

Information sought by NZSSES

**Last Name: MISRA
Middle Name: KUMAR
First Name: ARUP
(Read as ARUP KUMAR MISRA)**

**Assistant Professor
Department of Chemical Engineering
Assam Engineering College
Guwahati-781013, Assam, India**

**Telephone: 00-91-361-2674128(0)
00-91-361-2571213 ®
Fax: 00-91-361-2572215
00-91-361-2668475**

**E-mail: 1. misak62@hotmail.com
2. arupmisra1962@yahoo.co.in**

**Title of Paper:
NETWORKING YOUNG INDIA FOR SUSTAINABLE DEVELOPMENT**

(No co-author is there)

Intended Category: Philosophy, Policy and Practices

NETWORKING YOUNG INDIA FOR SUSTAINABLE DEVELOPMENT

Arup Kumar Misra
Assistant Professor of Chemical Engineering
Assam Engineering College
Guwahati-781013, Assam, India

Prologue:

- A small book on hazards of chemical pesticides written by a frail American lady in 1962 transformed millions of hearts throughout the world. At an impressionable age during school days, I borrowed the book from a friend and read it number of times. Most of the discussion on chemical reactions was incomprehensible to a schoolboy, but the focal theme of “ecological integrity” got permanently imprinted in my mind. “The Silent Spring” by Rachel Carson has largely motivated me to do what I am doing today.
- Much later in 1998, I read with tearful eyes, a biographical sketch of the great agro-scientist George Washington Carver, the son of an Afro-American slave of Missouri, who revolutionized agriculture in the South and liberated people from disastrous consequences of mono cropping. Carver’s life and exploits would challenge any work of fiction.
- Over and above, as a proud Indian, the life and teachings of Mahatma Gandhi, one of the greatest priests of non-violence of the last Century, has probably never ceased to influence me. My interest on anything related to sustainability science and engineering must have grown out of his innumerable essays on the subject.
- Sustainable development and green engineering are emerging fields, and we are expected to play pivotal roles in translating the concepts into reality. Challenges in a developing country like India are manifold compared to the developed world. But, with the tremendous psychic energy and spirit of overcoming adversities the Indians possess, this country would finally emerge out of all its problems. Efforts are already on, at different levels, towards achieving sustainability.

Introduction:

“Sustainable” and “Development” are individually two simple words. But when they combine, they represent the single largest challenge to our collective creativity and intellectual spirit. It seeks to maintain our present rate of development whilst leaving suitable resources behind for the future generations to continue to develop. It is all about integrating the environment, society, economy, and their interactions. When we say

society; the intrinsic feelings like happiness, well-being, camaraderie, culture, religion, ethics, all play significant roles. They do not necessarily stem out of financial growth or economy. Unfortunately, ignoring these higher-order social needs, the world in the latter part of the 20th Century acted towards achieving maximum economic development. Standards of living went up, modern gadgets were invented in geometric progression, and we marched towards a hi-tech global village. In the process, the environment suffered. “Sustainable development” revolution is trying to erase the past mistakes and guide the future without compromising with the life we enjoy today. The path to sustainability is full of hurdles and the very definition is subjected to multiple interpretations.

India has its own strengths and weaknesses like any other country in the world. If we allow “ecocentric” views to prevail here, then about 400 million poor Indians would never be pulled up to a decent status of livelihood. On the contrary, if “technocentric” views take over, then man will continue to control nature till all citizens achieve respectability, but environmental problems would multiply simultaneously beyond control. Which country can allow its babies to die before attaining the age of five or watch silently its children to be illiterate and undernourished? Which parents would like to put their children in factories to earn bread for the elders? Which Government would not like to provide good roads, pure drinking water, enough food, and employment to the citizens? But, as of today, it is an insurmountable task in an over-populated country like India. Indians are theoretically conversant with the best ecological traditions and environmental practices ever known to mankind; but are trapped in a dilemma of playing with “big numbers”. Therefore, the massive efforts of Indians in all sectors of “sustainability science and engineering” appear insignificant most of the time. Indian logic has to struggle hard for striking a sympathetic chord in International Conferences and Seminars.

