and with people's active participation to build a better tomorrow. Let us strive to build a society free from exploitation and inequalities and aim for an alternate way of life with ecological balance in a better environment.

Wishing you the best in your efforts and endeavors.

With warm regards

Dr. G. Vijayam,

PAPER PRESENTATIONS

1. ENVIRONMENTAL ACCOUNTING

(A SYSTEMATIC APPROACH FOR MANAGING NATURAL RESOURCES)

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ABSTRACT

‘Green accounting’ is the popular term for environmental and natural resource accounting, which incorporates environmental assets and their source and sink functions into national and corporate accounts. It is broadly defined as the identification, collection, analysis, dissemination, and use of physical flow information (materials, energy and water flows), environmental cost information, and other monetary information for both conventional and environmental decision-making. This definition of Green Accounting is similar to the definition of conventional natural resources management methods, but has several key differences:

- It places particular emphasis on identifying environmental costs, including the costs of producing waste;
- It includes information on physical flows and use of materials, water, and energy, as well as cost information;
- Its information is particularly useful for activities and decisions with environmental impacts.

Green Accounting or Environmental Accounting is an important function that provides a means to incorporate information to manage and conserve environment in the globalize world. The most compelling reason for practicing green accounting is the growing body of evidence indicating that environmental costs can make up a much larger proportion of costs than any country can realize. Environmental accounting will also serve as a solid foundation for an Environmental Management System (EMS) which increases the effectiveness of an existing one management system not only for developing countries but also for developed ones.

Key-words- Green accounting, physical flow information, environmental costs, Environmental Management System.

GREEN ACCOUNTING- A GREEN STEP FOR SUSTAINABLE FUTURE

Growth can no longer be measured in strictly economic terms such as the monetary value of output, income or expenditure per head. Additional criteria are needed for green growth. According to UK economist Tim Jackson: "Prosperity consists in our ability to flourish as human beings -- within the ecological limits of a finite planet. The challenge for our society is to create the conditions under which this is possible." Green growth will come from applying green public procurement and green research and development. Appropriate penalties such as making the polluter pay for pollution and incentives like tax breaks for investment in green R&D are required. However, measuring green growth will need additional criteria such as sustainability, greenness, happiness or well-being.

In its 2009 Communication "GDP and Beyond: Measuring progress in a changing world," the European Commission proposed five actions as part of the EU roadmap for the development of indicators relevant to the challenges of today:

1. Complementing GDP with environmental and social indicators;
2. Near real-time information for decision making;
3. More accurate reporting on distribution and inequalities;
4. Developing a European Sustainable Development Scoreboard; and
5. Extending national accounts to environmental and social issues.

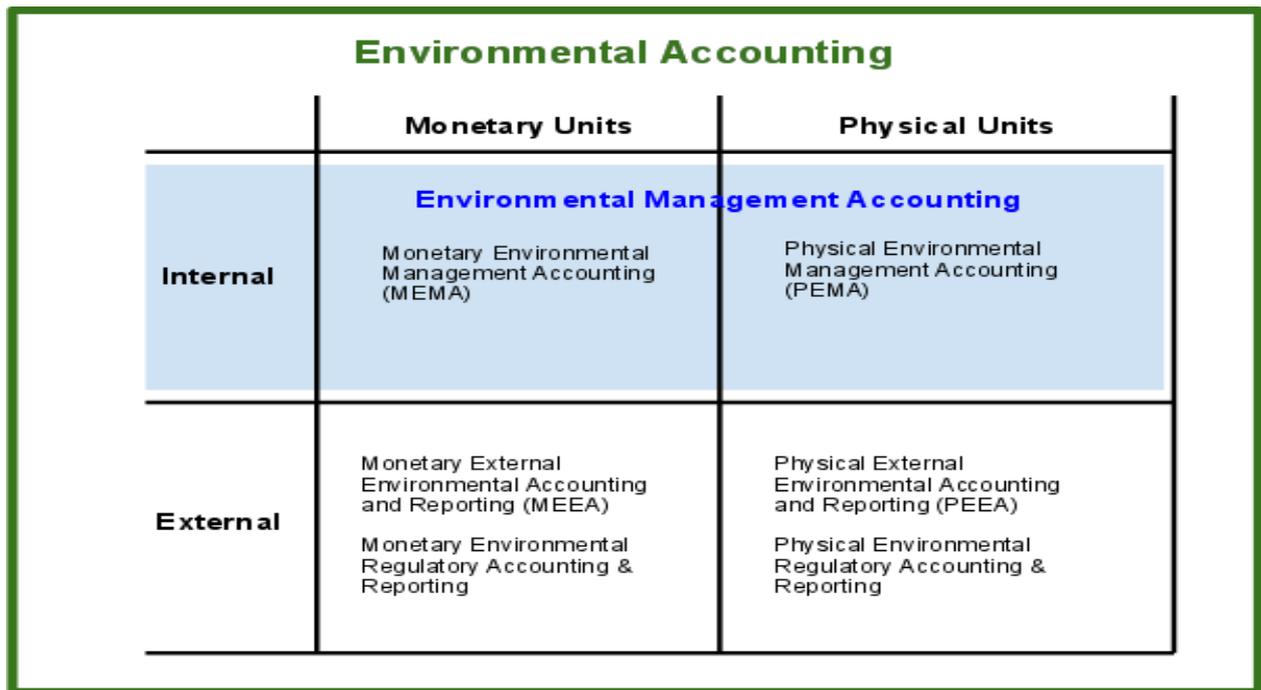
Green accounting incorporates environmental assets and their source and sinks functions into national and corporate accounts. It is the popular term for environmental and natural resource accounting. Conventional national accounts largely ignore:

1. New or newly observed scarcities of natural resources, which threaten to undermine the sustainability of economic performance and growth, and
2. Environmental degradation as an 'external' (social) cost of economic activity.

Green Accounting is similar to the definition of conventional natural resources management methods, but has several key differences:

1. It places particular emphasis on identifying environmental costs, including the costs of producing waste;
2. It includes information on physical flows and use of materials, water, and energy, as well as cost information;
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Green Accounting or Environmental Accounting is an important function that provides a means to incorporate information to manage and conserve environment in the globalize world. The most compelling reason for practicing green accounting is the growing body of evidence indicating that environmental costs can make up a much larger proportion of costs than any country can realize.



Source: - eco-efficiently-action-project.com

OBJECTIVES OF GREEN ACCOUNTING

1. Segregation and Elaboration of all Environment related Flows and Stocks of Traditional Accounts:

The segregation of all flows and stocks of assets related to environment permits the estimation of the total expenditure for the protection of the environment. A further objective of this segregation is to identify that part of the gross domestic product that reflects the costs necessary to compensate for the negative impacts of economic growth, that is, the defensive expenditures.

2. Linkage of Physical Resource Accounts with Monetary Environmental Accounts:

Physical resource accounts cover the total stock or reserves of natural resources and changes therein, even if those resources are not affected by the economic system. Thus natural resource accounts provide the physical counterpart of the monetary stock and flow accounts of SEEA.

3. Assessment of Environmental Costs and Benefits:

- (a) The use (depletion) of natural resources in production and final demand;
- (b) The changes in environmental quality, resulting from pollution and other impacts of production, consumption and natural events, on the one hand, and environmental protection, on the other.

4. Accounting for the Maintenance of Tangible Wealth:

The SEEA (**System of Environmental Economic Accounting**) extends the concept of capital to cover not only human-made but also natural capital. Capital formation is correspondingly changed into a broader concept of capital accumulation allowing for the use or consumption and discovery of environmental assets.

5. Elaboration and Measurement of Indicators of Environmentally Adjusted Product and Income:

The consideration of the costs of depletion of natural resources and changes in environmental quality permits the calculation of modified macro-economic aggregates, notably an environmentally adjusted net domestic product (EDP).

MAIN STEPS IN GREEN ACCOUNTING

There is no single, formal methodology associated with green accounting. The Satellite Economic and Environmental Accounts (SEEA) is a widely discussed effort to compile economic and environmental data into a common framework using green accounting. SEEA (**System of Environmental Economic Accounting**) is structured as a series of methodological options from which users choose the techniques that are most appropriate to their needs. In addition, the National Academy of Sciences, USA reviewed a system of environmental accounts developed by the Bureau of Economic Analysis (BEA) in 1994 called the Integrated Economic and Environmental Satellite Accounts. However, there has been little progress in developing a standardized system for green accounting.

Some of the overarching methods currently in use for green accounting include-

1. Natural resource accounts;
2. Emissions accounting;
3. Disaggregation of conventional national accounts;
4. Value of non-marketed environmental goods and services; and,
5. Green gross domestic product.

PROBLEMS OF GREEN ACCOUNTING

1. It does not include comprehensive natural resource accounting because regional natural resource accounts are not reflected in the main accounts.
2. It focuses on the use of natural resource for economic activities and ignores the flows and transformations within the natural resources.
3. The types of data needed are not available in the necessary format. Thus lack of data has been one of the main problems in the SEEA.
4. Another problem arises when environmental data are directly connected with data of existing national accounts for the preparation of the green accounting. They require assigning of environmental pollution loads to the appropriate economic activities. However, the costs of preventing pollution can only be determined if the causes of pollution are identifiable. But the causes of many types of environmental pollution are not clear. If there are several pollution factors which cause environmental damage, the assignment of this damage will be highly arbitrary.
5. Another problem arises when some of the consequences of environmental pollution become visible after a long time. Estimating only the immediate consequences will lead to wrong policy decisions.

6. There is no simple justifiable valuation system for the green accounting. For different aspects of environmental problems, different valuation problems are used such as prevention and restoration costs and contingent evaluations based on surveys.
7. The pricing of all environmental variables in monetary terms in the green accounting has consequences:
 - (i) The accounting system is restricted to those variables which are easily monetized thereby reducing the range of the accounting system,
 - (ii) Monetization of environmental variables and their concentration of only a few aggregates results in a drastic reduction of the green accounting system.

GREEN ACCOUNTING AND SUSTAINABLE DEVELOPMENT

By integrating social and ecological costs and benefits resulting from the natural environment into traditional economic accounting systems, green accounting aims to capture the interdependency and dynamic interactions between the three pillars of sustainability (economy, society, and environment). More accurately valuing natural resources costs and benefits may contribute to the development of more appropriate and sustainable economic, trade, and development policies.

Incorporating green accounting into national economic accounts could provide a measure of sustainability; however, considerable advances in methods of measurement and valuation are needed. From a purely accounting perspective, particular forms of capital could be diminished or, in an extreme case, wholly eliminated without decreasing overall welfare if other forms can be substituted for it. There are, of course, no substitutes for the life-sustaining services of nature and the question of when and how to account for this fact is the source of many ongoing debates in green accounting.

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2. OVER-EXPLOITATION OF NATURAL RESOURCES AND IMPACTS OF AFFLUENCE

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Abstract:

For a long time, humankind believed that resources endowed by nature were unlimited, as was the exploitation of natural resources by human activities. But with the rising of human productivity, more and more countries have become industrialized and people have begun to realize that there is a risk of overexploitation of natural resources, and it is threatening our very livelihood. Suddenly, the danger of Overexploitation of natural resources has attracted public attention.

This article analyzes reasons why developing countries are the main actors in the overexploitation of natural resources, and why some behaviors neglecting environmental degradation or overexploiting natural resources happen at certain stages of economic development. Some economist's preach privatization as means to solve the problem of overexploitation of natural resources, but other studies show that privatization is not a panacea and is unrealistic or unpractical in some regions and for some activities. In addition to the lack of capital and of knowledge, which renders countries incapable of properly managing the exploitation of natural resources, institutional weakness is also an important factor that leads to the overexploitation of natural resources.

After decades of development, industrialized countries have begun to regulate the exploitation of natural resources and protection of the environment by economic instruments. Some of these economic instruments are also considered useful to developing countries, but there are some prerequisites. Several years ago, some developing countries richly endowed by nature took measures to ensure that large multinational corporations paid them for the right to exploit natural resources and these countries have been able to use these funds to preserve the environment and biodiversity. A very important aspect of the effort to prevent the overexploitation of natural resources is relieving poverty. Indeed, poor people are most dependent on the exploitation of raw materials, in other words, of natural resources. Giving them access to capital, to knowledge, and to opportunities of development is the most efficient way to avoid a global overexploitation of natural resources.

Keywords: Natural resources, poverty, inequality, biodiversity, environment protection, economic growth, genetic resources, sustainable development.

1. Introduction

Natural resources may be divided into regenerative resources such as land (arable and grazing land), air, ground water, forests, plants and animals, etc. on the one hand, and non-renewable resources such as oil, coal, natural gas, metals, minerals, etc. on the other hand. The exploitation of both regenerative resources and non-renewable resources is increasing, as more

countries embark on industrialization and consume more resources. Pessimists say that our globe is running out of resources, because increasing population and rising standards of living require the consumption of more non-renewable resources. Optimists say that the world will never lack resources, even if non-renewable resources will by definition one day be exhausted, because humankind will discover other resources to as substitutes for existing resources. This debate may last for generations, but people will continue to exploit these resources anyway, because they want to raise their living standards. In any case, as the existing non-renewable resources are diminishing, so the non-renewable resource question should be focused on how to utilize existing resources more efficiently, in order to yield more wealth from fewer resources, whilst awaiting the discovery of new substitute resources.

The exploitation of regenerative resources has some more worrisome aspects. As regenerative resources may be reproduced and are in general cheap and abundant, people are tempted to exploit them carelessly. But although regenerative, overexploitation of these resources damages our environment irreparably. So here we will deal mainly with the problems of overexploitation of regenerative natural resources, such as deforestation, although the overexploitation of non-renewable resources often has the same or similar origins.

2. Human Activities and Loss of Biodiversity

Both regenerative and non-renewable resources have always been exploited by human activities for our livelihood. But until recently, the exploitation of natural resources has not been a significant concern for humankind, because the scale of exploitation has been moderate due to limited productive capacity, and the demand for natural resources was restricted by a low level of industrialization. Since World War II, with rapid development of productive capacity in industrialized countries the demand for and consumption of raw materials has increased significantly.

After decolonization, many developing countries also embarked on industrialization, exerting an additional pressure on the raw materials market, so causing the prices of raw materials to rise. Attracted by alluring prices on international markets, some developing countries shifted from their traditional activities to more lucrative ones, giving rise not only to the overexploitation of natural resources, but also to irreparable destruction of the natural environment.

Environmental degradation used not to be a very widespread concern, until scientists revealed that the diverse biological species of our world influence each other and the degradation of some species may trigger off a chain reaction, jeopardizing our living surroundings. Public opinion began to realize that the variety of our ecosystem composed of diverse species is vital to our livelihood and that we have to protect this biodiversity for our survival while continuing to develop, so the raising of living standards continues to be one of the most important concerns for our leaders.

Sustainable development has been put forward as a new concept of development that will maintain the rhythm of development in harmony with the natural environment's regenerative capability. The term biodiversity conceived by naturalists in the 1980s was adopted by a United Nations' convention on biological diversity at the Earth Summit in Rio de Janeiro in 1992.

Although biodiversity is vital to human existence, its impoverishment is mainly caused by human activities. For animals, destruction by people, overexploitation, and the introduction of new species have all played unequal role in the extinction of existing species. For plants, land transformation played the major part. Deforestation is essentially caused by the expansion of agricultural activities, whether by small-scale farmers or by large agricultural concerns. With increasing population, successive initiatives to enlarge arable land have been undertaken, and more natural resources have been exploited, often at the expense of the natural environment. The seriousness of the problem is clear from statistics: from 1700 to 1980, almost 12 million km² of forest (20% of total forest) has made way for arable land, and forest depletion has been accelerating since 1980. Tropical rainforests are also diminishing rapidly.

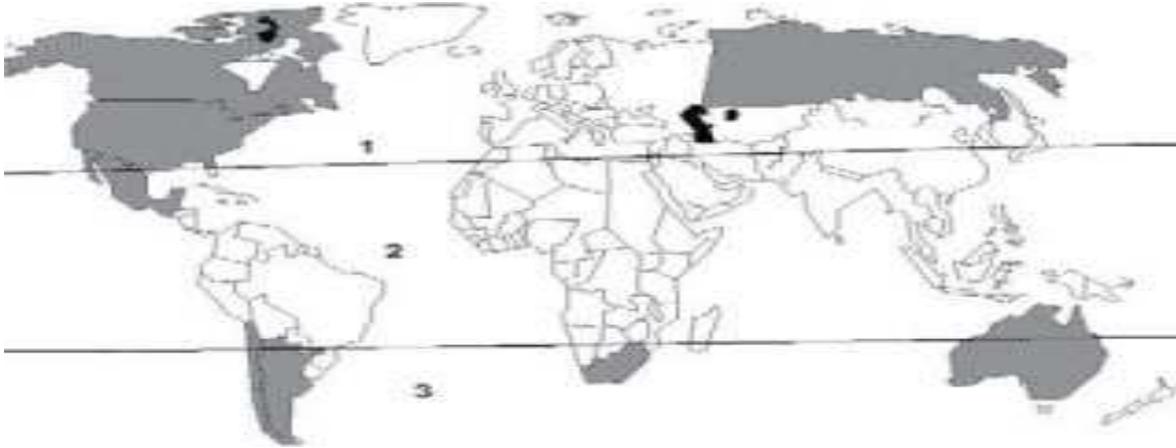
Most natural resource exploitation likely to destroy the ecological balance is now occurring in developing countries, although industrialized countries have also contributed to environmental degradation by the overexploitation of natural resources. Only by suffering from serious environmental consequences have industrialized countries realized that development should be kept in harmony with the environment. Only then did the importance of environmental protection become a major topic of debate in developed countries and green movements become a non-negligible political force in many developed countries. Under pressure from green movements, nongovernmental organizations (NGOs), and public opinion, governments, local authorities, and firms in developed countries have to take into account environmental factors, and take measures to ensure sustainable exploitation of natural resources.

However, in many developing countries, environmental protection is far from being a significant popular concern, even though environmental degradation goes hand in hand with overexploitation of natural resources. Why then do developing countries not draw sector in order to produce manufactured goods and replace imported goods. This process is called import-substituting industrialization. Import substituting strategy aims to straighten out the uneven exchange situation between richer developed countries with manufacturing skills and poorer developing countries that lack manufacturing experience. But the development of a manufacturing sector in developing countries went through a painful period, the lack of capital, techniques, skilled labor, and other factors hampering this strategic sector.

To support this sector, developing countries are often forced to resort to exporting more natural resources to obtain the necessary hard currency to import the manufacturing equipment and spare parts needed in production. Thus, paradoxically the pressure to exploit natural resources was increasing as these countries tried to develop their own industries and become less dependent on the export of natural resources.

