

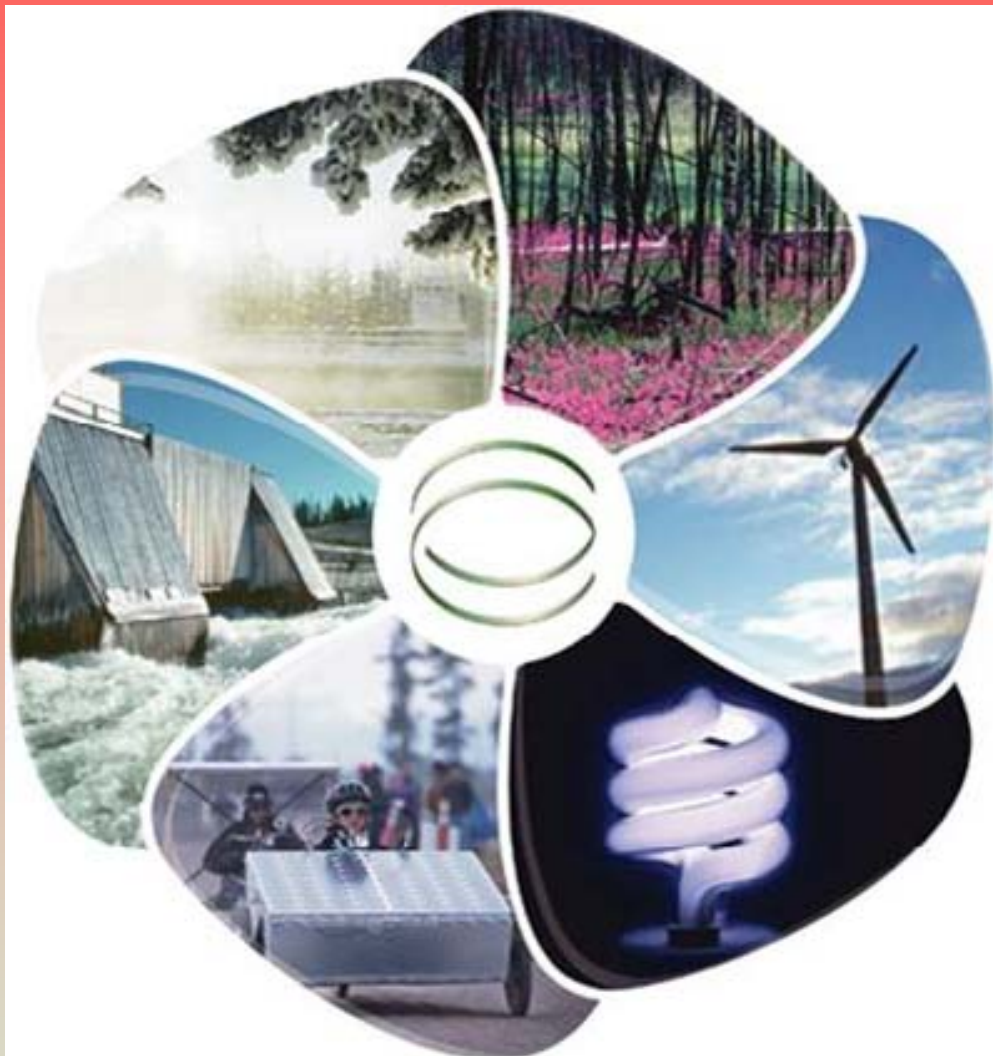


livelihoods

today and tomorrow

January 2010

Energy



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Happy Republic Day!

It is 60 years of Indian Republic! It is 60 years to National Anthem! It is 60 years to Indian Constitution!

Prices have not stopped rising despite the passing of harvest festival, Pongal. A severest drought, and huge floods, ensured that there is increased food insecurity! Together with economic recession, numbers of poor are rising! The poverty of poor is rising!

This decade is a youth decade. 12 January is youth day. Youth are the majority in the adults. They are the future and destiny for the country.

One of longest solar eclipse passed us on 15 January. A miracle in the sky! 4 million took bath in Ganga during Kumbh Mela at Rishikesh. Heavy rain in Sabarimala and 50,000+ swamis lost their way!

Telangana continues to witness more suicides. Events of solidarity including rallies, bandhs! Ultimatum after ultimatum! Lives of common people are being stalled! Many a person, while suffering, has been looking forward eagerly for the new state!

One of the early discoveries of the human beings is fire, an energy form. Gradually, over a period of time, energy use has been the symbol of 'civilization'. While the five elements have energy in them, energy has multiple forms. Sun, sunlight, wind, burning wood and coal, flowing water, rising wave, thunder, lightning, growing tree, life, harvested produce, oilseeds, oil, oil lamps, electricity, petroleum, bio-diesel, natural gas, atomic energy – energy is there in all of them and/or energy is consumed. Energy needs have grown and are growing. It is clear that the energy reserves will not last long. Efforts for energy conservation are on. Search for alternative energy sources is on. World is trembling with increased energy consumption. Climate and environment are changing. The differences are huge amongst countries, regions, and classes/sections. Now, the energy consumption, particularly the consumption of high energy users, has to come down. The conservation of various energy forms, sources, etc., has to be intensified. Alternative energy sources need to be tapped more intensely and vigorously. Efforts are increasing and gaining momentum. Even then, there are lives with high and unbearable drudgery. Energy based tools and technology can reduce their drudgery.

In actuality, there are no livelihoods which do not use energy. There are livelihoods in energy conservation and alternative energy. At least 10% of the overall livelihoods should be focussing on conservation and alternatives. In this context, 'livelihoods' explored 'energy'.

Amulya KN Reddy, is a tireless legend, in alternative energy and energy conservation. Smokeless Chulha (stove) helps reduce pollution in kitchen, increases energy efficiency and savings. GEO's this effort need to go to scale. TJ David is a barefoot engineer who has been innovating energy tools for the poor. He has 18 patents with 100+ innovations to his credit. TERI – The Energy and Resources Institute – has been working for a long time on energy, energy sources, energy alternatives etc. Stan Zibilisco's 'Alternative Energy Demystified' is an essential reading for all those who wanted their understanding of the alternative energy forms and sources.

In the dynamic pursuit of decent livelihoods, poor need to invest in appreciating and reflecting on all the five elements, the energy and matter within them. With the belief that the earth has enough to meet the real needs of all, 'livelihoods' is a part in the journey towards enhancing the knowledge energy of the poor, their organizations and the individuals and institutions that work with them. With the happiness that you are part of this journey and with the faith that you continue to be with us in this, I remain.

A handwritten signature in black ink, appearing to read 'M. G.', with a horizontal line underneath.

G. Muralidhar

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‘livelihoods’ team

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Energy
 Energy is fundamental part of our lives. Without energy, from its simplest forms such as biomass to its more complex counterparts such as fossil fuels or hydro-electricity, society is unable to maintain or improve living standards, meet the basic needs of its citizens or maintain the socio-economic infrastructure necessary for political and economic stability. Energy access has the potential to alleviate poverty through stimulating rural livelihood options. ‘livelihoods’ attempts to understand the issues, trends and livelihoods in and around Energy sector.

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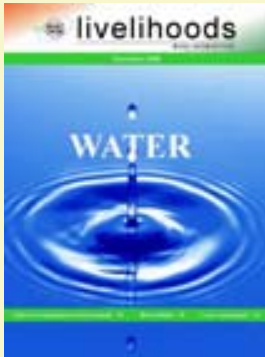
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Response



I see that you and your organization are doing a phenomenal job in some areas that are critical for mankind. Do keep up the great work. Encouraging you guys is the least we could do!

Ramachandran

I was going through the December issue. I liked the story on wild boars. I think there is some thing wrong with the first sentence (One day the village headman approached a wise man to offer his advice.) of the second paragraph in the story. It needs correction. "Village Headman" and "Wise man" should be other way. Please re-check. Thanks.

Sampath

Veteran CPM leader Comrade Jyoti Basu Passes away. Jyoti Basu is a prominent figure in Indian politics for over fifty years, first as a young communist party leader and legislator, then as a leader of opposition in West Bengal legislature and finally as a Chief Minister of West Bengal for an unprecedented five terms from 1977 onwards. He continues to live in the hearts of Indians as he preferred to be useful even after death by donating his eyes and body.



“...the environment cannot be improved in conditions of poverty... How can we speak to those who live in villages and slums about keeping the oceans, the rivers and the air clean when their own lives are contaminated at the source?”

Indira Gandhi

India Remains World's Largest Milk Producer: Amidst global doom, India has retained its position as world's largest milk producing country with production estimated to reach 110 million tonnes for 2008-09. The National Dairy Development Board (NDDB) revealed this when the apex body of dairy cooperatives released its annual report recently.

Indian Companies Using Health Cover for Hiring, Retaining Employees: Despite hike in the health premium costs, over 40 per cent of Indian companies consider health care cover as a value differentiator. According to one survey, almost 41 per cent of the companies use healthcare cover as a talent attraction and retention tool, while 11 per cent use it to minimise losses arising out of employee health issues. The survey covered 125 of India's largest employers and from across industries, mainly from the private sector, reporting an average revenue of more than Rs 400-crore. Most of Indian companies providing healthcare cover to their employees are grappling with an average 10 per cent rise in premiums over the last three years.

Indian Companies Buy Land Abroad for Agricultural Products: Indian companies are buying land overseas, mainly in Africa, to grow agricultural products that can be exported to large markets, including India. Companies and investment houses prefer the African route to agriculture as direct investment in this sector in India is fraught with bureaucratic hurdles. Also, land is relatively cheaper in Africa and fertile. According to statistics provided by governments of various countries in east Africa, more than 80 Indian companies have invested about £1.5 billion (about Rs 11,300 crore) in buying huge plantations in countries in eastern Africa, such as Ethiopia, Kenya, Madagascar, Senegal and Mozambique that will be used to grow food grain for the domestic market.

India Facing Acute Faculty Shortage in Higher Education: According to Indian Union Minister of State for Science & Technology, India is facing serious shortage of faculty members in higher education due to

rapid increase in number of institutions in our country.

UK Aid Supports New Vaccine to Eradicate Polio: The new Bivalent OPV vaccine (bOPV) has been developed over the last twelve months by the World Health Organization, with the support of funding from the UK's Department for International Development. A clinical trial that compared bOPV with the traditional oral poliovirus vaccine found that bOPV was at least 30% more effective. The new bOPV vaccine delivers the benefits of both in one package. The UK is the second largest government donor to The Global Polio Eradication Initiative which has reduced cases of polio by over 99% in the last two decades.

Govt Increases Onion Minimum Export Price (MEP) by \$50/tonne to beef up Supply: India has raised the Minimum Export Price (MEP) of Onion by \$50 a tonne for all destinations to discourage exports and curb price spiral in the commodity. According to National Agricultural Cooperative Marketing Federation of India (NAFED) official_ Onion MEP increased to discourage exports and maintain enough supplies in the market in order to bring down high domestic prices. No export can take place below the MEP and all contracts are registered with the NAFED. India has exported 991,000 tonnes of onions in the first half of 2009-10 against 915,000 tonnes a year ago.

Indian GDP Growth Could Be Shy of 7%: India's GDP growth for 2009-10 could be shy of 7% because of a sharp deceleration in the agricultural sector. Estimates of growth for the farm sector, being compiled by the Central Statistical Organisation, suggest that agricultural output could show negative growth of up to 10%, according to two key policymakers.

India Emerges as 4th Largest Steel Producer in World: With production of 46.77 million tonnes of crude steel during the period January-October, 2009, India emerged as the fourth largest steel producer in the world and is expected to become the 2nd largest producer of crude steel in the world by 2015. 222 Memorandum of Understanding (MoUs) have been signed by the investors with various

State Governments for setting up additional 276 million tonnes of steel capacity in the country recently.

India Eyeing Gulf Market for Horticultural Export: India is planning to organise horticulture fairs to showcase a variety of its produce in the Gulf region to boost exports. The Gulf offers a huge export potential. The Government has been conducting horticulture fairs in different parts of the country to provide farmers a common platform to exchange technical knowhow about the latest technologies.

India tells Textile Groups to Diversify: As India's textile industry is a key export sector and the second largest employer after agriculture (15000 companies involved, 15 % of the country's total exports and 50 m people are employed in India), the ministry of textiles decided that there is a need to take actions towards catching the new trends according to the requirements of the consumers. At present India's textile industry is highly vulnerable to its overdependence on western markets and had not sufficiently embraced new technology to maintain a competitive edge against rivals such as China, Korea and Indonesia.

Map of India to Change Soon-ISRO: The Indian Space Research Organisation (ISRO) has developed a degradation status map, the first of its kind in India that hints at the extent of degradation. The sands have flown across—unchecked and uncontained—and taken over parts of Haryana, Punjab, Uttar Pradesh and Madhya Pradesh as they advance by half a kilometre every year. There would soon be more contenders on the map of India.

A Grim Future to India - Indian Meteorological Office (IMO): According to IMO, in 2009 in India rainfall was 29 per cent below average which shows that the farmers would soon have to deal with more barren lands. Rainfall is predicted to fall in shorter, more intense bursts over several regions in the near future. Being reason of this, about 5.3 billion tonnes of soils are eroded each year.

India to use ICARDA pulses varieties to boost yield:

International Centre for Agricultural Research in Dry Areas (ICARDA) established recently its South Asia Regional Program in India and China. It suggested that India will utilise the huge collection of germplasm of lentils (masoor dal), chickpeas (gram) and grasspea (Kulthi) available with Syria-based ICARDA to increase pulses yield especially in dry areas. It revealed that India grows pulses in about 22.5 million hectare and 80 per cent of this is in dry areas.

World Bank contributes to India's flourishing self-help group movement: With UN organizations pushing to eradicate extreme poverty and hunger, a project comprised of numerous self-help groups (SHGs) in India is also scaling up its efforts. The Andhra Pradesh Rural Poverty Reduction Project, a micro-financing initiative, aims to enable the rural poor in the province of Andhra Pradesh, India, to improve their livelihoods and quality of life. On December 23, 2009, the World Bank approved an additional \$100 million for the project, which is attributed to have raised incomes for around 10 million rural women since it first began.

The Andhra Pradesh Rural Poverty Program was launched in 2003 after receiving approval from the World Bank. The project has organized nearly 90 percent of its participants – about 10 million women, as previously mentioned – into approximately 850,000 SHGs. The additional \$100 million investment, a credit through the World Bank's International Development Association (IDA) – which aims to reduce poverty by providing interest-free loans and grants for programs that boost economic growth, reduce inequality, and improve people's living conditions – will be going towards improving community institutions so that they are able to deal more effectively with external partners. These partners include commercial banks, market institutions, public sector departments, and private sector partnerships.

Nepal Ban hits India: Nepal has banned export of boulders, crushed stones and sand to India. Over exploitation of these natural resources from the Siwalik range has resulted in deforestation, frequent flash floods

and landslides. Nearly 8 lakh tonnes of boulders, crushed stones and sand are imported to India daily from Nepal. The decision will hit hard India's construction industry and hundreds of crushers located across the Terai region of Nepal.

No Developed Land to Farmers–Maharashtra Government Takes U Turn; Amends Rehabilitation Law: The Maharashtra Government has gone back on its promise to give developed land to farmers who cede land for infrastructure and industrial projects. In December, the state amended the law that provided farmers developed land in lieu of land acquired from them. The Maharashtra Project Affected Persons' Rehabilitation Act, 2009 had a clause that said 12.5 percent land developed for a project should be given to the farmers from whom the project land is acquired. The amendment, passed during the winter season of the Assembly, has done away with this clause. Farmers who will be displaced by the Mihan SEZ in Nagpur would have been the first to get developed land under the law if it had not been amended.