This paper would like to highlight some of the initiatives taken in India, with special reference to a National Youth Network, called VIPNET; striving basically to ensure sustainable education and development leading to a sustainable society. An overview of certain national and international trends, with their direct or indirect consequences on the Indian scenario, is also presented. It would be easier to comprehend the sustainability status of the country with a few “scenarios” before going for the case studies.

Some Dominant Scenarios of India:

1. In 2001-02 India imported petroleum products worth Rs.700, 000 million (US \$ 15,550 million) (*Airy, 2000*). The demand of petroleum products is increasing by 7-8% annually, thereby further increasing the imports and jeopardizing the security of the country.
2. 65% of the rural households in India do not have electricity even after 57 years of independence (*Rural Energy—India Country Gateway*). We have a shortfall of

15,000 MW power and the Government does not have resources to install the additional capacity. This is the prime reason of industrial backwardness.

3. Between 1950 and 1995, Government of India spent Rs.500, 000 million (US \$ 11,110 million) on surface irrigation and water storage facilities. Only 50% of these are in service now, creating unimaginable crises of drinking water and crop damage. To mitigate this problem, inorganic fertilizers and pesticides have been extensively used; when developed countries have banned most of them (*Vohra, 1996*).
4. We have an exploding population, adding an Australia every year to the Country. Needless to mention, unemployment and corruption have engulfed us due to this unmanageable population.
5. Almost a thousand people died in Delhi (Capital of India) & Surat (12th largest City, known as Manchester of India) in 1996 and 1994 respectively due to dengue fever and plague. Extremely unhygienic conditions, filth of garbage and municipal waste created these epidemics. Tourists stayed away for years, foreign companies stopped investment (*Shah, 1999*); at some level poverty increased.
6. Insurgency and secessionist tendencies are on the rise. When a mosque in Ayodhya in Uttar Pradesh was demolished in 06 December 1992, about 2000 km away in Mumbai, India's commercial capital, 400 people lost lives in communal violence. Poverty, unemployment and resulting tensions are primarily responsible for such tragic incidents.
7. India is most unwillingly compelled to spend almost 6-8% of its GNP on medical costs related to declining environment (*Kumar, 1997*). This is a colossal amount. No less than 52,000 babies die in Indian cities every year before attaining the age of 5. Annually 25 million hospitalizations occur due to asthma and bronchitis, costing the exchequer Rs.46, 000 million (US \$ 1020 million).

Genesis of Unsustainability:

A highly sustainable ancient civilization like India, which provided beacons of light and wisdom to the West, has turned unsustainable. Mismanagement of resources and rampant corruption at all levels are two major causes pointed out by everyone in this context. But the genesis of the problems lies beyond these and on many other factors.

Let me start with a simple hypothesis. Human settled in villages with agriculture as the vocation in the post-cave-man era. Needs were adequately supplemented by hunting and gathering. Then came an urge for social order and discipline. So religion was born. Religious leaders felt the necessity of an exclusive environment to preach and propagate their tenets. Towns and cities were built. As anticipated, religion gave birth to education, trade & commerce, and finally industrialization. Construction of

good houses, roads, bridges, other civic amenities became imperative. This in turn, created desire among the rural population to move onto the civilized quarters. Migration from villages started in the form of cheap, skilled & semi-skilled labours. Developed countries experienced and contained this trend earlier; India is still experiencing it. Of course, the rate has apparently declined in the past two decades after steep rise. To give an idea, during 1971-81, 19.73 million people migrated from villages to urban centers. This declined to 12.73 million during 1981-91 (www.censusindia.net/annual.html). The recent data was not available, but there are number of reasons to believe that the rate is falling. Automation and computerization of industries & factories has definitely cut down manpower requirements. Labour-intensive production mechanism has made for capital-intensive processes. Even, washing machines, dishwashers, vacuum cleaners, etc are challenging domestic help and part-time maids. Interestingly, the earlier process of predatory migration has been gradually substituted by a symbiotic migration. Nevertheless, the insular rural societies became very vulnerable to rapidly changing urban influences. Half-baked ideas percolated deep into peoples' psyche, and a weak rural-urban interface got established. Due to myopic planning and lack of futuristic projections, the problems have assumed mammoth proportions. India has realized now the need to push forward drastic measures to arrest the decay. One such model or vision, which was ignored earlier but has been strongly advocated today, is the Gandhian Vision.