This paradoxical situation worsened when some developing countries wanted to rush to produce more expensive raw materials for international markets to gain more revenue instead of better managing the exploitation of their traditional resources. Côte d'Ivoire, for instance, used to be covered with dense tropical forests. In the 1970s, the price of coffee and cacao grains was favorable on the international markets, Côte d'Ivoire undertook a vast campaign to promote the cultivation of coffee and cacao, and organized and unorganized activities destroyed the vast forests of Côte d'Ivoire. This situation typified some of the problems of natural resource

overexploitation in developing countries. Overexploitation of natural resources, even destruction of environment, often occurs in the name of development.



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3. GREEN COMPUTING SALVAGE CONCLUSION FOR THE EXISTING LIVELIHOOD UNIVERSE PROBLEM: SEEKING MANY SOLUTIONS FOR THE BIO-DIVERSITY.

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Abstract:

We can't think of our lives without PCs, subsequently let's find out how to live with them in a way that makes them environment friendlier. Now in days, PC's consumed more electricity and generates too much e-wastage to be considered to an Eco-friendly solution by today's standards. By considering of a typical PC taking approximately 110 watts to run, and with well over 1 billion of them on the planet, we can easily understand what the Silicon Valley Toxics Commission is saying about e-wastage is the fastest growing part of the drainage. It is under the concentration of environmental organizations, and businesses from other industries to take care of the bio-diversity of the nature. This paper gives a glance on numerous green initiatives currently under way in the computer industry, as well as troubles that have been elevated regarding these initiatives and represents a study with an example to learn supplementary about the vision of green computing.

Index terms: E-wastage, green environment, energy, cost saving

INTRODUCTION :

DEFINITION: Green computing, Green ICT as per IFG International Federation of Green ICT and IFG Standard, **green IT, or ICT sustainability**, is the study and practice of environmentally sustainable computing or IT. this can include "designing, manufacturing, using, and disposing of computers, servers, and associated subsystems—such as monitors, printers, storage devices, and networking and communications systems — efficiently and effectively with minimal or no impact on the environment. The goals of green computing are similar to green chemistry: reduce the use of hazardous materials, maximize energy efficiency during the product's lifetime, and promote the recyclability or biodegradability of defunct products and factory waste. Green computing is important for all classes of systems, ranging from handheld systems^[2] to large-scale data centers

LITERATURE REVIEW:

GREEN COMPUTING –GREAT COMPUTING[1].industry standards EFGCD – Eco – Friendly Green Computing Definition defines Eco- Friendly Green Computing as the study and practice of the design, development, implementation, utilization and disposal of IT infrastructure efficiently and effectively with low or zero impact on the environment whilst reducing operating costs.

Typically, green computing systems or products take into account the so-called triple bottom line of people, planet, profit.

GREAT COMPUTING¹ takes responsibility for their outdated products by offering a PC recycling service. [2]Cutting back on these two energy uses - the computers themselves and the energy used to cool them - makes a direct impact on company costs.

If you can increase the energy efficiency of front and back-office computing, you may not need to increase hardware resources as quickly as you thought, which can save capital expenditure on the kit, cooling equipment and even the buildings necessary to house them.[3]It provides managers, academicians, scientists, and researchers in various government, public, and private sectors coverage of topical issues like green strategy, green transformation, green technology, green revolution, ecology system, sustainability supply chain, green and sustainable innovation, global warming, energy efficient system, recycling and reuse systems, product usability, reverse supply chain, closed loop supply chain, environmental issues, carbon footprints, renewable energy, applied ergonomics, and climate change.

Basically, the whole green aspect came about quite a few years back when the news that the environment was not a renewable resource really hit home and people started realizing that they had to do their part to protect the environment. [4] Many governments worldwide have initiated energy-management programs, such as Energy Star, an international standard for energy-efficient electronic equipment that was created by the United States Environmental Protection Agency in 1992 and has now been adopted by several other countries.

Today almost all streams weather its IT, medicine, transportation, agriculture uses machines which indirectly requires large amount of power and money for its effective functioning. We have great machines and equipments to accomplish our tasks, great gadgets with royal looks and features make our lives more impressive and smooth. Green computing whose goals are to reduce the use of hazardous materials, maximize energy efficiency during the product's lifetime, and promote the recyclability or biodegradability of defunct products and factory waste.

Therefore we use Green Computing for following benefits-

- 1) Using ENERGY STAR qualified products help in energy conservation.
- 2) The Climate Savers Computing Initiative (CSCI) catalog can be used for choosing green products.
- 3) Organic light-emitting diodes should be used instead of the regular monitors.
- 4) Surge protectors offer the benefit of green computing by cutting off the power supply to peripheral devices when the computer is turned off.
- 5) Donating your old computers and other peripherals can reduce the rate of e-waste creation.
- 6) Moreover, those who cannot afford to buy a computer can benefit from such donations. Through proper disposal of computers and its accessories, it is possible to reduce environmental pollution.

7) It was expected that computers would help reduce paper wastage. However, even today wastage of paper is a serious issue in industries. The easy availability of photocopiers and printers is also one of the culprits behind unchecked paper wastage. Think twice before using printers.

8) Use the device only if it is necessary.

9) The manufacturing of disks and boxes needed for video games takes up a lot of resources. Video game manufacturers can offer their games online for download, leading to reduction in e-waste. This move can cut down on the transportation/shipping cost.

10) Use of 'Local Cooling' software can help in monitoring and thereby, bringing down the energy consumed by your computer. This 'Windows' program makes adjustments to the power options of your computer and helps minimize energy consumption.



Figure 1: An Example figure represents Energy cost savings

SEEKING MANY SOLUTIONS FOR THE BIO-DIVERSITY IN GREEN COMPUTING VIEW:

As IT users, we can also contribute our own effort to protect the environment by operating the IT equipment wisely. We have collected the following information from various sources for our reference:

1. Do not leave your computer running overnight and on weekends. every machine need to be controlled by a human. If that human is not responsible then the entire system will collapse.
2. A modest amount of turning on and off will not harm the computer or monitor. The life of a monitor is related to the amount of time it is in use, not the number of on and off cycles.
3. so recruiting the necessary and adequate human resource is the primary thing to any organization. There are many machines but the machines are useless then it will be of no use.
4. Machines sholud be under the control of humans. But humans sholud not be under the control of machines.so make use of machines in a proper way.
5. Do not turn on the printer until you are ready to print. Printers consume energy even while they are idling.
6. Do not print out copies of email unless necessary.
7. If you spend a large amount of time at your computer, consider reducing the light level in your office. This may improve CRT (cathode ray tube) screen visibility as well as save energy.
8. Most computer equipment now comes with power management features. If your computer has these features, make sure they are activated.
9. The best screen saver is no screen saver at all - turn off your monitor when you are not using it. This option is second best only to turning off your computer all together.
10. Use "paperless" methods of communication such as email and fax-modems.
11. When typing documents, especially drafts, use a smaller font and decrease the spacing between lines, or reformat to keep your document to as few pages as possible, especially when typing drafts.
12. Review your document on the screen instead of printing a draft. If you must print a draft, use the blank back side of used paper.
13. Use a printer that can print double-sided documents. When making copies, use double-sided copying.
14. Always buy and use recycled-content paper. Look for papers with 50-100% post-consumer waste and non-chlorine bleached. Also, recycle your paper when done.
15. Buy a monitor only as large as you really need. Although a large monitor might seem more attractive, you should remember that a 17-inch monitor uses 40 percent more energy than a 14-inch monitor. Also, the higher the resolution, the more energy it needs.

16. Ink-jet printers, though a little slower than laser printers, use 80 to 90 percent less energy.
17. Request recycled / recyclable packaging from your computer vendor.
18. Buy vegetable (or non-petroleum-based) inks. These printer inks are made from renewable resources; require fewer hazardous solvents; and in many cases produce brighter, cleaner colors.
19. Choose the places where we can use the reduced power the machine.
20. Choose the virtualization.
21. As best example google is maintaining their servers at seashores it reduces the cost of maintaining the AIR conditioners
22. Education and certification on green computing is need to be encouraged and they should be helpful to the society.
23. Many IIT's are encouraging to plan for the eco-friendly computing by creating awareness in the students.inviting them to create logos.planning Research Associate programmes on green computing.
24. Here are some LOGOS designed for GREEN INDIA.



Figure 2: steps to make india green

CONCLUSION:

Bio-Diversity is suffering with many problems caused by the human beings directly or indirectly. Knowingly or unknowingly one should not trouble our universe. Here are many solutions provided where every person can easily perform. There is nothing difficult to follow the above said points. These will be easily applicable to organizations, companies, individual PCs, laptops, Printers and every resource used in computing.

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4. A Glance at the NIGC Production and Processing Facilities in Line with Achieving a Premium Rank in the Global Trade Balance

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Abstract

With respect to the natural gas share in the fossil energy carrier basket and the 47 year valuable experiences in the gas industry activities in terms of hardware and software, the NIGC has a high potential and is considered to be among the major gas companies in Iran and the Middle East. As much as consumption rate has gone up, and based on the horizons developed in the development outlook document, natural gas production, processing and dehydration capacity has had a growing trend to meet the new requirements. Without operating its development projects, the NIGC is capable of processing 600MCM *per day* of gas. As mentioned earlier, at present, the NIGC is responsible for the management and operation of seven independent and private processing companies. According to the estimations, by 2025, the number of gas processing companies is supposed to increase through carrying out development projects. Predictions indicate that in case all the gas processing development projects are materialized, by the end of 2025, the total processing capacity of the NIGC will amount to over 1200 MCM per day.

Natural Gas Transfer

Natural gas transfer from production origins and processing plants to various consumption points in various sectors of gas industry is of high sensitivity and importance. The total length of high-pressure gas transfer pipelines in Iran is around 36 thousand km. The pipeline's transfer capacity is estimated to be 600MCM per day based on the decisions adopted in the framework of the twenty-year outlook document, the length of pipeline from 36 thousand km should reach 70 thousand km. Hence, the Iranian Gas Transmission Company as one of the subsidiaries of the NIGC benefits from all vast executive- logistic facilities and various machinery to implement general projects in the realm of engineering, fundamental and detailed designing gas especially in relation with designing gas transfer pipelines, supply and distribution networks, pressure reduction stations all over the country while observing international standards.

Iranian Gas Transmission Company, which enjoys 75 active gas pressure-boosting stations, has taken measures to boost gas transmission capacity to meet the requirements of both domestic and export sectors through planning for construction of new stations. In case the above-mentioned projects 35,200 km of pipeline by 2025 are materialized, our pipelines will benefit from 140 active stations. The status of Iran's strategic gas reserves in south coast of Iran and the existence of common gigantic South Pars gas field shared with Qatar has made the Pars Special Energy Zone so important.

Iran's share from gas reserves in South Pars is estimated to stand at around 14.2 TCM (around 8 percent of the world's total gas reserves and 50 percent of Iran's gas reserves). Taking into consideration all the above - mentioned points, the Pars Special Energy Zone's position and role in development of the economy of the country is undeniable.

Natural Gas Distribution and Consumption

Besides Iran's integrated and vast gas distribution network in home and business sector which consumes the lion's share of the produced and processed natural gas, there are some other sectors including power plants, major industries and petrochemicals that consume a significant amount of the processed gas. The share of gas in the country's oil and gas product basket has reached 65 percent so far and is expected to continue to grow in the near future. Until the present time, the total length of over 263 thousand km urban gas distribution network has been constructed which is responsible for providing gas to 1026 cities and 17330 villages. At present, around 22.3 million households enjoy natural gas.

5. SOLAR PANEL AND RENEWABLE ENERGY IN MEXICO

Development and outlook for photovoltaic

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Abstract

Mexico has a great opportunity for the use of renewable energy (RE), regardless of type energy is concerned, solar, geothermal, hydro, etc., Because it is a country with diverse climate sea world, though little explored sparsely and it is necessary to identify the most suitable for promoting public policies and find the absolute advantage, given the international theories, we can use the same basis for rethinking the development of the sector, using as a guide the absolute advantage that Mexico has in its natural resources and climate types. We also see that international experience shows that it is possible to establish markets "green energy" where end users cover their costs and is a highly profitable emerging market, for both sides, provider and consumer, we also see as government programs exist that support the same, a fact that makes it tempting for the investment of national and international firms.

Keywords: Energy, Mexico, Development, lead, renewable.

1. Introduction

Renewable energy (RE) currently occupies an increasing space in the energy landscape, and global economics. All developed countries and developing countries are changing their energy policies for the development of technologies that provide economic growth, and can meet the demands of its population. The technologies that use renewable energy are currently experiencing the highest growth rate in the world.

Mexico is no exception. Over the last decade and currently the energy reform led to the development of the energy sector, currently there are 10 major private companies engaged in the production of renewable energy, who sell both CFE (Federal Electricity Commission) as direct producers, and production equipment to businesses and individuals. Mexico has initiated a way to diversify fuels used in electricity generation. The intensive use of fossil fuels has impacts on energy security by the volatility of prices and availability of fuels, the environment by the emission of greenhouse gases and health.

It is for this reason that in Mexico recently, legislators and government have developed various policies, laws, rules and regulations to promote the rational use of non-renewable resources and increase the implementation of energy sources that cause less environmental impact, such as renewable energy. In the latter context, the use of solar energy could play an important role.

Various energy planning documents developed and /or supported by several national and international organizations and actors such as the Ministry of Energy (Secretaría de Energía), bilateral cooperation agencies, research centers, NGOs, associations and representatives of civil society and private industry, have highlighted the enormous potential for Mexico to take advantage of the solar resource, both for thermal applications such as electricity generation.

In the case of electricity generation, international experience shows that PV systems require some form of intervention by the authorities conducting energy policy to overcome the obstacles and create a market that will accelerate their development.

2. Objective

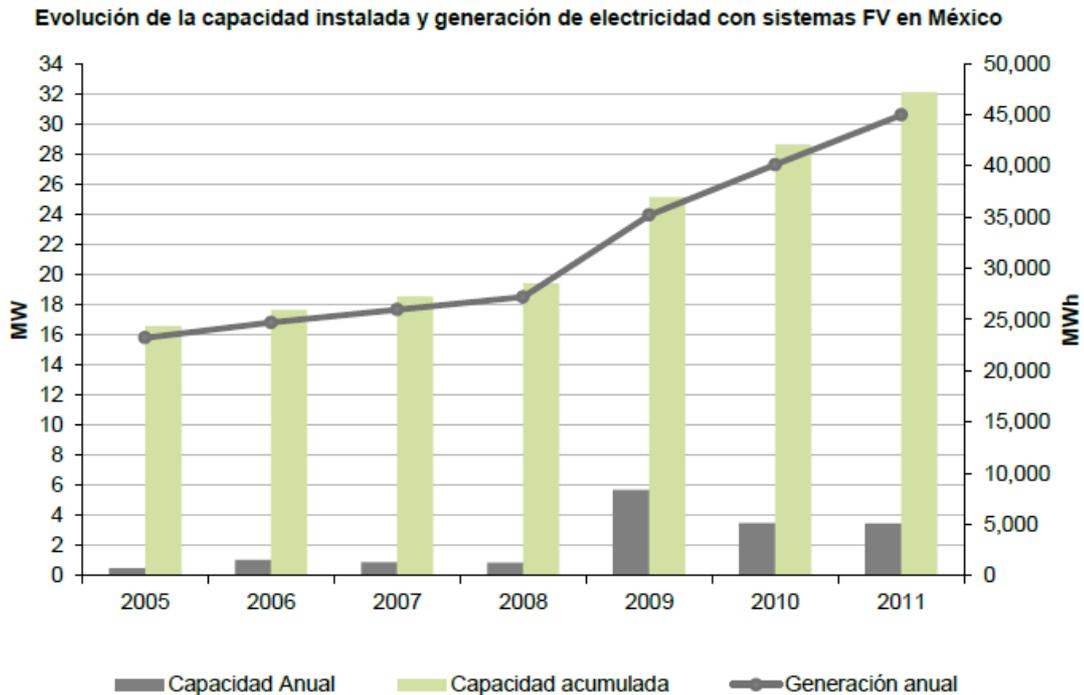
This paper analyzes the renewable energy industry, specifically solar and photovoltaic (PV) panels. While a new industry and an emerging market in Mexico, it is also a potentially growing market niche, making it a sector of business potential which is economically viable. The period of analysis oscillates between 2000 and 2013.

This work is focused on the review and analysis of the renewable energy sector since the operation of the technology, its application, its current market and chronological development, immersing foreign and national investment as well as the sale and production of PV equipment. The present study investigates these aspects using techniques such as Herfindal-Hirshman Concentration Index (HHI) and Pascual concentration indices, also game theory.

The research questions are: What are the main features of the RE marketing Mexico? What is the industry outlook both in development and production? And who are major investment companies in the photovoltaic industry in Mexico.

3. Background

According to the National Association of Solar Energy (ANES), until 2006, virtually all PV systems installed in Mexico, were in isolated applications of the grid and electrical network, rural electrification, communications, signage, water pumping and cooling. However, from the year 2007 there are records of applications connected to the grid and electrical network. This trend has continued in subsequent years so that in 2011, of 3.5 MWp installed in that year, about 94% were connected to the electricity grid systems. As shown in the figure below, the annual installed capacity, systems isolated and connected to the network, has shown a fluctuating behavior in the period 2005 - 2011. In cumulative terms, the increased capacity of 16.5 MWp to 32 MWp. Regarding the annual electricity generation of 23,235 MWh is increased in the year 2005 to 44.974 MWh in 2010 (Figure 1).



Fuente: Elaboración propia con datos de SENER, 2012

Figure1. Evolution of installed capacity and power generation PV systems in Mexico. Source: SENER2012.

4. Description of technology

Although until the middle of last century, the use of solar energy to generate electricity materialized its first applications, mainly during the early space race between the U.S. and the former Soviet Union, the phenomenon that gave origin was observed by first time over 100 years ago. This phenomenon, called "photovoltaic effect," generally speaking, can be explained as follows:

- A. When sunlight shines on two layers of semiconductor material, that is, those that conduct electricity only under certain conditions, this causes the release of electrons which flow from the bottom layer toward the top of the semiconductor;
- B. On passing the electrons (electricity) through one or more electrical loads (e.g. a lamp) then they give up their energy;
- C. Finally, the process is repeated to re-combine the electrons with the semiconductor material of the top layer (Figure 2).

