



## **The Tiger Center**

Discussion Paper Series

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# EDEN

## Economic Development, Ecological Nurturing

### **Nagpur & Vidarbha: Decisions & Directions for Development**

#### **A Discussion Paper for Central India and the Whole World**

by Prof. Nishi K. Mukerji

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## **Nagpur & Vidarbha: Decisions & Directions for Development**

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**Introduction:** There are few cities in the world endowed with the natural beauty and greenery of Nagpur. There are even fewer cities which have a unique mile stone in its very heart called the 'zero mile'. This is literally and symbolically the very heart of India. The quality of beauty is immensely enhanced when an object of beauty is innocently unaware of its own attractiveness. Such is the case with Nagpur – Vidarbha- and its people.

Yet the litany of lament never stops. Nagpur and Vidarbha is underdeveloped, and backward. It should become a separate state like Jharkand, Uttaranchal, or Chattisgarh. It is exploited by the rest of Maharashtra. Its leadership has no commitment to the development of the region, and are shallow opportunists. Perhaps there is truth in some of this and statehood might become a panacea for its developmental problems. Has statehood benefited other regions? who knows?

**Leadership & Strategy:** However what we do know is that leadership and strategy are the keys to development.

The good book says, '*Where there is no Vision the people perish*'. **Leadership requires Vision, Courage, and the capacity for Risk and Sacrifice.** In case after case, whether it was Japan, after the war, Singapore, more recently, and the examples of Jamsetji Tata and Narayan Murthy at home, all of them exemplified these qualities of being visionaries, with courage, and the capacity for risk and sacrifice. All of them developed and implemented strategies built around their Strengths and their Assets. When their strategies led to growth they created new assets which became launching pads for further progress. As a case in point, Prime Minister Lee Hsien Loong of Singapore, now wants to make Singapore- can we do it for Nagpur?- as the worlds first Solar City! What immense implications does this have for the Equity the Quality of Life, and the Wealth of Singapore?

***No country or region has strengths in every industry. The Soviets tried it and failed. The Swiss built their economy around Banking, Holland around Cut Flowers, and the Japanese around Automobiles, and Consumer Electronics. The key question for leadership in Vidarbha then is to asses the economic balance sheet of the region, establish the regions assets and build strategies which are founded on them. This is important otherwise Nagpur could end up becoming just another Hyderabad or Bangalore, built on a conventional economic growth model.***

At present the value chain for Vidarbha is somewhat dismal. Vidarbha provides the raw materials and services -minerals, forest products, power (mostly thermal) and labor - to other regions, at thin margins. Other regions add value to what Vidarbha has supplied and appropriate substantial commercial benefits. This is how Empires worked. India was a cheap source of raw material, labor, and a captive market for the British during the time of their empire.



What then are the assets and the strengths of the region on the basis of which strategies can be formulated?

**Strategic Assets, Choices, Analysis and Directions:** Assessing the strategic assets and strengths of Nagpur and Vidarbha, on the basis of which we can develop the paradigms for progress, reveals that they are: a) the regions rich bio-diversity and forests, and b) a great wealth of solar sunshine.

a) Bio-diversity wild life and eco tourism: *In fact Nagpur is the 'Tiger Capital of the World'.* There is no other city with an international airport which has so many tiger reserves and the environment that supports them, in its proximity. *This includes Tadoba Andhari – the jewel in the crown- you just have to experience it.* You can also experience: Pench, Melghat, Nagzira, Navegaon, Bor, and other forests and bio-diversity all in the near vicinity of Nagpur. It is actually possible to land in Nagpur drive 50 km. and have an encounter with a real wild Royal Bengal Tiger, and the environment that sustains it. Nagpur is even the international entry point for other famous reserves in Central India like Kanha, Bandavgarh, and I was about to say Panna, but it went the Sariska way!! Is anyone listening?? Is anyone held accountable??