Padma Awards: India has announced Padma Awards, the country's highest civilian awards, in three categories, namely, Padma Vibhushan, Padma Bhushan and Padma Shri for the year 2010. These awards are given to public affairs/social work/development, among other things. This year the awards are announced to:

Dr Yaga Venugopala Reddy, ex-RBI Governor

Prof. Abhijit Sen,

Sailesh Kumar Bandyopadhyay

Dr. Balagangadharanatha Swamiji

Shri Eknath Rao alias Balasaheb Vikhe Patil

Dr. Ranjit Bhargava

Ms. Anu Aga

Shri Ayekpam Tomba Meetei

Shri Deep Joshi

Dr. J.R. Gangaramani

Shri Kranti Shah

Dr. Kurian John Melamparambil

Baba Sewa Singh

Ms. Sudha Kaul

Dr. Sudhir M. Parikh

Scheme for Empowering Women from Minority Communities: In an effort to help women from minority communities make better use of government programmes, the Leadership Development of Minority Women scheme was launched in New Delhi recently. The ministry of minority affairs' scheme, which will target 32,000 women in the first year, aims to empower women by providing them knowledge, tools and techniques for interacting with government, banks and government functionaries at all levels. Besides awareness programmes on schemes and issues like education, employment, health, hygiene, immunisation and family planning, emphasis will also be paid on micro-credit to self-help groups.

New \$4 Million Project in India Links Rural Farmers to Urban Markets: A new \$4 million Agribusiness Systems International (ASI) project aims to double the incomes of small-scale fruit and vegetable farmers in Uttar Pradesh, India -- including women -- using tested techniques that link rural farmers with various market outlets. The three-year project, Sunhara India, which symbolically translates into "prosperous India" in Hindi, will provide a unique blend of farmer support and tailored outreach to women to meet specific marketing demands to increase farmers' competitiveness.

CCEA Approves New Interventions in National Horticulture Mission: The Cabinet Committee on Economic Affairs (CCEA) on Jan 21 approved several new interventions in the centrally sponsored scheme on the national horticulture mission. The scheme was launched during the tenth five-year Plan. "Based on the feedback received during the implementation of the scheme, new interventions such as high density plantations (HDP), horticulture mechanisation and certification of good agricultural practices (GAP) have been included," the CCEA and ministry of agriculture said in a press statement. ■

**All the powers in the universe are already ours,
It is we who have put our hands before our eyes and cry that it is dark.
We are what our thoughts have made us;
So take care about what you think.
Words are secondary.
Thoughts live, they travel far.
When an idea exclusively occupies the mind,
It is transformed into an actual physical or mental state.**

**We reap what we sow
We are the makers of our own fate.
None else has the blame, none has the praise.**

**There is no help for you outside of yourself;
You are the creator of the universe
Like the silkworm
You have built a cocoon around yourself...
Burst your own cocoon
And come out as the beautiful butterfly,
As the free soul.**

Then alone you will see the Truth.

**In one word, this ideal is that you are divine.
God sits in the temple of every human body.**

- Swami Vivekananda



Pioneer of Appropriate Technology– Amulya

A cricketer, electrochemist, energy analyst, rural energy practitioner, appropriate technology pioneer, spokesman for sustainable development, campaigner against nuclear energy and weapons, respected teacher and more than anything, a person who has tried to live up to Gandhiji's talisman is Amulya Kumar N Reddy who is popularly known as Amulya.

Amulya K N Reddy was born on 21st October 1930 in Bangalore. He had done his schooling in Saint Joseph's school, Bangalore. During his college days, he was actively involved in many student movements due to which he got opportunities to meet many socialist leaders. In that period, an interest awakened in chemistry because of the friendship with children of the family of the Noble laureate C.V.Raman. After a graduate degree in Chemistry, he did his M.Sc at Central College, Bangalore. He got the seat in sports quota because he was an excellent cricketer. He got married in 1951. In mid 1950's he went to UK to do PhD.

On his return from the UK, Amulya worked for 3 years at the Central Electrochemical Research Institute, Karaikudi, Tamilnadu. In 1958-1961, he worked as Senior Scientific Officer, Central Electro Chemical Research Institute (CECRI) Karaikudi, Tamilnadu. From 1961-1966, he worked as a Post-doctoral fellow at John Harrison laboratory, University of Pennsylvania, Philadelphia, USA. In 1966 he joined as assistant professor in Department of Inorganic & Physical chemistry, Indian Institute of Science (IISc), Bangalore and worked till 1969. Then he worked as co-author, with J.O'M Bockris, of the two-volume text-book "Modern Electrochemistry".

In 1973, when he was quite well known in the area of electrochemistry, he started feeling that the work he was doing in advanced institutions of science and technology is irrelevant and not much useful to most of the people in the country especially to the poorer sections of the community. He started realizing the inequalities that exist in the society and also started questioning them. With this realization at the back of his mind Amulya decided to change his career into rural development and in 1974, he set up the Center for Sustainable Technology under the name of Application of Science and Technology to Rural Areas (ASTRA). The basic objective of this institution is correcting the strong urban bias of R&D in science and engineering.

ASTRA was started with a belief that the application of science and technology would be a weapon in protecting the interests of the poor. With this perspective, ASTRA has over the years worked in the areas of bio-energy, biogas, gasification, fuel efficient stoves and driers, water purification, renewable energy, climate change, forestry and alternate and low-cost buildings etc. Much of the work was done in the villages of Pura and Ungra, about 100km away from Bangalore. Amulya believed that people's participation is very important in planning, implementing and managing any development program and hence encouraged the involvement of community in all the activities of ASTRA. ASTRA's work attracted a band of colleagues and students who worked with commitment and excitement on developing technologies to suit the needs of

rural India. The work on biogas plants was in many ways a trend setter and brought Amulya and his colleagues' national and international fame. The work has brought him into closer contact with the world of social sciences.

Decades of work on rural technology and development led Amulya to question the existing paradigm on energy. This paradigm, according to him has consumption oriented, supply driven approach, by passing the poor and ignoring environmental sustainability. He named the existing paradigm as GROSSCON (Growth Oriented Supply Sided Consumption directed). The critique and the seeds of an alternative paradigm, called DEFNDUS (Development Focused End Use oriented Service directed), were presented in the book "Energy for sustainable Development" which he wrote in 1988 along with his three colleagues. This paradigm has been applied in Karnataka and few other states and Maharashtra.

Amulya realized the importance of including developing countries in partnerships to study their problems. Along with his collaborators in three parts of the world, he set up the International Energy Initiative (IEI). Its mission is to build local capacity and analysis and to engage, locally and globally, so as to promote energy for sustainable development. He was the founder president of IEI and edited its research journal "Energy for Sustainable Development and the Role of Technologies". He nurtured this journal in a way that it today became a sustainable development platform for debates on technologies for the developing world.

Amulya also paid special attention to the gender aspects of energy by engendering energy towards empowering women. Amulya was very sensitive to ordinary and poor people, had a keen insight to their lives and had implicit faith in them. He gave tremendous encouragement to students and young colleagues. In 1975, he was involved in establishing the Karnataka State Council for Science and Technology (KSCST). Organizing large scale programs under the KSCST for the students of engineering and science in Karnataka state was an expression of his interest in youth. He served on the board of Center for Development Studies, a Tiruvanthapuram based organization, for about 2 decades.

Amulya got many awards for his work both in the areas of science and technology and rural development. Amulya wrote hundreds of articles on energy and sustainable development which inspired many people working in this sector. A great visionary who struggled all his life to bring the innovations of science and technology closer to the people especially the poor, Amulya K.N. Reddy breathed his last in the year 2006 in Bangalore. ■

Community Adoption of Good Stoves

The United Nations estimates that 2 billion people a day are still cooking using firewood. Respiratory disease is the fifth-leading cause of death in the developing world, and 1.6 million people per year die from breathing wood smoke. In India alone about 5 lakh people die every year due to indoor air pollution from cook stoves. Majority of the affected people are women and children. Biomass is the major source of fuel for cooking in rural areas for more than 90% of the households. In this context there is a need to understand the existence of thousands of stove models / designs in use all over the world, which gives us a cue to understand the communities' decision making process to adopt Good Stoves. There is a requirement of at least 1 billion good stoves on earth.

The 'STOVE' is one of the most basic needs of all human beings. One cannot imagine a family without a stove. There are many homeless families, but no family is without a stove. In majority of the cases, people are using very low cost and inefficient stoves. The silent death of people due to indoor air pollution never attracts media, or it is never a major issue for the governments. There is not a single college or institute which has a long term course to teach making good stoves. There is no mention in any of the school books or many environmental books about the term 'stove'. Provision of one billion Good Stoves is one of the biggest challenges we face today. There is not much honor to humanity and science if we fail to provide a good stove to the common man.

Geoecology Energy Organization [GEO] is working with communities in different parts of the world. GEO has designed 30 varieties of Good Stoves in the last 5 years and implemented their program of Good Stoves in two villages namely Kothur and Srirangapur of Andhra Pradesh. Based on the learning from experience with community over three years, GEO realized some major factors that the design of stoves should have in accordance to the community needs, utility, culture and aesthetics. These include –

- * Flexible use of different types of locally available biomass
- * Low maintenance cost
- * Convenient sitting posture before the stove
- * Safe from heat and flames to users
- * Less smoke so as to not affect the health of user and their family
- * Easy to operate
- * User should be able to cook all types of traditional food
- * Stoves should be long lasting preferably made with locally available good quality material.

With all these factors in mind, GEO decided to create stoves and planned to get communities interested in adopting good stoves. The staff of GEO conducted

various sensitization and awareness programs. They started doing survey on kinds of existing stoves, biomass and other fuels in use etc. During one of the field visits, they found that majority of the existing stoves were created using three stones, releasing large amounts of smoke. To find a solution to this problem, GEO developed Good Stoves with metal and other materials. It made two series of stoves, one is AVAN (Earth) series and another is MAGH (Cloud) series. AVAN series of stoves are designed especially for poor people whereas MAGH series of stoves are designed for people who can afford to pay for a good stove. The above two series of stoves are based on scientific principles and latest technology. The cost of these stoves start from Rs.2 and the range is up to Rs.1000. The main beneficiaries of Good Stoves programs are women those who occupy the middle-and lower-income rungs of the society.

The process of facilitation plays an important role in community adoption of Good Stoves. GEO designed the stoves with locally available raw material in the presence of community and shared their performance with community through village level workshops. The process was started as a pilot with selected leaders of the community. The stoves are made in their presence and based on the needs the expressed modifications were made to the stoves. People who used the stoves for the first time were impressed by the performance of these stoves and they came forward to create awareness among large number of other people about these stoves.

GEO organized trainings to local youth, women and masons on the construction and maintenance of good stoves. The people who want to adopt a good stove were also assisted financially. As a result large number of people in the two villages attracted towards adopting these good stoves. To monitor the performance of the stoves and also to make repairs if necessary, GEO trained some local youth who are always available to the community.

GEO implemented the program Good Stoves successfully and about 270 good stoves were adopted by the community which covered about 70% of the total number of households in the two villages where GEO is working. By seeing the performance of these stoves the remaining families in these villages and also the people in the neighboring villages are demanding for these Good Stoves. At present GEO is focusing on the preparation of wood gas stoves which are less costly and also useful to reduce indoor pollution.

Important learnings from GEO intervention of Good Stoves include that the technology when developed as a joint effort, where community, government, support organizations' and scientists role is adequate in development and dissemination will have good results. Further, through capacity building programs communities' knowledge on the advantages of a good technology need to be propagated.

N. Bhaskar Reddy, GEO, Hyderabad. ■

Leading in Knowledge Domain!

Jyothi Basu expires! An era ends!

State is a governance unit in a country. Why is it misunderstood as a country? How many lives need to be lost? How many person-days need to be lost? For a Telangana, a state to be de-merged? When are we making smaller districts? Why can't we have perspective plans for these regions, in any case?

As we live the month, as food prices go up, Christmas, English New Year, and Sankranti are celebrated on a low key. Kumbh Mela, the largest congregation of Hindus in the world, passed off without any serious incidents. Youth Day (12 January), World Religion Day (3rd Sunday in January - 17 January), and National Girl Child Day (24 January) have passed without much ado. We see no agenda as yet for commemorating 2010 as International Year of Biodiversity, International Year of Forests and International Year of Youth!

While New Year began with lunar eclipse, solar eclipse on 15 January was one of the longest in this decade.

By 26 January 2010, we are 60 years as Indian Republic! It is 60 years since we adopted Tagore's Janaganamana as National Anthem (24 January 2010).

During the month, we got repeated endorsement – pursue processes/plans; results are byproducts. When natural flows of universe become our processes, universe takes us in its stride.

Food Prices and Food Security, watersheds, social entrepreneurship, social enterprises, sustainable development/livelihoods, elders, marginalized communities, collectives, the people who work with/for them, plans and creative tension continued to hog the most of the time of our time during the month. We are still working to make the material for Resources and Livelihoods Course of the distance mode PG Diploma in Sustainable Rural Development ready. About 600 participants are going through the program in the first year of the launch itself. Looking at the Business Plans of social enterprises, and working on strategic plan for scaling-up sustained community action to address health needs including HIV/AIDS are also taking our time. Visit to Institute of Rural Management has aided my reflecting on collective entrepreneurship and differentiating community entrepreneurship from collective entrepreneurship. The work on preparing detailed project reports for clusters of micro-watersheds is still to begin. Lent a hand in co-conceptualizing Bharatiyam program with Vidya and Jeevika as two independent but inter-related program components. Elements in Vidya include – vidyarthi, vidyaalayam, gurukulam and/or nidhi; and elements in Jeevika include – kutumbam, jeevika, gramam and/or nidhi. More details can be seen at www.bharatiyam.org. Business plan for 'L-channel' has also been initiated.

Another month has elapsed on Telanagana! All-party meeting at New Delhi on 5 January 2010 appealed for

peace! However, Telangana suicides are continuing! BJP expressed unequivocal support. All are awaiting some declaration on or before 28 January 2010.

While Glaciers may not melt by 2035, as projected earlier (recent faux pas admitted!), we need to remain concerned of climate change. Stopping use of plastic bags can be one small step as part of our remaining concerned - use biodegradable/fabric/paper/bamboo bags; carry folded cotton bags when going for shopping; reuse nylon bags; if at all you have to use, thicker bags so that reuse is possible; etc. Start eating raw food – as they offer better nutrition, fibre, flavor, health etc.; as they reduce preparation time; as they consume less energy; and as they increase immunity.

Since I have been teaching Post-graduates (in Development/Livelihoods Management!) for a while, I went over the recent book - What they teach you at HBS. HBS offers its curriculum in two parts – Required Curriculum (RC) in first year through 10 courses and Elective Curriculum (EC) in second year through 10 out of 96 electives. RC establishes a common foundation in the fundamental practices of business. The courses include: 1 & 2. Finance I and II, 3. Financial Reporting and Control, 4. Leadership and Organization Behaviour, 5. Marketing, 6. Technology and Operations Management, 7. Business, Government and International Economy, 8. Strategy, 9. Leadership and Corporate Accountability, and 10. Entrepreneurial Manager. EC offers an opportunity for depth, breadth or both. The critical advices from two years at HBS, brought out by Philip, include:

- * Resist the temptation to be a short-termist;
- * Be honest with yourself in choosing the right job;
- * Keep your moral compass;
- * Maintain the proper balance;
- * Make 'change' the friend;
- * Do not be a 'career engineer' but learn and grow at every opportunity;
- * Only thing you cannot afford not to do is to learn;
- * Professional happiness would come from being very good at something difficult;
- * Do right and be seen doing right;
- * It is important to learn why good people did bad things and to avoid that fate; and
- * Learn how to say no and how to juggle schedules.

One question that is arising repeatedly is – all enterprises serve some purpose which is of use to some customers (people, therefore social). Then what is so different about social enterprise? **What is that special social in social enterprise?**

The best meaning of helping others in development action

Perspectives

G. Muralidhar

has been provided by John Dewey and it reads –

The best kind of help to others, whenever possible, is indirect, and consists in such modifications of the conditions of life, of the general level of subsistence, as enables them independently to help themselves.

The five principles for "helpers" trying to provide help to "doers" are:

- help must start from the present situation of the doers—not from a "blank slate";
- helpers must see the situation thro' the eyes of the doers—not just through their own eyes;
- help cannot be imposed upon the doers—as that directly violates their autonomy;
- nor can doers receive help as a benevolent gift—as that creates dependency; and
- doers must be "in the driver's seat"—which is the basic idea of autonomous self-direction.

