

# Nation Building, IITians and Happiness

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# Talk structure

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- What is nation building?
- How IITians can help in this process?
- Philosophy and technological challenges in nation building
- NARI's solutions
- How we can become happy by helping others – essence of Nation Building

# What is nation building ?

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- ◆ All life forms want a comfortable and happy life. In case of human beings it is a sum of 2 things; personal happiness and better environment.
- ◆ Personal happiness can be obtained from variety of ways. We will talk about it later.
- ◆ Environmental improvement is what I call nation building. It is the enabling environment which makes you feel happy to live in, work in and just be a part of it. This environmental happiness also gives us a sense of belonging, makes us feel proud and gives us a sense of ownership.
- ◆ Our pride should be genuine and not out of insecurity.
- ◆ For environmental happiness and nation building we need excellent young technologists like you.

# How can IITians help in nation building ?

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- ◆ First accept that whatever we are today is because of the country and society. Hence we should give something back to the society. Gratitude is the essence of being human.
- ◆ Half an hour per day (only 2% of the time) should be set aside for society work. Almost 200 hours/year.
- ◆ Work on anything in which you interact with the surrounding and can help make it better. Thus work of helping needy students, cleaning the surroundings, energy saving etc. can all be part of your work for society.
- ◆ As technology students try to use technology for solutions.
- ◆ See how you can use your technical knowledge to save energy in your daily life. Keep a daily log of the energy consumed and how you can save it.
- ◆ Even thinking on improving your surroundings, writing about it and telling others is society work.

# IITians in Nation Building (contd.)

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- ◆ Be active and this activity will give you a positive frame of mind.
- ◆ Develop a habit of focusing on task. Great inventions and ideas have come from intense concentration. Practice Yoga. It helps in concentration. ADS is a disease. Try removing it.
- ◆ Develop a “can do” approach. You should be bubbling with ideas. **Best ideas are maximum ideas.**
- ◆ Be positive in your approach. Rise above the negative things. Make them irrelevant. This is how nature evolves.
- ◆ Don't worry about the outcome. Positive things will happen. You are doing the society work for your benefit – discipline and discovery.
- ◆ Tremendous satisfaction and happiness results in helping others.

# Issues in Nation Building

- ◆ 60% of our rural population live in primitive conditions. They have almost nonexistent electricity.
- ◆ They use very inefficient kerosene lanterns for light and biomass in primitive cook stoves. Modern technology somehow has not touched their lives.
- ◆ Without these people getting into mainstream, environment cannot be improved. Hence nation building in true sense is bringing these people in mainstream of development. Helping the rural poor is the biggest challenge for all of us.
- ◆ 54% of India's population is below 25 years of age and most of them live in rural areas and are unemployed. Mass media (cell phones, TV etc.) has fueled their aspirations.
- ◆ Creation of rural based enterprises is the best bet to create wealth and improve their quality of life.



# Issues in Nation building....

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- ◆ You will all go and become important leaders in corporate world either here in India or abroad.
- ◆ Corporate India cannot survive without 60% of rural population coming in mainstream development.
- ◆ 1/3<sup>rd</sup> India under Maoist rule. Tremendous impact on national economy and development.
- ◆ Rural population has same aspirations as all of us. Fuelled by mass media.
- ◆ Information is knowledge and power. Recent events in Middle East attests to it. People know what exists and expect to increase their quality of life. Their march to achieve that is unstoppable.