*Pursuing the issue of economic opportunity-seeking; the biggest industry in the world after oil- energy, in US \$ revenue terms is tourism; and the fastest growing segment of this immense industry is wild life and adventure tourism. Since wild life and adventure tourism is a big money spinner, India has the assets to take a pole position in this industry, and Nagpur and Vidarbha are a centre piece of this edifice.*

On my return to India in 1999, I was privileged to work with an Indian who is what the French would call a 'bon viva' and is easily amongst the world's greatest hoteliers. Whilst preparing a paper on hospitality and tourism, we did a comparative analysis of the performance of India and China. *In India historically the hospitality and tourism industry has been seen as a marginal player in creating the dynamics of development and progress.* This mind set is reflected in the results of the analysis shown below:

- In 1975, both China and India were hosts to 675 thousand foreign visitors.
- In 2000 India had 3.0mn.visitors, China hosted 30.0mn.visitors. In 25 years the differential had increased by a factor of 10!
- Notably India and China in spite of their differences have significant similarities as visitor destinations. They are both large countries. They both have histories and civilizations that date back into antiquity. They have great bio-diversity, and 'Wonders of the World' to see like the Taj Mahal, the Tiger, and the Great Wall, they both have the Himalayas, deserts, lakes, beaches, forests and a rich tapestry of peoples.

This discussion leads us to an important metric; the ALS (Average Length of Stay) which becomes a number in computing the capacity of the industry to create wealth. It is possible to complete a visit to Singapore (which gets more



visitors than India!) in 2/3 days. This is obviously not possible with China and India. They are both just too big, with great variety and complexity. To experience either of these Countries, the ALS is between 7/ 10 days, and that too may not be sufficient.

Let us make a simplifying assumption to facilitate the analysis. Assuming that a visitor would spend in the range of US\$ 500 to US \$ 1000 per day. This includes board & lodging, transport, shopping sight seeing etc. The implications of these numbers in pro forma calculations are analyzed below.

- For the year 2000:

China earned in the range of:

Minimum: US\$ 500 \* 7 Days\* 30.mn = US \$ 105bn.or INR 5250 bn@.

Maximum: US \$ 1000\* 10 Days\* 30.mn. = US\$ 300 bn. INR 15000 bn.

India earned in the range of:

Minimum: US\$ 500 \* 7 Days \* 3.mn.= US\$ 10.5 bn. or INR 525 bn.

Maximum: US\$ 1000 \* 10 Days\* 3.mn = US\$ 30.bn or INR 1500 bn.

@ assuming 1US\$= INR 50/-

The numbers in themselves are mind boggling, and the differential between India and China by a factor of 10, simply saddening. The potential is obvious; will the leadership seize the opportunity?

There are caveats to these numbers: They do not include domestic tourism, which can be very big in both countries. Though the numbers pertain to the year 2000, more recent figures for the two countries can be inputted into the calculations with more or less the same inferences. The most recent figures for China in 08 show around 130 mn. visitors, and around 6.mn for India. Clearly the Olympic Games in Beijing have been immensely beneficial to China's economy, just as the Tokyo Olympics and the Seoul Olympics benefited Japan, and South Korea, before the Beijing games. ***Though tourism becomes a primary engine of growth, it has a huge multiplier impact on other industries like Infrastructure, Roads and Transport, Telecommunications, etc, and it creates opportunities for education and employment.***

***Care has to be taken to prevent the adverse impacts of the sleazy side of tourism, and the best contrasting example of this is to see the way it is managed in Singapore, and Bangkok. Moreover since the focus is on the Wild Life and Adventure Tourism segment, this should in fact have a salutary and beneficial impact on both social mores and the environment.***



We had noted earlier in this paper, that the biggest industry in the world in US\$ revenue terms after Oil-Energy, was Tourism, and that the fastest growing segment of this industry was Wild Life and Adventure Tourism. Before addressing the implications of this reality for the development of the Nagpur-Vidarbha region, *we should also note the observation by our Prime Minister Dr. Manmohan Singh, an eminent economist. He said that our Tiger Reserves (there will now be 37 of them) should also function as ‘profit centers’ as indeed do many other parks around the world which are thriving.*

*We do know that in management what is not measured often does not get done.* Our Parks and Forests are enormous economic assets, but we do not seem to have a measure of how efficiently the assets are managed, and what returns we get from them.

‘The powers that be’ see ‘Conservation’ as their primary responsibility, and keep churning out numbers for fauna and flora which are more often than not controversial, and even scandalous- Sariska, and Panna-. Their organizations and people are not educated and trained to manage economic assets. They reflect Abraham Maslow’s dictum that if the only tool you have is a hammer, you see every problem as a nail. *In fact at present the only elements who seem to be making any kind of economic returns from our parks and forests, are poachers and smugglers, and their ‘friends’ of different types who are colluding with them.*

An analogy from the Taj Mahal is germane. The Taj Mahal is Historical Capital that through effective management has been transformed into an Economic Asset, which earns immensely for the economy, and has created tremendous brand equity for the country. For many India is synonymous with the Taj Mahal.