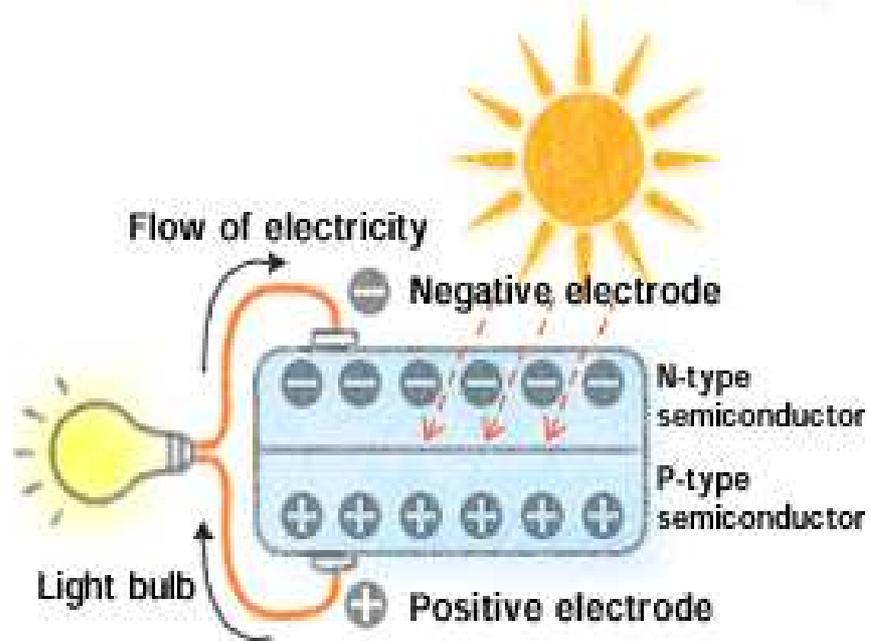


Figure 2: Photovoltaic
Source: Solar pool tech

Today this phenomenon is exploited by using small plates, called photovoltaic cells, which are made primarily of silicon, one of the most abundant elements on earth. The arrangement comprises a number of these cells encapsulated and electrically connected in series and / or parallel, mounted on a support structure, is called photovoltaic module or panel. A set of these panels are usually mounted on stands or structures, but today can be integrated as elements of shade, or even as part of the facades of some buildings.

The following figure shows arrangement of a photovoltaic module assembly (Fig. 3):

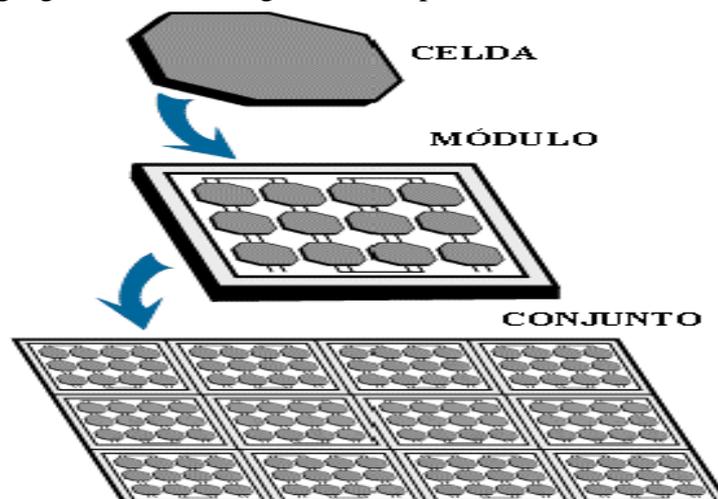


Figure 3. Assembly of a PV module
Source: Organización Anes

A special feature of PV is that electricity is delivered as a direct (or continuous) stream, so that connection to the main electrical networks is still necessary to transform in alternating current, the form how the CFE delivers electricity in in homes. It is for this reason that in order to harness solar energy, in most cases, it requires an inverter, which along with other electric components form what is called a photovoltaic system. One of the main advantages of PV systems is that maintenance costs are low throughout life, approximately 20 years for PV modules. However, their initial investment costs are still high compared with other technologies; although the costs of operation and maintenance are virtually null compared to the costs of generating electricity. It is expected that both their investment and generation costs continue to decline significantly over the next few years.

There are two markets that can harness solar energy for electricity generation: the interconnected electric systems and network or autonomous isolated systems.

A. Interconnected systems to the electricity network

They are found mainly in urban or rural areas, which are interconnected to the National Electricity System (SEN). These systems consist of the following components (Figure 4):

- 1) Panel or PV array
- 2) Current inverter
- 3) Interconnecting devices, protection and measurement, switches, protection system and bidirectional meter.

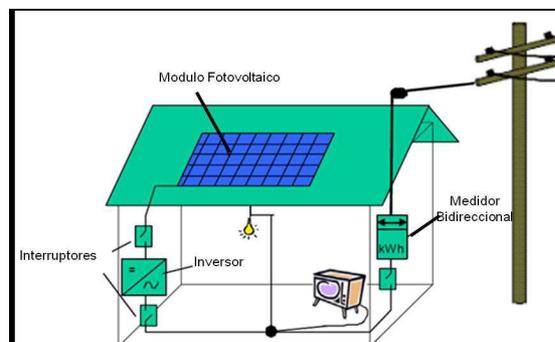


Figure 4: Example of PV system interconnected to the grid in a dwelling

Source: CONUEE/ GTZ, 2009*Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

B. Isolated systems

Isolated systems are characteristic of rural or isolated areas, where it is not economically feasible to construct a grid interconnection with SEN. These systems consist of the following components (Figure 5):

- 1) Panel or PV array
- 2) Bank and battery charger
- 3) Interconnecting and protection devices.
- 4) Current inverter. Rev. Optional, for alternating current loads.

C. PV isolated system

Unlike the SEN interconnected systems, these do not require a measurement device. However, additionally require a battery bank and a controller to store the electricity that will be used at other times in the photovoltaic system cannot generate, for example, at night.

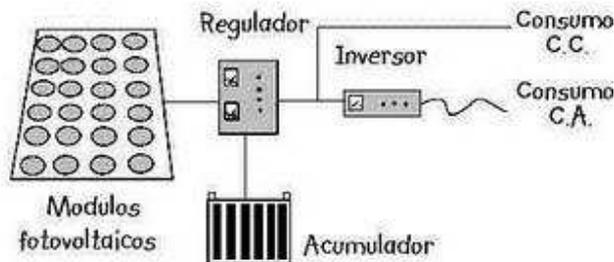


Figure 5: PV isolated system
Source: alternative asnueltas

5. Industry of solar energy in Mexico

Mexico is among one of the 5 countries with the most attractive in the world to invest in PV projector, still behind China and Singapore, because it is part of the Sun Belt. These are countries with latitude + -35 with respect to Equator and exhibit higher levels of solar and sunlight radiation of the planet. For Mexico, there are areas where there is a greater 5kWh per m² radiation. Attraction also includes other factors such as market potential, politics, business environment, financial stability and renewable energy policies. The size of the electricity market, its projected growth in electricity consumption in the next 2 decades and its competitive cost of PV technology also cover electrical networks and their ease of distribution, among others (Figure 6).



Fuente: IIE.

Figure 6: Daily solar and sunlight radiation.
Source: IIE.

A. PV Solar

Mexico currently has an installed capacity of 33MWin solar PV projects, mainly in applications of rural and industrial electrification. Currently there are several construction and development projects of this kind that would have an installedcapacityof39.1MW. In late2011, a

Spanish company called Siliken invested in a photovoltaic power project in Durango called La Manzanadel Sol. Theameprojecthas100MWof installed capacity now in itsfirst stage and who estimates that this would to have a total of400MWinthe five years after its initiation (Fig. 7).

Centrales solares fotovoltaicas para la generación de electricidad

| Central / permisionario | Estado actual | Capacidad instalada (MW) | Ubicación | Tipo de servicio |
|--|-------------------------|--------------------------|---------------------|------------------|
| Contratos de pequeña y mediana escala | En operación | 32.0 | - | Privado |
| Central Piloto, Santa Rosalía | En operación | 1.0 | Baja California Sur | Público |
| Total | - | 33.0 | - | - |
| Proyecto fotovoltaico, Durango | Por iniciar operaciones | 0.5 | Durango | Privado |
| Proyecto fotovoltaico (autoabastecimiento) | En construcción | 3.8 | Aguascalientes | Privado |
| Proyectos fotovoltaico (pequeño productor) | En construcción | 29.8 | Jalisco | Privado |
| Central Piloto, Cerro Prieto | En construcción | 5.0 | Baja California | Público |
| Total | | 72.1 | | |

Fuente: CFE/CRE/ SENER/ medios electrónicos

Figure. 7: PV Centrales in México

Source: CFE

6. Market structure

A. Major PV companies in Mexico

Mexico is the leading supplier of photovoltaic modules in Latin America, with an annual production capacity exceeding 276 MW still above countries such as Chile, Brazil and Argentina. Among the leading developers of photovoltaic are: Abengoa, Abener, Del Sol Systems, Microm, Iberdrola and Silken.

1). Solar Thermo high concentration

Today in Mexico there are no operating plants using such technologies harnessing solar energy. However, in the state of Sonora is developing the project 171 CC Agua Prieta II, by CFE same that consists of a combined cycle hybrid system, 477 Mwe, and a thermal solar field trough parabolic channels with a power of 14 MWe. It is expected that this central enter into operations in 2014-2015 (Figure 8).

**Potencial de penetración de las tecnologías termosolares de concentración en México
Período 2010-2015**

| Región | Escenario | Potencia media (MW) |
|----------|-----------|---------------------|
| Norte | Bajo | 0 |
| | Medio | 816 |
| | Alto | 1,413 |
| Noroeste | Bajo | 417 |
| | Medio | 837 |
| | Alto | 1,431 |
| Total | Bajo | 417 |
| | Medio | 1,653 |
| | Alto | 2,844 |

Fuente: IIE.

Figure 8: Growth potential of solar thermal energy in Mexico
Source IIE

The table looks like it has grown the national energy sector since early 2000 to late 2013 and can be seen as the sector photo voltaic energy barely appeared in the outlook in mid-2012 producing only 0.01 of energy and being less than 1% of its development potential (Figure 9).

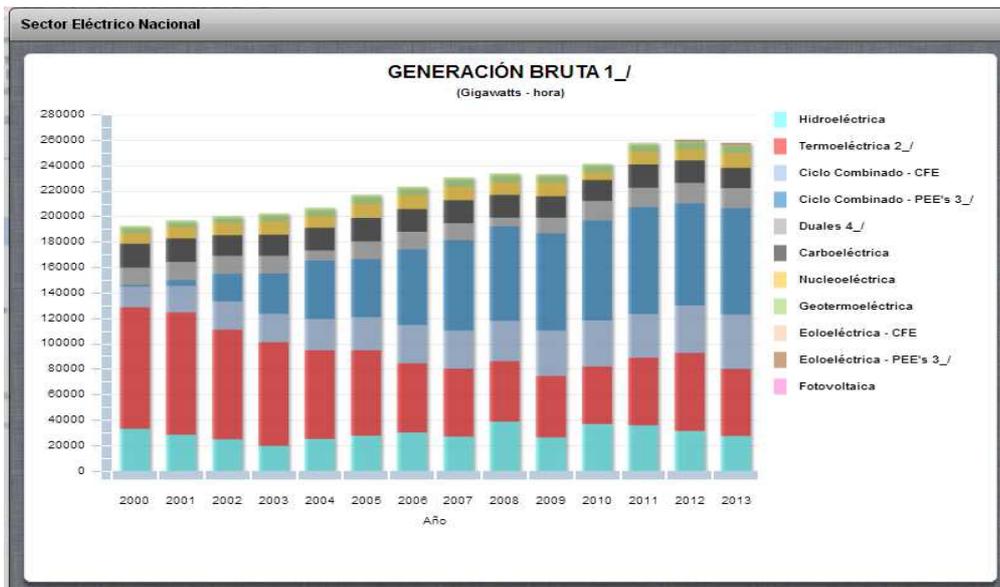


Figure 9: Gross Power Generation
Sources: SENER

B. Share of renewable energy companies in Mexico

The following table shows the number of companies participating in the market for 2009, according to INEGI. It can be appreciated that for this year are 65 companies involved in this market segment. Gross production for 2009 amounted to a total of 450,968,876 units, with a total investment of 29,504,562 bp generated a total income of 522,313,705 million, and given the figures we also see that there are 27 companies that dominate this market goes to 77.07% of it (Table 1).

Table1:Companies by number of employees

| Stata | Economic units | Total Gross production | Intermediate consumption | Total expenses by consumption of B and S | Total investment | Gross census aggregate value | Total remunerations | Total revenues |
|---------------|----------------|------------------------|--------------------------|--|------------------|------------------------------|---------------------|----------------|
| Total | 65 | 450968876 | 233857943 | 298861814 | 29504562 | 217110933 | 35520658 | 522313705 |
| From 0 to 2 | 5 | 10284205 | 8485161 | 8486788 | -32356 | 1799044 | 300 | 10451433 |
| 3-5 | 1 | 2100 | 1157 | 1186 | 0 | 943 | 0 | 2100 |
| 6-10 | 1 | 92538 | 79036 | 79036 | 0 | 13502 | 1021 | 92538 |
| 11-15 | 3 | 620686 | 620686 | 494161 | 20 | 4119 | 0 | 97966 |
| 16-20 | 3 | 99667 | 95548 | 94112 | 20 | | 0 | |
| 21-30 | 2 | 2859872 | 2132179 | 2132179 | 47609 | 727693 | 0 | 2580730 |
| 31-50 | 12 | 33293082 | 24408760 | 24409601 | -127987 | 8884322 | 53907 | 30346885 |
| 51-100 | 1 | 243083 | 220004 | 233195 | 0 | 23079 | 0 | 243083 |
| 101-250 | 1 | 536132 | 231202 | 311708 | 1417 | 304930 | 49448 | 430398 |
| 251-500 | 2 | 20050472 | 11308700 | 12706982 | 119680 | 8741772 | 100219 | 1561760 |
| 501-1000 | 7 | 35295345 | 15597663 | 18240301 | 1771641 | 19697682 | 1691959 | 24897558 |
| 1001 and more | 27 | 347591694 | 170804372 | 231672565 | 27593151 | 176787322 | 33623804 | 451020425 |
| Total | 65 | 450968876 | 233857943 | 298861814 | 29504562 | 217110933 | 35520658 | 522313705 |

Source: INEGI Census2009.

C. Concentration index segment

In the table below it is shown the participation of companies in the renewable energies sector, also there are calculations of the Herfindal-Hirshman Concentration Index (HHI). For 2009 were also calculated by size of enterprise, the data give an HHI of 0.60 that is a monopolistic competition because 27 of the 65 companies control the market hogging the 77.07% of the market, leaving only one 22.93% for all other companies.

None the less, economic theory tells that the market tends to be from monopolistic to oligopoly due to the size of companies and the influence they have in the market competition (Table 2).

Table2:Concentration indexes

| Strata | Economic units | Participation/ Market share | % | P ² (IHH) | HH | ID(HH ²) |
|---------------|----------------|-----------------------------|-----------|----------------------|-------------|-----------------------|
| Total | 65 | 1 | | | | |
| From 0 to 2 | 5 | 0.022804689 | 2.2804689 | 0.000520054 | 0.000855074 | 7.31E-07 |
| From 3 to 5 | 1 | 4.66E-06 | 0.0004657 | 2.17E-11 | 0.608197431 | 0.369904115 |
| 6-10 | 1 | 0.000205198 | 0.0205198 | 4.21E-08 | 6.92E-08 | 4.79E-15 |
| 11-15 | 3 | 0.001376339 | 0.1376339 | 1.89E-06 | 3.11E-06 | 9.70E-12 |
| 16-20 | 3 | 0.000221006 | 0.0221006 | 4.88E-08 | 8.03E-08 | 6.45E-15 |
| 21-30 | 2 | 0.006341617 | 0.6341617 | 4.02E-05 | 6.61E-05 | 4.37E-09 |
| 31-50 | 12 | 0.073825676 | 7.3825676 | 0.00545023 | 0.008961285 | 8.03E-05 |
| 51.100 | 1 | 0.000539024 | 0.0539024 | 2.91E-07 | 4.78E-07 | 2.28E-13 |
| 101-250 | 1 | 0.001188845 | 0.1188845 | 1.41E-06 | 2.32E-06 | 5.40E-12 |
| 251-500 | 2 | 0.044460878 | 4.4460878 | 0.00197677 | 0.00325021 | 1.06E-05 |
| 501-1000 | 7 | 0.07826559 | 7.826559 | 0.006125503 | 0.010071569 | 0.000101437 |
| 1000-and more | 27 | 0.770766482 | 77.076648 | 0.59408097 | 0.976789672 | 0.954118064 |
| Total | 65 | 1 | 100 | 0.608197431 | 1.608197431 | 1.32421522 |

Source: INEGI Census2009.

This relatively new market and little taken into account is a tempting niche for the large firms because consumers are almost all the same, houses, apartment buildings, hospitals, businesses, hotels, sport clubs, government projects, solar parks and even the producers themselves would benefit because costs would be lowering. It is known that the solar energy market in Mexico ascents amount millions of dollars, of which 30 belong to photovoltaic.

Because it is an emerging market that is relatively new, turns out to be extremely profitable for all companies making the development and growth of this focus solely on their production costs, and market strategy.

7. Costs

Photovoltaic systems in network connection in Mexico differ in cost depending on its capacity. In late 2011 SENER and GTZ conducted a survey to stake holders and actors in the country to determine these costs. For the residential sector where the average investment for PV systems with a capacity between 0.24 kWp to 1.65 kWp is U.S.\$ 4.851/ kWp with leveled costs of U.S.\$ 17.8/ kWh. Mean while costs for systems with capacities between 2kWp to 10kWp are reduced U.S. \$3,000 /kWp - 4,200/ kWp and leveled generation costs range from U.S.\$ 10.9/kWh (Mx\$1.3) and U.S. \$ 15.4/kWh (Mx\$1.8). By early 2014 these costs were reduced to 1100dlls.

It is estimated that the average life span of photovoltaic panels is 25 years useful to 100% and up to 35 years total lifetime. And it is estimated that the initial investment is recovered in the medium term between 3 and 6 years after purchase.

8 Regulatory frameworks for renewable energy

Currently the following legal and regulatory instruments allow the use of solar PV grid connection.

General Law on Climate Change

On June 6, 2012 this law was published in the Official Gazette Diario Oficial de la Federación, which has among its purpose to ensure the right to a healthy environment and to establish the occurrence of powers of the three branches of government in the development and implementation of public policy on two guiding themes: Climate change adaptation and mitigation of emissions and greenhouse compounds.

A. Law on the Use of Renewable Energies and Financing of Energy Transition (LAERFTE) and its regulations.

In late 2008 this law was published in the Official Gazette Diario Oficial de la Federación, which has the purpose to regulate the use of renewable energy for electricity generation for purposes other than the provision of public service. Its regulation was published in the Official Gazette of September 2, 2009, including more specific areas for compensation of renewable energy projects.

B. Interconnection Agreement for Renewable Energy and Power Cogeneration System in Small and Medium Scale.

On April 8, 2010, the Energy Regulatory Commission(CRE) published these model contracts in the Official Gazette, and is intended to establish the rights and obligations of a user that connects a source of renewable energy to SEN. These interconnection agreements are based on the principle of "net metering".

Interconnection Agreement for Renewable Energy of Collective Source or Collective System Small Scale Cogeneration contract (to be published by the CRE)

This type of contract applies to everything related to Small Scale generation described in the previous paragraph. With the characteristic that the collective source of electricity generation belongs to a group of generators, besides, the energy generated by the collective source. It is divided, for billing purposes, between the owners depending on the percentage of investment made by each of the owners.