# What can you do now or in future?

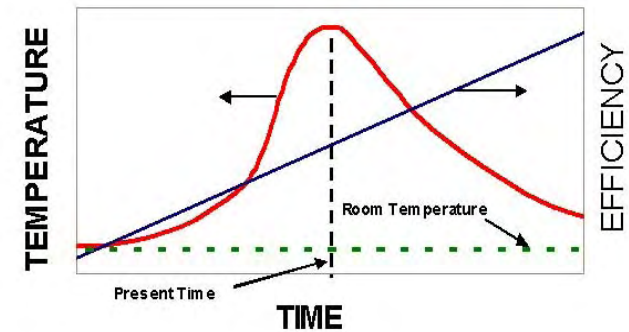
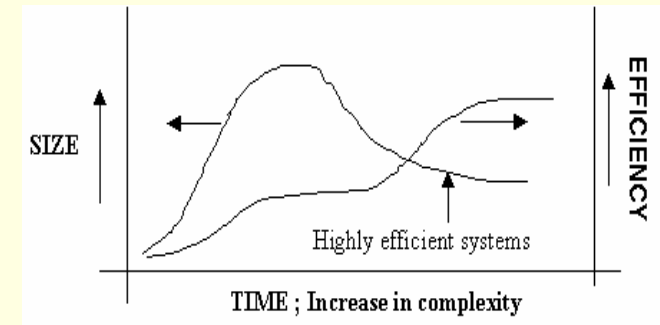
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- ◆ In order to understand rural problems, do an internship for a year with a rural NGO. This experience will stay with you all your life.
- ◆ Once you have resources from your own enterprises, in corporate and other sectors, use them to help rural areas.
- ◆ Even if you go abroad think how you can create conditions to improve the lives of these people. Use your considerable clout to create enterprises etc. This is your contribution to society.
- ◆ Set up S&T based NGOs or tie up with existing NGOs for spreading the technologies and ideas.
- ◆ For some of you who will go in banking and finance, help create venture and other funds so that rural enterprises can access soft funds.
- ◆ **As students of premier technology institute, work in technology areas rather than going in management.**
- ◆ **World moves because of technology. Other “things” needed to lubricate this movement.**



# Tech strategy of rural development

- ◆ High technology needed for rural development.
- ◆ It allows maximum extraction of materials and energy from dilute locally available resources; biomass, solar, etc.
- ◆ Hallmark of evolution: size reduction; sustainability; increased efficiency; **room temperature processes**; equilibrium with surroundings and robustness.
- ◆ Most of the new designs are following this route. Cell phones, power plants, etc.
- ◆ Biomimicry as mantra for design. Is also spiritual !
- ◆ Societies as Prigogine's dissipative structures. Decentralized high tech energy solutions  $\Rightarrow$  softer sustainable decentralized societies .



# Technological issues in rural areas

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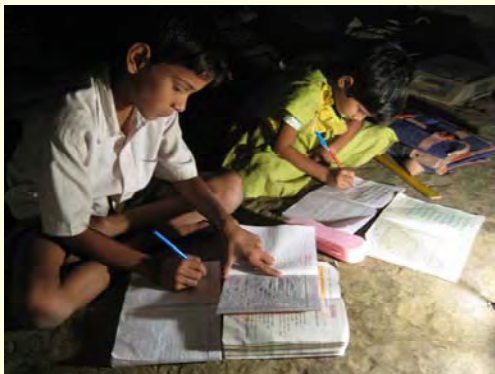
- ◆ Cooking and lighting constitutes 75% of total energy used in rural households.
- ◆ Indoor air pollution in rural households because of biomass based cooking and use of very inefficient kerosene lanterns, results in ~ 400,000 deaths/yr (WHO).
- ◆ Polluted drinking water in rural areas kills 1.5 million people every year.
- ◆ Rural population has the same aspirations for good life as their urban counterparts.
- ◆ We as technologists should solve these basic problems of cooking, lighting and clean water with the best tools of science and technology and using either the local resources or the existing ones.
- ◆ NARI's solution to these problems.

# Lighting, cooking and clean water

- ◆ Focused on low grade (50-60%v/v) ethanol as clean household fuel. Easy to distill and safe mixture.
- ◆ Developed stand alone stoves and lanterns. Problems of drinking, pressurization etc.
- ◆ Developed the concept of Lanstove.
- ◆ One device produces excellent light, cooks a complete meal for family of 4-5 and boils 10 liters of water. 3-5 times more efficient than electric cooking and lighting.
- ◆ Use of kerosene to bypass draconian excise laws.
- ◆ Excellent combustion in kero lanstove.  $\text{CO} < 3-4 \text{ ppm}$  and particulate emissions less than WHO standards.
- ◆ Kero lanstove becomes as easy to use and clean as LPG.



