Energy Conservation: From the other side of a coin to the third side of a triangle

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Abstract: In this paper, we look at the issue of energy from a very strange view point. This is one of looking back to see how or where to move forward. Pedagogically energy was just an enabler and completely decentralized, dispersed and 100% renewable. The situation started worsening since 18th century compounded by Colonization and Industrial revolution. If 19th century made it bad, 20th century brought it to the brink of ecological crisis and a serious challenge to evolution. The added dimensions of energy being the biggest traded commodity and political weapon has made any sane solution that much more difficult. This paper looks at these and the perceptions at global and local level that have shaped these issues. It also offers a strategy at global level and practice at individual level that can at best alleviate this mess. One still does not know what we truly need to do at global level to reverse this dangerous trend. Whatever the final process of growth, based and related to energy will be, one thing is clear, we have to start CONSERVING a lot, using a lot more of Renewable and change in a significant way the current and projected life style.

1.0: Introduction

Society at large, addresses issues of current interest, most of the time triggered by contemporary developments in Science, Technology, Socio-Political or paradigm shifts in Political Economy. While the issue of energy has been given Economic-Political importance, Its perceptions have been persistently neglected. At last for many wrong reasons, energy issues and more pertinently energy security and clean energy practices are in vogue. While sustainable development paradigm was discussing these, the final trigger was definitely the rapid, universal and unambiguous fact of alarming destruction of eco-system and related climate change. One other factor that has contributed is the equally dramatic rise of socio-economic levels in Asia (read India-China) and few other III world countries (Brazil, Venezuela). The rapid pursuit of Nuclear Energy capability (read weapons) in rouge states like North Korea, Pakistan, Iran, and other democratically fragile countries have brought Energy security at focus of human life in 21st century.

Many things in west have saturated in almost all aspects and in important ones (like social security, cost of living, labor, energy, etc) it has turned for the worse. While the ghost of GDP-GNP, per capita income etc., based material development is haunting the west, that ghost is actively pursued in III world, which actually scares the west more (everybody in III world wants to be an American).

So the battles are on energy (Gulf, Afghanistan and Iraq wars) in the last 10 years and many more to come. Thus the most important factor that decides the state of world, its people, its eco-system and economy is that of Energy. While we have failed in many

aspects (particularly in India on education, healthcare, etc) all of us have created disasters with respect to energy.

The issue is quite complex due to the following reasons:

1. Practices are poor (ex. 90% of sugar mills do not do co-generation)
2. We have one of the worlds largest T & D losses (+ theft in BIMARU)
3. More than 25% of rural household actually have never seen electricity, 50% have no reliable electricity, in summer 90% of country suffer Q & Q, and Reliability of Electric power.
4. Practices are poor because Perception is poor (it is advocated that high per capita consumption of energy is a sign of good development)
5. Perception is not clear because Dynamics of energy is very subtle, very complicated and rapidly shifting to say the least (why Saudi Arabia is one of the richest and at the same time one of the least developed nation in the world ?)
6. It is also a fact that significant percentage of Saudi's oil revenues have found way to fund global terrorism through religious channels.
7. The complexity of dynamics can be gauged by the fact that there were "many" socio-economic-political-demographic-cultural factors that resulted in WW-I and II. But the main reason for Gulf War, Iraq-II, Afghanistan, etc is all but OIL. Further the crisis with Venezuela (oil independence) and Iran- North Korea is about Nuclear energy (technology).
8. Almost 90% of the countries import energy and in many cases it is almost 75% of its GDP. Our oil pool deficit is about Rs 1,00,000 crores
9. Only 10% of population have access to LPG for cooking.
10. Unfortunately Energy dynamics makes sure that all are at the source of global warming (unequally) and all are at the receiving end of global warming -Ozone depletion and poor Energy-Security.

In fact even two or three of the above points causes shudder to address and honestly almost a dozen issues related to the above have not been listed. THERE IS LITTLE DOUBT THAT ONE OF THE MOST IMPORTANT ISSUE CONCERNING HUMANITY and more so INDIA is ENERGY and ENERGY SECURITY. We shall also see that, directly addressing energy security is difficult, expensive and counterproductive also. A better approach is one of **Energy Conservation**, which hits two birds with one stone: Cost effectiveness and increased energy security.