Since PV systems can reduce or stop suddenly generate electricity, for example, partially cloudy days, it is also necessary to establish a series of technical rules to avoid discomfort or harm to other users. For this, the CRE and CFE have developed a specific regulatory framework for interconnection technologies based on renewable sources such as photovoltaic systems:

- 1) Specification for low voltage interconnection of photovoltaic systems with capacity up to 30 kW (CFE G0100-04).
- 2) Annexes to the Interconnection Agreement in Medium Scale: Characteristics of measuring equipment and communication (Annex E-RMT) and technical requirements for interconnection (Annex ERD-T).
- 3) General Rules for Interconnection to SEN or permit generators with renewable energy or efficient cogeneration (published in the Official Gazette by the CRE, the May 22, 2012).

In more graphic form below is shown how is composed the regulatory and policy framework for PV in Mexico (Figure 10), which consists of the following legal structure

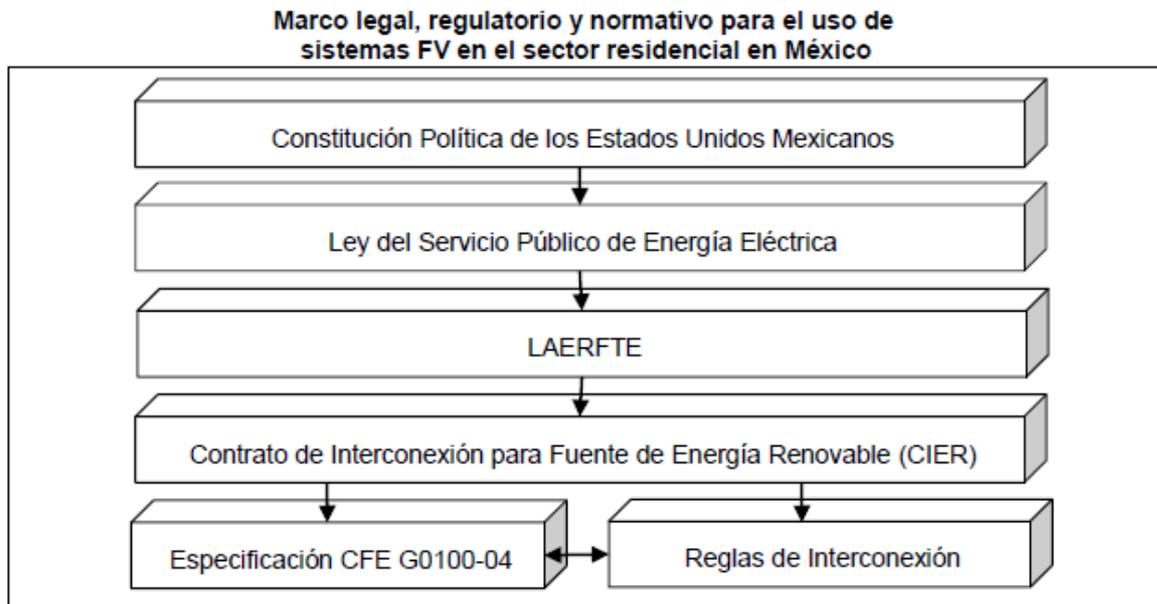


Figure 10: Legal structure.
Source: PROSOLAR SENER

In addition to public institutions (CRE and CFE) there are private institutions for issuing standards in the electricity sector such as the National Association for Standardization and Certification of the electricity sector that have issued Mexican Standards.

9. Conclusions

In the present work it has been observed how has been growing this renewable energy market considering the potential as an emerging market. Mexico is considered one of the most attractive countries to invest in this sector being considered as the 5th country with more possibility of development. Also it is seen that the HHI for 2009 is .60 which tells that it is a monopolistic competition with a tendency to be oligopoly. The profitability of the sector is abundant, generating profits of more than double the investment for businesses.

This being concluded it can also determine that the investment for consumers becomes profitable from the 3rd and 6th year, with costs ranging between 1000 and 10000 dollars according to their size. Within the regulatory framework also see the growing legislative restructuring encouraged to developing different ways for both the private sector and the public.

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6. Flights of Fancy: The ground truths of seaplanes in tourism

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Abstract:

Environmental pollution and degradation is a global concern and constant efforts are being made worldwide to address the issue through extensive research, awareness programmes, and dialogues. Development is popularly understood as economic upliftment and its detrimental effects are ignored. The popular assumption that tourism is an effective tool for development because of its revenue potential and claims of employment generation has legitimised its growth ignoring its impacts. Huge infrastructural investments have been sanctioned throughout the country, seaplanes being one of them. It was first introduced in the Andaman Islands in 2011 and subsequently an attempt was made in Kerala in the year 2013. Recently, Maharashtra introduced the service while other coastal states like Andhra Pradesh, Goa, and Gujarat announced plans to initiate the service soon. It is being seen as a promising investment by the State Governments. The seaplane service aims to open new places for tourism that are presently inaccessible thus subjecting fragile eco-sensitive zones to anthropogenic interventions. The service concerns water bodies such as lakes, rivers, dam reservoirs, and the ocean with massive areas required for the operations. Apart from occupying the fishing space of the traditional local fishermen, it will also harm the environment by discharge of waste or leakage of fuel into the waters threatening the aquatic life and the health of the organisms consuming it. The motive behind initiating seaplane service is to boost high end tourism that comes at the cost of the environment and the traditional livelihoods of the residing communities. The service is neither ecocentric nor people-centric but industry-centric in nature and thus objectionable. The paper highlights the issues of seaplane tourism and proposes that projects should go through vigorous impact assessments, and those minimally harmful to both the environment and the local communities should be prioritised.

INTRODUCTION

Environmental pollution and degradation is a global concern and constant efforts are being made throughout the world to address the issue through research, awareness programmes, and dialogues. However, the efforts seem to have failed miserably throughout the world as the indicators showcase its further deterioration. The planet has seen a rapid change in the last fifty years especially due to unregulated anthropogenic interventions. As reported by the Millennium Ecosystem Assessment Report, 2005, the consumption of ecosystem services, which is unsustainable in many cases, will continue to grow as a consequence of a likely three to six fold increase in global GDP by 2050 even while global population growth is

expected to slow and level off in mid-century. Most of the significant direct drivers of ecosystem change are unlikely to lessen in the first half of the century and two drivers climate change and excessive nutrient loading—will become more severe.¹ The developed countries already account for a brutal exploitation of natural resources and the race between the developing and the underdeveloped countries to become developed has led to rapid industrialisation, urbanisation and therefore mass exploitation of natural resources. Due to the steep growth of population, governments are seeking new avenues of settlements and transportation. Development is popularly considered synonymous to economic upliftment and undermines its effects on the social, cultural, and environmental front of the country. Mega projects such as dams, power plants, and roadways are being given prime importance even if they are seen as potential threats to the environment. India is investing immensely on various fronts and tourism an important domain where substantial amounts of money has already been allocated. The popular assumption that tourism is an effective tool for development because of its revenue potential and claims of employment generation has legitimised its growth ignoring its impacts.

India has always been known as a hub of pilgrimage and heritage tourism. Over the years forest, mountains and coast based tourism have been the highlights. However, other forms of tourism such as medical tourism, surrogacy tourism, and adventure and sports tourism have recently caught pace and are fast growing. Coastal tourism in India is no more limited to the beaches of Goa and Puducherry but almost the entire peninsular coast has become a tourism hub. The coastal states have focused on tourism development and huge infrastructural investments have already been sanctioned. There has been a stress on the development of new tourism destinations at places that are relatively quieter and less explored. Amongst the massive projects that have been sanctioned, the seaplane tourism has received a lot of attention by the government.

There is a need to critically analyse seaplane tourism and the motive behind its promotion because of the various factors that seem problematic and therefore need to be addressed. The implications are numerous ranging from environmental degradation to social as well as economic in nature. The paper attempts to unfold the truth behind seaplane tourism by tracing its history in the country and abroad.

WHAT ARE SEAPLANES?

Seaplanes are especially designed amphibian aircrafts² that can land on both land and water surfaces. The initial production of seaplanes in the world started almost eighty years back but due to limited market, no revolutionary changes in the designs of the aircraft have been observed. Most countries presently use seaplanes as water bombers for fire fighting. However, growth of tourism in the recent years especially nature based tourism in areas that are lesser disturbed has brought forward new opportunities for seaplanes. Islands like Mauritius and Maldives have well-established seaplane tourism. Smaller islands like those in the Pacific Ocean have become one of the fastest growing tourist attractions but do not have much land to construct airports. North America and Canada have a lot of water bodies that are remotely located and other transport facilities like land planes and roads are not available.³ Seaplanes thus become the only way of accessing these areas.

DEBUT OF SEAPLANE TOURISM IN INDIA

The Government of India introduced Seaplane Tourism in Andaman Islands in 2011 to provide a fillip to the ongoing tourism in the islands. The service aimed to open new places for tourism purposes which have been inaccessible due to the lack of transportation facilities as construction of airports are not possible in the smaller islands. The islands receive tourists from all over the world owing to its extraordinary natural beauty. Jal Hans, the seaplane service, is a joint venture between the public sector, Pawan Hans Helicopters Limited (PHHL) and the Andaman and Nicobar administration.⁴ It was promoted by the then Indian Civil Aviation Minister and the first pilot project was conducted in 2010 from Port Blair to Havelock Islands. The service has temporary been stalled due to administrative reasons as claimed by the official website of seaplane operations of the Andaman Islands.

Seaplanes in mainland India were introduced for tourism purposes in the state of Kerala, an important tourist destination in the country in June 2013 in Kollam. It was the first in the mainland and second in India after the seaplane service in the Andaman and Nicobar Islands proposed for the state of Kerala in the Emerging Kerala⁵ meet, 2012. The Kerala government worked diligently to make this project a success. The Ministry of Tourism, India was responsible for the marketing and promotion of the services while the State Government of Kerala was to regulate and facilitate the service.

SEAPLANE TOURISM: TRACING THE TIMELINE

The seaplane project received a good response from the tourists that flock to the Andaman Islands. The success of this venture influenced the Government of Kerala to initiate it, as the state of Kerala receives a high number of tourists from within the country and abroad. An attempt to introduce the seaplane service was made in 2013 but was subjected to strong protest from the local communities especially the fisherfolk residing in the areas where the service was planned to be initiated. In Kerala, the project was proposed to take off in 8 different sites: Vembanad lake, Mattypetty dam, Asthamudi lake, Punnamada Lake, Vembannad lake, Bolgatty - Cochin backwaters, Thalangara, Ayitty and Kottapuram.

The fishing community claimed that the project shall deeply affect their livelihoods and the marine ecology of the region. The protests turned stronger and many activists and organisations joined the fishing community in their struggle. The government had no option but to stall the project temporarily but also promised that it would be resumed soon after the government negotiates with the fishing community. An expert committee⁶ was constituted by the Government of Kerala to study any probable impact of seaplane operations on inland fisheries of Kerala and to suggest remedial measures, if any. The committee finally submitted its report in June 2014 which gave a clean chit to the seaplane tourism service confirming that the service was 'viable' and in its 16 recommendations, it concluded that *"the committee is of the opinion that the launching of the seaplane proposed in the project will not cause any impact on the ecosystem and fisheries in the inland water bodies of Kerala and therefore the introduction of its operation in Vembanad and Astamudi lake is recommended".* It must be noted that there was a conflict regarding the composition of the committee. In the meeting to formulate the committee, all trade union representatives suggested that K.S.Purushan be included, considering his expertise on fisheries sciences and coastal economy. The tourism Minister agreed, but later went back on his word and dropped K.S. Purushan from the com-

mittee, and in his place included Anil Kumar, the MD of the infrastructure division of Kerala Tourism. This was strongly opposed by the trade unions. This move by the state tourism Minister clearly indicated the intention of the government to go ahead with the project and justified its reluctance on inclusion of the proposed candidate into the expert committee. There have been several newspaper reporting where the government announced that the operations shall soon begin and that the fishing community has no objections over it but it has not been resumed till date.

After the unsuccessful attempt of the Government of Kerala to introduce the service in the state in the year 2013, there was a period that recorded no further developments or plans of introducing the seaplanes in other states. However, in the year 2014, the Government of Maharashtra announced the introduction of seaplane service in order to boost tourism in the state. The first flight took off from Mumbai to Pawana Dam, Lonavala, a popular tourist destination and the service continues to run.⁸ The test flight from Mumbai to Gangapur Dam, Nashik district that took place in November 2014 witnessed strong protests from the local fishermen and the environmentalists.⁹ Local activists have also filed a Public Interest Litigation (PIL) against the service in the Bombay High Court¹⁰. Goa recently conducted a test flight amidst strong protests from the fishing community and plans to launch the service after July 2015.ⁿ In the Vibrant Gujarat Summit¹² held in January 2015, Maritime Energy Heli Air Services Pvt. Ltd. (MEHAIR) and the Gujarat Government signed the MoU on opening up a Maintenance, Repair, and Overhaul (MRO) Unit for seaplanes at Bhadar Dam, Gujarat. The service plans to connect Ahmedabad, Surat, Bhavnagar, Bhuj, Mandvi, Jamnagar, Keshod, Porbandar, and Rajkot.¹³ MEHAIR was initially involved in initiating the seaplane operations in Kerala and presently running the service in Maharashtra. Andhra Pradesh has conducted extensive research to trace places and routes where seaplane service can be introduced and has identified the first route to be from Vijaywada to Vishakhapatnam and later extend to Sirsailam, Nagarjuna Sagar, and Tirupati. The total cost of this Public Private Partnership (PPP) project has been estimated to be Rs.100 crores.¹⁴

As is evident from the above information, a clear pattern of the growing popularity for seaplane tourism among the Governments of various coastal states can be observed. In the last two years five states have undertaken the project, some already operating and some in the initial stages.

SEAPLANE TOURISM: IMPLICATIONS

The seaplane service fundamentally aims to open new places for tourism that are presently inaccessible. These places may include profound forests, high mountains or serene islands which are extremely rich in biodiversity and of high ecological importance. Subjecting such fragile eco-sensitive zones to anthropogenic interventions will have adverse effects on the ecosystem. The service will also damage the environment by the discharge of waste or the leakage of fuel from the seaplanes, polluting the water and therefore harming the rich aquatic life. A study conducted to gauge the impact of seaplanes on the environment reveals that the probability of fuel spillage is one of the most devastating impacts that seaplane service can pose. There is an element of risk involved in the operations regarding the fuel spillage and cannot be eliminated and can only be reduced to a minimum by good management and training.¹⁵ Therefore, a constant vigilance over the risk factor involved has

to be kept and to ensure that it is being well managed and the risks are reduced to a minimum is a matter of concern. Research has noted that the consumption of fuel per minute by a seaplane is greater than that of a marine surface vessel, ensuring higher carbon emission, a fact often overlooked considering seaplanes cover the same distance in a shorter period of time. The noise produced during the landing and take-off of the seaplanes is close to 75 dBA¹⁶ which is significantly higher than the noise produced by the marine vessels used for commercial transport. The promoters of seaplanes argue that even though the noise levels of seaplane operations are higher, the duration is very short and therefore does not pose any problem. However, in the dearth of studies that unveil the extent of impact the noise generated through the seaplane operations in a particular area has, it cannot be concluded that the noise levels will not harm the biodiversity around it. The visitation of migratory birds in the country may be therefore deeply affected by the seaplane service as the service generally operates on serene water bodies that attract these birds. An important observation about the proposed project in the state of Kerala is the concept of floating jetties. The Detailed Project Report (DPR) proposed to put to use the available jetties in some sites and in places where none exist, floating jetties be introduced. To manoeuvre around construction permits required to build jetties, a floating jetty seems an easier option; however these should be avoided for the risk of impacting the fragile ecosystems. With current discussions on climate change, the seaplane project adds another dimension of tourism's contribution to climate change.

The seaplane service that is being initiated in various states will categorically involve water bodies whether they be lakes, rivers, dam reservoirs, or the ocean and the amount of the area required for the operations is massive. The length of the water strip required for the seaplanes to operate is 2000-2500m.¹⁷ By occupying such large areas in the water bodies, the service shall curtail the fishing space of the traditional local fishermen who have used these water bodies as a source of their livelihood for centuries in a sustainable manner. The fishermen of the region have raised concerns about the water currents that the seaplanes produce that will displace the fish population in the water body and therefore reduce the catch.

The service being expensive cannot be afforded by a large number of budget tourists that travel across the country. Therefore, it serves to a limited number of privileged tourists thereby promoting high-end tourism in the country. The concept of the seaplanes also further perpetuates the model of the all-inclusive, and distancing the tourist from engaging with the community and the realities of the region they visit. The taxi drivers and owners, the houseboats and restaurants are sectors within the tourism industry that will be adversely impacted by this move. To cater to the privacy of the tourist, access routes to lakes and canal get closed thereby causing inconvenience to the local communities residing in the region.

There has been a constant push by the Central Government to promote seaplane services in the country and recently the Transport Minister of India stated that there is need to develop water transport as it is a cheaper form of transport and there are no chances of traffic congestion. This suggests that the Government is keen on establishing seaplane services throughout the country. The dam reservoirs and the lakes are being used for the operations that serve public good and are being allotted to private companies for profit making. The use

of the reservoirs for the seaplane operations at Gangapur dam, Mula Dam, and Dhoom Dam in the state of Maharashtra are clear examples of using common property resources for profit making by a private company with support from the State Government.

In the Kerala instance, the local communities had no idea about the project. They had no conceptual understanding of what seaplanes were, and were not in a position to articulate either the benefits they would likely see from a project such as this, or what the negative impacts may be. In Punnamada Lake, Kerala markings were made without even informing the local community. Therefore, it is evident that the whole process of selection and introduction of tourism projects in a particular region does not involve sharing of the information on a local level. Panchayat and Town Municipality members in Allapuzha and Kottapuram on enquiry revealed that they did not have any details, or documents related to seaplanes operations in their respective sites. This is despite the fact that, as per the DPR itself, the Local Self Governing Institution (LSGI) is one of the four bodies whose clearance is mandatory for operations to begin. The explanation given by the Panchayat and Town Municipality members for not having information or documentation was that, it was a tourism project and decisions for tourism are taken by officials in the Department in Tiruvanthapuram, and that this project was being executed as a Public Private Partnership (PPP). Therefore, it is clear that the decision making is restricted to the top officials and there is no space for the LSGIs to be a part of this process. No feasibility studies or impact assessments were conducted in the region before taking the decision to introduce the service in the region. This is particularly disappointing in light of Kerala's own Tourism Policy 2012,¹⁸ which included noteworthy and progressive aspects such as recognising the role of the Local Self Governing Institutions (LSGIs), and visualising sustainable development by involving local communities and the Panchayats.