The helper-doer relationships are captured at length by the following "gurus":

- **Albert Hirschman** - development advisor and a government,
- **E.F. Schumacher** - development agency and a developing country,
- **Saul Alinsky** - community organizer to the community,
- **Paulo Freire** - educator and community,
- **Søren Kierkegaard** - counselor and a student,
- **John Dewey** – teacher and learner,
- **Carl Rogers** - therapist and client, and
- **Douglas McGregor** - manager and worker (Theory Y).

With our work arena and abilities/skills mostly limited to sensing, analyzing/thinking, reading, writing and talking, we tend to believe that we are knowledge workers. Then we need to appreciate - Knowledge is the capacity for effective action. Knowledge sharing is a human behavior. Everyone is in the business of creating knowledge and sharing it. *Knowledge is born in chaotic processes that take time. We should know to appreciate and tolerate chaos.*

Then, the organizations that work with knowledge workers need leadership different from charismatic decision making. Here leadership roles are designer, teacher, and steward, requiring skills of building creative tension, mental modeling and integrative systems thinking. In essence, it would mean developing an architecture that fosters continual expansion of the capabilities of the members and

building leaders, learning and growing leaders.

Building creative tension would mean building shared vision and appreciating current reality of where we are. Facilitating personal visioning and aspirations, communicating and asking for support, re-visioning on a dynamic and an on-going basis, etc., are part of this. Surfacing and testing mental models would require digging into generalizations and abstractions, balancing inquiry and advocacy, differentiating what is espoused and what is practiced, recognizing and working on defensive routines, etc. Systems thinking calls for seeing big picture, seeing interrelationships, seeing beyond blame, detail vs dynamics, focusing on high leverage, going beyond symptomatic solutions, translating the intuitive insights into logically argued conclusions etc.

To acquire these skills, the leaders need to learn to use tools - systems structures/sub-structures in management/ leadership domain like limits, short-cuts, lowering goals,

reactions, tragedy of commons, growth vs investment, etc.; charting strategic dilemmas like listing, mapping, contextualizing, sequencing, cycles, synergy, integration, linkages etc.

While we see networks of Corporate organizations, NGOs in districts, at state and national level, we do not notice **networks/coalitions of support organizations**, consulting groups and social enterprises in development sector. There is a need to build these networks and coalitions for solidarity, learning and collaborative bidding and work.

Further, we need low-cost software for small CBOs and NGOs. We need to have knowledge and learning platforms in e-domain. We need wide-spread knowledge sharing/dialoguing through radio, websites, e-books, e-magazines, you-tubes, slots in existing channels, and dedicated channels. We are able to see

beginnings of all these. They need to be done on scale. It would mean partnerships. Building models of participation in creation, organization and dissemination. Financing through grants, venture capital, loans etc. Seeking volunteers and running campaigns. So on and so forth.

This may mean producing hundreds, if not thousands, of ethical business and social entrepreneurs and professionals who work in ethical business and social enterprises in knowledge management in livelihoods/ development domain.

Who should do this? Who can do this? What should we do? How can we help them to do this? Yes, we need to build and make our promising youth leaders to commit to this agenda.

We may be a facilitator, leader, mentor, entrepreneur, integrator, manager or a communicator in this pursuit. **Whatever we are, we need to make it our business to pursue building mentors of mentors, lead mentors, mentors, professionals, leaders and volunteers. We need to learn and mentor learning. Tirelessly! Persistently! Repeatedly! Again and Again!** ■

Energy

Energy is fundamental part of our lives. It provides other basic necessities of life such as food, water, shelter and clothing. Without energy, from its simplest forms such as biomass to its more complex counterparts such as fossil fuels or hydro-electricity, society is unable to maintain or improve living standards, meet the basic needs of its citizens or maintain the socio-economic infrastructure necessary for political and economic stability. Energy access has the potential to alleviate poverty through stimulating rural livelihood options. 'livelihoods' attempts to understand the issues, trends and livelihoods in and around Energy sector.



Energy is used in synonymous with the Sun. There is no life on earth without Sun, elaborating this further there is no life without energy. Recognizing its importance various sources of energy like sun, water, wind, fire etc have always been revered in all civilizations. Ease of modern life is built around the facilities that use different forms of energy. Energy has become such an intrinsic part of our lives that lack of it creates a void. Energy plays a pivotal role in development; there is a high degree of correlation between energy use, economic growth, and level of development. World over societies have been built fueled by energy in different forms.

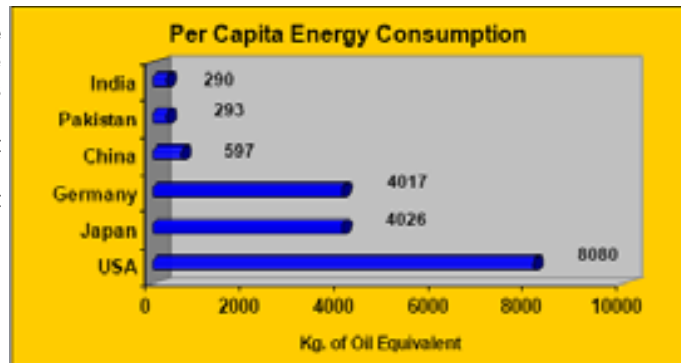
Simplest definition of the word 'Energy' is *the ability to do work* and work is defined as exerting a force over a distance. Root of the word 'Energy' comes from the Greek word 'energeia' which means "activity, operation". There are a variety of energy resources and energy forms. Energy resources include hydro power, wind, solar, biomass and geothermal and energy forms include, light, heat, electricity, hydrogen and fuel. The forms of energy are often named after a related force. Some of them include kinetic, potential, thermal, gravitational and electromagnetic etc. Consumer uses certain equipment to convert the energy into end use activities, e.g., irrigation, transport, cooking, etc.

India is the world's eleventh-largest energy producer, with 2.4 percent of energy production. It is also the world's sixth-largest consumer, with 3.5 percent of global energy consumption. Domestic coal reserves account for 70 percent of India's energy needs. The remaining 30 percent is met by oil, with more than 65 percent of that oil being imported. On the sectoral consumption front, the industrial sector in India is a major energy user accounting for about 52 percent of commercial energy consumption. Per capita energy consumption in India is one of the lowest in the world. But, energy intensity, which is energy consumption per unit of GDP, is one of the highest in comparison to other developed and developing countries. For example, it is 3.7 times that of Japan, 1.55 times that of the United States, 1.47 times that of Asia and 1.5 times that of the world average. As the level of economic development is positively co-related to per capita energy consumption, the energy consumption figures in India are in line with its low per capita income.

The energy sources can be classified in a number of ways: exhaustible and inexhaustible or renewable resources, primary and secondary, conventional and non-conventional. Most of the energy sources are substitutable to each other due to the fact that one form of energy can be converted to other - such as coal to electricity.

The distinction between exhaustible and in exhaustible energy is based on features like whether they get exhausted over a time when used as an input of a production process or not. More correctly cycling time taken by them to be available again as a resource. Renewable resources have a cycling time less than 100 years, while non-renewable resources take more than a million years. Examples of non renewable resources are fossil fuels, and examples of renewable resources are hydro energy, solar energy, wind, biomass, and energy from wastes (such as biogas, agro-wastes, etc.).

Further, based on conventionality in deriving energy,



energy sources could be classified as conventional (coal, oil, hydro, nuclear, etc.) and non - conventional (solar, wind, tidal, geothermal, biogas, etc.) sources. Energy is also classified as primary or secondary depending on the form in which it is used. For example coal, firewood, etc., are primary sources and electricity is a secondary source. Energy in its primary form can be of different kinds. The main types are Chemical (fossil fuels- coal, oil, natural gas, peat; biomass - wood, agricultural residues, etc.), Potential (water at a certain height), Kinetic (wind, waves), Radiation (sun), Heat (geothermal reservoirs, ocean thermal reservoirs) and Nuclear (uranium). Important types of secondary energy are electricity and mechanical energy.

Though there are various kinds of energy, *human and animal energy* continue to be the dominant sources of energy for majority of the poor to pursue livelihoods. Human energy is the physical energy used as labour. Animal energy refers to the work done using animals. Draught animal power (DAP) continues to be used on Indian farms due to small holdings and hill agriculture. More than 55% of the total cultivated area is still being managed by energy given by the draught animals and the physical labour of human being. India possesses the finest breeds of draught animals. Bullocks, buffaloes and camels are the major draught animals for field operations. Horses, mules, donkeys, yak and mithun are the pack animals that are used for transport. The quality of work from the draught animals depends upon the power developed by them.

Beyond human and draught animal power, *coal* is by far the most abundant fossil fuel on earth. It is essentially carbon and is mainly used as a combustion fuel. The large-scale use of coal began with the Industrial Revolution in the 19th century. As the number of industries increased, demand for more sources of energy grew. India has about seven percent of the world's proven coal reserves. By current estimates, the reserves are enough to meet India's needs for at least another 100 years.

The next important source of energy is *oil and natural gas*. The origin of the oil industry in India can be traced back to the last part of the 19th century when petroleum was discovered in Digboi in north-east India. Thereafter large numbers of oil fields have been discovered both inland and off-shore. This has led to the setting up of refineries to process the oil and gas for use in various sectors. The other products obtained by refining crude oil include gasoline, diesel fuel, aviation fuel, home heating oil, oil for ships, and oil to burn in power plants to make electricity. Almost all forms of plastic come originally from oil.

Solar energy is the most readily available source of energy and is renewable. It does not belong to anybody and is, therefore freely accessible. But the catch here is affordability of equipments that are necessary to harness this energy. This technology is still not affordable to many people because of its cost. It is the most eco-friendly source of energy usage as it is non-polluting and, therefore, helps in lessening the greenhouse gas effect. Solar energy is used for: cooking, heating, drying, timber seasoning, distillation, electricity, power generation, cooling, refrigeration, cold storage. Solar energy can also be used to meet our electricity requirements. Through Solar Photovoltaic (SPV) cells, solar radiation gets converted into DC electricity directly. This electricity can either be used as it is or can be stored in the battery. This stored electrical energy then can be used at night.

Biomass is yet another renewable energy resource derived from the carbonaceous waste of various human and natural activities. It is derived as by-product from the timber industry, agricultural crops, raw material from the forest, major parts of household waste and wood. Biomass does not add carbon dioxide to the atmosphere and on the other hand it absorbs the same and releases it to be consumed as a fuel. The advantage is that it can be used to generate electricity with the same equipment or power plants that are now burning fossil fuels. Biomass is an important source of energy and the most important fuel worldwide after coal, oil and natural gas. Biomass fuels used in India account for about one third of the total fuel used in the country, being the most important fuel used in over 90% of the rural households and about 15% of the urban households. This energy is being used for: cooking, mechanical, applications, pumping, power generation, transportation.

The core of the earth is very hot and it is possible to make use of the *geothermal energy*. These are areas where there are volcanoes, hot springs, and geysers, and methane under the water in the oceans and seas. In some countries, such as in the USA water is pumped from underground hot water deposits and used to heat people's houses. Geothermal manifestations are wide spread in India in the form of 340 hot spring sites. The utilization of geothermal energy for the production of electricity dates back to the early part of the twentieth century. For 50 years the generation of electricity from geothermal energy was confined to Italy and interest in this technology was slow to spread elsewhere. In 1943 the use of geothermal hot water was pioneered in Iceland. In India, northwestern Himalayas and the western coast are considered geothermal areas. The Geological Survey of India has already identified more than 350 hot spring sites, which can be explored as areas to tap geothermal energy. It is being used mainly for poultry farming, mushroom cultivation, and pashmina-wool processing, all of which need higher temperature.

Wind energy is the kinetic energy associated with the movement of atmospheric air. It has been used for hundreds of years for sailing, grinding grain, and for irrigation. Wind energy systems convert this kinetic energy to more useful

forms of power like generation of electric power. Windmills for water pumping have been installed in many countries particularly in the rural areas. Wind turbines transform the energy in the wind into mechanical power, which can then be used directly for grinding etc. or further converting to electric power to generate electricity. Wind turbines can be used singly or in clusters called 'wind farms'. Small wind turbines called aero-generators can be used to charge large batteries. Five nations – Germany, USA, Denmark, Spain and India –

account for 80% of the world's installed wind energy capacity. Wind energy continues to be the fastest growing renewable energy source with worldwide wind power installed capacity reaching 14,000 MW.

Energy is a fundamental part of our lives. It provides the basic materials for a good life in the form of heating (for cooking and warmth), cooling and lighting. The domestic sector is the largest consumer of energy in India accounting for 40-50% of the total energy consumption but the bulk

of it consists of traditional fuels in the rural household. Rapid urbanization and diverse urban growth patterns involved many basic structural changes in the economy that have important ramifications for energy use. Growth in income is leading to an increased demand for energy - particularly electricity end use - and energy-intensive products and services. The increased per capita energy use is a consequence. The growing demand for modern household fuels such as LPG and kerosene adds greatly to the already burden on scarce resources of capital and foreign exchange.

On the domestic front energy supports people's health through the refrigeration of vaccines and medicines. Alternative energy sources for cooking reduce air particulates and associated respiratory problems. Social relations are enhanced through the provision of lighting and access to alternative forms of communication such as radio, television and Internet. Meeting and socializing is also possible because fuel enabled transportation. Lighting for personal safety improves personal security. Energy can also improve overall financial security through its application in income generating activities such as producing goods or providing services, e.g. hairdressing, telecommunications, charging batteries etc. Energy is also crucial for development, supporting industry, transportation, and agriculture and meeting the demands of modern life.

Modern energy access has the potential to improve health in rural areas both directly- by powering healthcare facilities- and indirectly, by providing cleaner fuel sources and reducing debilitating labor. The inefficient combustion of solid fuels combined with inadequate ventilation contributes to poor health in many households. These high levels of indoor air pollution often result in decreased pulmonary function, particularly amongst women and children. According to the World Health Organization, approximately 1.6 million premature deaths are attributable annually to indoor air pollution, making it the second largest environmental health risk factor in the world. Indoor air pollution is also responsible for 38 million disability adjusted lost years (DALY), where one



DALY represents one healthy year of life lost by an individual due to disease or adverse health conditions, which in turn has numerous impacts on income generation, livelihoods and education. Furthermore, this dependency on biomass resources such as fuel wood and the lack of intermediary means of transportation means that increasingly large distances are traveled with these heavy loads, often resulting in debilitating back conditions, particularly impacting women and children.

Energy based technologies can help ensure that communities have access to one of the most basic necessities, clean water, by aiding in both the distribution and purification of water supplies. 17% of the world's population does not have access to an improved water source with this value rising to over 45% in sub-Saharan Africa. This lack of a clean and steady water supply limits agricultural activity and results in easily preventable diseases, poor hygiene and inadequate sanitation. The World Health Organization found unsafe water, hygiene, and sanitation to be the world's largest environmental health risk factor, annually responsible for over 1.7 million deaths. Energy technologies such as solar, wind and hydraulic ram pumps can aid in redistributing the water supply to the areas in which it is most needed whilst application of simple solar distillation techniques can improve water purity. However, energy based technologies sometimes may lead to unemployment. For example the use of tractors led to the displacement of large number of people who are dependent on ploughing and transporting activities. Similarly the advent of power looms in the cloth production sector severely damaged the livelihoods of millions of handloom weavers.

The impacts of energy access on education are often indirect, with one linkage being to the issue of time burden. Improved energy resources can reduce the time and labor required to achieve certain tasks such as collecting fuel wood and water as well as mechanizing many activities. This in turn could lead to increased enrolment of children in schools, since their household roles are no longer as consuming. In addition, access to lighting in the home increases the time available for study and hence may impact on achievement levels. Lighting at the schools themselves can remove restrictions on school times making night classes a viable possibility or allowing schools to double as community centers in the evenings. Electrification can also affect education infrastructure through the integration of modern resources such as computers and internet access.

The industrial sector continues to be the single largest commercial energy consuming sector using up about 50% of the total commercial energy in the country, although its share is declining gradually. Indian industry is highly energy-intensive and its energy-GDP elasticity is around 1.5 compared to less than unity for the developed nations. Transport infrastructure has expanded considerably and its energy-intensity has grown gradually. Rapid urbanization along with the conglomeration of industrial and commercial activities has consequently increased the transport demand. Uncontrolled expansion of cities coupled with inadequate public transport has contributed to a phenomenal growth in the number of mechanized energy-intensive private modes leading to energy inefficiency and severe pollution problem.