2.0 Energy Perceptions

We are continuously using energy for activities like cooking, lighting, heating, transport, entertainment, agriculture, infrastructure, manufacture and other economic activity (services, health care, education, etc). These have generated its own perceptions some of which are absurd, contextual and subjective. We shall briefly look at some of them:

1. One of the "accepted" norms of development is per capita energy consumption. In this the world bank and other agencies compare III world with First world on

these numbers. The stupidity of this is the fact that 80% of the energy in First world is for heating and cooling spaces, the tragedy of which we are saved. Yet our "Educated" planners have overlooked this and beat the world bank drum to justify fancy excursions in energy planning for the country.

(Learning Item (LI)-1: Shift from imitation to NEED based decision)

2. Most non renewable energy sources, its processing, use and high economic returns depend on Centralized, Urban and high density use as seen in Cities, energy intensive industries & agriculture and surface transport issues. These in turn have indirectly advocated such development with so much disparity now and almost sounded a death knell to Renewables. India and other III world are naturally and on a efficient scale dispersed, energy density non-intensive, supports diverse renewables and automatically evolves a sustainable and energy equitable society. Today's energy disparity, both Q & Q is directly related to this aspect of III world natural development being missed (one of the many Nehruvian Dreams that have (should have gone sour)

(Learning Item (LI)-2: Shift from Centralized (Nehruvian) to Decentralized / Dispersed (Gandhian) models of development in general and in particular, Energy Generation and utility)

3. We have always been subjected to Technology based solutions over commonsense based solutions. Thanks to the technology mafia supported by "IIT's and related IAS" babus who cannot think. We could have made Bio-Diesel, Bio-Mass, Renewable focus long back (like Brasil) but instead went through Petroleum and now Hydrogen and other fancy paths. (a local example is Mangalore-Bangalore train)

(Learning Item (LI)-3: Shift from Technology based (Nehruvian) choices to Commonsense / People /Eco-system based (Gandhian) choices of development in general and in particular, Energy generation and utility)

4. It is true that we have shortage of Electricity and our energy equity is very poor. This hardly justifies per capita KWH as the number to be the right index for judging. We have not spent time and used common sense to figure better and more appropriate indices.

(Learning Item (LI)-4: Shift from Numbers that are "scientific" and thus (easy and convenient to) measurable, to that of approximate numbers of concepts that are meaningful. Best example is to have Numbers (relating to social sensitivity) of hours spent in sourcing daily energy as a effective measure for Q & Q, in energy services.(see the difference between LPG, and collecting twigs and bio-mass to burn)

3.0 Dynamics

The dynamics related to global energy can at best be described as, crazy, uncertain, chaotic, disgusting, painful, absurd, unreliable, violent, stupid, etc. Hardly anything complimentary. It is not much different in the country. Some nations in Africa can add few more adjectives. The subtle part of this is the fact that if you ask women in III world they will add at least 50% more adjectives than men of the same country. Direct impact is on Economy and QoL, but again the subtle long term impact is on Women & Children and host of related factors (like infant mortality, literacy, health, economic status, etc) that affect basic life and related dignity of living. There is significant rural-urban divide in this. Broadly the dynamics are as follows:

1. Rural-urban divide on Quality & Quantity and Reliability (same with other QoL issues like sanitation, etc). Strong urban bias.
2. Non-renewables over Renewables. Non renewables have been heavily Institutionalized, subsidized and provided with **stealth benefits.** (There is Petroleum research institute, but not Cattle dung research institute)
3. Initial costing over life time costing favoring Non renewables and Centralized energy services (like our bad roads)
4. On global scale, very unreliable and risky (gulf region and oil politics)
5. Internal distribution and politics (lorry & , port strike, killing of Manjunath, etc)
6. Society brainwashed into consumerist and high energy life (killing of bicycle cities of pune and mysore).
7. Govt. driving this destruction hard by poor public transport policies. With notorious example of Bangalore. (the lobby of IC engine technology at work)
8. Very poor scaling up of railways within India for the last 50Years.
9. Almost unheard of, the expansion of Inland water ways and sea ways with so many rivers, canals, and large coastline.
10. Rise of fanciful air transport in India, a disaster for public good.

(Learning Item (LI)-5: Shift from urban centric and technology dominant, institutionalized choice of solutions to choice of technology that is good for everyone. Customization is essential. De Urbanization, Rural-Ecosystem centric, Ecologically benign choices is essential for rural-remote and slowly turn Urban system towards Green Power / Electricity).

A good analogy for such energy perception is one of raising a child. It is so easy to indulge and spoil a child, which eventually grows to become a monster and very destructive. Contrast this with sensitive parents trying very hard to make the child grow amidst all diversions and distortions in molding a valuable citizen.