It is estimated that in a year when around 3.mn foreign tourists visited India, approximately the same number visited the Taj Mahal. *In effect virtually every visitor to India visited the Taj, such is its drawing power.* If the foreign visitor pays INR 1000/- to see the Taj Mahal, the Taj earns:

3.mn\* 1000 = INR 3 bn.(again this number does not include the revenues from domestic tourists, and the ancillary economic activities generated by the management of the Taj)

*It is because this historical capital( the Taj Mahal) has been effectively managed and transformed into a performing economic asset, that we are able to maintain, and embellish the Taj, create wealth and employment, and have the resources and develop the management skills to PERPETUATE IT FOR POSTERITY,AND FUTURE GENERATIONS.*

*At present our forests and national parks in general, and in Vidarbha (which is richly endowed with them) in particular are Non Performing Assets. These assets must see as their mission not only conservation, preservation, and research, but function as ‘profit centers’ accountable for economic returns, to the full reach of their potential. Flowing from the mission leadership must take action and make a number of interventions and investments.*



a,1) Actions, Interventions and Investments:

- Reorient the management education of those accountable for the performance of these assets. (remember the adage, show me an organizations educational system, and I will show you that organizations future)
- Launch a powerful marketing strategy with a global reach to generate demand for Vidarbha's parks as a destination, and create products for visitors which will *delight* them in their wild life encounters. It is significant that there is not a single marketing input making the claim that Nagpur is 'The Tiger Capital of the World'. ***The marketing goal could be that, every 10th tourist who comes to India should want to experience wild life encounters especially with the tiger in Vidarbha. This is not so far fetched, after all if India is synonymous with the Taj Mahal, it is also synonymous with the Royal Bengal Tiger. And if the number of foreign visitors who visit the Taj is almost equal to the total numbers of foreign visitors, there is no reason given, effective marketing, why one in ten of them should not want to experience India's wild life encounters.***
- On the supply side create the infrastructure of ***requisite size and quality*** in terms of rooms, food, transport, roads, medical facilities, fashion souvenirs, etc, Keep in perspective ***the enormous employment and entrepreneur generating potential of all these interventions***. Keep in mind also that visitors will return, and create 'word of mouth' advertising to others depending on the quality of what they experience.
- It is ironic that though the region is blessed with some of the world's finest forest and wild life assets, there is not a single world class hospitality and infrastructure organization that can bring their market to them.
- Invest in the professional skills, attitudes, and knowledge of the people of the region so that they can be gainfully employed in the economic activity created by these investments. Create a mix and a match between the world class facilities created, and the world class employees educated.
- Create and work in the context of international bench marks in terms of hygiene, safety, environmental health, pollution, etc. Compare this with world leaders e.g., the Kruger National Park, in South Africa, Yosemite in the USA, or any other park or region which is a fit for comparison.

a,2) The Results of the Strategy: In an earlier analysis, based on a kind of delphi ( the best estimates of experts) the earning potential in revenue terms from hotels and conveyance only, of Vidarbha's tourism was calculated as INR 920 Cr. Given the assumptions of the analysis and a conventional incremental growth perspective, the numbers of course add up correctly.

However in this paper there are fundamental changes in focus and direction. Wild Life and Adventure Tourism, and Clean Energy are in the vanguard, and are the engines of growth . ***This is based on an analysis of the assets and strengths of the region which have enormous potential demand. All this coupled with aggressive international and domestic marketing, can create quantum changes in the results.*** Let us proceed with the analysis.



Assuming that: 10% of the foreign visitors to India come to Vidarbha, and that there are a total of 6.mn. visitors to India, the total number of foreign guests to Vidarbha would be. 600,000.

The rupee/\$ exchange rate is 1US \$= INR 50/-

For the hotel the foreign guest pays INR 10,000 per night or US\$ 200/-, and the Indian guest pays INR 4000/-.

The numbers of Indian guests are equal to the numbers of foreign guests, i.e., 600,000.

On travel and transport foreigners pay INR 50,000 or USD 1000/-, the Indian guest pays INR 10,000/-

The ALS (Average Length of Stay) for both is 5 days.

The revenues from Hotels for foreigners is  $600k * 10k * 5 \text{ days} = \text{INR } 3000 \text{ Cr}$   
For Indians it is  $600k * 4k * 5 \text{ days} = \text{INR } 1200 \text{ Cr}$

The revenues from travel and transport for foreigners =  $600k * 50 = \text{INR } 3000 \text{ Cr}$ .  
For Indians =  $600k * 10 = \text{INR } 600 \text{ Cr}$ .  
Total= INR 7800 Cr.