Gandhian Approach of Sustainability: The Missed Bus.

Western countries initially followed a path of centralized development in terms of energy production, creation of megacities with modern facilities, to name a few. Soon they shunned this model because of inherent loopholes. Unfortunately India is still a staunch follower of this model. This model has led to high degree of unemployment, poor quality of life and large-scale exodus of people to the cities. Exodus occurred not because people wanted to come and enjoy city life at the expense of their ancestral homes back in the villages; but because agriculture and land reforms failed in rural set-up. Farmers lost everything and were compelled to seek alternate means of survival. Indian scholars strongly believe that the Indian Government did not adopt the decentralized model of development given to us long back by the "Father of the Nation" Mahatma Gandhi.

Gandhi took leadership of the freedom movement after his return from South Africa in 1915. His aim was to free India from the British; but he never considered it as the only goal. Gandhi started motivating Indians for all types of vocation and skills, entire range of activities necessary to run the country after freedom, and published his thoughts extensively through his magazines called "Young India" and "The Harijan". He forecast long back that failure of agriculture and village systems would give rise to poverty and exodus, which would be the biggest curse for the country (<http://meadev.nic.in/Gandhi/ecology.htm>).

Gandhi also personally laid down an example of "simple living, high thinking." It necessitates for less greed and wants. He demonstrated a rare quality of spiritual thoughts, which is now accepted by the entire world as a "necessary and sufficient condition" for sustainable development. Bruntland Commission Report narrated the

gloomy scenes in 1987; but Gandhi wrote in 1929—“ It is an arrogant assumption that human beings are lords and masters of the lower creatures. On the contrary, being endowed with greater things in life, they are trustees of the lower animal kingdom.” In another piece of writing he expressed-- “ The incessant search for material comforts and their multiplication is evil. I am bold enough to say that the Europeans will have to remodel their outlook. If they are not to perish under the weight of their comforts, a time is coming when those will retrace their steps and say...what have we done?”

Gandhi’s decentralized planning and implementation schemes have once again been pulled out of shelves. Indian Government has given ample powers to the local authorities and democratically elected bodies have started functioning in the entire country. But sustainability does not come from political actions alone. It has to be backed up by social, economic, intellectual and industrial reforms.

Looking for a Universally Applicable Definition:

“Sustainability” has been interpreted by experts in various contexts over a wide range of endeavours. Perhaps a precise universally acceptable meaning is still elusive. Intuitively, sustainability seems to stress the need to view environmental protection and continuing economic growth as mutually compatible, not conflicting aspects. In practice, this is the biggest challenge for developing countries. Who will decide what is acceptable to all and how much development to do? Where can we draw a line to balance economic prosperity and environmental protection? Are the principles valid in the United States of America also applicable to the South Asian countries, for example?

South Asia is characterized by high population growth and load, uneven socio-economic population distribution, systemic failure to provide basic human needs, and therefore a vicious cycle of “poverty-population growth-environmental degradation-more poverty-more misery-more violence-poverty”. Are we addressing to these problems in their correct perspective?

We have had many International Summits since Rio. The first Summit at Rio de Janeiro, in 1992, gave us insights into the issues of sustainable development. Following that we have had The Population Summit in 1995 at Cairo, The Social Summit in 1995 at Copenhagen, The Women’s Conference in 1995 at Beijing, The Habitat II Conference in 1996 at Istanbul, The Millennium Summit in 2000 at New York, and lastly The World Summit on Sustainable Development in 2002 at Johannesburg. Every Summit promised a lot for the humanity. Yet, conditions at ground remain much the same in the developing countries (*Ghosh, 2002*). Environmental degradation continues, inequalities widening, material lives becoming more fragile and insecure. The Johannesburg Summit defined its key objective as “to reinvigorate political commitment to sustainable development.” Was there enough political commitment from those who matters?