CONCLUSION:

By a preliminary overview at the history of the service, its implications and analysing the limited literature that is available mostly in the form of news articles, one can conclude that the service is not a viable and a sustainable form of tourism. The seaplane service has been operating in many countries around the world but there is little known about its impacts on the environment. Most studies that have been conducted on their environmental impacts¹⁹ have been done by the seaplane service operators and therefore cannot be considered as trustworthy piece of information. The Detailed Project Report (DPR) of the Kerala Seaplane Project itself states that it has borrowed its impact assessment report from an old study conducted by the US Army Corps of Engineers (USACE), stating that there are no impacts of seaplanes on air quality, water quality, soil quality, wildlife, fisheries and hydrology.

However, the service has not been welcomed as a way to promote tourism in many parts of the world. Seaplane tourism had witnessed similar oppositions in Sri Lanka and Ireland by the local fisherfolk on similar grounds and resulted into a long struggle. The

Negombo lagoon in Sri Lanka was chosen as a suitable site for the seaplane operations but the local communities especially the fisherfolk of the region came together and fought for the 'Right to Feed' (of the fishermen) and the 'Right to Breed' (of the fishes) in the lagoon. The Sri Lankan government finally took a decision to move the project to another site from the Negombo lagoon after months of protests by the fishing communities and many local groups.²⁰

Tourism, its conception, its form, and space for tourism to be introduced should lie in the hands of the local people. Large expanses of the water body will be made off limits from fishing activity, for operational purposes. For the enjoyment of a handful of people from the affluent section of the society as tourists and the private gain of the operators, the local communities and the environment are being subjected to suffering. India continues to promote high-end tourism at the cost of the traditional livelihoods and the environmental health of the country. The efficacy and the authenticity of the impact studies are questionable. However, such projects shall still be promoted through various ways and means and the big corporates along with the government shall continue to reap the benefits at the cost of the local communities. The seaplane tourism that was attempted in Kerala was immediately stalled in 2013 and the one currently operational in Maharashtra involve lakes and dam reservoirs for the operations. No environment impact assessments for the particular project in Maharashtra have been traced so far and the question that arises here is that in dearth of feasibility study reports and impact assessment reports, can such a project be allowed to be carried out?

The local communities of the places where promotion of tourism is being thought of should be consulted for their opinions on any project that has to be introduced in the region. They should also be consulted for prospective projects that they think can bring about a positive change in their present condition without adversely impacting their traditional means of livelihoods, local culture, and the environment. The projects should go through vigorous impact assessments, and those minimally harmful to both the environment and the local communities should be prioritised after the consent of the local communities is attained.

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7. Filthy To Healthy – India

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Abstract:

India is one of the oldest civilizations in the world, spanning a period of more than 4000 years, and witnessing the fusion of several customs and traditions, which are reflective of the rich culture and heritage of the Country. Historians, writers, politicians and other eminent personalities across the Globe have greatly appreciated India and its contribution. Undoubtedly, India is a nation of Pride but unfortunately based on growing levels of pollution, one can say that it is worst polluted site or dirty nation. Anyone who has visited India knows it is perhaps the dirtiest country in the world. But hardly any leader talks about it. Mahatma Gandhi used to urge Indians to clean their own toilets – a job that Hindus thought was ‘dirty’ and should therefore be done by someone from the lowest caste – and tried to set an example by cleaning his own. Previous prime ministers have not tackled the issue, preferring to stick to loftier themes. But Narendra Modi is cut from different cloth and has been telling Indians some home truths: India is dirty and we Indians – you and I – must clean it up. Swachh Bharat Abhiyan (Clean India Mission) is a national campaign by the Government of India, covering 4041 statutory towns, to clean the streets, roads and infrastructure of the country by 100% collection and scientific processing/ disposal/ reuse/ recycling of municipal solid waste. This campaign was officially launched on 2 October 2014 at Rajghat, New Delhi, where Prime Minister Narendra Modi himself cleaned the road. The Rs. 62,000 crore per year Swachh Bharat Abhiyan will hopefully solve the issue of misdirected governance that holds back attempts to make India cleaner and healthy nation.

Key-words: Culture, Tradition, Toilets, Sanitation, clean and green governance, Environmental Management System.

Introduction: India is the world's most populous democracy. As a nation India enjoyed 68 years of freedom and independence. There are 3 easy ways to getting an idea of the state of development of a country in every aspect. They are 1. How healthy and happy the children look 2. How the women of the country are treated 3. How clean the country is. In fact, all three are closely connected. We all know that India utterly failed to maintain cleanliness and sanitation in the country since from independence. Population, Pollution and Poverty – India is more suffering with these 3 P's than ever before.

More and more pollution generated during the Self rule than in any foreign rule. We are personally delighted that Prime Minister Narendra Modi has announced his Swachh Bharat Abhiyan. He's done it with his usual marketing flair by launching it on Mahatma Gandhi's birthday and also tied it up with the promise that, by Gandhi's 150th birth anniversary in 2019, we should deliver a clean India in his honour. we heard him say to a wildly cheering audience in Madison Square Garden that Gandhiji gave us freedom, we should give him the reverberate through the country. Modi realizes that one cannot change

centuries old social attitudes by enforcement alone, but with a deeper emotional connect. This is a much needed campaign. The fact that our cities are over whelmed by garbage is quite visible, and the problem is worse in smaller cities. Also, with growing industrialization and rising consumerism, it's a problem multiplying at an accelerated pace.

Swachh Bharat Abhiyan (Clean India Mission) is a national campaign by the Government of India, covering 4041 statutory towns, to clean the streets, roads and infrastructure of the country.

This campaign was officially launched on 2 October 2014 at Rajghat, New Delhi, where Prime Minister Narendra Modi himself cleaned the road. It is India's biggest ever cleanliness drive and 3 million government employees and school and college students of India participated in this event. The mission was started by Prime Minister Modi, who nominated nine famous personalities for the campaign, and they took up the challenge and nominated nine more people and so on (like the branching of a tree). It has been carried forward since then with people from all walks of life joining it.

The components of the programme as listed in the SBM guidelines are:

- a) Construction of individual sanitary latrines for households below the poverty line with subsidy (80%) where demand exists.
- b) Conversion of dry latrines into low-cost sanitary latrines.
- c) Construction of exclusive village sanitary complexes for women providing facilities for hand pumping, bathing, sanitation and washing on a selective basis where there is not adequate land or space within houses and where village panchayats are willing to maintain the facilities.
- d) Setting up of sanitary marts.
- e) Total sanitation of villages through the construction of drains, soakage pits, solid and liquid waste disposal.
- f) Intensive campaign for awareness generation and health education to create a felt need for personal, household and environmental sanitation facilities

With effect from 1 April 1999, the Government of India restructured the Comprehensive Rural Sanitation Programme and launched the Total Sanitation Campaign (TSC). To give a fillip to the Total Sanitation Campaign, effective June 2003 the government launched an incentive scheme in the form of an award for total sanitation coverage, maintenance of a clean environment and open defecation-free panchayat villages, blocks and districts called Nirmal Gram Puraskar. Effective 1 April 2012, the TSC was renamed to Nirmal Bharat Abhiyan (SBA). On 2 October 2014 the campaign was re-launched as Swachh Bharat Abhiyan.

Objectives

This campaign aims to accomplish the vision of a 'Clean India' by 2 October 2019, the 150th birthday of Mahatma Gandhi. It is expected to cost over Rs. 62000 crore (US\$9.8 billion). Fund sharing between the Central Government and the State Government and Urban Local Bodies (ULBs) is 75%:25% (90% : 10% for North Eastern and special category states). The campaign has been described as "beyond politics" and "inspired by patriotism".

The Swachh Bharat mission is being billed as the biggest state-driven cleanliness drive that Indian has ever seen and will address issues of sanitation and the disposal of waste in villages and cities. Urban India generates 68.8 million tonnes of trash a year and more than 6,000 tonnes of plastic waste lie uncollected daily. By 2047, 1,400 square km of land, or the total area of the Delhi metropolitan region, will be required just for municipal waste. As a country, we just don't know what to do with the dirt we generate, and this seems to be part of a socio-biological mindset where we do not bother what happens to our waste once it is out of our houses.

Specific objectives are:

- Elimination of open defecation
- Conversion of insanitary toilets to pour flush toilets
- Eradication of manual scavenging
- 100% collection and scientific processing/disposal/reuse/recycling of municipal solid waste
- A behavioural change in people regarding healthy sanitation practices

Generation of awareness among citizens about sanitation and its linkages with public health supporting urban local bodies in designing, executing and operating waste disposal systems Facilitating private-sector participation in capital expenditure and operation and maintenance costs for sanitary facilities.

Construction of toilets

Construction of toilets is one aspect of the Swachh Bharat programme. The programme aims to to make India "open defecation free" by 2019. It plans to construct 12 crore toilets in rural India by October 2019, at a projected cost of 1.96 lakh crore (US\$31 billion). Prime Minister Narendra Modi spoke of the need for toilets in his 2014 Independence Day speech stating, "Has it ever pained us that our mothers and sisters have to defecate in open? Poor womenfolk of the village wait for the night; until darkness descends, they can't go out to defecate. What bodily torture they must be feeling, how many diseases that act might engender. Can't we just make arrangements for toilets for the dignity of our

mothers and sisters?" Modi also spoke of the need for toilets in schools during the campaign for 2014 Jammu and Kashmir state elections stating, "When the girl student reaches the age where she realises this [lack of female toilets in the school] she leaves her education midway. As they leave their education midway they remain uneducated. Our daughters must also get equal chance to quality education. After 68 years of independence there should have been separate toilets for girl students in every school. But for the past 68 years they could not provide separate toilets to girls and as result the female students had to leave their education midway."

The Government is conducting the scheme in concurrence with the Indira Awaas Yojana, a rural housing scheme. Although, the Swachh Bharat programme began on 2 October 2014, the government had begun constructing toilets prior to that date. In the 12th Five Year plan (2012–17), the previous UPA government allocated 37159 crore (US\$5.9 billion) for rural sanitation under its Nirmal Bharat Abhiyan scheme. The UPA used 4724 crore (US\$750 million) of allocated funds, leaving the Modi government with 32435 crore (US\$5.1 billion).

The programme has also received funding and technical support from the World Bank, corporations as part of corporate social responsibility initiatives, and by state governments under the Sarva Shiksha Abhiyan and Rashtriya Madhyamik Shiksha Abhiyan schemes. As of May 2015, 14 companies including Tata Consulting Services, Mahindra Group and Rotary International have pledged to construct 3,195 new toilets. As of the same month, 71 Public Sector Undertakings in India supported the construction of 86,781 new toilets. Between April 2014 and January 2015, 31.83 lakh toilets were built. Karnataka led all States in construction of toilets under the programme, while Punjab built the least.

First Toilets, Then Temples

Modi had triggered the issue of sanitation with his first toilets, then temples slogan during his election campaign which inspired an animated discussion at the India. Added to this is an enormous public health emergency that, till recently, no one wanted to talk about. A staggering 597 million Indians do not have access to toilets, and the social cost of open defecation is beyond estimation, leading as it does to diseases, malnutrition and impaired development.

The water and sanitation program, a trust administered by the world bank, has estimated that a dollar spent on sanitation could save nine dollars in health, education and economic development. Poverty alone cannot be an excuse for how sanitation is such a low priority in India since countries much poorer than us, including Bangladesh, are almost open defecation free. In Pakistan, 28 per cent of the population practiced open defecation, as opposed to 54 per cent in India, as per a 2011 UNICEF survey. In Sri Lanka, the figure was just 1 per cent.

But the question of what dirt means in India, and what to do about it, demands a deeper, more discomfiting reckoning. Cleanliness is a physical state, but it is also a complex

social story. Seventy-eight per cent of sewage is untreated, dumped in rivers and lakes, and allowed to seep into the groundwater. Even, today, only 33 per cent of rural households have toilets. In 2006, this sanitation deficit was estimated to have shaved off nearly 6.4 per cent of the GDP. But these numbers aren't even the half of it.

India's famous lack of hygiene is puzzling to those of us used to piped water and plumbed toilets, whose household waste is picked up from home or nearby dumpsters. Why is the rest of the country such a filthy embarrassment, wonder civic-minded middle-class Indians. But to flip the question, why does it take a small army of sanitation workers to tend to toilets in hotels, malls and workplaces? If one of them is absent, why is it inevitable that the fanciest of toilets will quickly degenerate? The disregard for public cleanliness is not confined to one or the other class; it is just the fog we live in.

Cultural Practice:

Many people prefer open defecation despite having toilets, because of cultural practices. "Indians defecate on the beaches; they defecate on the hills; they defecate on the river banks; they defecate on the streets; they never look for cover." So wrote V.S. Naipaul, channelling Winston Churchill in 1964. Despite decades of state efforts in sanitation, a staggering 597 million Indians still do not use toilets. It is not just an ugly sight; it is a public health emergency and a social scandal. Sanitation is the single most rewarding development intervention – the World Bank's water and sanitation program has estimated that a dollar spent on sanitation saves nine dollars in health, education and economic development.

Dig deep enough into the problems holding children back – diarrhea, malnutrition, developmental impairments – and you strike inadequate sanitation, underlying this sickness. "only a fraction of Indian towns have a proper sewerage system," says Bindeshwar Pathak, founder of the sanitation pioneer sulabh, which has built 1.3 million toilets in homes, and about 8,000 public toilets. Capital-intensive sewerage, which requires extensive treatment and steady water supply, is still a faraway possibility for much of the country. Most Indians rely on toilets with individual septic tanks, pits latrines of various kinds, or turn to the great outdoors.

Poverty is not a convincing explanation either. Bangladesh, for instance, has a GDP of \$ 2475.97, compared with India's \$ 5238.02. " But in Bangladesh, now almost nobody defecates in the open. Poorer, water-scarce countries in Sub-Saharan Africa are transitioning to toilets, "says economist Dean Spears, who works at the Research Institute for Compassionate Economics.

There are age-old social norms at work here too, like the idea that accumulating faeces near or under one's home is icky and intolerable, no matter how sanitary. Until those ideas are bent, and demand is actively created, the toilet mission is bound to fail. "Every mission needs missionaries," as Bindeshwar Pathak says, and this will necessarily involve civil society. Or, as Ashoke Chatterjee, a sanitation expert based in Gujarat, colourfully puts it, "sanitation starts between the ears, not between the cheeks". The Swachh Bharat Mission

has made such active persuasion and hygiene education a big part of its work. Also, hearteningly, it incorporates a regular survey on toilet use – finally trying to make sure that money for latrines is put to good use.

Open Doors, Closed Mind

June 21 was declared as the **International Day of Yoga** by the United Nations General Assembly on December 11, 2014. Yoga, a 6,000+-year-old physical, mental and spiritual practice having its origin in India (Bharat), aims to transform body and mind. The declaration came after the call for the adoption of 21 June as International Day of Yoga by Indian Prime Minister, Narendra Modi during his address to UN General Assembly on September 27, 2014 wherein he stated:

"Yoga is an invaluable gift of India's ancient tradition. It embodies unity of mind and body; thought and action; restraint and fulfilment; harmony between man and nature; a holistic approach to health and well-being. It is not about exercise but to discover the sense of oneness with yourself, the world and the nature. By changing our lifestyle and creating consciousness, it can help us deal with climate change. Let us work towards adopting an International Yoga Day."

Narendra Modi further stated that *"Yoga embodies unity of mind and body; thought and action; restraint and fulfilment; harmony between man and nature; a holistic approach to health and well being."* In suggesting June 21, which is the Summer Solstice, as the International Day of Yoga, Narendra Modi had said that the date is the longest day of the year in the Northern Hemisphere and has special significance in many parts of the world.

International Support

This initiative found support from many global leaders. At first, the Prime Minister of Nepal Sushil Koirala supported the proposal of Modi. More than 177 countries including USA, Canada, China have supported this move, including 175 nations co-sponsoring the resolution. It had the "highest number of co-sponsors ever for any UNGA Resolution of such nature." On Dec 11, 2014, the 193-member U.N. General Assembly approved by consensus a resolution establishing June 21 as 'International Day of Yoga'. The resolution also saw a record number of 175 countries co-sponsoring it. Following the adoption of the UN Resolution, Sri Sri Ravi Shankar lauded the efforts of Narendra Modi, stating that "It is very difficult for any philosophy, religion or culture to survive without state patronage. Yoga has existed so far almost like an orphan. Now, official recognition by the UN would further spread the benefit of yoga to the entire world."

United Nations

A/RES/69/131



General Assembly

Distr.: General

9 January 2015

Sixty-ninth session

Agenda item 124

Resolution adopted by the General Assembly on 11 December 2014

[*without reference to a Main Committee (A/69/L.17 and Add.1)*]

69/131. International Day of Yoga

The General Assembly,

Recalling its resolutions 66/2 of 19 September 2011 on the Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases and 68/98 of 11 December 2013 on global health and foreign policy,

Reaffirming General Assembly resolutions 53/199 of 15 December 1998 and 61/185 of 20 December 2006 on the proclamation of international years, and Economic and Social Council resolution 1980/67 of 25 July 1980 on international years and anniversaries,

Noting the importance of individuals and populations making healthier choices and following lifestyle patterns that foster good health,

Underscoring the fact that global health is a long-term development objective that requires closer international cooperation through the exchange of best practices aimed at building better individual lifestyles devoid of excesses of all kinds,

Recognizing that yoga provides a holistic approach to health and well-being,

Recognizing also that wider dissemination of information about the benefits of practising yoga would be beneficial for the health of the world population,

1. *Decides* to proclaim 21 June the International Day of Yoga;
2. *Invites* all Member and observer States, the organizations of the United Nations system and other international and regional organizations, as well as civil society, including non-governmental organizations and individuals, to observe the International Day of Yoga, in an appropriate manner and in accordance with national priorities, in order to raise awareness of the benefits of practising yoga;
3. *Stresses* that the cost of all activities that may arise from the implementation of the present resolution should be met from voluntary contributions;
4. *Requests* the Secretary-General to bring the present resolution to the attention of all Member and observer States and the organizations of the United Nations system.

69th plenary meeting

11 December 2014

14-67019 (E)

1467019

Please recycle 



PM Modi Message:**My dear fellow citizens!**

Service, in our Indian ethos is the ultimate duty – **Seva Parmo Dharma**. One year ago, you had entrusted me with the responsibility and honour of serving you as your . I have devoted every moment of every day, and every element of my body and spirit, in fulfilling the same with fullest sincerity and honesty. We assumed office at a time when confidence in the India story was waning. Un-abated corruption and indecisiveness had paralyzed the government. People had been left helpless against ever climbing inflation and economic insecurity. **Urgent and decisive action was needed.**

We systematically went about addressing these challenges. **Runaway prices** were immediately brought under control. The languishing economy was rejuvenated, building on **stable, policy-driven proactive governance**. Discretionary allotment of our precious natural resources to a chosen few was replaced **with transparent auctions**. Firm steps were taken against Black Money, from setting up a **SIT** and passing a stringent **black money law**, to generating international consensus against the same. Uncompromising adherence to the principle of purity, in action as well as intent, ensured **a corruption-free** government. Significant changes have been brought about in **work culture**, nurturing a combination of **empathy** as well as **professionalism, systems** as well **breaking of silos**. State governments have been made equal partners in the quest for national development, building the spirit of **Team India**. Most importantly, we have been able to **restore Trust in the government**.