Most of the agriculture activities also depend on energy. Apart from consuming human and draught power, agriculture operations consume energy for irrigation. Energy helps improve other agriculture operations like ploughing, sowing, spraying, harvesting, processing and many value addition activities; storage; transporting etc. Many other rural livelihoods also are dependent on energy. Most of the ghanis (oil expellers that are used in rural areas) operate based on draught power and nowadays they are being operated using electricity in some places. Similarly many rural livelihoods such as weaving, value addition to agriculture produce, brick making units, small scale enterprises depend majorly on energy. Most of the urban livelihoods also depend mostly on energy and energy based technologies.

The standard of living of the people of any country is considered to be proportional to the energy consumption by the people of that country. In one sense, the disparity one feels from country to country arises from the extent of accessible energy for the citizens of each country. India, with over a billion people, today only produces 660 billion KWh of electricity and over 600 million Indians, a population equal to the combined population of USA and EU, have no access to electricity, and limited access to other clean, modern fuels such as LPG and kerosene. This constrained energy access is reflected in the relatively low Human Development Index of India. Enhancing energy supply and access is therefore a key component of the national development strategy.

The distribution of primary commercial energy resources in India is quite skewed. 70 percent of the total hydro potential is located in the northern and northeastern regions, whereas the eastern region accounts for nearly 70 percent of the total coal reserves in the country. The southern region, which has only 6 percent of the total coal reserves and 10 percent of the total hydro potential, has most of the lignite deposits occurring in the country.

Rural electrification in India has suffered badly over the last decades mainly because of the poor operational and financial health of State Electricity Boards (SEBs). Although 86 percent of the total villages have been electrified over the years, nearly 80,000 villages are yet to be electrified. Moreover, the use of electricity in rural areas for households and other productive purposes such as small industries are rather limited. Rural people are often not in a position to afford the cost of electricity and they meet their basic energy needs through the use of energy sources like firewood, cow dung, agricultural residue and kerosene. However, inefficient exploitation of these resources has led to environmental degradation, with biomass fuel sources rapidly depleting, placing even greater pressure on the poor just to meet basic needs.

An action plan on 100 percent village electrification within the next 6 years has been prepared in which rural electrification would be treated as a basic minimum service under the Prime Minister Gramodya Yojana. Other elements of the action plan include; setting up credit support from Rural Electrification Corporation to SEBs for speedy electrification in the backward areas, improving the quality of power supply in villages by strengthening the distribution network, earmarking a sum of at least Rs. 750 Crores out of the Rural Infrastructure Development Fund for rural electrification works and augmenting the resources of

REC by allowing it to float capital gains tax exemption bonds.

Renewable energy can play a major role in rural electrification. In India, 18,000 villages mostly in remote far-flung areas can only be electrified by using renewable resources since they are not economically viable to connect through conventional grid systems. The features of rural electricity viz, low and dispersed loads, high transport and development costs and seasonality of the load favors decentralized (small hydro and biomass based) power plants for meeting rural electricity needs in a sustainable manner. Local institutions like Panchayats might play an important role in the implementation, operation and maintenance of such power plants. This will not only minimize transaction costs but also minimize transmission and distribution costs.

The impacts of energy use are both local and global. Pollution from burning fossil fuels and the associated effects of acid rain has been a particular problem for both European and Asian forests and soils, which are continuing to deteriorate as a result. Air pollutants also cause lung disease and asthma, impair visibility and generate foul odours. Production of nuclear-generated electricity results in waste disposal problems and ecosystem degradation from upstream mining operations. Heavy metals produced during the fabrication of solar cells can contaminate soils. Desertification in the Sahel and elsewhere in sub-Saharan Africa has been linked to fuel demand from biomass (IUCN 2007). The increased demand for biofuel also affects food security as land and water resources are diverted from food crops to crops for fuel production. Indirect effects of energy use include both overexploitation of natural resources and the spread of invasive alien species facilitated through global trade, both made possible through cheap and easily-available energy for transport.

Energy use also impacts men and women differently. Seventy percent of the 1.2 billion people living on the equivalent of one dollar a day are women. Traditional responsibilities for collecting fuel and water mean time and physical effort are expended by women and girls in gathering fuel and carrying water rather than attending school or generating income. They also suffer disproportionately from health problems related to the collection and use of traditional fuels. Exposure to smoke from poorly-ventilated, indoor fires causes respiratory infections, cancers, and eye diseases; it is responsible for close to two million premature deaths per year. Replacing low quality fuels such as traditional biomass with more efficient fuels can significantly reduce the health impacts from smoke and physical exertion (UNDP 2004). Involving women in energy decisions can help ensure that solutions meet women's practical, productive and strategic needs.

On one hand energy supports many livelihoods and on the other hand energy sector itself creates many livelihoods. There are many people in the country who are engaged in energy production, storage, transportation like people who are working coal mines, crude oil basins, power plants etc and also the people who are engaged in manufacturing, selling of energy based devices etc. The people who work in the area of energy production always face high risks than any other livelihoods. They work in very hazardous conditions. We often here of accidents in coal mines, gas



basins which kill many workers. Health hazards are also very common among these sections of people. Though they are working in high risk and hazardous conditions the wages they get for their work are abysmally low.

To conclude, in all countries, Energy is the fundamental requirement for providing other basic life necessities, such as food, water, shelter and clothing. Without energy, from its simplest forms such as biomass to its more complex counterparts such as fossil fuels or hydro-electricity, society is unable to maintain or improve living standards, meet the basic needs of its citizens or maintain the socio-economic infrastructure necessary for political and economic stability. Indeed, for the estimated two billion people who currently rely on traditional biomass for cooking and do not have access to electricity, a lack of energy acts as a barrier to industrialization and getting out of the poverty trap.

Energy access has the potential to alleviate poverty through stimulating rural livelihood options. This can occur via the establishment of new energy-based industries, creating employment in manufacture, construction and maintenance. Energy access can allow households to engage in a more diverse range of income-generating activities, value addition as well as make pre-existing activities more efficient. In particular, this diversification will make rural families far less dependent on natural resources as their sole form of income. Nearly 60% of the population in low income countries relies on agriculture, forestry and fishing for their livelihoods. This figure rises to over 90% in some countries. With the necessary infrastructure to ensure sustainability, new livelihoods developed via energy access can have a huge impact on long term poverty reduction.

As we move away from subsistence living to global living we consume more energy. China and India are rapidly catching up with rest of the world in energy consumption. Heavy dependence on non-renewable resources is posing a serious threat to sustainable development. Some sources of energy may become scarce and expensive. They make transport expensive and thereby food and other basic items become expensive and unaffordable. The poor as usual will bear the brunt. Increased prices will push many more into poverty. In this context we need to explore alternative choices. What choices do we have? Whatever choices we make, can we all work towards ensuring that those choices will be poor-friendly in terms of availability, accessibility and affordability? ■

Profit or Loss, We Know Only This Work

Kanakalakshmi belongs to washermen family and is fighting against odds to feed the family. She is worried about the skyrocketing prices and about the future of her family. 'livelihoods' interviews this woman to know more about her livelihood.

Q: What is your name?

A: My name is Induru Kanakalakshmi.

Q: What is your native place?

A: I was born and brought up in Hyderabad. I got married to a person who belong to Achipur village, Dubbaka mandal in Medak district of AP.

Q: Are you educated?

A: No, I am not. My husband is also an uneducated person.

Q: Since how long your parents are here?

A: In my grandfather's time only my family members migrated to Hyderabad and settled as washermen. Since then they are working here only. After my marriage, my husband and myself also settled here and started doing the same work.

Q: Where are you staying at present?

A: We are staying at Boggulakunta area, Hyderabad.

Q: How many children do you have and what they are doing?

A: We have four children. Three of them are girls and one boy. Last year my eldest daughter got married. My second daughter has completed Intermediate. My third daughter is now studying and my son is in 7th class.

Q: From when did you learn this work of ironing clothes?

A: Since childhood, I have been engaged in this work. When I was young, I used to help my mother when she was doing washing and ironing clothes of people. Now my mother is helping me in my work.

Q: Do any other family members' help you at work other than your mother?

A: My husband and my children are also helpful to me in household work and also in washing and ironing. Because of financial problems, my second daughter stopped her studies after Intermediate. So she helps me in the work. Even my younger daughter helps me when ever she has holidays.

Q: What is your husband doing?

A: Previously my husband and myself used to share the work. I used to go for washing clothes and my husband used to do the ironing. While doing ironing we need to stand from morning to evening. Recently my husband fell ill



and from then on he is unable to stand for long time and he is also unable to walk long distances. So he is not able to help me in ironing. But he is going to Dhobi ghat and washing clothes and bed sheets.

Q: Where is the Dhobi ghat?

A: It is near to Mahatma Gandhi Bus Station which is about 5-6 kms from

my home.

Q: Is there no other ghat which is near to your home?

A: No, Government built only this ghat for washermen near bus station. It is very comfortable to wash clothes there though it is far.

Q: Is your husband able to go there with his leg problem?

A: Previously he used to go there by bus. But it became very difficult for him to go by bus after few days. Then I took a loan from DWACRA group and bought a scooter for him. Now he goes by scooter for washing clothes.

Q: Where do you get coal for ironing the clothes?

A: We buy coal from Ramkoti which is the major coal selling market in Hyderabad. We buy coal at Rs.100 per 10 kg bag. We buy 10 or 20kg at a time.

Q: Do you get washing work daily?

A: In rainy seasons we get less work. We don't take clothes from people to wash in rainy season because it is difficult to dry them. In summer we get more work .

Q: How many hours you work in a day?

A: I work from 9 am in the morning to 6 or 7 in the evening.

Q: Do you have any problems in this profession?

A: Ironing is a very painful work. We need to stand all the day and get back pains and leg pains by the evening. We should be cautious while ironing the clothes. Otherwise clothes may burn. Then we loose our customer base.

Q: How is your financial status? Is this profitable or not?

A: Profit or loss, whatever it may be, we know only this work. We have to do this only. We get Rs 300-400 per day in good season. From that money we need to pay rent and school fees to children, buy provisions, clothes etc. We also need to pay for iron box repairing frequently. The prices of all provisions and vegetables are raising day by day. Even the coal prices are increasing. After paying for all monthly requirements, we are left with nothing to save for future. We don't know how tomorrow will be. ■

Firewood

The use of wood as a fuel source for heating is as old as civilization itself. **Firewood** is any wood like material that is gathered and used for fuel. The fuel wood is burnt for various activities such as cooking, water heating, space heating, lighting and livestock rearing, etc. Among various activities, cooking requires maximum energy.

Firewood is the most easily available form of fuel, requiring no tools in the case of picking up dead wood, or little tools like axe if they are cut from branches or stem of a tree. Fire wood is collected for both personal use as well as income generating activity. Some firewood is harvested for commercial purpose only, but in heavily wooded areas it is more usually harvested as a byproduct of natural forest. Much wood fuel comes from native forests around the world. Plantation wood is rarely used for firewood, as it is more valuable as timber or wood pulp. Firewood usually relates to timber or trees unsuitable for building or construction. Firewood is a renewable resource provided the consumption rate is controlled to sustainable levels. The shortage of suitable firewood in some places has seen local populations damaging huge tracts of bush thus leading to further desertification. The moisture content of firewood determines how it burns and how much heat is released. Unseasoned (green) wood contains more moisture and gives out less heat where as seasoned (dry) wood has between 25% to 20% moisture content and gives out more energy.

In rural India people are highly dependent on firewood as a source of energy; animal dung and agricultural residue are the other fuels. They are dependent on firewood as a major source of energy because it is freely available in nature around them, it is less expensive when compared to other forms of energy, and the only expenditure is what goes towards the labour and time in collecting and keeping firewood ready to be used. This is also because it is harder for poor rural households to switch to costly non-bio fuels such as kerosene and liquefied petroleum gas and lack of access to technology required to harnessing other viable energy sources is yet another reason. Largely ineffective

government program to introduce more energy-efficient cooking stoves is also responsible keeping up the demand for firewood. The National Sample Survey found that 86 per cent of rural households in India as well as more than one in five of urban households relied primarily on firewood, woodchips or dung cakes for their cooking fuel in 1999-2000. Out of 95 million tons of the firewood used in our country, 79 million tons are consumed in rural area and 16 million tons in urban India. Demand for fuel wood is growing.



Harvesting or collecting firewood varies by the region and culture. Some places have specific areas for firewood collection. Other places may integrate the collection of firewood in the cycle of collecting NTFP from the forest, while cattle rearing and other activities. Collection can be a group, family or an individual activity. As mentioned fuel wood is collected for personal use as well as for commercial purposes. Collecting firewood for a family is mostly done by women. They spend considerable time in collecting firewood. They mostly collect twigs and branches that are fallen on the ground or ones that are dried up on the trees. Some of them also collect it specially to be sold. They make small bundles of firewood and sell them in local shandy or village market. Firewood for commercial purpose is collected by felling trees. Forest dwellers use axe to fell the trees where as Forest department in India which does logging uses other tools like chain saws and other equipments to fell the trees and splitting them into pieces. Deadfall that has not started to rot is preferred, since it is already partly seasoned. Standing dead timber is considered better still, as it is both seasoned, and has less rot. The tools and methods for harvesting firewood are diverse. Generally, firewood is not highly processed and is in some sort of recognizable log or branch form.

Normally wood is cut in the winter when trees have less

Inputs	Pre-collection	Collection	Post-collection	Marketing
Axe Sickle Rope water	Keeping the tools ready. Going to the forest. Identifying the trees that can be felled to cut the wood.	Cutting the branches of the trees. Gathering all the cut branches to one place. Bundling the cut branches and carrying them to home. A firewood seller works about 25 days in a month to collect the firewood from the near by forests.	Cutting all the collected branches into equal size. Drying them for removing moisture. Bundling and Storing. A firewood seller is able to collect about 6 bundles each day.	Selling the firewood in the nearby market or shandy. Each bundle of firewood is sold at Rs 10.

sap so that it will season more quickly. Most firewood also requires splitting, which also allows for faster seasoning by exposing more surface area. Poorer households use axe to cut fire woods but modern tools like chain axe and splitting maul are used when firewood are cut for commercial purposes. There are many ways to store firewood. These range from simple piles to free-standing stacks, to specialized structures. Usually the goal of storing wood is to keep water away from it and to continue the

Income and Expenditure for a firewood collector:

Expenditure on the collection of firewood:

Fixed Cost:

Axe: Rs 300

Sickle: Rs 150

Total fixed cost: Rs 450

Recurring cost:

For sharpening the tools: Rs 45 (Labour cost)

For transport: Rs 50 (Labour cost)

Total recurring cost per month: Rs 95

Income from sale of firewood:

A firewood collector works for about 25 days in a month.

Each day he can collect 6 bundles of firewood which are sold at Rs 10 per bundle.

Income per month: Rs 10* 6 bundles* 25 days= Rs 1500

drying process. Firewood should be stacked with the bark facing upwards. This allows the water to drain off, and standing frost, ice, or snow to be kept from the wood.

Burning firewood creates numerous by-products, some of which may be useful (heat and steam), and others that are undesirable, irritating or dangerous. Ash and charcoal are the most common by products. Ashes have local use, household use them to clean utensils and is also used as fertilizer. Charcoal is used as fuel and used is making local tooth powders. Another byproduct of burning firewood is smoke. This contains water vapour, carbon dioxide and other harmful particulates that can irritation to eyes and harm the lungs and wind pipe. Women are the most affected from such harm as they are constantly exposed to it while cooking. The WHO estimates that more than 407,000 deaths occurred in India during 2002 that were due to causes attributable to solid fuel use.



The heavy removal of wood from forests can cause habitat destruction and soil erosion. The unrecorded remark of fire wood from forests was considered as an extra drain on the forest reserve. The

FAO and other international organizations identified fire wood collection as one of the underlying causes of deforestation in the developing countries. Over-exploitation of fire wood was responsible for a number of environmental problems. Since the realization, many state

forest departments initiated state level wood balance studying during the mid 1980s. Many plantation projects, popularly known as Community Social Forestry to increase the production of fuel



wood, fodder and small timber in rural areas by planting trees in community waste lands, marginal farm lands and other vacant lands with fully community participation were launched in India and other countries from the late 1970s to bridge the demand and supply gap of fire wood. Since the implementation of the social forestry and large scale forestry afforestation programmes the area of the production of fire wood has gradually shifted from forest to non forest areas. A lot of fire wood is now being produced from trees planted along with roads, canals, farm lands and waste lands. Further, measures taken by the government of India to conserve biodiversity and existing forest resources has resulted in an increase of restricted areas where removal of fuel wood is not permitted.