World consumption patterns portray an opposite picture. The aggressive stand of a few developed countries and refusal to sign even the Kyoto Protocol are indirectly promoting differences and creating frustration in the developing world. Unregulated capitalism, free trade and investment agenda are being used by the rich as synonyms

of Sustainable Development. What progress has been made with the “polluter pays” principle? Recent surveys have shown that citizens in the USA and other developed countries are themselves dubbing the present paradigm shifts as unsustainable. A large section of Americans want the Government to cut the multinational corporations to size. The entire world is looking towards the protagonists of sustainable development for some concrete action.

India has initiated some of these actions in different forms and modules, through various agencies. In spite of many conflicts and contradictions, these programs are heading towards at least “partially” successful goals. Popular S&T programs are found to be a major success story in Indian context.

Popular S&T Programs for Sustainable Development:

Indian science & technology traditions are very ancient. Contributions of Indian scholars and scientists in mathematics, astronomy, medicine, material science are internationally acclaimed. But, sudden slump started from the medieval times when it was repeatedly invaded by foreign powers, finally colonized by the British for 200 years till 1947. Not only the social fabric got torn; the common man lost all spirit to pursue a healthy life after these onslaughts.

“Sustainability” demands awareness of the community, scientific temperament in every individual and rational outlook of the society. Literacy is the driving force in the process. India’s literacy rate as per the Census Report of 2001 is rising, but still about 38% people are illiterate. In this direction, there has been a strong national awakening in India after independence.

In the mid-Sixties, an NGO called Kerala Sashtra Sahitya Parishad, in the Southern State of Kerala, utilized folk-media and folk-forms to propagate the message of science and literacy among the people. The project was a resounding success. Kerala is presently 100% literate State. The Government at the Central and Provincial levels recognized this initiative and started adopting contact programs for literacy, for science & technology, for health & sanitation, for population control, with various target groups, especially for the school children. The official agencies responsible for these programs are:

- 1. Ministry of Human Resource Development (MHRD): The National Council of Science Museums (NCSM), The National Council of Educational Research & Training (NCERT), The All India Council of Technical Education (AICTE), The University Grants Commission (UGC).**

The NCSM runs science museums, science centers, children science parks, and hobby clubs, besides organizing National Science Seminars every year on some central theme. Popular lectures, workshops and training for skills, lecdems are extremely potent in motivating children towards scientific pursuits.

NCERT is entrusted upon the mantle of designing and implementing school curricula in the country. But as extra-mural activity, this organization holds science exhibitions and develops kits & teaching aids for the teachers. UGC directs the higher secondary and

tertiary education of India. To reach a larger base, it has been, for last four decades, promoting extension and continuing education modules. The use of audio-visual media is another remarkable feature of UGC. AICTE looks after the technical education needs of the country. Responding to the needs of spreading education to the grass-root level, this Council has done its bit by involving community in development scenario. World Bank has recently adopted a large number of modules developed in India for dissemination in the developing world.

2. **Ministry of Information & Broadcasting:** The various organs of this Ministry are: All India Radio, Doordarshan (the Government television channels), Films Division, Directorate of Visual Publicity, Press Information Bureau, Indian Institute of Mass Communication, Song & Drama Division, Film and Television Institute of India, Directorate of Field Publicity.
3. **Ministry of Science & Technology:** The Department of Science & Technology (DST), Vigyan Prasar (meaning spread of science), 13 other autonomous bodies.
4. **Department of Scientific & Industrial Research (DSIR):** Council of Scientific & Industrial Research, 40 National Laboratories in diversified areas.
5. **Ministry of Non-conventional Energy Sources:** promotes alternate sources
6. **Ministry of Health & Family Welfare**
7. **Ministry of Information Technology:** networking IT centers, cells
8. **Ministry of Agriculture:** biological means, alternative techniques
9. **Ministry of Environment & Forest:** protection, conservation, joint action
10. **Departments of Biotechnology, Space, Atomic Energy, Ocean Development.**

VIPNET: Sustainable Networking Panorama.