Guided by the principle of **Antyodaya**, our Government is **dedicated to the poor, marginalized and those left behind**. We are working towards empowering them to become our soldiers in the war against poverty. Numerous measures and schemes have been initiated – from making **school toilets** to setting up **IITs, IIMs** and **AIIMS**; from providing a **vaccination** cover to our children to initiating a people-driven **Swachh Bharat mission**; from ensuring a **minimum pension** to our labourers to providing **social security to the common man**; from enhancing **support** to our **farmers** hit by natural calamities to defending their interests at **WTO**; from empowering one and all with **self attestation** to delivering **subsidies directly** to people's banks; from universalizing the banking system to funding the unfunded small businesses; from irrigating fields to **rejuvenating Ma Ganga**; from moving towards **24x7 power** to connecting the nation through road and rail; from building homes for the homeless to setting up **smart cities**, and from connecting the **North-East** to prioritizing development of **Eastern India**.

Friends, this is just the beginning. Our objective is to transform quality of life, infrastructure and services. Together we shall build the India of your dreams and that of our freedom fighters. In this, I seek your blessings and continued support.

Always in your Service,

Jai Hind!

3 P's Control to Establish HEALTHY India

Population Control!

Pollution Control!

Poverty Control!

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8. EARTH SAVING TIPS

Save Trees Save Environment Save Earth

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Introduction:

The world is currently facing an unprecedented health and environmental crisis. Despite progress in both the health and the environment fields, the situation is approaching the brink of global disaster. So extensive and far reaching are the problems that the future wellbeing of humanity, together with that of many other life forms on the planet, is in jeopardy. Environmental crises are distinguished by rapid and largely unexpected changes in environmental quality that are difficult if not impossible to reverse.



Interesting Forests Facts:

- Forests are home to 80% of the worlds terrestrial biodiversity.
- The livelihoods of 1.6 billion people depends on forests.
- More than a quarter of modern medicines originate from tropical forest plants.
- One ton of recycled paper saves approximately 15 trees and their habitat.
- The death of one 70-years old tree would return over three tons of carbon to the atmosphere.
- Destruction of forests creates numerous environmental catastrophes, including altering local rainfall pattern, accelerating soil erosion, causing the flooding of rivers, and threatening millions of species of
- plants and insects with extinction.

"Everyone is a stakeholder as we are all inhabitants of the one and only mother Earth, so please take care of it"

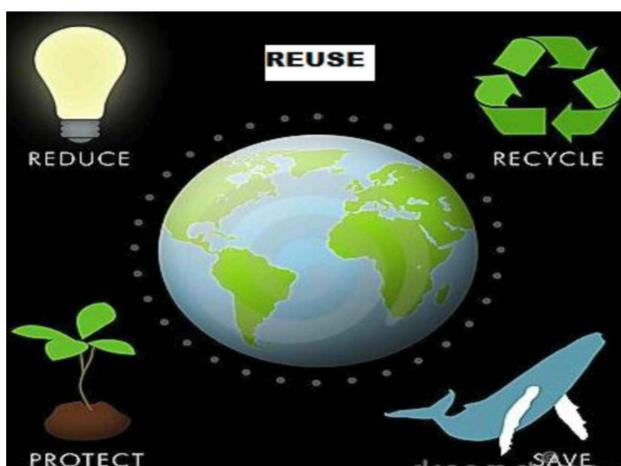
Save Trees Save Environment Save Earth:**Earth Saving Tips:**

1. Buy plain white toilet paper, tissues and paper towels. Dyed paper pollutes.
2. Instead of ammonia-based cleaners, use vinegar and water or baking soda and water.
3. Walk or ride a bike instead of using the car for short trips.
4. Reuse your grocery bags, or buy a string bag you can carry your groceries in.
5. Buy eggs and milk in cardboard cartons instead of plastic. Or recycle your plastic milk jugs.
6. Take showers instead of baths to save water and energy.
7. Don't use electric tools and appliances when hand-operated ones will do the job.
8. Choose a light-colored car with tinted glass to lessen the need for air conditioning.
9. Use mulch and natural ground covers in gardens to contain moisture and conserve water use.
10. Instead of ironing, hang clothes in the bathroom while you shower.

11. Turn off lights in rooms you aren't using.
12. Replace incandescent bulbs with more efficient screw-in compact fluorescent bulbs
13. Use high-quality multi grade oil in your car to increase fuel efficiency.
14. Avoid keeping refrigerator or freezer too cold. Government recommended temperature for fresh food is 38 degrees F. For freezers it's 5 degrees F.
15. Reuse aluminum foil and plastic wrap, or avoid them completely by using plastic containers.
16. Plant trees. Strategically located, trees can reduce heating and cooling bills, help prevent soil erosion and reduce air pollution.
17. Water lawns at night to limit evaporation.
18. Compost your leaves and yard waste. You'll improve your garden's soil.
19. Minimize the use of garden chemicals by weeding.
20. Be sure to return your recyclable cans and bottles for your deposit.
21. Buy rechargeable batteries.
22. Use cold water rather than hot water whenever possible for kitchen tasks and laundry.
23. Share rides to work or use public transportation.
24. Buy a fuel-efficient car. Aim for 35 miles per gallon.
25. Read labels and research the products you buy.
26. Caulk and weather-strip doors and windows.
27. Ask your utility company for an energy audit to assess energy waste in your home.
28. Install water-conserving showerheads and sink-faucet aerators.
29. Insulate your water heater. Turn it down to 121 degrees F.
30. Close off unused areas of your home. Shut off or block heat vents.
31. Compare Energy Guide labels when buying appliances.
32. Keep the fireplace damper closed to prevent heat escape. Keep glass fireplace doors closed when a fire is burning.
33. Use an automatic setback thermostat to turn down heat when you're not home and at night.
34. Capture free solar heat in the winter by opening curtains on south windows during sunny days.
35. Clean lamps and lighting fixtures regularly.
36. Thaw frozen foods in the refrigerator to reduce cooking times and to ensure food safety.
37. Remove unnecessary items from your car. Each 100 pounds of weight decreases fuel efficiency
38. Don't speed; accelerate and slow down gradually.
39. Use latex and other water-based paints instead of toxic enamel or oil based paints.
40. Repair leaks and drips as soon as they occur. A moderate drip wastes two gallons of water per hour.
41. Rent or borrow items you don't often use. Efficient use of products conserves resources.
42. Use small electric pans and ovens to reduce energy use.
43. Run your dishwasher only when full, and use the energy saver cycle.
44. Avoid products made from tropical rainforest woods.
45. Instead of chemical air fresheners, set a cotton ball soaked in vanilla extract on a saucer
46. Roach killer: mix baking soda and powdered sugar. (Keep away from children and pets.)

47. Ant killer: Use chili powder to hinder entry.
49. Use a holding tank on your boat and don't empty toilet tanks into the water.
50. Take your own coffee cup to work instead of using disposable.
51. Pour a kettle of boiling water down the drain weekly to melt fat that may be building up.
52. Use a trash bag in your car instead of throwing trash out the window.
53. Consider using cloth diapers instead of disposal ones. Check for a local diaper service.
54. To remove rust, rub rust spots briskly with a piece of crumpled aluminum foil, shiny side up.

YOU Can Save the Earth: Reduce Re-use Recycle



Re-use:

Reuse manila envelopes and file folders. Duplex: print or copy on both sides of paper.

Save Energy:

Use the stairs instead of the elevator. Plant trees and shrubs around the building.

Substitute:

FAX instead of using overnight express;

Use mugs instead of throw-away cups.

Recycle: (When You Are Shopping)

Buy things made of renewable resources: wool, cotton, plant matter, organic compounds, and wood

instead of plastic.

Reduce:

Buy in bulk. Don't buy items with excess packaging. Use plastic bags for produce only when necessary.

Re-use:

Use and reuse a fabric bag, not paper bags.

"Shall we surrender to our surroundings or shall we make our peace with nature and begin to make reparations for the damage we have done to our air, to our land and to our water? "

9. Biological Degradation of Plastic Waste in the Environment

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Plastics cannot degrade easily and remain in the environment slowly releasing the toxic gases. Plastics are the major threatening polluting agent in the environment and responsible for degradation of health of human beings and animals. A very general estimate of worldwide plastic waste generation is annually about 57 million tons. Release of a chemical bisphenol A (BPA) by plastics has been shown to interfere with reproductive development in animals and has been linked with cardiovascular disease and diabetes in man. It is estimated that some 1 million seabirds and 100,000 other marine animals including turtles, whales and dugong and countless fish are killed as a result of plastic litter every year. The polythene could sometimes cause blockage in intestine of fish, birds and marine mammals. Burning of plastics again releases toxic fumes in the atmosphere. Degradation of plastics is a great challenge as the materials are increasingly used. It is therefore required to find effective methods of plastic waste degradation which are fast and safe to the environment. The degradation of plastics has been investigated for more than three decades now. During early years research was mainly concerned about understanding the deterioration process (Johnson, 1987) and how light (photo degradation) and heat (thermal degradation) may help in degrading the plastics (Day and Wiles, 1972a). But now the focus of research is on biodegradation of plastics using different types of microorganisms from different sources (Klausmeir and Osmon, 1976) and on the production of biodegradable (Wool and Cole, 1988) and photodegradable plastics (Horsfall 1981). Microorganisms such as bacteria, fungi, actinomycetes can degrade the plastics (Gu *et al.*, 2000a) in aerobic and anaerobic conditions. During the course of our research we are expecting to identify a good number of effective strains of microbes which we want to formulate and distribute for universal application to degrade the plastic wastes. The new method of plastic degradation is expected to be effective, safe and fast in the environment.

10. Climate change impacts on mangrove ecosystem in coring mangroves of East Godavari dist of Andhra Aradesh

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Abstract :

Mangroves are one of the most productive ecosystems on earth, deriving nourishment from terrestrial and tidal waters. Mangroves serve as important feeding, nursery and breeding grounds for a variety of commercially important organisms and also serve as protected areas for endangered species. Mangroves act as a barrier against cyclones, thus protecting the human settlement and other properties. They stabilize coastal sediments, thus preventing coastal erosion. However, world over, mangroves are facing degradation, owing to the intertidal areas being extensively developed for aquaculture or other purposes. Loss of mangroves is a cause of serious environmental and economic concern. Therefore, mangrove habitats need to be protected. In India, mangroves are distributed at selected locations along the east and west coasts in the mainland and in the islands of Andaman and Nicobar. In the mainland, the mangroves are relatively well developed in the east coast than in the west coast. In order to assess the status and suggest suitable management plan for protection of mangroves, coral reefs, etc., the Department of Ocean Development (DOD) has initiated an activity namely, “Development of a Critical Habitat Information System (CHIS)” using modern tools like GIS, RDBMS, remote sensing, etc. DOD has established an Integrated Coastal and Marine Area Management Project Directorate at the National Institute of Ocean Technology (NIOT) campus in Chennai to implement this programme.

Introduction : Coringa mangrove (Lat. 16⁰44' to 16⁰53' N and Long. 82⁰14' to 82⁰22' E) is situated south of Kakinada Bay and is about 150 km south of Visakhapatnam. Coringa is named after the river Corangi. Coringa mangroves receive freshwater from Coringa and Gaderu rivers, distributories of Gautami Godavari river and neritic waters from Kakinada bay. Numerous creeks and canals traverse this ecosystem. An imagery of Coringa mangroves

2.1 Coringa Wild Life Sanctuary In order to rehabilitate the salt water crocodile which was at the verge of extinction and to protect the other endangered species, such as Olive Ridley turtles and Indian Otter, the Government of Andhra Pradesh declared a part of Godavari mangrove system as Coringa Wild Life Sanctuary in July, 1978. The Coringa Wildlife Sanctuary covers an area of about 208 sq.km. It is located between Lat. 16⁰30' and 17⁰00' N and Long. 82⁰14' and 82⁰23' E in the East Godavari District. About 120 species of resident and migratory birds (egrets, cormorants, etc) depend on this area for breeding and nesting.

Major Types of Habitat

Coringa is the second largest mangrove formation in India, next to Sundarbans. The Coringa mangroves are bordered on the northern side by Kakinada Bay. The area of Coringa Reserve forest is 3156 hectares and of Coringa Extension forest is 9442 hectares including

waterways. In Coringa, totally 15 species of mangroves were recorded. The dominant genera are *Avicennia*, *Excoecaria*, *Aegiceras*, *Rhizophora* and *Sonneratia* (Fig. 3). Fig. 3 View of mangrove in Coringa Turtle Nesting Ground Minor nesting of Olive Ridley turtle, an endangered species, was reported in the Andhra Pradesh coast (Whitaker and Kar, 1984). Silas et al. (1984) were of the opinion that while many of the turtles migrate to Orissa (Gahirmatha) coast, a few of them reached the Tamilnadu and Andhra Pradesh coast for nesting. Along the Andhra Pradesh coast, a 25 km stretch from Kakinada (Lat. 16^o57' N and Long. 82^o12' E) to Konapakapeta was identified as nesting place of marine turtles. In Coringa region, the sand spit and the Hope island are important nesting grounds (Rao, 1985). The nesting season was reported to be during Oct- Feb.

Climate

The distribution and health of mangrove plants are largely governed by climatic factors such as solar radiation, temperature, rainfall, wind, etc. During 1995-97, atmospheric temperature ranged from 24.8^o to 32.6^oC. The annual rainfall was 871, 1627 and 1156 mm for the years 1995, 1996 and 1997, 5 2014 respectively. Annual mean wind speed ranged from 2.1 to 2.3m/sec. The observed high rainfall and temperature seem to be conducive for the health of mangroves in Coringa.

Development of Information System

The Information System was developed in GIS by integrating the data collected from various sources, viz., (1) theme maps from conventional and remote sensing data, (2) data on water quality and biological parameters from field investigations, and (3) data on socio-economics, etc., from Govt.organisations

Methodology

Primary data comprise remote sensing data and data collected from field measurements on various parameters. Satellite data alongwith ground truth observations provided information on spatial features. Field data on water quality parameters were collected using standard methodologies. Data on biological parameters were collected for three seasons, using standard methodologies described in the Manual (ICMAM-PD, 1998). Sampling locations were fixed using GPS in the study area. These field data were stored in Oracle RDBMS as tables. GIS provided the capability to store both the spatial features and the attribute data from field investigations from RDBMS.

Remote Sensing

Satellite data of 2012(IRS 1A) and 2014 (IRS 7C) were analysed using ERDAS image processing software, along with ground check using GPS for geographic reference to prepare the landuse /land cover maps. The base maps were used to rectify the digital satellite data for positional accuracy. Landuse maps of 2012 and 1998 were analysed to detect the changes using overlay facility of GIS.

Geographic Information System

GIS is a powerful tool to store, manipulate, analyse and retrieve spatial and attribute data. Using bases prepared from toposheets, maps on geology, geomorphology, soil, etc., were prepared from the data provided by Govt. departments and stored as themes in ArcView. Attribute data of environmental parameters from RDBMS were attached to respective themes in GIS.

Database Sampling



Shoreline changes – sand spit A sand spit has formed near Kakinada Bay over a period of 100 years.

Based on British Admiralty charts, Hydrographic Survey of India charts and field investigations, Reddy and Prasad (1982) have presented the possible reasons for the sand spit formation and growth.

Fig. 6 Sand spit formation and growth Godavari river was discharging into Coringa Bay (present Kakinada Bay) (Fig. 6A). During 1848-1851, major confluence of Godavari river shifted its course from Coringa Bay to about 5 miles southeast. Dam construction at Dowleswaram (1846-1852) and deforestation in Godavari basin during this period could have reduced the flushing capacity of the river and increased sediment transport, which ultimately resulted in silting up of the Coringa creeks.

Silting up of Coringa creeks caused opening of the major branch of Godavari river in open sea near Hope Island. The increased sediment input resulted in formation of a shoal in 1851 (Sacramento shoal).

Landuse/Landcover

Satellite data of 1988 (IRS 1A) and 1998 (IRS 1C) were analysed for landuse/landcover studies of Coringa region. Field checks were carried out extensively to collect information on various landuse/ landcover categories with geographical positions using GPS. These data were utilised for classification of satellite data. Mangroves, degraded area, mudflats,

aquaculture, salt pan, agriculture, coastal vegetation, brackishwater, river, tank, settlement, etc., are the various landuse/landcover categories observed in this region

Biodiversity

Coringa mangrove ecosystem has a rich biodiversity of flora and fauna.

Totally 15 species of mangroves, 137 species of phytoplankton, 81 species of zooplankton, 126 species of microbenthos, 37 groups of meiobenthos and 114 species of macrobenthos were recorded during the study period.

Mangroves

15 species of “true mangrove”, 6 mangrove associates and 6 salt marsh species were observed during the study period. The dominant mangrove species are *Avicennia marina* (Fig. 12), *A. officinalis*, *Excoecaria agallocha*, *Sonneratia apetala*, *Aegiceras corniculatum* and *Rhizophora apiculata*. Tree density varied from 81-706 no/0.1 ha. High tree density of 453 and 706 no/0.1 ha was observed in Coringa and Gaderu, respectively. Mangrove species *Avicennia marina* spatially, *Avicennia marina*, a salt secretor species, was distributed throughout the mangroves due to its wide salinity tolerance. Landward *Excoecaria agallocha* was dominant. *Sonneratia caseolaris* is reported to be at the verge of extinction in this area.

Phytoplankton

137 species of phytoplankton were observed during the study period (1998-99) comprising 91 species of Bacillariophyceae, 19 species of Dinophyceae, 14 species of Cyanophyceae, 9 species of Chlorophyceae and 4 species of Euglenophyceae. Species of Bacillariophyceae were dominant throughout the study period (Table 3, Fig. 13) and more number of species was observed in Dec'98 than Jun'98 and May'99. Among Bacillariophyceae, there was an increase in centricales from 22 to 33 species, while pennales decreased from 42 to 29 species. Table 3. Phytoplankton species distribution during 2013 Class Jun'2012 to Dec 2014 Overall Bacillariophyceae 55 species Chlorophyceae 47.