The demand for fire wood increased in spite of the rapid growth in the commercial energy sector especially in rural and remote areas. The national demand for fuel wood is expected to reach 350 MT in 2010. The present shortfall is around 60 MT, much of which is met through felling young trees. There is an organized market for firewood; many traders are listed on internet where they advertise for them.

Value chain analysis of a fuel wood collector dwelling in the forests reveals that both men and women collect firewood. Women collect twigs and dried branches as firewood, where as men fell dried up trees or branches. Men carry simple tools like rope and axe to collect wood where as women carry only a sickle and a rope. Men generally go as a group to collect firewood and purposefully go for it. Women collect firewood as part of other activities like cattle grazing or NTFP collection or agricultural activity. Once the firewood is brought home, men split the log of wood and dry them to remove moisture. When it is ready a bundle of 25 firewood pieces are made. The firewood is stacked upright and bundle is made with the help of a rope. Two such bundles are placed on either side of a stick (like a kavadi) and kept ready to be transported to nearest market place. This pair of bundle of firewood is sold at Rs.40 at the local shandy or a petty shop on the highway. Women make a bundle of firewood collected by them, the price of which varies from Rs 5 to 10 depending on the size of the bundle. This is mostly sold at the village market or shandy.

These days the people who collect firewood from the forests are facing lots of difficulties as they are not allowed by the forest department personnel to enter the forests in many places. With the increased use of LPG the demand for firewood also decreased which is posing threat to the livelihood of people who depend on firewood collection. There is a great need to work with these firewood collectors not only for improving their livelihood but also to protect the depleting forests. ■

The Energy and Resources Institute

With the purpose of tackling and dealing with the immense and acute problems that mankind is likely to face from the gradual depletion of the earth's resources and the existing methods of their use which are polluting, The Energy and Resources Institute (TERI) started working 2 decades ago. It has created an environment that is enabling, dynamic and inspiring for the development of solutions to global problems in the fields of energy, environment and current patterns of development, which are largely unsustainable. Over two decades, the team of TERI has developed a range of technologies in different disciplines and areas of scientific endeavor.

TERI was formally established in 1974. The activities of TERI are dedicated to technology innovation and it builds in comprehensive dimensions that are environment-friendly, natural resource conserving and people-oriented. For the effective use of mechanical and chemical engineering techniques for applications that suits the needs of the poorest of the poor, It developed a bank of technologies that carry immense potential to reduce the ecological foot print of development on the country's natural wealth while also generate opportunities for under privileged. The philosophy of TERI has been its reliance on entrepreneurial skills to create benefits for society through the development and dissemination of intellectual property.

TERI has done many researches in the field of climate change and has pursued several projects on municipal solid waste management. Since adaptation to the impacts of climate change has to take place at the local level, some states of India have been approached by TERI to see how it might be possible to assess these impacts in those states and sub-regions, so that suitable adaptation measures can be taken proactively.

TERI has implemented various energy conservation programs in rural India. Prominent among them is the 'Improved cook stoves programme' which is implemented in north India. This covered 86 households in more than 20 villages of Solan district, Himachal Pradesh. These stoves are found suitable for those using hot water in the summer due to cold weather in the hills. This chullha saves 40% of fuel wood and also saves cooking time. Under 'Fuel substitution programme', community solar water treat for water heating and cooking in 30 villages in Solan district of Himachal Pradesh, 1116 improved chullas, 51 solar cookers with electric back-up in Western Himalayan. For the purpose of cooking and lighting 24 biogas plants, 250 improved chullhas, 500 nutandeeep improved kerosene lanterns, 65 solar lanterns in 3 village panchayats in Sultanpur district of Uttar Pradesh. For the purpose of lighting, 275 solar lanterns in 4 villages of Jaisalmer district of Rajasthan.

Some other technologies applied in industry area are, Gasifier system for silk industry and Oil zapper and Oilorous. The new gasifier powered silk reeling system developed by TERI is substantial improvement over the other traditional oven systems. It increases in energy efficiency by about 60%, 3.7% increase in silk yield, 2% of

the market price of silk, 11% faster cocoon processing of cocoons, 28% reduction in water consumption.

Oilzapper and Oilorous is a boon for oil industry. The Oilzapper is essentially a cocktail of five different bacterial strains that are immobilized and mixed with a carrier material. The benefits of this, it can be used in *situ*, there by eliminating the need to transfer large quantities of contaminated waste from the site, a process that poses more threats to the environment. Secondly, the solution is complete in itself contaminants are not merely transferred from one environmental medium to another but destroyed.

TERI began a programme of JFM (Joint Forest Management) in the Haryana Shivaliks in July 1990 in collaboration with the HFD (Haryana Forest Department), with financial support from the ford foundation. Teri has been providing all the necessary backup support in developing and implementing the programme. The success of the JFM in Haryana is manifest in the improved status of its forests, socio-economic development of the people and the evolution of an institutional process of co-operation between the HFD (Haryana Forest Department) and the HRMS (Hills Resources Management Societies).

Energy efficient buildings, Integrated photovoltaic systems, Biomass gasifier, Subteranean air tunnels, daylighting, recycling waste water are the some other technologies of TERI.

TERI established modern IT facilities and systems, which have been of great value in enhancing productivity and knowledge in the organization. TERI provided software development support not only to the staff with the institute but also to the organizations outside. The sustainable development outreach division essentially carries out a range of out reach activities, which involve interaction with the business and the industry and the provision of knowledge for them and other stakeholders to address the objectives of sustainable development. This also involves the use of the media, including audiovisual techniques for packaging messages that the public requires, in support of bringing about change. DSDDS (Delhi Sustainable Development Summit), which has emerged by TERI, as the most important global event, addressing issues of sustainable development on an annual basis.

The TERI press publishes a series of books for children to educate them on the most critical challenges facing human society, including climate change. The institute established on the name of TERI University in 1998. Initially set-up as the TERI school of advanced studies, it received the status of a deemed university in 1999. The university is a unique institution of higher leaning exclusively for programmes leading to P.hd. TERI has now emerged as a global institution that requires its presence overseas to be enhanced and strengthened.

Giving practical solutions to face the green house affect, TERI is also providing a gateway of opportunities for the economic welfare of human society and towards development. ■

Food Security at 'Crisis' Roads

Food inflation is over 15% in the country. The prices of rice, pulses, sugar and vegetables are all on the rise. Sugar price touched 30 year high. The Government of India is taking measures to import food to stabilize food prices. Imported sugar has already arrived. Rice import duty has been scrapped to facilitate rice imports. Food expenditure of the poor households has nearly doubled. Sadly, the reason is not increase in food consumption; it's the increase in food prices. India ranks 94th in the Global Hunger Index of 119 countries in the world! Food security in the country is once again in 'crisis' roads.

India will need 350 million tonnes of food grains to feed its growing population by 2020. Is the country gearing up to meet this challenge? 2020 is only a decade away. Today food situation in India is in a bad state, may it be production or distribution or affordability. Monsoon failure, low productivity, shift to non-food crops, influence of global markets, deteriorating poverty situation making food unaffordable for many, incoherent government policies, to list a few reasons are together hijacking the food security in the country. How do we confront this reality and how do we transition from being a food insecure to a food secure nation?

FAO defines food security as 'a situation which exists when all people at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life'. MS Swaminathan Research Foundation (MSSRF) uses 17 indicators for measuring food security, that include food affordability, availability, absorption, access, access to housing, livelihood access, access to sanitation, health and nutritional outcome. In essence, we can say that food security is broadly contingent on three parameters – availability, accessibility and affordability. While availability and accessibility relate to production and distribution, the question of affordability is linked to what Amartya Sen terms as 'endowment' and 'exchange entitlements'. One can buy food if one has the resources to do so. Resources come from assets such as land and other productive means or wage labour. How adequate these are, determine one's capacity to afford food. Self-provisioning also helps in achieving food security.

Food grain production in India was a matter of critical concern for nearly two decades after Independence. Despite initiating investments in irrigation, infrastructure, rural development programs, and policy initiatives in land reforms, public distribution, rural credit, etc. dependence on food imports continued. Rapid increase in population growth implied near-stagnation in per capita food grain availability. At this juncture, the introduction and rapid spread of high-yielding varieties not only made the country self-sufficient in terms of food but also India became a marginal net exporter of food. To encourage farmers to pick up cultivation of high yielding crops, government further enhanced its spending on agriculture and agriculture services. However this trend seems to have

reversed since 1990.

The share of agriculture in India's GDP is declining. From more than 50% contribution in 1950, today agriculture contributes less than a quarter to India's GDP. The share of industry and services is increasing. On the other hand India still remains an agrarian society with nearly 69% of the population depending on agriculture for living. The number small and marginal holdings have increased enormously. Average size of holdings has come down to 0.2 hectares. Increase in the cost of inputs has largely increased the cost of cultivation forcing many to shift out of agriculture into wage labour. Many small and marginal farmers are taking up agriculture labour during agriculture season and resorting to daily wage labour during non-season and/or migrating in search of employment. Large



section of the new generation is demoralized and/or reluctant to cultivate. Rain-fed agriculture which constitutes about 69% of the arable land in India stands neglected in terms of research and development and investment. Rain-fed food crops are losing out to water intensive food grains like rice and wheat except for pulses. Overall the government spending on agriculture and irrigation infrastructure has noticeably declined. The combined share of agriculture and irrigation in total Plan outlays has come down from the high of 31.04 per cent in the Fourth Plan to just 10.63 per cent in the Tenth Plan. Agriculture policies pursued by the government may it be free electricity or subsidized inputs like fertilizers, improved irrigation etc have not benefited the scores of small and marginal farmers.

Green revolution though boosted food grain production in the country, it also necessitated intensive farming. Usage of high inputs of water, fertilizers and pesticides have brought in devastating environmental outcomes that have made continued pursuit of such methods difficult if not impossible. Soil fertility deteriorated resulting in low productivity. Added to these woes, climate change is

making its impact felt on agriculture and agriculture productivity across the world and India is no exception. Poor and erratic monsoon led to severe food shortages in 2009 causing a whopping 15% food inflation. The prices of basic consumables like rice, dal, sugar, vegetables are sky rocketing. India, the world's second largest producer and consumer of rice is all set to import rice today. Sugar is already being imported. Rising prices not only diminished the nutrition intake but also the quantity of food consumed from every poor man's plate in the country and at the same time increased the poor household's expenditure on food

competition from farmers in developed countries covered under very high subsidies. In addition to this, the unfair rules in WTO against developing countries, are forcing India to open its gates for external goods and services which will destabilize the domestic prices, jeopardize our farmers and push them into more poverty. Another external thrust that the nation is currently being subjected to is to open the doors for GM food crops. While the supporters of GM technology argue that it can help mitigate food crisis, farmers, environmentalists and other activists are opposing it on the grounds that it is detrimental to environment and human health impairing immune system and organ damage in the long run. India has fourth largest area under GM crops, almost all of which is under BT cotton. For the first time there is a push to introduce GM food crop in India – BT Brinjal. Protests are taking place in various parts of the country against BT Brinjal. Food security also entails access to safe food.

Since 1960s government has initiated measures to raise food production and improve food availability. These include

- > Price assurances to producers using the system of minimum support prices (MSP) implemented through obligatory procurement
- > Inter and intra-year price stability through open market operations
- > Maintaining buffer stocks and
- > Distribution of food grains at reasonable prices through PDS
- > Integrated Child Development Services (ICDS) and Mid Day Meal Scheme (MDMS)

All these helped India emerge out of the situation of food shortage to food surplus. However since the economic reforms in 1990s the food scenario in the country changed. Prior to economic reforms MSP was pegged only to national market prices. But after reforms it is pegged to international prices making the price situation highly volatile. The MSP for some products particularly wheat and rice has been raised indiscriminately without considering domestic demand and supply factors. Raise in MSP has increased the retail prices of these cereals in the open markets. For an average poor household in India the amount of food grains distributed through PDS is not enough for meeting the food needs of the family for the whole month. Many of them therefore resort to buying from the open market at high prices. On the other hand malpractices in PDS system continue to hamper the accessibility of the poor to subsidized food. Research reveals that 91% of the demand for cereals by the Indian consumers is met by open market purchases and only 9% by PDS.

While huge quantities of food grains remain accumulated in public stocks there is high incidence of under-nutrition in the country. Another sad paradox indeed! The central government pays subsidy to the Food Corporation of India to meet (a) the difference between economic cost of food grains and their sales realization at the central issue prices fixed for PDS and other welfare schemes, and (b) carrying

Recommended nutrient intake	
Dietary factor	Goal (% of total energy, unless otherwise stated)
Total fat	15-30%
Saturated fatty acids	<10%
Polyunsaturated fatty acids (PUFAs)	6-10%
n-6 polyunsaturated fatty acids (PUFAs)	5-8%
n-3 polyunsaturated fatty acids (PUFAs)	1-2%
Trans fatty acids	<1%
Monounsaturated fatty acids (MUFAs)	By difference
Total carbohydrate	55-75%
Free sugars	<10%
Protein	10-15%
Cholesterol	<300 mg per day
Sodium chloride (sodium)	<5 g per day (<2g per day)
Fruits and vegetables	≥400 g per day
Total dietary fibre	From foods
Non-starch polysaccharides (NSP)	From foods
Source – FAO state of world food security, 2007	

dramatically. This is a sad paradox. While the government puts the blame squarely on monsoon failure for low productivity and consequent rise in food prices, the reality goes beyond monsoon failure and the associated demand and supply factors. Lack of coordination between various departments of the government and bureaucracy and absence of timely reaction to control food prices by releasing stocks and poor controls on preventing hoarding and black marketing, and absence of long terms plans to increase sustained food productivity, poor quality of agriculture extension services by the cash starved state governments are few other reasons that share the blame for current food crisis along with monsoon failure.

Demand for non-food crops like cotton, tobacco etc in the national and international markets is posing serious threat to local food security. Falling levels of food production is resulting in increase in the food prices which in turn negate the surpluses that farmers are making from non-food crops. In some cases food crops like maize and increasingly being used for poultry feed and bio-fuel. Speaking of international markets, the Indian farmer is being subjected to unfair

cost of buffer stock as a measure of food security. Since 1998 food grain stocks have shown a sharp increase. Larger stocks mean more maintenance expenditure in terms of storage, interest charges, quality and value deterioration. Increase in stocks can be the result of increase in output or decrease in consumption or decrease in net import or a combination of these. Trends since 1990 show that decrease in consumption is a significant contributing factor.

Poor in India expend more energy than they take. The rising food prices have only worsened this ratio. Poverty and lack of purchasing power have been identified as the two major factors responsible for the low dietary intake in India. While interventions like NREGS have resulted in improved

incomes for the poor, the current increase in food prices for the most part negated increased incomes. Poor food and nutrition intake is widely recognized as a major contributing factor for maternal deaths, infant mortality and stunted growth in the country. If neglected, the crisis will soon reach alarming proportions. In terms of food insecurity Jharkhand and Chhattisgarh rank high. Better performing states include HP, Kerala, Punjab and J&K. AP, MP, Bihar, Gujarat, Karnataka, Orissa and Maharashtra are performing poorly. Recently revised figures show that poverty has increased in India. This is a national shame considering the growth per cent we claim to be achieving and also considering that Indians are quoted in the Forbes World's Billionaires list.