The Department of Science & Technology, Government of India established Vigyan Prasar, in 1991 to take up large-scale science popularization work in this vast country. It has been able to sufficiently fulfill the aspirations of people through a multi-pronged approach of publishing printed and electronic software, holding seminars & conferences, organizing awareness campaigns, catalyzing radio & television productions, and other need-based thematic programs. VIPNET, an acronym for Vigyan Prasar NETWORK, was added as a new project of Vigyan Prasar in 1998. It provided, for the first time in the country, an opportunity to obscure and remote children and youth in India to become an integral part of a countrywide NETWORK and contribute to its growth as equal partner. Excitement was palpable in every part of India.

The fundamental objective of VIPNET was to weave all science clubs, societies, organizations, and voluntary bodies, either existing or going to be formed, together to achieve the goals of sustainable development. Strengthening popular science movement was no doubt an objective in the mindset of the protagonists, but the ultimate motto of

sustainability was uppermost in the project. There was a need to intervene and reverse the trends of unsustainable growth in the country.

An active and fully functional organization in any part of the country, without any discrimination of caste, creed, ideology, religion or language, could apply for registration to VIPNET. It was assured that no unit would lose its identity or flexibility by joining the Network. No registration fee was charged for the entire process. Starting from May 1998, in a slow but steady way, the VIPNET grew from strength to strength. The membership touched 2000 mark in December 2000, rose to 4000 in December 2002, and now stands at about 6000 in March 2004. These numbers may be trivial in the Indian context with about 400 million children and youth in the school or college going age; but if one considers the geographical and demographic aspects, VIPNET has achieved a remarkable degree of success, which no other similar efforts could achieve earlier in India.

VIPNET started its activities by motivating the members to celebrate some of the National and International events in their true spirit. Background material and software were provided to observe National Science Day (28 February), National Safety Day (04 March), National Immunization Day (16 March), World Disabled Day (19 March), World Forestry Day (21 March), World Health Day (07 April), World Earth Day (22 April), International Energy Day (03 May), National Technology Day (11 May), World Telecom Day (17 May), World No-tobacco Day (31 May), World Environment Day (05 June), World Population Day (11 July), International Literacy Day (08 September), World Habitat Day (07 October), World Food Day (16 October), World AIDS Day (01 December), and National Energy Conservation Day (14 December) in the first phase. These are not merely some one-day celebrations done under duress from the Central Office; the clubs generated prolonged awareness campaigns and sensitized the children in their own way taking help of these events. Almost 75% of the 6000 VIPNET clubs are constantly reporting about their success stories woven around these events.

Science clubs have been playing a key role in most of the places of India, both as intra-mural and extra-mural activities. Some of the exemplary works of these units are adequately documented in published literature. Science clubs were opened in schools and out of schools by many National and International agencies like Ministry of Environment & Forest, Ministry of Human Resource Development, Ministry of Science & Technology, National Council of Science Museums, UNICEF, UNESCO, etc. A survey carried out by the author put this number at about 5000, too inadequate for a country with one billion plus people.

VIPNET has been able to create a tremendous impact in society due to a very novel approach. Programs were never imposed on the clubs. Doling out financial grants has also been discouraged. It was strongly felt that interaction through ideas & opinions, motivation by success stories, and academic guidance to the members would be a better approach. Till now, in the last 6 years, about 100 workshops and training programs have been organized for the VIPNET clubs, in clusters, to motivate the children and involve the youth in forming self-help groups. Incentives are also provided to the member organizations to generate their resources through sale of Vigyan Prasar books, kits,

software, etc. in local areas. Experiences of providing abundant money to such organizations have shown that they create negative impact and breed corruption.

VIPNET provides liberal support (*VIPNET Booklet, 1998*) in the form of:

- Free subscription to VIPNET NEWS, a monthly newsletter, published since December 1998.
- Free subscription to DREAM 2047, the bilingual Vigyan Prasar Newsletter, published since July 1998.
- Free books on popular science & technology, health & sanitation, medical & agricultural sciences, from time to time.
- A dedicated website for the members to exchange news, views, clippings, activity reports and writings.
- Free participation in an array of programs like Nature Camps, Ham Radio, Origami, Root & Shoot, Puppetry for Communication, Hydroponics, Telescope Making, Sky Watching, Science Behind Miracles, Rocketry, Science Writing, Small-scale Publishing, etc.
- Easy access to some of the established and highly sought after programs like National Children's Science Congress (continuing since 1993), Science Exhibitions, Camps, etc.