Zooplankton

During the study period, 81 species of zooplankton were observed comprising 51 species of Crustacea, 6 species of Hydrozoa, 5 species of Sagittoidea, 3 species of Polyhymenophora and 16 species of other taxa. Copepods dominated the zooplankton composition followed by bivalve veligers, gastropod veligers and decapod larvae. Among the copepods, the dominant species were *Acartia erythraea*, *Eucalanus elongatus*, *Paracalanus parvus*, *Acrocalanus gibber*, *Acartia clausii*, *Acartia sewelli* and *Paracalanus aculeatus*. More number of species was observed. Density of microbenthos ranged from 909 to 190661 no/gm. Though ciliates dominated the species composition, in terms of numerical abundance microalgae dominated the microbenthos population, which increased from 47%. Percentage composition of microbenthos abundance Rich biodiversity and abundance in mangrove

environment than baylocations indicate that the clayey sediment nature (texture) and organic content of mangrove environment are important factors for the microbenthos.

Fishery resources

Finfishes and shrimps comprise a major part of the fishery resources in coastal waters of Kakinada. Clupeids, scianeids, upenoids, Nemipterus, Trichiurus, Saurida, elasmobranchs and catfishes are some important finfishes recorded. Among shrimps, *Metapenaeus dobsoni*, *M. monoceros*, *M. brevicornis*, *Penaeus styliifera*, *P. monodon* and *P. indicus* were the predominant. The total fish landings in Kakinada increased from 7188 to 7647 tonnes during 1994-97 (source: A.P. Fisheries Statistics, 2014). While the finfish catch increased from 5600 tonnes in 2011-'12 to 6147 tonnes in 2012-2014, the shrimp catch decreased marginally from 1587 tonnes to 1500 tonnes during the same period. About 3000 mechanised crafts are engaged in fishing in East Godavari district, of which about 1000 are trawlers and the others include beach landing crafts, gill netters, liners, seiners, etc. In addition, about 6950 traditional crafts (motorised 500; non-motorised 6450) are also engaged in fishing activities. Pelagic resources are exploited using hook and lines for sharks, seer fish, tunas, etc., and boat seines for sardines, mackerels, stolephores, etc. Shore seines are also operated for near shore fishery resources. Cast nets, gill nets, drag nets and trawl nets are the major fishing gears used in this region. Smoking, salting and sun drying of fishes and shrimps are the major fish processing activities. Shell burning for lime production is also observed.

Socio-economic conditions

Fishing is the major activity in this region followed by agriculture. The fishermen population is the highest in this district (about 1,28,000) as compared to other districts of Andhra Pradesh. About 18 villages are located around Coringa region. Among all villages, Tallarevu has the highest population (10583 – 1998 census). There is more awareness among the people about education and the literacy level is about 47.2% in Tallarevu and Coringa. Besides, fishing and agriculture, people also depend upon livestock and aquaculture activity for their livelihood. Mangroves are the main source of firewood, wood for construction, etc., and fodder for cattle.

Causes for degradation of mangrove ecosystem

Important activities and factors that cause mangrove ecosystem degradation, change and loss of habitats in and around Coringa region are: mangrove deforestation for firewood and wood for construction; over exploitation of molluscs and shrimp seeds; cattle grazing; effluents from nearby industries, discharges from agricultural fields; conversion for aquaculture, etc. Natural events such as cyclones, river influx, tidal incursions, erosion and accretion are also of equal concern. Felling for wood Mangroves are indiscriminately cut by the locals for firewood collection (and wood for construction. As many as 16 adjacent villages depend on mangroves as a source for firewood. Some of the locations close to these villages show denuded mangrove vegetation. Firewood collection by local people Over-exploitation of resources Over-exploitation of resources is another major concern causing ecological imbalance in the mangrove ecosystem. About 3600 tonnes of molluscs

are 28 removed annually from Kakinada Bay and Coringa mudflats for lime production. Species of bivalves (*Placuna placenta*, *Anadara granosa*, *Macoma* sp, *Meretrix* sp.) and gastropods (*Cerithidea cingulata*, *Telescopium telescopium*) are regularly handpicked. Collection of post larvae (seeds) of tiger shrimp (*Penaeus monodon*) for aquaculture industry is another major activity; which is likely to have adverse impact on the shrimp fishery in this area. Over-exploitation of molluscan resources and shrimp seeds. Large number of cattle, buffaloes, etc, observed in adjoining villages (Corangi village - 2200 nos) indicate that cattle grazing could be an important factor for degradation of mangroves. Cattle grazing in mangroves is a common sight in the peripheral areas of mangroves.

People's participation is important for conservation of mangrove ecosystem. The A.P. Forest Department and M.S.Swaminathan Research Foundation (Chennai) are involved in creating awareness among locals about the importance of mangroves in an effort to reduce pressure on mangroves by way of felling, over-exploitation of resources, etc. Cutting of mangrove trees for construction purposes and cattle grazing in mangrove area should be stopped. Detailed surveys on the coasts of Kakinada-Coringa region need to be taken up to identify and protect turtle nesting grounds. Based on these data, using GIS, a buffer zone should be marked to regulate fishing operations during the nesting season in such areas to avoid possible catch of turtles in fishing nets. The health and productivity of mangrove ecosystem are governed by hydrodynamics in the mangrove ecosystem. Dispersal of seedlings and colonisation of calm areas are caused by water circulation especially flushing rates. The high flushing condition leads to reduction in settlement of mangrove seedlings and depressed regeneration, while low flushing condition enables efficient trapping of seedlings and massive regeneration (Wolanski, 1989).

Water circulation over mud banks and tidal canals in mangrove fringed coastal waters is vital for the recruitment of shrimp larvae and maintenance of shrimp fisheries, as reported by Chong et al. (2009). Thus, water circulation induced by differential tidal flushing rates could enhance/reduce the recruitment of larvae from neritic waters to mangrove creeks and on settling of mangrove seedlings and thus has an impact on fishery resources and biodiversity of the mangroves. In Coringa, catchment land use, water discharge in the rivers and tidal flushing are important factors. Detailed studies have to be taken up on hydrodynamics and biodiversity of this area. The results of the models based on these data have to be integrated with GIS for better understanding of the governing processes and identifying the areas where natural regeneration of mangroves is likely to occur, where digging of channels is to be taken up and planning the mitigation processes such as reduction of pollution load, etc..

Conclusion

The GIS based Information System is useful in assessing the status of mangrove ecosystem. The various changes that have occurred in mangrove areas such as degraded areas, areas converted for aquaculture, etc, over a period of 10 years have been clearly delineated. Remote sensing is a useful (and less expensive) tool to identify these spatial features with geographic accuracy. GIS and remote sensing could be effectively used for

monitoring the mangrove areas over the years. This information system could serve as a baseline database for the decision-makers to monitor areas of mangroves and to draw up suitable management plans of afforestation. The information system could be used as a baseline database for monitoring the biodiversity as well. Less number of species in Coringa than Gaderu (both being mangrove areas) is a cause for concern and calls for action to mitigate the adverse effects of effluents in Coringa and also to improve water circulation / flushing in this area based on understanding of the hydrodynamic processes and topography. Outputs of models based on seasonal data on hydrodynamics, physicochemical and biological parameters will be useful in understanding the governing processes of the bay-mangrove environment. Using overlay facility of GIS, these models can be presented to decision makers to project the various hydrodynamic processes during different seasons to enable them to plan for management actions such as afforestation, reduction of pollutant load during dry season, etc., for conservation of mangrove ecosystem.

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11. OCEAN ACIDIFICATION IMPACT ON MANGROVE ECOSYSTEMS**Dr.V. Rangarao,(Principial) P.Gopichand (Associate prof.)**

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Ocean acidification refers to a decrease in ocean pH over decades or more caused primarily by uptake of atmospheric CO₂. Because human activities (primarily burning of fossil fuels) are releasing CO₂ into the atmosphere very quickly, the ocean is taking up CO₂ faster today than it has in the past which is causing the chemistry of the world's oceans to change more quickly than they can handle. When atmospheric CO₂ dissolves into seawater, carbonic acid is formed, and hydrogen ions are released. As a result, the pH of the ocean surface waters decreases, making it more acidic. When hydrogen ions are released in seawater, they combine with carbonate ions, thus lowering the carbonate ion concentration. Marine calcifiers such as corals, coralline algae, crabs, clams, oysters, and some plankton need carbonate ions to build their skeletons and shells. Acidification often leads to reduced calcification and dissolution (e.g., affecting a coral's ability to grow its skeleton, resulting in slower growth and a more fragile structure, thus more vulnerable to erosion. Other important calcifying species have been witnessed to have troubles in acidified waters. Sea urchins are important grazers and can help to protect coral reefs from encroaching algae. Young sea urchins have been observed to grow slower and have thinner, smaller, misshapen protective shells when raised in acidified conditions, like those expected to exist by the year 2100. Slower growth rates and deformed shells may leave urchins more vulnerable to predators and decrease their ability to survive. Furthermore, under acidified conditions the sperm of some sea urchins swim more slowly, this reduces their chances of finding and fertilizing an egg, forming an embryo and developing into sea urchin larvae. Brittle stars, which are important burrowers and prey items for flatfish, appear to be very vulnerable to increasing ocean acidity both as adults and larvae, which could result in severe population declines in the future. In acidified conditions, adult brittle stars lose muscle mass when regenerating their arms and many if not all brittle star larvae will not survive.

12. FISHERIES SECTOR AND COASTAL/MARINE PROBLEMS

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ABSTRACT

Marine fisheries, as well as fisheries in large lakes, depend on the coastal area in a variety of ways. Most capture fisheries are based on coastal stocks; others exploit offshore stocks which spend part of their lives in inshore waters, e.g., in a nursery or feeding area. Fish stocks also rely on primary productivity in the coastal area as an important part of the food chain.

Coastal aquaculture is also heavily dependent on the coastal area for space and resources. This dependency of the marine fisheries sector on the coastal area makes it particularly susceptible to activities which result in coastal environmental change which may have major impacts on the sector. At the same time, the fisheries sector can affect other coastal activities, e.g., through competition for space. The need is apparent, therefore, to consider the development and management of the fisheries sector within the context of coastal area management and development planning, i.e., in the context of the protection and management of the resources, the environment and the activities of the coastal area.

These Guidelines are provided as explanatory material to Article 10 in the Code of Conduct for Responsible Fisheries. Article 10 concerns the Integration of Fisheries into Coastal Management in order to assist in achieving the rational use of scarce coastal resources. In particular, they address the issue of how the fisheries sector can be integrated into coastal management planning so that interactions between the fisheries sector and other sectors can be taken into account in the establishment of management policy and practice with regard to coastal resources.

The Guidelines are addressed to all who are interested in improving the use of fisheries resources in the coastal area. The Code sets out actions which are required at the level of national government or of the authorities responsible for fisheries. However, resource users have a role to play in the planning process, not least in making clear the different valuations placed upon the resource. Integrated coastal management (ICM) usually refer to the process of resources management in the interface between the sea and the land, but the principles of integrated management also apply to the water/land interface of large inland water bodies.

The fisheries sector is taken, in the Code and these Guidelines, to refer to both capture fisheries and aquaculture, unless one or other sector is specifically mentioned. These Guidelines contain the Provisions of Article 10 of the Code of Conduct, in bold, followed by the related explanations and considerations.

BACKGROUND

From ancient times, fishing has been a major source of food for humanity and a provider of employment and economic benefits to those engaged in this activity. However, with increased knowledge and the dynamic development of fisheries it was realised that aquatic resources, although renewable, are not infinite and need to be properly managed, if their contribution to the nutritional, economic and social well-being of the growing world's population was to be sustained.

The adoption in 1982 of the United Nations Convention on the Law of the Sea provided a new framework for the better management of marine resources. The new legal regime of the oceans gave coastal States rights and responsibilities for the management and use of fishery resources within their EEZs which embrace some 90 percent of the world's marine fisheries.

In recent years, world fisheries have become a dynamically developing sector of the food industry and coastal States have striven to take advantage of their new opportunities by investing in modern fishing fleets and processing factories in response to growing international demand for fish and fishery products. It became clear, however, that many fisheries resources could not sustain an often uncontrolled increase of exploitation.

Clear signs of over-exploitation of important fish stocks, modifications of ecosystems, significant economic losses, and international conflicts on management and fish trade threatened the long-term sustainability of fisheries and the contribution of fisheries to food supply.

Therefore the Nineteenth Session of the FAO Committee on Fisheries (COFI), held in March 1991, recommended that new approaches to fisheries management embracing conservation and environmental, as well as social and economic, considerations were urgently needed. FAO was asked to develop the concept of responsible fisheries and elaborate a Code of Conduct to foster its application.

Subsequently, the Government of Mexico, in collaboration with FAO, organised an International Conference on Responsible Fishing in Cancún, in May 1992. The Declaration of Cancún endorsed at that Conference was brought to the attention of the UNCED Rio Summit in June 1992, which supported the preparation of a Code of Conduct for Responsible Fisheries. The FAO Technical Consultation on High Seas Fishing, held in September 1992, further recommended the elaboration of a Code to address the issues regarding high seas fisheries.

INSTITUTIONAL FRAMEWORK

“States should ensure that an appropriate policy, legal and institutional framework is adopted to achieve the sustainable and integrated use of coastal resources, taking into account the fragility of coastal ecosystems and the finite nature of their natural resources, and the needs of coastal communities.”

In considering the integration of fisheries into broader coastal area management, the first requirement is for the State to establish policy, legal and institutional frameworks for the integrated management of coastal areas.

Increasingly, the basic policy framework within which coastal area management is discussed is one of ecologically sustainable development. This framework establishes the range of 3 policies which will be considered ecologically sustainable; the management problem is how to decide between them, taking into account local conditions, including social and economic considerations.

The fundamental problem in coastal area management is one of resource allocation. Coastal resources are becoming increasingly scarce due to a combination of economic development and increased population in coastal areas. In common with other resources, the scarcity of coastal resources requires that choices be made between different uses. Coastal area management involves establishing a framework within which such choices might be made and the resultant policies implemented.

However, the coastal area has a number of features that complicate such choices. First, it is a dynamic system where physical, ecological, social and economic processes interact; coastal management planning needs to take account of these various dynamic processes. Second, the fluid nature of a number of coastal resources complicates the allocation of these resources. Third, the local and regional character of resources may complicate policy co-ordination between different agencies. Where it is possible, the valuation of different development and or conservation options provides a sound basis for policy formulation.

In ICM a holistic approach is necessary. In the management of coastal resources, care has to be taken to avoid a narrow sectoral approach where this is likely to be inadequate. For instance, artisanal fisheries may be very difficult to manage unless there is economic development on-shore creating alternative employment opportunities. There are many other areas where a co-ordinated approach to policy making is required.

To obtain this type of approach, an institutional framework is required which provides the appropriate linkages between national, regional and local authorities. There is a spectrum of approaches adopted by countries to provide such a framework. At the beginning of the spectrum, an existing agency may be given a mandate to initiate cross-sectoral coastal planning but with no additional responsibilities or powers. Although this approach may result in an initiation of cross sectoral coastal planning, it is likely to be rarely effective in the long term. Further along the spectrum, some countries have adopted an approach under which the different agencies involved in coastal management retain all their responsibilities but co-ordinates their planning and actions through a central body; the mandates of such bodies varies considerably. Finally, countries may adopt a truly integrated approach within which much of the responsibility for planning and the allocation of resources is undertaken by an integrated institution; such an institution may be either an existing organization which has been provided with enhanced powers to mediate or, alternatively, a new institution.

“In view of the multiple uses of the coastal area, States should ensure that representatives of the fisheries sector and fishing communities are consulted in the decision-making processes and involved in other activities related to coastal area management planning and development.”

“States should develop, as appropriate, institutional and legal frameworks in order to determine the possible uses of coastal resources and to govern access to them taking into account the rights of coastal fishing communities and their customary practices to the extent compatible with sustainable development.”

“States should facilitate the adoption of fishing practices to avoid conflict among different fisheries resource users as well as with other users of the marine environment.”

“States should promote the establishment of procedures and mechanisms at the appropriate administrative level to settle conflicts which arise within the fisheries sector and between them and other users of the coastal area.”

“States, in accordance with their capacities, should establish or promote the establishment of systems to monitor the coastal environment, as part of the coastal management process, using physical, chemical, biological, economic and social parameters.”

States should promote multidisciplinary research in support of coastal area management, in particular, on its environmental, biological, economic, social, legal and institutional aspects.”

REGIONAL COOPERATION

Environmental impacts, e.g., caused by pollution, coastal erosion, may be transmitted from one State to another by oceanic currents. Consultations with the State or States likely to be affected will assist in the most appropriate valuation of the proposed environmental changes.

Many coastal resources, including fisheries, have a strong regional character. Where appropriate, States should cooperate at a sub-regional or regional level in research programmes, and in the elaboration of mechanisms and protocols for the exchange of knowledge, experience and technical assistance in support of responsible development and management of coastal resources.

Another area for cooperation is the exchange of information. Where appropriate, States should provide in an accurate and timely manner, whatever relevant information they may possess. Such information relates to the fisheries themselves (biological characteristics of the resources, production by species, economic information) and to the impact on fish stocks of coastal developments, e.g., habitat and pollution effects.

IMPLEMENTATION

“States should establish mechanisms for cooperation and coordination among agencies involved in development, planning and management of the coastal area.”

Conventional sector planning generally takes little account either of the resource externalities generated by the sector and passed on to another sector or those originating in another sector and impacting upon it. Improved planning will enable line ministries to identify and assess cross-sectoral impacts and the effects of management intervention. Such policy analysis is an essential basis for an effective presentation of the concerns of the fishery sector, first when area management strategies are being formulated and, second, during plan implementation, for the satisfactory negotiation with other line ministries and institutions involved in the negotiation process of trade-offs between development proposals.

Appropriate institutional arrangements are required to provide for cross-sectoral area management strategies to be formulated and to provide a forum for the resolution of conflicting sectoral-based actual and proposed actions.

“States should ensure that the authority or authorities representing the fisheries sector in the coastal management process have the appropriate technical capacities and financial resources.”

GLOSSARY

Contingency valuation A technique for establishing a monetary value for a non-traded environmental “good” or service, e.g., a scenic attraction, by asking respondents to the sum they would be prepared to pay. While successes have

been claimed for the method, recent re-assessments suggest it should be used with caution and reinforced with empirical research.

Deposit refund systems A system where a surcharge is levied on the price of products leading to resource depletion or pollution which is then refunded if the product (or its residuals) are re-cycled.

Hedonic pricing A valuation technique to determine the value of non traded environmental ‘good’ which uses statistical analyses to isolate the environmental values which contribute to differences in product prices, typically price differences in real estate prices. The technique has limited application in dealing with resource valuations in, say, the fisheries sector but is well suited to other aspects of the valuation of coastal resources.

Non-compliance fees “Additional” prices to be paid for not complying with environmental requirements to meet the social costs arising from environmental damages. **Performance bonds** Similar to a deposit refund system where a bond is placed equal to the estimated social costs of possible environmental damage as a surety for complying with environmental requirements and is forfeit if these requirements are not met. **Tradable permits** a system where rights to discharge pollution or exploit resources can be exchanged through

either a free or a controlled “permit” market. Examples include Individual Transferable Quotas in fisheries, tradable depletion rights to mineral concessions and marketable discharge permits for water-borne effluents.