We can massage these numbers with our own sense of 'happiness', and 'reality', but we must not remain victims of conventional and incremental thinking. The central point is clear. This kind of approach has immense wealth creating potential. By also sustaining the environment, and preserving the bio-diversity, it will show case Vidarbha as an example of a developmental model for the 21<sup>st</sup>. century, facing the challenges of environmental degradation and climate change successfully.

***When you are sitting on a Gold Mine why would you want to destroy it with a Coal Mine!??***

b) Clean Energy and Technologies for Sustainable Development: Pursuing the analysis of the strategic choices, and directions for the development of the Nagpur-Vidarbha region, ***the second dimension of the strategy committing to Clean Energy and Technologies that Sustain the Ecology fits the region like a glove.*** Since the choice of the drivers of growth for the region (which is blessed with 300 days of sunshine in a year) based on its generic assets, can be eco-tourism; the commitment to clean energy and eco friendly technologies (solar, bio, water harvesting, etc) becomes a logical complement as a choice. ***The two powerful ideas for economic growth and ecological sustainability are mutually reinforcing.***

***Economic growth and development are of course survival issues. But how we power that growth, from clean or from dirty energy, is also a survival issue.*** These issues deserve a broader discussion. ***By now it is common knowledge, and there is a 'deafening consensus', that the burning of fossil fuels, mostly coal, oil and gas, essentially to generate power, releases unsustainable levels of carbon dioxide, and methane. This thickens the earth's atmosphere and traps the sun's heat closer to the earth's surface leading to global warming and climate change.***



***The results of this can be unmitigated disaster.*** Studies in Geophysical Research, confirm that the heating of the oceans waters is increasing the destructive fury of hurricanes, remember Aila, and the Tsunami. Higher temperatures are having a devastating impact on water bodies and ground water levels, leading to a desertification of the earth's surface. There are more forest fires, summers set in earlier, last longer and are much hotter. Remember Nagpur just this year. Scientists are recording an increasing number of earthquake disasters which are taking a huge toll of life. ***But this is happening all over the world. The environment is seamless and does not recognize national boundaries,*** just as the Tsunami did not.

To compound the danger from global warming is the ice caps in the arctic. If these were to melt scientists fear that the oceans levels could rise by 20 ft! inundating huge parts o the earth. A friend who just returned from a pilgrimage to the Himalayas mentioned that he had gone to Gau-Mukhi after 20 years, and was surprised to see that the glacier had retreated by more than a kilometer. The carbon dioxide levels on earth are now at their highest in 650,000 years, and destructive changes are taking place at an alarming rate. ***Is it progress if the economy grows and the earth is destroyed and becomes hostile and uninhabitable?***

After the recent presentation of the Union Budget in Parliament and the predicted possible 7% growth in GNP, many wise men from the east and the west commented on its merits. Soon after at the international conference of the G-8 nations in Italy, the developed and the emerging nations continued their scripted slanging face offs on the emission of green house gases (especially carbon dioxide, and methane caused mainly by burning fossil fuels for generating power).

There is an element of morbidity and even of humor in all of this. GNP as a measure of economic growth powered by dirty energy (from burning fossil fuels, coal, oil, and gas), hides as much as it reveals. The stand off between the leaders of the nations responsible for poisoning the environment is peculiar. It is as if all of them were sitting inside an airplane with all its engines on fire and about to crash, and there are cute debates continuing on who is really to blame!

***GNP( Gross National Product) myth and reality:*** Classical free market economics may have won the day over command economies, but it is falling way short of measuring impacts on the environment which are becoming survival issues. The distortions contained in the conventional calculations of GNP, a measure of a nations economic progress and performance, can have disastrous consequences. ***In calculating GNP buildings, factories, plant& equipment etc, are all depreciated, but natural resources are not.***

***Let us say that we dramatically increase grain production by the intensive use of pesticides. When some of this pesticide seeps into and poisons ground water reservoirs, and when we tally the costs and benefits of growing the grain; we will pride ourselves on the increased production of grain but the cost and the loss contained in the poisoned water will not be shown as a cost at all! It will be zero. Apply this to the entire region of Vidarbha, or indeed the whole country and the results are appalling.***





***Or take another example if we cut down the beautiful forests of Tadoba Andhari, in Vidarbha, and dig up its soil for mining. The computations of the value gained would include everything we had EXTRACTED( TAKEN AWAY) from the forests, earth and the soil, but the fact that we had lost a beautiful pristine habitat and its constituents FOREVER, and the value it would have created for all time ,into infinity, would not figure as any kind of value or cost at all! It would also be Zero!!!***