Impact of VIPNET:

Before I discuss about the role VIPNET has played in the last six years, I would like to mention a few recent reforms in the country and their impact.

1. A central scheme called "Improving Science Education in Schools" was started in 1987-88, which provided science kits to upper primary classes, upgraded science laboratories and libraries in higher classes and provided training to science teachers.
2. "Environmental Orientation to School Education" was initiated in 1988-89. Review and development of curricula were done to make "green syllabi" for science, social studies, literature and moral science courses. Lots of kits, teaching aids, manuals were produced.
3. Since 1993-94 "Computer Literacy and Studies in Schools" project is continuing. It is giving a boost to "demystify" computers and provide hands-on-experience to young school children, and opening up a whole range of opportunities in IT.
4. The Hon'ble Supreme Court of India has given strict orders to all States and Union Territories to implement "Environmental & Sustainability Studies" in schools immediately from 2003.
5. The Director General of Council of Scientific & Industrial Research (India) in his Presidential Address of the 87th Indian Science Congress at Pune (03 January 2000) delineated a Panchasheel (five principles) Policy for the country:

- a) Child-centered education,
- b) Woman-centered family,
- c) Human-centered development,
- d) Knowledge-centered society, and
- e) Innovation-centered India.

It is an irony that so many projects and catchy slogans have not seen us through the troubled times. Impact has been insignificant in most of the places due to certain genetic disorders. Government projects usually cannot usher in desirable results because they mostly do not address to the issues of economic development, social equity and justice. They also have failed to spark entrepreneurial qualities among the youth. Individually every project looks fantastic, but due to its stand-alone nature, it suffers from serious limitations to operate in such a diverse society like India with a massive target group. That's where networking makes a difference. Synergistic efforts of all initiatives would play a larger and positive role in sustainable development. VIPNET proposed this approach. Still, it is not the panacea for all problems, but people would accept such "models" as their own with lesser resistance. Too much of regulations and monitoring from the top have yielded negative results in the past. Mistrust and apprehensions are also many when something new is proposed. So it needs enough time to bridge the existing barriers.

VIPNET & Sustainability:

1. There is a small village called Kempty in Uttaranchal State, nestled in the majestic Himalayas with a mind-blowing beauty. The Kempty falls is a large water stream rushing and gurgling down the mountains to emerge at the village cliff, which has been visited by tourists since time immemorial. Rich tourists travel through their own cars from Delhi, Chandigarh, Dehradun, and other urban centers of the country with bag-full of eatables, mineral water bottles, and other picnicking accessories. They spend a few hours in the falls taking bath, photographs and leave the place after dumping all their organic and inorganic wastes nearby. Kempty is a delight for tourists; not a passion like the locals. In due course of time, the carrying capacity of the township got exceeded. Plastics and rubbish created severe pollution, water discharge got impaired, and aesthetics got badly affected. The local VIPNET units requested us for a solution. We immediately organized a two-day workshop to unite and sensitize the innocent hill tribes. It was the first exercise carried out to address to such problems after 53 years of independence in June 2000. A "Save Kempty" campaign was launched, strict laws were enacted by the members, local shops were relocated at a distance, cars were stopped 1 km before the falls, and tourists compelled to carry back their waste generated. Today Kempty looks much better.
2. Ratlam is a backward district in Madhya Pradesh, the largest State in India in terms of geographical area. VIPNET targeted this district to motivate the young people to take up developmental activities and modern agricultural practices. The programs of VIPNET spread out like wildfire. Drinking water sources were purified and recharged, small irrigation facilities created, school dropouts reduced, and masses got a big impetus to seek for their rights. After this success,

- UN bodies like UNESCO and UNICEF adopted Ratlam for their work. VIPNET provided a skilled workforce and motivated leadership.
3. In a remote and impoverished district known as Kandhamal, in the coastal State of Orissa, VIPNET mobilized support and created awareness to stop social malpractices and rampant superstitions. By adopting crop rotation techniques, multiple cropping instead of monoculture in a piece of land, by harnessing the rich forests in the hills, the plight of the tribal people there could be changed. VIPNET garnered support of Government and NGOs to launch a big project and the networking is working fine in the last three years.