In terms of dietary diversification urban households seem to be faring better than their rural counterparts. Dietary diversification increases with increasing family income. In the urban areas consumption of milk and animal products increased with increase in income. Pulses major source of protein in Indian diet. However among the poor both in urban and rural areas consumption of pulses has come down due to steep increase in their prices. In high poverty areas cereals are the major food item. Cereal consumption expenditure is high among the poor in rural areas in relation to the other food items they consume. It is also high among middle and high income groups in rural areas

mainly because of the culture of food sharing. Among cereals there is shift from consumption of coarse cereals like bajra, ragi, maize and jowar which are rich in micronutrients and minerals to rice and wheat. Thanks to PDS which boosted rice and wheat consumption by supplying them at highly subsidized prices. It is therefore, time to relook at the food basket supplied through PDS. Campaigns promoting nutrient rich coarse grains need to be taken up on a scale and be made available through PDS. Poultry, fish and meat consumption is high in urban areas compared to rural areas. So are fruits and nuts. Milk and milk products consumption is raising in the country but much slower compared to developed nations. On the



negative side, fat intake is increasing in urban areas causing problems of obesity, diabetes etc. Oil, sugar and beverage consumption is rapidly growing. Overall trend is decline in expenditure on food items and increase in non-food items both in rural and urban areas. Between rural and urban areas food expenditure remains higher in the former.

Women bear the brunt of food crisis at the household level. Across the world, women play a significant role as both food producers and providers. In a typical household woman eats her meal at the end after the male members of the family and the children. Accessibility to food is a critical issue for women. Increase in food prices and decline in the capacity of the household to afford food means less food in

the woman's plate leading to severe malnutrition in her case. The situation of pregnant and lactating mothers is further worse. Several studies have revealed that domestic violence against women increases in times of food shortage at home.

A multi-pronged comprehensive approach addressing the problems of food production, distribution and affordability is needed. In a country like India with high dependence on agriculture for sustenance and livelihood, high level of illiteracy, dismal skill building avenues, lack of sufficient readiness on the part of industry and service sectors to provide additional employment opportunities, it is but imperative for the government to invest in agriculture development. Agriculture development should not only increase food production but also result in increasing the net income of the farmers. Agriculture extension services should leverage ICT-based mediums extensively. The quality of the extension services need to improve significantly. More employment avenues in non-farm sector need to be created to reduce the pressure on agriculture that is currently over-populated. Diversified cropping, collective purchases of inputs and collective sales can help bring down the expenditure and risk. The concept of seed banks and grain banks has been tried successfully on a small scale by various non-government organizations in the country. Such decentralized measures can be looked into more intensely. Appropriate attention should be paid to conservation of common property and biodiversity resources and rehabilitation of wastelands. Planning and investment in horticulture can help tide over nutritional malady. Improving access to vegetables, fruits and milk and milk products at affordable cost throughout the year is critical to achieve sustainable food supply and to prevent macro and micro deficiencies. With globalization, food prices are no more a play of national markets alone. This calls for more proactive governments and bureaucracy.

Can we make a detour from the food crisis roads and travel the food surplus roads? Yes, we can with concerted and committed efforts. ■

Five Years After Tsunami

It has been five years since Tsunami struck Indian shores on 26th of December 2004. It affected total of 895 villages along the coast line of 2260 kms causing extensive damage in Andaman & Nicobar Islands, the states of Andhra Pradesh, Kerala, Tamil Nadu and the UT of Pondicherry. The scale of disaster was huge. It caused immense social, economic and environmental devastation. Most survivors had lost everything. It is recorded that nearly 12,405 people dead, 5,640 missing and more than 647,599 displaced from their homes.

The disaster devastated communities with its high toll of human lives, injuries, adverse effect on family networks, homes and livelihood. It lead to long term consequences for families torn by the death or disability of a member, such as for widows, single parents and their children, orphans, children separated from their families, the elderly and the disabled. The majority of those affected on the coast were fisher folk who suffered the most damage in terms of housing and livelihoods with loss of dwelling units, household assets, and productive assets like boats and nets.

Degradation of many components of the Indian coastal and marine ecosystem, including coral reefs, sea grass beds, mangroves, beaches, sand dunes, mud flats, lagoons and the east coast tropical dry evergreen forests and pollution due to sewage and industrial emissions enhanced the impact of Tsunami. Erosion or accretion in numerous places along the coast as well as associated sedimentation of lagoons and waterways took place. Saline waters crept into agricultural lands and ground and surface freshwater resources, fishery resources, including aquaculture, coconut and other plantations suffered,

The Asian Development Bank, the United Nations and the World Bank put together a joint team and undertook an assessment of the socioeconomic and environmental impact. The assessments estimated overall damages to be around \$574.5 million, and losses were estimated to be \$448.3 million. Biggest damage was in fisheries, housing and infrastructure which included private asset damages related to coastal fisheries, agriculture and micro enterprise livelihoods. The losses related to livelihoods in these sectors are of particular significance because the damage pushes vulnerable communities like coastal fisheries communities and related livelihoods, agriculture and micro-enterprises into poverty. Shifting focus from relief to reconstruction, funds required to take up short term and long term reconstruction was assessed to be approximately \$400.0 million for the short term (within one year) and approximately \$813.0 million for the medium term (up to three years) reconstruction.

Tsunami exposed the vulnerability of coastal populations to other natural hazards such as floods, cyclones, drought, lightning strikes and earthquakes as well. Combined with

growing populations, higher population densities in coastal zones, continued dependence of a large section on primary sectors vulnerable to extreme climatic events, inadequate systems to assess and reduce risk, and moderate emergency response capacities, exposes these communities to high disaster risk. This brought to focus a need to establish systems for tracking existing and emerging patterns of disaster risk.

Therefore setting up of local level, early warning systems equipped with improved forecasts and warnings systems with effective communication systems, public awareness, social infrastructure and preparedness at the community level becomes essential. Existing cyclone shelters need to be repaired and strengthened, assessing the need for additional shelters and put in place a community based system for their maintenance need to happen. Strengthening emergency services at the district, block and village levels, establishing linkages between environmental and disaster risk management and improving access to risk transfer mechanisms such as insurance, micro-credit schemes for the lower socio-economic strata need to happen.

Keeping the above requirements in view, reconstruction activities were identified. Joint Action committee formed at the behest of GOI put forth four principles for recovery and reconstruction:

- * Environmental considerations should be mainstreamed into all other sectoral interventions
- * lessons drawn from studying the nature, causes and distribution of major impacts should be used to guide further development of disaster risk management strategies for the coastal zone
- * recovery and reconstruction should be framed within the context of an integrated coastal zone management strategy
- * Solutions should be localized and site-specific as far as possible.

Some of the reconstruction activities suggested were:

- * Implementation of the **Coastal Regulation Zone (CRZ)** notification of 1991. This notification requires the coastal zone (defined as the area up to 500 meters of the High Tide Line) to be classified and then regulates the types of activities and land uses permitted in each.
- * Rebuild the **basic infrastructure** and services like housing, roads, transport and communication, damaged coastal roads and bridges, damaged ports and fishing harbors, restore breakwaters and carry out dredging.
- * Strengthen the existing **health system** by improving



communication facilities, providing health staff mobility and strengthening human resources

- * **Rebuild schools** as child-friendly social centers to retain and psychologically restore children in communities whose lives and social networks have been shattered. Coordination between the education and social welfare departments to link schools and ICDS centers, for example, can be strengthened.
- * restoration and promotion of **sustainable management of coastal land and water** resources; rehabilitation of lands in rain-fed areas, further land reclamation and soil improvement; fodder development; risk mitigation through diversification into non-farm activities, local post-harvest value addition; crop and livestock insurance as an integral component of productive activity; and capacity building of farmers, including women.
- * Reconstruction of the fleet of larger boats to **restore fisheries**
- * **improving wage earning opportunities** through employment generation programs; replacement of lost or damaged assets;
- * forming and strengthening of **self-help groups**, both for men and women, and providing them seed capital to facilitate bank linkages
- * **income transfers and social assistance** to vulnerable groups who are not immediately capable of undertaking economic activities
- * **Prioritize value addition** through appropriate investments in technology and related marketable skills.
- * **reducing vulnerability of poor** and low-income families through risk mitigation measures such as insurance, targeted social transfers, and development of social protection measures
- * Restoration of damaged infrastructure for protection against normal coastal hazards such as cyclones, storm surges and river floods.

Many efforts have been made and a lot of funding has been put into reconstruction and rehabilitation. Most of the activities have been towards rebuilding infrastructure importantly repairing damaged houses and building permanent houses, drinking water and roads. There have been efforts towards providing electricity, sanitation, and drainage in these new settlements. In addition, schools, dispensaries, community halls, cyclone shelters, and construction of roads, highways and rebuild damaged fishing harbors. Disease prevention activities, such as vaccinating children against measles are being taken up. Training, funds, materials and technical support were also given to women and men to design, build and repair their own homes. Vulnerable communities who previously had no titles to the land have been helped to secure coastal land and build new homes, often in the name of the woman of the household. Funds have been spent towards replacing boats and nets and providing cash-for-work as a stop-gap for families without an income like fish workers and those in micro enterprises such as pickle making, coconut fiber products and market gardening.

Many activities have been taken up to improve the economic status by providing economic activities, such as establishment of petty shops, small provision stores, poultry farming and manning public telephone booths, and have been supported with a grant and bank loan. Micro enterprises such as manufacture of electronic transformers, small electrical circuits, seafood products, dairying, sanitary napkins, cultivation of seaweed, and crab fattening have also been done. Giving loans, livelihood resources or job training, the choice of activities is based on local resources and skills of the people.

The development of cluster activities has emerged as one of the effective development instruments to enable these activities. This has led to formation of new SHGs and strengthening of old SHGs and federations. These groups have also been supported in forming alliances and planning campaigns to protect their rights to live and work on the coast.

Indian government passed a bill on the disaster management in 2005 and developed a disaster management plan for country. The Act set up the National Disaster Management Authority (NDMA) under the chairmanship of the Prime Minister and various functionaries at the state and district levels. The Act envisages pro-active, holistic and integrated management of disasters with emphasis on prevention, preparedness and mitigation. The stress is on saving lives and property with the collective efforts of both governmental and non-governmental agencies (NGOs). Preparedness is the key. In this effort, all sections of the community are to be involved.

However not all of the communities affected by the tsunami have had access to relief assistance nor have all communities benefited equally from the rehabilitation operations. Many, especially members of marginalized and vulnerable groups, have not received the same opportunities to restore their lives. While fishing communities received some help, vendors and labourers, salt pan and lime workers, shrimp farmers, women involved in seaside limestone production, small coastal business, petty traders, dalit and tribal inland fisher folk, and farmers whose land has been made uncultivable by the influx of salt water could not get adequate. Moreover, no compensation has been received for loss of livestock. Further community involvement in relief and reconstruction was not adequate causing wastage of efforts, money and goods.

In conclusion there seems to be no difference of opinion in whether post Tsunami relief and rehabilitation activities were taken up or not, but there seem to be no consensus on how beneficial they were and whether the most vulnerable people were able to access it. The experience is also different in different areas. The outcome is also dependent on amalgamation of factors like involvement and participation of local community, vision of the facilitating organization, enthusiasm with which it was implemented to name a few. In all restoring diversity of livelihoods requires more than mending damaged nets and putting catamarans and trawlers back to sea. Despite their differences with the government over rehabilitation, most people seem to have picked up the pieces of their lives. But it will take many more years for the wounds to heal completely and may be the scars will remain for some. ■

National Electricity Policy 2005

Electricity has become one of the most significant human need in today's world. It is a key factor for socio economic development of the country. Electricity is playing a vital role in household consumption, agriculture, small scale industries and big industries. The electricity consumption has been gradually increasing in the industry, agriculture and household utilization for last 6 decades. 56% of the households have the accessibility of electricity in India (as per 2001 census). Electricity has an immense potential in playing an important role in development of rural areas and poverty reduction.

Growth in the power sector in India is not in a desirable stage. The electricity sector has been unable to meet the existing demand. The huge gap prevails between demand and supply. There is lot of energy shortages that prevail in the country. This is due to inadequacies in generation, transmission & distribution as well as inefficient use of electricity. Very high level of technical and commercial losses and lack of commercial approach in management of utilities has led to this situation.

Electricity industry is capital-intensive having long gestation period. Resources of the power generation are unevenly dispersed across the country. Electricity is a commodity that can not be stored in the grid where demand and supply have to be continuously balanced. The widely distributed and rapidly increasing electricity demand requirements of the country need to be met in an optimum manner. In this context to develop power system the Central Government prepared National Electricity policy 2005 under the provisions of the Electricity Act 2003.

The Policy is one of the key instruments for providing policy guidance to the Electricity Regulatory Commissions in discharge of their functions and to the Central Electricity Authority for preparation of the National Electricity Plan. The Policy aims at accelerated development of the power sector, providing supply of electricity to all areas and protecting interests of consumers and other stakeholders keeping in view availability of energy resources.

The objectives of the Policy are to provide electricity to all households in next five years, overcome energy shortages and reach to power demand fully by 2012, supply of reliable and quality power in an efficient manner at reasonable rates, achieve to per capita availability of electricity to be increased to over 1000 units by 2012, reach minimum lifeline consumption of 1 unit/household/day as a merit good, to make financial turnaround and commercial viability of electricity sector and to protect the consumers interests.

Main thrust areas of the Policy lay down the approach for developing Rural Electrification distribution backbone and village electrification to achieve the target of completing household electrification in next five years by preparing National Common Minimum Program. The Policy also envisages financial support in terms of capital subsidy to states for rural electrification and special preference to dalit bastis, tribal areas and other weaker sections for rural electrification. It seeks full development of hydro potential.

Choice of fuel for thermal generation is to be based on economics of generation and supply of electricity. Exploitation of non-conventional energy sources such as small hydro, solar, biomass and wind for additional power generation capacity is also envisaged. Development of National Grid is an important feature of the Policy.

This Policy lays special emphasis on time bound reduction of transmission, distribution losses and advocates promotion of competition aimed at consumer benefits. The Policy estimates that to meet the objective of rapid economic growth and power for all including household electrification, an investment of the order of Rs.9,00,000 crores would be required to finance generation, transmission, sub-transmission, distribution and rural electrification projects up to the year 2012. The Policy recognizes that public sector investments both central and state governments, will have to be stepped up and a sizeable part of the investments will need to be brought in from the private sector.

The Policy recognizes private investment in the electricity sector by maintaining appropriate balance between the interest of the consumers and the needs of the investment. The Policy encourages for private sector participation in distribution for ensuring correct billing, speedy implementation of stringent measures against theft of electricity. The Policy says that the open access in transmission will promote competition and in turn lead to availability of cheaper power. The Policy stipulates that Regulatory Commissions should regulate utilities based on pre-determined indices on quality of power supply.

The Policy suggests that the parameters should include frequency and duration of interruption, voltage parameters, harmonics, and transformer failure rates, waiting time for restoration of supply, percentage defective meters and waiting list of new connections and request the commissions to specify expected standards of performance.

The Policy emphasizes that the Central Government, State Governments and Electricity Regulatory Commissions should facilitate capacity building of consumer groups to enhance the efficacy of regulatory process. The emphasis is also on higher efficiency levels of generating plants through renovation and modernization, transmission capacity to have redundancy level and margins as per international standards, adequate transitional financial support for reforming power utilities.

The utilization of electricity is rapidly increasing intensively and extensively. Along with demand, the cost of expenditure of electricity generation is also growing and the resource scarcity is increasing gradually. The Government is trying for alternative sources of electricity generation like hydro electricity and solar electricity. The Policy mainly focused the need for 100% electrification, addressing losses and scarcity. The Policy however, does not focus sufficiently on resources pertaining to alternative electricity sources. ■

Earthquake Hits Haiti Harder

Haiti a small and poor country in Caribbean Islands with 9 million population and an area of 28,000 square kilometer experienced severe earth quake of a magnitude of 7.0. Its epicenter was near Leogane, approximately 25 km (16 miles) west of Port-au-Prince the capital of Haiti. The earth quake occurred on 13th January, 2010 at a depth of 13 km. The quake, the most powerful in the region for 200 years, was centered in a city of two million people, many of them living in flimsy shanty slums. By January 24th 52 aftershocks, 14 of which were between magnitudes 5.0 and 5.9 were experienced. Unofficial reports indicate that nearly 2, 00,000 people lost lives and 30, 00,000 people affected. Many notable landmark buildings including the Presidential palace were significantly damaged or destroyed. People of Haiti who were already overwhelmed by hurricane, floods, political unrest and down trend of economy, got devastated with the earthquake even more.