Lanstove



# Energy from agriculture

- ◆ India produces 800-1200 million tons of agricultural residues/yr.
- ◆ Mostly burnt in fields as a part of waste disposal. Loss of tremendous energy besides creating pollution.
- ◆ Has the potential of producing 90,000 MW of electric power (>55% of installed capacity) or 80% of total liquid fuel supply of India.
- ◆ Energy from agriculture could be an order of Rs. 400,000 crore/yr industry.
- ◆ Tremendous wealth flow to rural areas. India then can join the ranks of developed countries.
- ◆ NARI's work on Taluka energy self sufficiency became a national policy.



# Agriculture issues

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- ◆ Sophisticated technology needed in farming. Lacking in India. Best brains needed in agriculture science and technology. IIT engineers needed in this sector.
- ◆ Small land holdings fit for precision agriculture. Need for developing small and high tech farm machinery.
- ◆ In developing high tech small farm machinery, inputs needed from packaging and computer industry.
- ◆ Presently farming is non remunerative and unglamorous. Lowest growth rate among all sectors. Crisis in farm labor availability. Need for mechanization of farms on large scale. May make it glamorous.
- ◆ Farms and farmers are the backbone of any nation since they can produce food, fuel and wealth from the land. They should be helped.

# Water Issues

- ◆ If energy from agriculture picks up there will be pressures on the land and water will become the critical issue. It already is!
- ◆ Rain water harvesting and storage in earthen dams. Rainfall in India  $\sim 4 \times 10^{12}$  m<sup>3</sup>/yr. Water usage  $\sim 65 \times 10^{10}$  m<sup>3</sup>/yr. (16% of rainfall).  
Creation of rural water utilities?
- ◆ **Water Act similar to Electricity Act needed.** Rainwater harvesting, production and supply of clean water by utilities in rural areas are needed.
- ◆ At Taluka and village level, strategy of combined power and water utilities. Flue gases of power plant can be used for water purification.
- ◆ High technology needed for water purification and distillation. Nanoparticles as photocatalyst for water purification.
- ◆ Solar energy for water purification. Water filtration through 4 layers of cotton sari and heating in solar water heater to 60<sup>0</sup> C for an hour, removes 100% total coliforms.

# How to create personal Happiness ?

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- ◆ Happiness is a state of mind. You start feeling happy when you become internally secure.
- ◆ Deep thought or Sanyam helps in creating internal calmness and security. A powerful mind can move mountains. Besides it makes you very sensitive to surroundings. That is the genesis of nonviolence
- ◆ This internal security also helps us become less greedy for materials and resources. This is the genesis of spirituality.
- ◆ Spirituality can help in curbing the greed for resources and making us sustainable. High technology with spirituality should be the mantra of development and basis of nation building.

# Sustainable living

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- ◆ Spirituality also helps in *Simple living and high thinking*.  
Examples of Mahatma Gandhi and Einstein.
- ◆ One can live a decent and fulfilling life with 50 – 70 GJ/person per year. Present Indian consumption is 18 GJ/person. US uses ~350 GJ/person!
- ◆ If every citizen of the world follows US lifestyle we will need 4 earths to sustain it.
- ◆ Urban elite as role model? Need for all of us to live simply.
- ◆ With the reduction of greed the environment can be made better.
- ◆ A happy individual can then give back to society both knowledge and resources. This is the essence of nation building.



# THANK YOU

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Useful sites:

[www.nariphaltan.org](http://www.nariphaltan.org) (Institute)

[www.nariphaltan.org/writings.htm](http://www.nariphaltan.org/writings.htm) (all my articles and writings)

[www.nariphaltan.org/simplelife.htm](http://www.nariphaltan.org/simplelife.htm) (my experiment in simple living)

[www.nariphaltan.org/ncsd](http://www.nariphaltan.org/ncsd) (Center for Sustainable Development at NARI)