There are many more success stories in the micro and macro levels. VIPNET works in diverse situations with an extremely open policy. Use of pedagogical approach is discouraged unless situation demands. Children and youth are encouraged to do the activities themselves for experiential learning. The beneficiaries are expected to realize their problems; then approach for assistance. Unwanted help or sermons bear reverse impact in India due to widespread suspicion and complacency. An overall desire should be created among the people towards emancipation. Since VIPNET does not go for funding, it establishes linkages between its units and development & funding agencies. Sustainable relationship builds the foundation for sustainable development.

VIPNET Plays Major Role in Government Projects:

VIPNET units have taken up many need-based independent projects. They are also training up the members to handle other projects carried out by different agencies. Many government organizations have sought the help of these units to conduct programs in a smooth manner. Two such projects, where indirectly this Network is behind the scene in many States, are briefly discussed below.

Case Study 1: Joint Forest Management (JFM)

The Governments have managed Indian forests as State property. Sensitive and rare forests are put under the different categories of Reserved Forests, Sanctuaries, and National Parks. The Ministry of Environment & Forest, at the national level, and provincial departments in the 36 States and Union Territories make laws and bye-laws to protect these rich assets. Villagers residing on the fringe areas of the forests have just been silent spectators although they have lived in perfect harmony with nature. Collecting fodder and firewood, grazing the cattle and picking up few forest products are all they do inside the forests. But a centralized model of management gave rise to large-scale corruption in the Government departments. Forest officials and contractors literally plundered them by felling trees, exporting timber and even clearing patches to rehabilitate migrants for political motives. Simmering conflict took a turn of violent clashes, protests as soon as local interests were sacrificed. A new strategy became imperative.

In 1988, Government mooted a new forest policy and proposed the Joint Forest Management (JFM). It envisaged to offer land rights to the tribal and indigenous people near the forests (*Percy, 1991*). Focus shifted towards ecological necessity and

resources for the locals. This gave a new lease of life to the forests. Once the people got the land rights, their love and commitment towards the forests reappeared. Everywhere in the country, Van Suraksha Samiti (VSS), meaning Forest Protection Committee, were formed. The local people, the science clubs, school children and our network contributed significantly in bringing about the change.

The World Bank commended (*World Bank, 1998*) Indian JFM Model as

1. A catalyst for natural regeneration,
2. A means of protection from fires, grazing, and plunder,
3. A means of local livelihood sustenance, benefit to the protectors,
4. A strong link between rural development & forest conservation.

Case 2: Population Control

In 1999 India became the second country after China to cross the one billion-population milestone. Sensible people in the society did not know whether to celebrate or mourn this achievement. Per capita land holding in India in 1960 was 0.21 hectare, which dropped to 0.11 hectare in 1999 (<http://www.worldwatch.org/alerts/990813.html>). It is projected to touch one-tenth of this in another 50 years. Food production, water, civic amenities, transport, housing, employment, in fact anything one can perceive is constantly getting diminished due to the denominator getting bigger and bigger with the same numerator.

Since 1950's India launched the family planning programs. An astronomical sum has been invested in creating awareness, sterilization, free distribution of contraceptives and supporting a huge manpower to all these. But silently the 430 million in 1960 touched 1014 million in 2000 (<http://www.library.uu.nl/populstat/Asia/indiac.htm>). Where did we go wrong?

People of India, especially the illiterate and ignorant class, were never taken into confidence before launching the campaigns. A strong reason of failure was the attempt for forced sterilization. After all, no one would allow himself or herself to be treated as an animal. NGOs and voluntary efforts once again raised above their differences to find out a path.