13-Eco-Crisis Of Marine Fishing Villages In Andhra Coast

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Abstract

Role of fisheries sector to fulfill growing demand for food is of paramount importance for nutritional security. GO/NGO subsidiary policies and excessive technological invasion in the fisheries sector had created an environment in which life has become physically and mentally unhealthy. Living resources are self-renewable, more so are the aquatic living organisms, especially fish, utilized rationally on a sustainable basis in harmony with the ocean environment. The recent developmental policies pressurized the traditional fishing system for the sake of export and countries economic growth lead to marine ecosystem crisis entangled fish and fisherman community in the south coastal districts of Andhra Pradesh. 61-day ban imposed on motorized boats to conserve fish during breeding season in A.P. State. The ban is being enforced to prevent mass fishing in the breeding areas and to improve the productivity in the Fishermen's interest. This will help the brood stock to develop. The paper manifests the buoyancy of fish and fisherman during the natural as well as anthropogenic calamities and recommends welfare of the traditional fisherman. The ecosystem stability and social life of marine fisherman is the ultimate analysis in this research.

Keywords: fish; fisherman; eco-crisis; marine villages

INTRODUCTION

Fishing is an age old practice carried out since time immemorial. Healthy oceans are invaluable to human development. Human activities in the marine Environment, and on the landmasses that drain to it, have damaged ocean ecosystems, the services they provide and the economic values they generate. The undivided state of Andhra Pradesh is situated between latitudes 13°40'N and 19°N and longitudes 80°E and 85°E. It is bordered by the Bay of Bengal in the east, Orissa and Madhya Pradesh in the north, Maharashtra in the north-west, Karnataka in the west and south-west, and Tamil Nadu in the south. The divided state of Andhra Pradesh has a long coastal belt of 974 kms spanning nine districts and is one of the important maritime states in the east coast of India. The state has a continental shelf area of 33227 Sq. Kms Fishing is an important economic activity in the state. The coastal region of A.P. State has been dividing into nine districts: Srikakulam, Vizianagaram, Vishakapatnam, Krishna, Guntur, Prakasam, Nellore, East Godavari and west Godavari. On the east of the state the seacoast extends from Srikakulam in the North to Nellore in the south. One of the major threats to the coastal zone is from intensive aquaculture being practiced along the coast. With the state government spelling out its priority to set up the AP maritime Board, the

investor community is exuding confidence that the move will give a fillip to investment opportunities in long coastline. The board is expected to change the landscape of the coast by offering a slew of incentives and hassle-free regulations for integrated development of coastline infrastructure.

ROLE OF FISHERES

Fish is India's most popular non-vegetarian product, the average Indian household consumes 1.14 kg of fish in a month. The Agriculture revolution shifted to Aquaculture revolution in the coast of Andhra Pradesh recently. Fish preservation is of great importance to the coastal poor. Preserved fish ensure adequate protein during low fishing periods. Fish are important in the balance of nature. They eat plants and animals and also become food for plants and animals. They are also considered brain food. Fishing is important because it can be used as a food source. Fishing is relaxing and fun as well making it important in that way. This is something a family can do together. Fish are important because they keep the marine life alive.

Acquaintance of fishing gives the learning of fishermen culture. The marine environment, including the ocean and adjacent coastal areas, which forms an integrated whole, is a positive asset that presents opportunities for development. Participatory methods that draw from indigenous habitat definitions also have the potential benefit of generating new insights about socio-ecological processes and enhancing local acceptance and understanding of conservation projects by allowing stakeholders to actively contribute in management planning. The development of coastal and marine areas and their resources, however have to balance the mutually competing enterprises like ports, fisheries, tourism offshore fishing, aquaculture, salt industry, waste disposal, etc. The outputs of this programmed have direct relevance to the management of coastal zone and provide economic benefits to the people living in the coastal areas.

FISHERFOLK

The fisher folk are almost at the bottom of the social ladder. Majority of the fishermen communities in A.P. State belongs to the following castes - Agnikulakshatriya, Vadabalaji, Jallari and pattapa. Fishermen have a low caste status. They are classified a "backward class" and belong to the socially and economically weaker section of the population. The fishing villages are to a large extent geographically isolated: adequate infrastructure facilities, proper road communication and sufficient fresh water supplies are lacking. The standard of housing is usually very low, a fact aggravated by frequent fires and cyclones.

In view of the increased demand for fish and the scope offered by the resource potential for increasing catch, the government envisages expansion of the fishing fleet as well as increase of its operational range — by means of fleet improvements and diversification, provision of improved landing facilities, better marketing and transport infrastructure. The government is also focusing its attention on the development of potential brackish water areas for fish and shrimp farming. Besides increasing production, the government aims at securing

reasonable prices for fish producers and at improving the socio-economic status of fisher folk. The usefulness of integrating indigenous ecological knowledge (IEK) have the potential benefit of generating new insights about socio-ecological processes and enhancing local acceptance and understanding of conservation projects.

TRADITIONAL AND TECHNICAL FISHING

Knowledge and learning are the most fundamental long-term sources of institutional change (North 1994)⁹. Information (knowledge) is passed by organizations (individuals) and through institutions across time and spatial scales. There is not one single knowledge system. Different societies may have a different understanding of social and ecological processes and phenomena. The most known, and perhaps accepted, system is that of scientific knowledge (also known as western knowledge). Other systems of knowledge can also play an important role in natural resources and environmental management. Such systems may include traditional and local ecological knowledge systems. Berkes (1999, p.8)² defines traditional ecological knowledge as “a cumulative body of knowledge, practice, and belief evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment”. Local ecological knowledge may be defined as “the knowledge generated through observations of the local environment and held by a specific group of people” (Berkes et al. 2002)³. Both traditional and local ecological knowledge should be seen as a complement to rather than a substitute for scientific knowledge in natural resource and environmental management. It is important to note that social systems, as here defined, encompass the social, economic, and cultural aspect of human societies, including their ethics (values) and worldviews. Hence, the term social system is sometimes interchangeable with socio-economic system in this study.

MARINE ECOSYSTEM EXPLOITATION

Due to the over exploitation, fish is maintaining distance from fisherman before and after the fish catch. The aquatic medium is a more restricted habitat than the terrestrial one and aquatic organisms are more vulnerable to the activities of man and other agents compared to life. The aquatic medium, that shelters invertebrate and vertebrate groups, forms a greater portion of the human food chain. Majority of the animal groups have either direct or indirect link with the aquatic environment⁶. The recent developmental policies by the GO/NGO pressurized the traditional fishing system for the sake of export and countries economic growth lead to marine ecosystem crisis enmeshed both fish and fisherman community in the south coastal districts of Andhra Pradesh. Under this great dilemma situation of fish and fisherman during the natural as well as anthropogenic calamities there must be an immediate unconditional rescue must be required to secure the welfare of the traditional fisherman. Hence the coastal and marine ecosystem stability and social life of marine fisherman is the ultimate concentration.

METHODOLOGY

In my present study I used, in most cases, a combination of qualitative and quantitative research methods including interviews, participant observation. The main fieldwork was carried out during the period June 2010 to August 2014, which was based on the data collected from primary and secondary sources. The primary data was collected from selected respondents using comprehensive and pre-tested questionnaires. The important variables considered for the study were population, gender, age, literacy, health, employment, income and indebtedness parameters. The study covered 150 respondent households from 8 adopted marine fishing villages i.e. Manginapudi, Gilakaladindi, Nizampatnam, Suryalanka, Vodarevu, kothapatnam, Krishnapatnam and Maipadu in selected districts of Krishna, Guntur, Prakasam, Nellore in Andhra Pradesh coast of about 400 kms distance.

Marine systems are complex socio-ecological systems and therefore require monitoring approaches that integrate ecological, economic and social methodologies (Christie et al. 2003; Ostrom 2007). We must understand the impacts they have on adjacent fisheries as well as any unintended ecological or social consequences to ensure potential benefits can become realized. Fishing is a risky and brave occupation and a great model to study fishery responses to management, social, and environmental changes. Additionally, fishery has historically been proactive in management and willing to participate in studying reserve impacts on their fishery. The socio-ecological approach I used tests theoretical social and ecological relationships between fishery and marine ecosystems to better understand how to manage marine protected area trade-offs and the broader human - environment dynamics. I combined a use of three datasets: fishery dependent catch and effort data, fishermen interviews, and ecological community monitoring data. Generally, I find using a socio-ecological approach where human activity and drivers of human behavior are explicitly included broadens the conventional understanding of fishing-marine protected areas - marine ecological relationships.

Case Study:

61-day ban imposed on motorized boats to conserve fish during breeding season in A.P. State:

Fishing operations using mechanized and motorized boats in the Bay of Bengal off the Prakasam coast will come to a halt from Wednesday, as the authorities have announced a 'fishing holiday' to conserve fish and other marine resources during the breeding season.

As many as 43 mechanized and 1,943 motorized boats in the more than 100-km seacoast were anchored by fishermen of 10 coastal mandals, following the ban on using mechanized boats for fishing for 61 days. More than 26,000 active sea-faring fishermen in the coastal mandals of Ongole, Kothapatnam, Chirala, Vetapalem, Chinnaganjam, Nagulapadu, Tangutur, Singarayakonda, Ulavapadu, and Gudluru, anchored their boats.

Over 2,200 non-motorised boats in Prakasam district could, however, continue fishing as usual in the sea. "The ban is being enforced to prevent mass fishing in the breeding areas

and to improve the productivity in the Fishermen's interest. This will help the brood stock to develop".

Demands

The authorities would deploy its team along the coastline in the district to enforce the closed season effectively. Meanwhile, Fishermen and Fish Workers Association demanding the Union and State governments to provide financial assistance of Rs. 4,000 to each fisherman and scholarship to their children to continue their education. This was in addition to essential commodities including 31 kg rice being supplied to each of them during the ban period.

Conclusion

Access to free market and non-market ecosystem services such as the provision of food and coastal protection, are of greatest importance to those who cannot pay – here, greening the blue economy becomes a question of security and equity. For these and many other reasons, greening our ocean economies is a matter of enlightened self-interest. The study suggests for institutional financial support like micro credit for fisher folk; creation of Self Help Groups; regulation of fish marketing through institutional interventions; vocational training for both fishermen and fisherwomen to enable them to latest advanced techniques in fishing and to undertake household income activities during dry or off season and provision of rural infrastructure for general societal/human development. The improved medical and educational facilities and measures for increasing level of awareness would increase the standard of living of the marine fishing households.

This paper attempts a brief factual presentation of data and baseline information on the main features of marine small-scale fisheries in south coast of Andhra Pradesh. It may serve as an introduction to the subject, leading to deeper studies; as a source of general information; or as a background document for use in discussions on planning and programming of development assistance. The maintenance of high and stable levels of economic growth and employment by accepting the ecologically sustainable development, the biodiversity conservation in the coastal waters to ensure the ecosystem stability and social life of marine fishermen is the ultimate analysis in this research.

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14. *Moringa Oleifera* Seed Extract For Water Purification

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Abstract

Many places in the world lack potable (drinkable) water. The World Health Organization has estimated that up to 80% of all disease and sickness in the world is caused by inadequate sanitation, polluted water or unavailability of water. Uncontaminated water is rarely obtainable in rural areas and incidentally, the prevalence of infectious disease amongst rural dwellers. It is now well established that 90% of the rural diseases may be attributed to the polluted water. The rural population is thriving on the contaminated water supply due to prohibitive cost and low availability of chemical coagulants and disinfectants and the heavy investment in setting-up the conventional water treatment plants at village level is not only a theoretical exercise but practically impossible for several reasons. Such projections have prompted interest in using traditional methods for treating the water. Using natural materials to clarify water is a technique that has been practiced for centuries. *Nirmali* seed powder and seeds of the *Moringa* have been found to be one of the most effective.

This may be more environment friendly easy to handle by our rural people and comparatively less toxic than the use of chlorine. To explore the conditions under which the natural coagulant aids as these additives are called in literature, the following short term study is selected for study. The difference is to use the powder, not as an aid but as coagulant itself. This is in view of the illiteracy, economics and environmental conditions of the rural women folk.

The ultimate goal of this work was to carry out an in vitro evaluation of *Moringa oleifera* in water and waste water purification.

Keywords: *Moringa oleifer*, water Purification, *Nirmali seed*

15. What Is Earth After 20 Years

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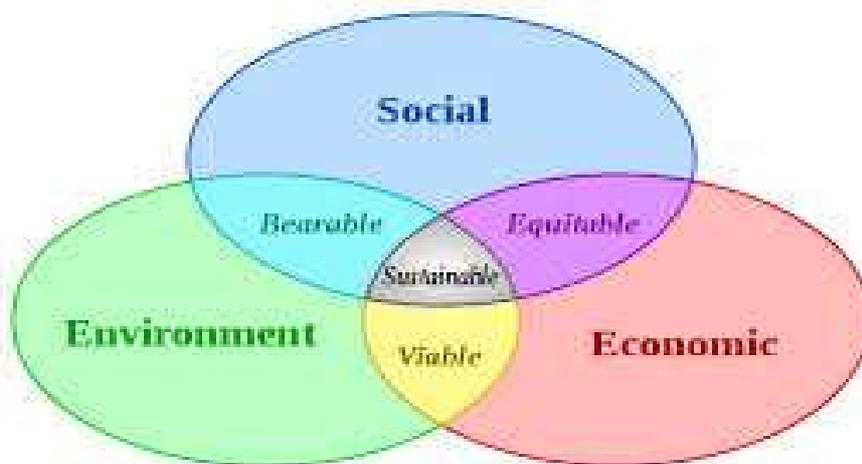
WHAT WILL HAPPEN??



Ecosystems will be destroyed and economies crippled, dealing a blow to global food supplies. In just over 30 years, local weather norms across the world will be consigned to history as we reach the point of ‘climate departure’. ‘Within my generation, whatever climate we were used to will be a thing of the past,’ said Dr Camilo Mora, of the University of Hawaii. The scientists used the minimum and maximum temperatures from 1860 to 2005 to define the historic bounds of climate variability. Projections for the next 100 years showed when the climate in each location was expected to shift outside these limits. After comparing data for each region, the researchers found the average date for reaching the point of departure would be 2047, or 2069 if greenhouse gas emissions slowed. Tropical regions, which are the poorest on Earth and home to most of the global population, will be first in the firing line in either scenario.

‘Countries first impacted by unprecedented climates are the ones with the least capacity to respond,’ said Dr Ryan Longman, co-author of the study in journal Nature. ‘Ironically, these are the countries that are least responsible for climate change in the first place.’

US expert Dr Ken Caldeira, from the Carnegie Institution for Science in Washington DC, said animals would soon be pushed to extinction if the findings were correct. Conservation of the Earth's resources, and equitable sharing was replaced by greed and the grabbing and privatisation of resources. Sustainable economies and societies were replaced by non-sustainable production systems, and a relentless drive to spread the virus of consumerism. Decision making moved into the hands of global corporations, both directly and indirectly. It is therefore not surprising that when we meet at Rio+ 20, the ecological crisis is deeper than what it was at the time of the Earth Summit, and the will and capacity of governments is weaker.



While the corporations wrote the rules of WTO and global free trade, they have also subverted the environmental rules which were supposed to regulate their commercial activities to ensure sustainability. They have mutated environmental laws which are supposed to regulate commerce into laws for commercialising and commodifying the earth's resources and ecological functions.

PROFITING FROM POLLUTION

They have subverted the Climate Treaty and the Biodiversity Convention. Instead of polluters paying and being regulated at the national and international level to stop pollution, the biggest atmospheric polluters who have contributed most to climate change are now laying the rules on how to deal with climate change. The biotechnology industry which has caused genetic pollution by releasing genetically engineered organisms into the environment is making the rules on how to manage biodiversity and how to govern Biosafety. The attempt to introduce BRAI, the Biotechnology Regulatory Authority of India, is one example.



The original objective of the Climate Treaty was to put in place legally binding emission reduction targets for the historic polluters, who in the pre-globalisation period were concentrated in the rich industrial North. The treaty was destroyed at the Climate summit in Copenhagen, by an attempt to replace it with a non binding Copenhagen Accord. The Kyoto Protocol introduced emissions trading, which in effect meant the polluter got paid, not punished. The big industrial polluters were first paid by allowing them to get private rights to our atmospheric commons. They then got paid by profiting from carbon trading.

Profits increased and emissions increased. Climate chaos is worse today than it was in 1992. And the polluters look for new avenues to make money and grab resources. Now they want to commodify the ecological functions and services that nature provides. This will be the big Climate debate in Rio+20.

The original objective of the Convention on Biological Diversity was the conservation of biodiversity and its sustainable and equitable use. This objective has been subverted and is being increasingly replaced by objectives of trade in genetic resources, profits and privatisation. The Nagoya Protocol on Access and Benefit Sharing restricts access only to global players, ignoring the access of local communities. It treats as utilisation only utilisation for research and commerce - ignoring the survival needs of local communities. It is in fact legalised Biopiracy, because it enables the transfer of genetic wealth from local communities to global corporations, it undermines the biodiversity economies and cultures which have conserved biodiversity, and are necessary for conserving it for the future.

'We know we can change it'

In both the Climate Treaty and the Biodiversity convention, trade and commerce is replacing conservation and the commons. Rights of Corporations is replacing the Rights of Nature and People.



And this change in values, from conserving and sharing to exploiting and privatising, is justified in the name of economic progress and economic growth. Yet the economic paradigm for which the Earth and Society are being pillaged and destroyed, is itself in deep crisis. Look at the farmers suicides and hunger and malnutrition crisis in India. Look at the protests in Greece, Spain or the Occupy movement of the 99% in the US.

As the Spanish indignados said:

A paradigm shift is desperately needed. And it will not come those who have created the crisis, and who are looking for new ways to extend the life of the Greed economy by commodifying and privatising all life on earth. They will come to Rio+20 to paint the Greed Economy Green, and call it the Green Economy. And they will have powerful governments on their side.

Movements for ecological sustainability, social justice and deep democracy will come to Rio+20 with another paradigm, one centred on the Rights of Mother Earth, the rights of future generations, of women, indigenous communities and farmers.

It is this epic contest between a destructive and dying outmoded paradigm and a life enhancing emergent paradigm that will be the most significant aspect of Rio+20. The outcome of this contest will determine the future of humanity. It will not enter the negotiations, which can only be the lowest common denominator in the current context of corporate influence. But it will provide the energy for the People's Summit, and many

government initiatives at Rio Centro. This contest will continue beyond Rio, in every country, in every village and town, every farm and workplace, every home and street.

None of us are immune to the crisis, or the response to it. None of us are bystanders. We are all immersed in processes that are either threatening the planet and our own future, or finding creative ways to shape a sustainable and just future. Every day is an earth summit in our lives. And each of us is negotiating our collective fate on the earth.

Thank you