Amongst the widespread devastation and damage throughout Port-au-Prince and elsewhere, vital infrastructure necessary to respond to the disaster was severely damaged or destroyed. This included all hospitals in the capital; air, sea, and land transport facilities; and communication systems. Due to this infrastructure damage and loss of organizational structures, the President of Haiti had no option left but to appeal to the international community to help in rescue operations.

Lakhs of people are still buried under the debris. Brazil, Argentina and Dominican Republic and other neighboring countries have responded to the appeals and launched fund-raising efforts, as well as sending search and rescue teams. The neighboring Dominican Republic was the first country to give aid to Haiti, easing tensions that have existed between the two countries since the 19th century. The Dominican team has sent food, bottled water and heavy machinery to remove the rubble. The hospitals in Dominican Republic were made available, and the airport opened to receive aid that would be distributed to Haiti. Personnel from the Dominican emergency team provided services to more than 2,000 injured and the Dominican Institute of Telecommunications (Indotel) helped to restore telephone services. The Dominican Red Cross and the International Red Cross have been coordinating health



relief services. The Dominican Republic has also sent eight mobile medical units along with 36 doctors including orthopedic specialists, traumatologists, anesthetists, and surgeons. In addition, 39 trucks with canned food have been dispatched, along with 10 mobile kitchens and 110 cooks capable of producing 100,000 meals per day. Large amount of aid is required to restore normalcy and for rehabilitation program. Rich countries are coming forward to give helping hand rather than leaving it as a responsibility of poorer countries.

Haiti's regional, historical and ethno linguistic position is unique for several reasons. It was the first independent nation in Latin America, the first post-colonial independent black-led nation in the world, and the only nation whose independence was gained as part of a successful slave rebellion. Despite having common cultural links with its Hispano-Caribbean neighbors, Haiti is the only predominantly Francophone independent nation in the Americas. It is one of only two independent nations in the Americas (along with Canada) that designate French as an official language. The main livelihoods of Haiti are tea estates, textiles. Other than these people migrate to other countries in the pursuit of livelihood. Haiti exports tea and handlooms but it is gaining more foreign exchange money through the citizens who migrate to other countries. In 2008 Haiti per capita income was 1300 dollars which is 6 times less than Dominican republic per capita income.



For 200 years now Haiti has been facing political unrest. Military dictatorship and mafia gang wars have marred the country with no leadership to look into its development. Haiti has also faced a chain of continuous disasters. The present Haiti's incident is the 15th disaster since 2001. As a result the country has remained poor with 70% of the population being poor and earning less than 2 dollars per day. Half of its population has no access to education and an equal number are unemployed. Poorer countries like Haiti become poorest when the disasters hit them and make them incapable. Risk both individual and covariant, can make individuals, households and even nations poorer. In this context risk management assumes critical significance. ■

Carpet Making

Shining livelihoods



Fortune Telling

Declining livelihoods



Barefoot Engineer-T.J. David

Thumswamy Joseph David is a natural inventor, having to his credit over 200 innovations in the field of energy. It included efficient and eco-friendly technologies both in the field of conventional and non-conventional energy.

T.J. David was born on 22nd December 1948. David's father, a medical doctor, died when David was only five months old. Later his mother soon moved from Bangalore to Delhi, where the family struggled in great poverty to survive.

David joined in St. John's school in North Delhi, a boarding school for the poor run by priests. Bright enough to get two double promotions, he had to relinquish school after the fifth standard in order to give his aging mother a helping hand. He studied as a day scholar till the seventh standard, doing odd jobs on the side. David's creativity manifested itself early in his life. As a schoolboy he used to take his friends' toys apart and put them together. He is a self educated person. He has been doing research and development in energy sector for about 50 years. Always enchanted by things mechanical, David made a sewing machine for his mother when he was 18. By 1970, he patched together his other intervention a cop less loom, which didn't require shuttle. The following years saw a series of other interventions, and praise for his work poured in from the National Research Development Corporation (NRDC), the Ministry of Science and Technology, other government institutions and the private sector. Inspired by the lives of great scientists like Newton, Edison, Einstein and the Curies, David retained belief in himself despite having to scramble without degrees or contacts, near the bottom of the economic structure for years and he decided to take up these kinds of work increasingly focused on the needs of India's rural poor.

David has been working on livelihood, micro finance ventures, technologies to provide self employment and additional income generating technologies for weaker section as well as, young engineering graduates' projects to make them employers rather than those seeking employment.

In the year 2000, he had more than 20 low-cost inventions to his credit in the field of appropriate technology. They include an animal-powered transmission system, a poultry care system, and a pump less cooler. He is currently seeking to commercialize a pedal-harvester. The current custom-built models sell for Rs 12,000 (U.S. \$650) as opposed to such available alternatives as a tractor-mounted reaper (\$8,700) and the combine-harvester (\$60,000). David sees two prime markets for this reaper: groups of reapers working in villages where they get low wages for their work and small (tractor less) farmers in villages where the cost of reaping is high.

The pedal-propelled harvester has been commended by the Indian Agricultural Research Institute, New Delhi, the G.B. Pant Agriculture University, Nainital and the S.K.N. College of Agriculture, Jaipur.

David developed a low cost mechanized farming robot

which can operate using both conventional and non-conventional energy sources. He developed about 15 types of technologies based on peddle powered production machines, with production capacity 5 kg onwards 30 kg per day. He also innovated another 15 types of technologies available based on draught animal (Bulls, Oxen, Camel, Donkey, Horse etc) power production machines, with production capacity 50 kg on wards to 500 kg per day.

David invented a unique solar crop harvest machine that works entirely on solar energy and has built-in photovoltaic panel of 200 volts. This harvester ensures a high level of power saving by replacing power transmission systems of conventional harvesters. There is also provision for a pedal wheel to make it much more maneuverable. The harvester costs only Rs.2.5 lakhs which is very low compared to the conventional harvesters which costs around Rs. 15 lakhs to Rs.22 lakhs.



David initiated a technical workshop in year 1984 along with another prominent social worker Sri Bunker Roy in Tilonia SWRC. Now it is internationally well known organization known as Barefoot Engineers Tilonia - Rajasthan.

David is one of the members the Inventor's Action Society which is India's first professional association of inventors which works on India's "craftsmen inventors" who, armed with few degrees or institutional connections, are increasingly disadvantaged. He is one of the recipients of most prestigious ASHOKA Fellowship. He had volunteered for many NGO's. In the year of 2000 he established one organization named TIES India (Technologist Inventors Engineers and Scientists). He joined in IIIT-Hyderabad as a Project Coordinator in Energy and Technology. At present he is very much occupied with the agenda of setting up a Technology Park, for 100 innovations for arranging demo as well as training and technology transfer program.

David's intelligence and persistence permitted him to continue and to come to understand how the systems confronting him so very unsympathetically work, and what must be done if they are to be reformed so that India's inventors can help the country develop the grassroots technologies it needs. He has received patent rights for 18 innovations so far.

David is currently working on the pedal reaper because he thinks it can enrich the lives of many poor people and also, in his own words, "out of my joy and my happiness." He invents because he loves the craft. After all, this barefoot inventor comments, "No one commanded the Wright brothers to make a plane." ■

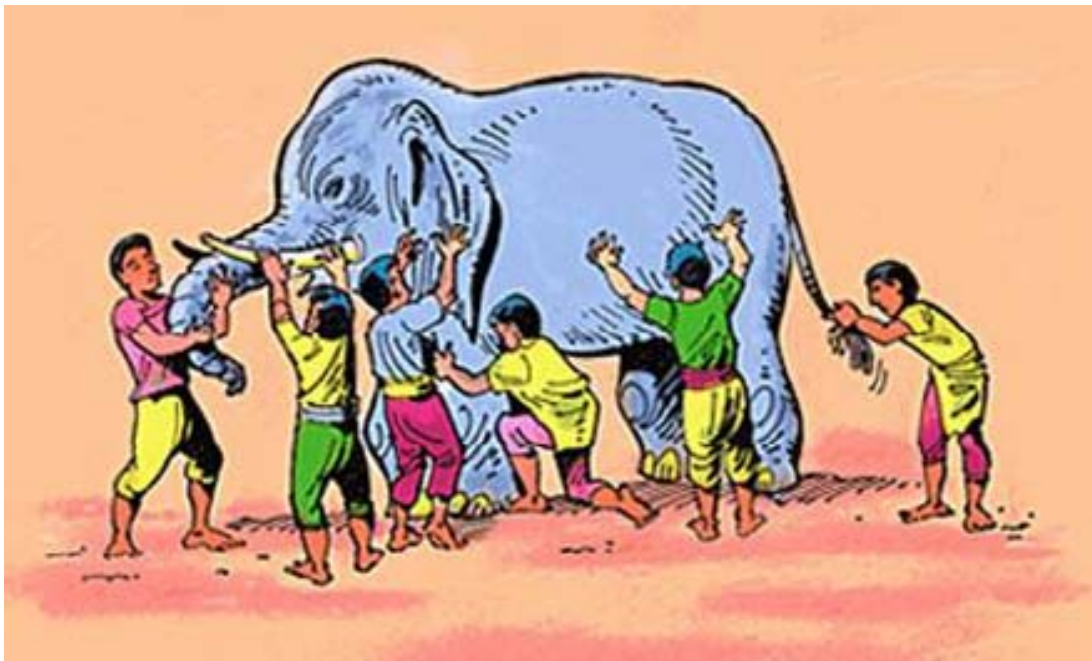
The Blind Men and the Elephant

There are various versions of the story of the blind men and the elephant. The blind men and the elephant is a legend that appears in different cultures - notably China, Africa and India - and the tale dates back thousands of years. Some versions of the story feature three blind men, others five or six, but the message is always the same. Here's a story of the six blind men and the elephant:

Six blind men were discussing exactly what they believed an elephant to be, since each had heard how strange the creature was, yet none had ever seen one before. So the blind men agreed to find an elephant and discover what the animal was really like.

It didn't take the blind men long to find an elephant at a nearby market. The first blind man approached the beast and felt the animal's firm flat side. "It seems to me that the elephant is just like a wall," he said to his friends.

The second blind man reached out and touched one of the elephant's tusks. "No, this is round and smooth and sharp - the elephant is like a spear."



Intrigued, the third blind man stepped up to the elephant and touched its trunk. "Well, I can't agree with either of you; I feel a squirming writhing thing - surely the elephant is just like a snake."

The fourth blind man was of course by now quite puzzled. So he reached out, and felt the elephant's leg. "You are all talking complete nonsense," he said, "because clearly the elephant is just like a tree."

Utterly confused, the fifth blind man stepped forward and grabbed one of the elephant's ears. "You must all be mad - an elephant is exactly like a fan."

Duly, the sixth man approached, and, holding the beast's tail, disagreed again. "It's nothing like any of your descriptions - the elephant is just like a rope."

And all six blind men continued to argue, based on their own particular experiences, as to what they thought an elephant was like. It was an argument that they were never able to resolve. Each of them was concerned only with their own idea. None of them had the full picture, and none could see any of the other's point of view. Each man saw the elephant as something quite different, and while in part each blind man was right, none was wholly correct.

There is never just one way to look at something - there are always different perspectives, meanings, and perceptions, depending on who is looking. ■

Electricity Availability Across the States

Name of the state	2004-05		2005-06		2006-07		2007-08	
	Electricity available in the state	% T & D losses	Electricity available in the state	% T & D losses	Electricity available in the state	% T & D losses	Electricity available in the state	% T & D losses
Andhra Pradesh	51,309.12	23.96	49,821.81	20.06	56,389.79	18.65	63,047.51	22.50
Arunachal Pradesh	406.31	42.96	321.13	49.72	323.14	57.79	516.81	67.20
Assam	3,862.02	51.76	3,692.37	40.34	3,883.71	33.69	4,143.77	38.60
Bihar	6,493.58	38.88	7,178.88	43.96	7,756.12	50.67	8,579.86	48.79
Chandigarh	1,318.68	30.37	1,438.49	31.64	1,421.49	25.13	1,581.06	23.77
Chhattisgarh	11,770.16	28.06	12,746.84	31.06	13,823.62	31.71	15,116.27	29.79
Delhi	23,525.58	45.40	26,119.80	42.22	21,906.73	33.00	22,883.89	28.65
Gujarat	53,410.68	30.43	51,451.72	27.91	54,269.62	24.87	60,301.67	26.64
Haryana	20,402.93	32.11	22,198.74	30.51	24,969.46	33.35	27,185.11	32.83
Himachal Pradesh	5,78.37	28.90	4,668.00	23.55	5,306.45	19.77	6,046.07	16.98
Jammu & Kashmir	6,696.46	41.08	7,605.55	44.93	5,393.61	51.98	9,101.23	55.71
Jharkhand	11,154.10	19.62	12,773.89	26.82	14,704.79	26.21	14,819.95	23.16
Karnataka	33,523.92	26.08	36,596.94	29.77	41,425.93	25.91	41,715.51	17.93
Kerala	12,284.76	22.48	13,321.03	23.50	13,982.64	19.11	14,347.72	17.82
Madhya Pradesh	29,320.83	41.30	32,322.35	40.07	33,078.65	39.24	36,688.57	35.70
Maharashtra	82,075.33	32.40	85,870.39	31.60	91,092.15	31.64	97,389.06	30.25
Manipur	604.25	70.61	509.74	63.21	467.23	53.47	541.64	63.56
Meghalaya	1,290.49	28.35	1,212.54	40.19	1,203.99	35.34	1,432.02	37.62
Mizoram	385.53	66.14	221.21	39.19	234.78	38.18	324.10	44.63
Nagaland	354.03	48.26	353.09	58.99	346.16	54.79	411.60	55.16
Orissa	18,483.22	44.02	14,885.29	45.56	16,036.37	40.86	18,662.84	39.46
Punjab	30,564.47	25.42	33,493.09	27.56	35,956.22	26.61	38,721.15	22.82
Rajasthan	30,158.55	44.68	29,982.35	39.92	31,109.57	35.06	36,289.58	34.81
Sikkim	528.42	50.49	233.75	10.73	289.75	26.86	411.79	36.80
Tamil Nadu	51,486.68	19.28	54,729.67	18.66	62,064.03	19.54	64,403.36	17.78
Tripura	1,129.03	59.54	629.48	41.11	604.71	34.75	695.62	42.81
Uttar Pradesh	42,992.45	34.39	45,083.14	32.63	51,937.13	33.49	52,568.34	28.60
Uttarakhand	5,503.69	39.30	5,460.68	35.96	5,930.59	34.48	7,306.69	35.66
West Bengal	30,874.45	28.54	27,882.55	24.84	29,620.99	23.64	33,350.36	21.30

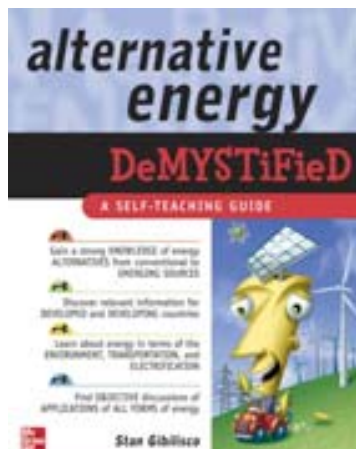
Books

Book Summary

Name: **Alternative Energy Demystified – A self teaching guide**

Author: **Stan Gibilisco**

Publisher: **The McGraw-Hill**



Alternative Energy Demystified is shortcut to a working knowledge of this timely topic. This book provides a good overview of present and future alternative energy sources. It discusses the fundamentals from wood stoves to nuclear fusion. Anyone with an interest in the subject will find the book useful and an inexpensive introduction to the subject.

As stated on the cover page, key purpose of the book is to gain a strong knowledge of energy alternatives from conventional to emerging sources, discover relevant information for developed and developing countries learn about energy in terms of environment, transportation and electrification and find objective discussions of applications of all forms of energy.

The book has 13 chapters titled as Heating with Wood, Corn, and Coal , Heating with Oil and Gas Heating and Cooling with Electricity , Passive Solar Heating , Exotic Indoor Climate-Control Methods , Conventional Propulsion, Propulsion with Methane, Propane, and Bio-fuels , Propulsion with Electricity, Hydrogen, and Fuel

Cells , Exotic Propulsion Methods, Electricity from Fossil Fuels , Electricity from Water and Wind , Electricity from Atoms and the Sun and Exotic Electrification Methods.