In 1994, the Government tabled a New Population Plan. Reproductive health, access to a range of contraception methods, training and education on sex, mandatory registration of birth, death and marriage were effectively incorporated with this Plan. Instead of applying punitive measures, people were motivated to follow what we wanted to achieve. Age of marriage for girls below 18 and boys below 21 are followed by almost all, barring some communities on religious ground. Our VIPNET units have played an extremely significant role in bringing about the transformation. Since 80% of these units are located in the rural areas, they are suitably placed and trained up to tackle the most vulnerable class of society.

Conclusion

- Nature can never be managed well unless the people closest to it are involved in its management. Common natural resources were earlier regulated through diverse, decentralized, community control systems. India had 544 princely States and Kingdoms before it wrested back freedom and power from the British in 1947. These States had a long martial history for boundaries, power and beautiful women. But the natural resources were managed locally to everyone's satisfaction. Indian Constitution and our own Government reorganized the States after independence and now we have 36 States and Union Territories for 1.2 billion people. The State Policy of converting common property and resources into Government resources put them under the centralized control of bureaucrats and political leaders. Power brokers isolated the common people from all major decision-making processes. This unsustainable practice is one of the biggest impediments to India's development.
- It is high time we restrict the MNCs and Corporate houses from using "sustainability mantra" and hijack the development process. Are we aware that 1.2 billion people earn less than \$1 per day, and 3 billion earn less than \$2 per day? The people in the first category would take 109 years to earn the amount what French Football star Zinedine Zidane is earning per day (www.infochangeindia.org/features67print.jsp). For whom do we talk about sustainable development?
- Globalization has many merits. We are directly or indirectly benefited by it. It's very good to be part of this community. Making best use of it, we must create a universal social consciousness to thrash out the problems and iron out the rough edges. By the word "we" in the preceding sentence, I mean the common people; not just politicians, UN experts, bureaucrats or administrators of big corporations.
- Professional bodies like the organizer of this Conference, The New Zealand Society for Sustainability Engineering and Science, have a significant role to play. It is the role of networking like-minded individuals to form many "Pressure Groups" throughout the globe. Working together for a cause like this has great advantages and power. India has a number of cases, where an individual or a group of them, have rocked the governments, stalled mega-projects and amassed huge gatherings to protest wrong decisions. We don't have many such international forums.
- Personal experience of working with Indian children and youth for 13 years has shown that after some initial resistance, changes do occur. One has to demonstrate in every conceivable way that "intended actions" are for "their welfare", not for "our welfare". Support, participation, funds, and goodwill will naturally follow. A die-hard optimist, I fully believe that sustainability is possible. The facts & figures given above with reference to my country might have portrayed a gloomy picture to you. They are going to be reversed. But since sustainability is a global issue, we want to fight the "Indian Rescue War" with the support of all of you from all countries, not alone. Helping India and China to become Sustainable would solve about two-fifth of the problems of humanity. It would benefit mankind.

Reference List:

1. Airy, Anupama., *Indian Express*, 01 September 2000
2. Ghosh, Jayati., www.networkideas.org/themes/privatisation/aug2002
3. <http://www.worldwatch.org/alerts/990813.htm>
4. <http://www.library.uu.nl/wesp/populstat/Asia/indiac.htm>
5. <http://www.censusindia.net/annual.html>
6. <http://www.infochangeindia.org/features67print.jsp>
7. <http://meadev.nic.in/Gandhi/ecology.htm>
8. Kumar, Priti., *Down to Earth*, 1997, Vol. 6, p. 29-43
9. Percy, Steve. "Villagers Will Have a Stake in Indian Forests", *New Scientist*, Vol.13, No.1770(1991):16
10. RuralEnergy—IndiaCountryGateway, Energy/overview/RuralenergyinIndia.htm
11. Shah, G., *Economic and Political Weekly*, Vol XXIX, pp. 2671-2676
12. VIPNET Booklet, *Vigyan Prasara*, New Delhi-16, September 1998, p.1-18
13. Vohra, B B., RGICS Paper 35, Rajiv Gandhi Foundation, New Delhi, 1996, p.46
14. World Bank, 1998. *World Bank Project Brief*, New York, NY, Oxford University Press.