(Learning Item (LI)-6: Energy is a very sensitive issue, needs long term perspective, Extremely essential and priority issue. It is too serious to be left in the hands of vested interest, academicians and technocrats. It is a peoples issue and it is essential to empower them to attend and decide on this).

<u>Conservation Policies and Practices</u>

A sensitive set of policies that can enable Energy Equity and Energy Security for majority of the population based on conservation could be broadly as:

1. **Very strong public transport policy (want to be Singapore, but…)**
2. Scaling of railways by 300% (not like Mangalore- Bangalore link)
3. Decentralized production of alcohol from various sources and stoves for this to be made for public and domestic use
4. Three time zones for the country and winter saving clock.
5. Rail-Road co-ordination (Mys-Bang example)
6. **Distributed, off grid expansion of electricity production (mostly from renewables, not the TN wind farm ex., but Malvalli power)**
7. **Empowering rural-remote citizens to produce electricity and supply to urban areas (as the case of AP tribals).**
8. **Tax on non renewables, remove so many hidden subsidies.**
9. **Incentives on renewable energy projects (not ICT) and services (like the Selco ex. On marina beach)**
10. **Legislate Energy as fundamental right (citizens), so duty for govt.**
11. Promote water ways and inland goods transport by boats
12. Promote and encourage Organic and Natural farming (Syn. Ammonia)
13. Energy conservation and complementary solutions (water harvesting)
14. Energy efficient building codes and building material.
15. **Bring back the bicycle and pedestrian culture on priority.**
16. Concept of enrolment based on neighborhood schools
17. **SUN-CENTRIC life and then anything else.(Laser for hospital)**
18. Renewable energy and energy conservation education at all levels.
19. A strong DSM **(CFL's/ White LED's)** and SSM to be implemented
20. Energy efficient Urban System and Services planning (Five day week)

4.1: Practices (at personal level)

1. Simple life style, also gives happiness to self & less trouble to others
2. Lead a low energy life, low on food chain, low on demands and low on gadgets (a life of managing gadgets instead of getting help from)
3. Follow 3 –R technologies (Reduce, Reuse, Renewables)
4. Waste to Wealth philosophy (40 centuries of sustainable agriculture)
5. Use natural and hand made products as much as possible (dress, food)
6. Energy conservation, Renewables and more of natural cycle of life.
7. Walk, bi-cycle, public transport, train, pooling of vehicles, bus, boat, car, plane in that order.

5.0 The Nuclear Option

Not withstanding all issues, the Nuclear option is growing strong everywhere. There are many conflicting points for-against this. Here we shall put this in objective terms and leave the reader to judge.

5.1: For Nuclear Option:

- Clean, "Renewable", Carbon free, and the leading contender for Energy against emission based power sources.
- Nuclear Fusion, still unproven for commercial use, but is a better contender than Nuclear Fission (all the current technologies)
- Nuclear Technology fairly mature and diverse

5.2: Against Nuclear Option:

- Unsafe to risky to disasters in operation (3 Mile, Chernobyl, etc)
- No safe disposal of nuclear waste (no country has done it, and it is never been proved that is really safe over centuries)
- Nuclear proliferation has just become universal and top of list item
- The number of rouge countries becoming (and trying) nuclear renegade nations posing global risk is unambiguously high.
- Indian Govt. (most others too) in particular has been inefficient, and extremely non transparent on its nuclear dimensions (cost, priority, safety, sustainability, security [6])

(Learning Item (LI)-7: Energy is a very challenging field. It needs Competence, Passion, Sensitivity, Commitment, Energy itself. Try energy in general and Renewable /Clean / Green Energy as a career.

Instead of using and spending energy in / for IT, Do / use IT in energy. You can not only save yourself, you can save the world too.

6.0 Conclusion: In fact given the present situation, we realize the damage started in 18th century. While the progress of Industrial revolution was underway no one felt that it was unsustainable. Thus it is very essential to look back and think deeply, as even now we may be actually creating new catastrophes, which perhaps 22nd century may recognize. Nothing can be more blind than human knowledge and its inherent sense of progress, particularly if it is based convenient aspects of "Modern science and Technology". The arrogance (Ignorance) that stems from "modernity and formal education" is the other side of coin of "Pain and Ignorance" people suffered in medieval times. Thus human suffering has been the only constant factor all along and now it is worse since into our suffering we have added Ecosystem also.

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