The chapters detail wide range of heat sources, including wood, corn, coal, oil, gas, electricity, and solar heat. Propulsion methods are discussed next, including gasoline, methane, ethanol, bio-diesel, hydrogen, fuel cells and more. Electricity from fossil fuels, water, wind, wave, atoms, and other sources. The book draws distinction between terms like energy, power, and heat. The chapters also define important terminologies like joule heat entropy, temperature, standard temperature & pressure and calories. Heating technology involved in each of these forms, various scales of measuring energy, its advantages and limitations are discussed. The book challenges the energy debate, it shows a convincing way that atomic and fossil energies are dispensable and could be replaced totally by renewable within some decades.

Content of the book is set in the background of current geopolitics centered on the cost of fuel. It provides explanations, definitions, and analysis of each alternative energy source from a technological point of view. As it discusses topics that are technical in nature, there are a few algebraic equations put forth in a very simple form. To help understand the topics discussed illustrations are appropriately used.

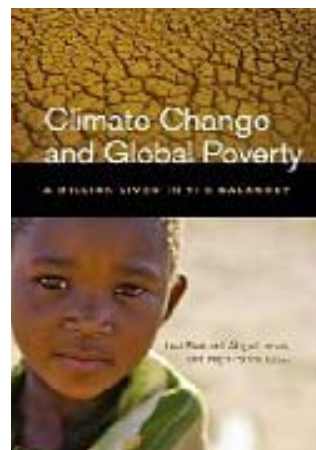
The chapters are well laid out and very practical. This is an overview book and NOT a HOW-TO book. There is a quiz at the end of each chapter to reinforce learning and pinpoint weaknesses and a final exam at the end of the book. This is followed by answers to quiz and exam questions, appendix on suggested additional reading and an Index. It can serve as a classroom supplement, tutorial aid, self-teaching guide, or home-schooling text. ■

New Books

Name: **Climate Change and Global Poverty**

Author: **Lael Brainard (Editor), Nigel Purvis (Editor), Abigail Jones (Editor)**

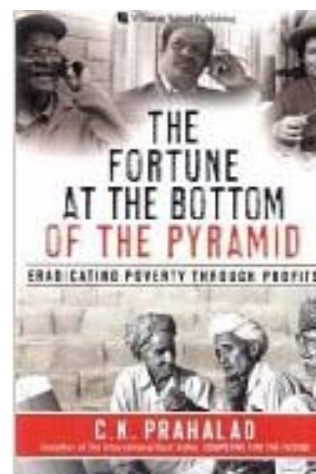
Publisher: **Brookings Institution Press**



Name: **The Fortune at the Bottom of the Pyramid**

Author: **C.K. Prahalad**

Publisher: **Wharton School Publishing**



Energy Related Schemes

Rajiv Gandhi Grameen Vidyutikaran Yojana:

Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) was launched in April 2005 by merging all ongoing schemes. Under the programme, 90% grant is provided by Govt. of India and 10% as loan by Rural Electrification Corporation (REC) to the State Governments. Rural Electrification Corporation (REC) is the nodal agency for the programme. Habitations above 100 populations are being covered under the scheme. During XI Plan, 327 projects costing Rs.16, 268 Crore have been sanctioned for electrification of 49,383 villages and for providing 162 lakh electricity connections BPL households. Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, Delhi, Goa, Lakshadweep, Puducherry are not participating in RGGVY programme.

Rajiv Gandhi Gramin LPG Vitrak (RGGLV):

“Rajiv Gandhi Gramin LPG Vitrak (RGGLV)” was launched on October 16, 2009. The Scheme aims at setting up small size LPG distribution agencies in order to increase rural penetration and to cover remote as well as low potential areas (locations having potential of 600 cylinders (refill sales) per month). The agencies under the RGGLV will be of small size requiring lesser finance/infrastructure. RGGLV distributors may be viable for around 1,500 customers in the cluster of villages being served. Age limit for the distributor is being kept as between 21 and 45 years leading to new employment opportunities for the rural youth. Under this scheme, all agencies will be in the joint name of husband and wife. In case of applicants who are single, an undertaking will be obtained that after marriage, ‘Spouse’ will automatically deem to become ‘partner’. This will be a step towards empowerment of rural womenfolk. The likely capital expenditure for setting up of a new RGGLV distributorship will be about Rs. 3.21 lakh with land measuring 20 meter X 24 meter being owned by the candidate being an essential requirement. The distributor will be able to recover the capital expenditure by the time 1,800 new LPG connections are released. The indicative net income of the distributor would be about Rs. 7,500 per month. An important feature of the scheme is that no interviews would be conducted and selection of the distributors would be by draw of lots from amongst all candidates who have secured more than 80% marks on the criteria of financial capability and educational qualifications. 25% of the locations would be reserved for SC/ST categories in the respective states. 25% reservation for the categories of Defence Personnel/Para Military Personnel/Physically Handicapped/ Outstanding Sports persons would be clubbed under one common category.

Remote Village Electrification Programme:

The objective of the Remote Village Electrification Programme (RVE) is to electrify all the remote census villages and remote hamlets of electrified census villages through non-conventional energy sources such as solar energy, small hydro power, biomass, wind energy, hybrid systems, etc. By focusing on un-electrified remote census villages and remote hamlets of electrified census villages, the Programme aims at bringing the benefits of electricity to people living in the most backward and deprived regions of the country. All un-electrified remote census villages or remote hamlets of electrified census villages, which will not be electrified by conventional means by the end of the Eleventh Plan (2012), as certified by the concerned Power Department / State Electricity Board, will be eligible for coverage under the Programme.

Test Projects on Village Energy Security:

The objective of the project is to go beyond electrification by addressing the total energy requirements for cooking, electricity, and motive provide access to electricity through renewable to households in remote villages and hamlets, which are not likely to get covered through grid extension. The test projects would be undertaken in un-electrified remote villages and hamlets that are not likely to be electrified through conventional means. The test projects would be undertaken by the Panchayats duly facilitated by implementing agencies such as DRDAs, forestry departments, NGOs, entrepreneurs, franchises, co-operatives, etc.

The test project implemented area should be remote and may include a tribal or forest-fringe village/hamlet. Have adequate availability of fallow, common on fallow, common or uncultivated non grazing land for raising plantations. Have a cohesive and progressive social structure. Have a minimum of 25 and maximum of 200 households within the village. The village should be identified in consultation with forest, tribal and rural development departments/agencies. After selection of the village / hamlet, a preliminary proposal would have to be prepared, got duly endorsed by the concerned State Nodal Agency and forwarded to the Ministry for consideration of ‘in principle’ approval. 90% of the capital cost of the test projects would be met through central grant, subject to a benchmark of Rs.20, 000/- per beneficiary household for meeting the total domestic and community energy requirements. The balance 10% towards the capital cost would have to be mobilized by the community / implementing agency / State Nodal Agency. The operation, maintenance and management costs would have to be met through user charges for the energy services provided. If it becomes critical for the sustainability of the project, financial assistance towards operation, maintenance and management costs will be provided, subject to a maximum of 10% of the capital cost per project. Evidence of serious efforts made to recover user charges would have to be provided. Professional charges @ 20% of the capital cost would be provided to the implementing agency for various services from concept to post commissioning, subject to a maximum of Rs.4.0 lakhs per village. ■

From Wage Labour to Entrepreneur

Mangamma was born and brought up in Vavilala village, Palakurthi mandal, Warangal district of Andhra Pradesh. She married to a person who belongs to the same village. This couple got three sons and one daughter. Mangamma and her husband used to work as daily wage labour to feed the family. When life was going on well, suddenly Mangamma's husband got paralysis and became unable to work. Then it became very difficult for her to feed the entire family only on her wage. She thought of migrating to a city where she can earn more income. Then one of her relatives asked her to come to Hyderabad and promised to support her in search of some work.

Mangamma followed that advice and she migrated to Hyderabad along with her husband and four children. With the help of her relative, she joined a bidi making unit where she earned a monthly income of Rs 1200. But that was not sufficient for the family to survive. So she asked her elder son to work somewhere to earn some money.

By that time he completed his class X and stopped education due to their bad financial position. He joined in a scooter mechanic shop to support his family. Even though he was earning another Rs 1000 per month it was still difficult for her to take care of all the household's needs like children's education, husband's health etc.

She started thinking continuously for a better livelihood option. Then she observed that there was no shop in her locality that sells vegetables and thought of starting a shop on her own. But the problem was the money to invest in the business. Then her husband advised her to ask her

employer in the bidi unit for a loan of Rs 5000.

Mangamma's employer was a generous person and has confidence on her. So he gave her the loan with which she started the vegetable selling business at home. Her son used to bring vegetables from the big market and her husband used to sit in the shop and sell vegetables. The vegetables selling business picked up very soon and they were able to earn a profit of Rs 100 per day. Mangamma used some of that money to repay the loans and the remaining money she started saving in Chit funds.

Seven years passed like that. In those seven years Mangamma became an expert in making bidis and learnt all the techniques of running a bidi making enterprise. She also learnt where and how to procure the raw material and where to sell the bidis etc. So she thought of starting a bidi making enterprise on her own. This time she had no need to take loan to invest in her business. She saved good amount of money and with that savings only she started that enterprise which is successfully running now.

Mangamma's son also became a good mechanic and asked her to give some money to start his own workshop some one year ago. She also encouraged her son and gave him money with which he started a workshop near their home. They have also started selling groceries in their vegetable shop which is also running successfully.

Now Mangamma's family is living very happily with the incomes from their three enterprises and all her other children are studying higher education. ■

Broken Lives

Hasty Decisions Hurts Sivaiah

Sivaiah belongs to Janagama village, Narayanapuram mandal, Nalgonda district. He has wife and two sons. Sheep rearing was his main livelihood. He had 20-30 sheep. His job was to sell buy sheep at low prices and sell them at higher prices. Along with this business he used to do cultivation in the one acre of land which he got from his father. He used to grow vegetables in that land.

As Sivaiah had so much experience in buying and selling of sheep, other people in the village also used to come and ask him to sell their sheep in the market for which he used to take a commission of Rs 100 per sheep. From all these works he used to get good amount of money to lead his family well. The only problem he had was taking the sheep for grazing in rainy seasons. But still it was not so difficult for him and their family was leading a happy life.

At that time Sivaiah observed many people in his village migrating to Hyderabad by selling properties in the village and settling over there. By seeing them he also thought of going to city. He thought that city life would be rosy all the way and he can provide good education to his children by staying in the city.

Without giving space for a second thought he got ready to

sell his land in the village to go to the city. His wife and well wishers advised him to think again. They told him that "your business is running quite well. What is the point in going to a city when you are earning enough here". But Sivaiah did not listen to anybody. He sold his land for Rs 3 lakhs and sheep for Rs 50000.

With that money Sivaiah shifted his family to Hyderabad. He joined his children in a good college. But he never thought of what he can do in a city like Hyderabad. He has only the skills of doing sheep business and doing cultivation which are not possible do in the city. He asked many people to give him some work but all his efforts are in vain. Meanwhile, the money he brought from village started melting.

Sivaiah, with no other option to work, joined as a wage labour in a construction site which is near to his house. There he used to get Rs 120 per day which was not at all sufficient to even feed the family. As he became unable to pay the house rent and children's education fees, he returned to his native village. Now he and his wife are working as daily wage labourers in their own village as they left with no money to invest in business again. ■

'Yoga'kshemam

Food Prices continue to be 'up'. Indian Poor have drifted away from food security for sure!

Comrade, veteran CPM leader, Jyothi Basu, the longest serving chief minister in any state in India, marks the end of an era! He continues to be useful even after his death. His eyes and body were donated.

Apart from Christmas (25 December), English New Year (1 January), Pongal (14 January) and Indian Republic Day (26 January), the month also allowed a few national/international days to go by – Youth Day (12 January)! World Religion Day (3rd Sunday in January - 17 January)! National Girl Child Day (24 January)! 2010 is also declared as International Year of Biodiversity, International Year of Forests and International Year of Youth!

Floods, non-timber forest produce collectors, artisans and craftsmen, vulnerable, elders, collectives, collective entrepreneurship, social entrepreneurs and social enterprises, resources and livelihoods, business plans, business plan competitions, mentors and mentees, volunteers, writers, editors, students and Gandhi, apart from climate change, energy, food, water and small governance units, continued to dominate our thinking space in this month. Amber, Elise, and Caroline are still working on a business plan for 'livelihoods'. We have also started to work on the business plan of 'L-channel'. 'Fasting' continues as a habit. 'Silence' and 'Thought Silence' – efforts are on. Practice is on.

This month has let me 'lost' in reflection. It has also reminded me that I am in mid-life. The need to define/outline the third phase of life, that may last 15-25 years, has been strongly felt. First phase was growing up into an adult. Second phase was in development action/support. What is next? Is it adjacency? Is it entirely different? Is it a combination of both? Is it a portfolio? *Surely, it has to be an offering.* It should let us flow in the flow of the universe. It would not let an opportunity filled with promise, rare and beautiful, go unfulfilled. Probably it would also help realize the full potential. When we know that we only have some skill in listening, thinking, reading, writing, and talking, this has to involve these skills and improving them significantly.

As I was in Anand for a day during the month, I remembered 'Anyway'. For many of you, it may be familiar. Anyway, I go over it!

- * *People are often unreasonable, illogical and self-centered; **love them anyway***
- * *If you do good, people may accuse you of selfish, ulterior motives; **do good anyway***
- * *If you are successful, you will win false friends and true enemies; **succeed anyway***
- * *The good you do today will be forgotten tomorrow; **do good anyway***
- * *Honesty and frankness make you vulnerable; **be honest and frank anyway***
- * *The biggest men and women with the biggest ideas can be shot down by the smallest men and women with the smallest minds; **think big anyway***

- * *People favor underdogs but follow only top dogs; **fight for a few underdogs anyway***
- * *What you spend years building may be destroyed overnight; **build anyway***
- * *People really need help but may attack you if you do help them; **help people anyway***
- * *Give the world the best you have and you'll get kicked in the teeth; **give the world the best you've anyway***

During the month, I got reinforcement - **It's when things seem worst that you mustn't quit!** When we are done, big things look small and little things look big; comparisons kill happiness; we are all we are/have now; and pursuit matters, results come. This month has also asked me to reflect on development action/support. Support builds on the current reality/situation, which is not zero, seen through the eyes of the doers. Doers have to be in driver's seat and learner's seat. The mentor plays more the role of a midwife, catalyst, and facilitator to build learning capacity in the learner-doers.

In the confluence of the souls, and through the gentle flows of universe, **the sun 'traversing' north** reinforces the need to listen to your innermost, however feeble it may be. It will ensure you reach glorious climactic expression, rasayogamritam. Be alert always and continue to sharpen the antenna. Forget not to surrender and be its instrument, useful and open instrument.

Can we be this? **Yes, if we pursue Atma Yoga.** The focus is on being fully involved. This begins with – being interested and focused; listening and observing; stopping going on and on; having and communicating faith in full; being positive; being silent; and using body language. Getting rid of ego, ready to serve and become a good follower follows. Being connected, performing to ability even under extreme odds, doing little more, and let the world realize their potential are the next things. This would mean sharing. This would mean being a river, not a reservoir. Being involved for its own sake in the act, with the mind, heart and body, is the way forward. That is Atma Yoga, Atma Yogi in relentless pursuit of rasayogamritam! An entrepreneur working with the Guru, exploring, tossing, expressing, discovering, and acquiring capacity for effective action!

Krishna confirms, playing flute in raas with Radha, seeking yoga in whatever dimension(s) we are capable and ready, universe knows how to make us ready in rest of the dimensions. For him, criticality is total involvement and complete devotion. Then, universe will take charge and grant silence, peace and flow with its free and natural flows. Forever 'lost'!

Krishna reveals: think of and reflect on the soul of universe, be devoted to it, serve it, spread this message; then joyous bliss is yours.

Join us in the world of yoga – yoga of capacity for effective action, action and devotion in all dimensions of our being towards being useful to life as it guides and innermost rasayogamritasiddhi in every minute of life. You will not regret it. ■



60 Years of Indian Republic?!?