To think that for the worlds economy and its institutions the GNP, is a kind of ‘sacred cow’! The World Bank, The International Monetary Fund, regional development banks like the ADB, and national lending institutions, decide on whether to sanction loans and do business with a recipient on the basis of how the GNP will be impacted. ***If the computations of GNP included values and measures of what had been lost in the environment as a result of economic activity, and if we then did a cost and benefit exercise, the nation in many cases would end up being poorer as a result of misguided decisions.***

It is not as if the flaws in GNP as a measure are not known. Herman Daly, a leading World Bank economist admits that “There is no point of contact between macroeconomics and the environment”. UN officials responsible for periodically revising the definition of GNP agree that it needs to be changed, but are reluctant to do it immediately. Believing wholly in GNP despite its shortcomings smacks of intellectual arrogance. This can lead to situations akin to when an expert surgeon comes out of the operation theatre, and proclaims that the operation was successful, but the patient is dead.

***The energy issue and specific technology options for the region:*** Energy and power are fundamental to development and progress, since the time man first rubbed two stones to create a fire.

As India’s economy and population grows, the demand for energy is growing at a compounded rate of 5.5%. To meet this demand it is estimated that we will have to double our capacity addition rate, at an investment of INR 13,000 bn. ***We are living with power shortages, especially in Nagpur and Vidarbha, compared to other parts of the state, and the situation seems to be worsening. To prevent this ‘energy poverty’ and ensure ‘energy security’, we rush into fossil fuel based power generating systems and into the ‘Energy – Environment Trap’. The more energy we generate in this way the more we increase ‘global warming’, and environmental degradation.*** The effects of this as we said are alarming and can be disastrous. The Tata BP Solar Corporation in one of its publications lists what the affects could be with specific reference to India:

- 38% drop in per capita water availability, as great dries become frequent
- Food grains production could drop by as much as 30%
- Wheat yields will reduce by 17% if the temperature rises by even 0.5 degrees C.
- The Ganga delta could turn infertile.
- All central and eastern Himalayan glaciers could be lost by 2035.
- Rise in sea levels could submerge major coastal cities and displace millions.
- 25% of the fauna and flora could be extinct by 2030.



Let us pause to think for a moment how all this would impact Vidarbha. ***How the rich 'Natural Capital', of Vidarbha would be consumed, instead of being transformed into productive and performing economic assets, creating and distributing wealth, and being perpetuated into posterity for the future generations.***

***The answer to the energy challenges for the regions economic development, lie in Renewable Energy Technologies.*** We have stated in this paper that developmental directions and choices should be based on a regions strengths and assets. Vidarbha is abundantly blessed, with sunshine, forests, and water, which are generic sources of renewable energy.

***What then are the Renewable Energy Technologies? How can they be practically applied?*** The Renewable Energy Technologies are: Solar Photovoltaic (PV), where sunlight including ultra violet rays is directly converted into electricity. Solar Thermal, where heat from the sun is carried to different points through a medium usually a fluid. Hydro Power, Biomass, Wind Energy, Waste to Energy, Geothermal, and other developing technologies.

***These sources of renewable energy can create a wondrous transformation in the region, a kind that has not even been imagined by the victims of linear thinking.*** Enough power can be generated to light streets, schools, homes and hospitals. There are examples of vocational training schools, and cottage industries being run after dark to create employment and augment the income of rural ladies and households. These sources of power can also operate TV's, and Computers. Solar pumps can be used to irrigate fields, and to pump drinking water, and solar refrigerators can be used to preserve medicines and vaccines in rural hospitals. Add to all of this the fact that these power sources can cost-effectively provide power to rural telecommunication networks, and repeater stations.

It needs to be emphasized that these applications are appropriately suited for our region. They create no noxious emissions, they provide power for human activity and economic growth, preserve the ecology, and they can be widely applied even in the most remote geographical settings. Moreover these systems are low on maintenance, and are long serving technologies. ***There is a practical working example of these technologies in Vidarbha. I would recommend a visit to the 'Centre for Science in Villages', 3km. from Wardha on the Nagpur road. All the technologies mentioned from Waste to Energy, Water Harvesting, Solar Photovoltaics etc, are functioning admirably in this Centre run by visionaries and led by Mr. Samir Kurvey. It is about time that Prophets were known in their own country.***

***Investments, costs, and the truth about these new technologies: There is an inertia of ignorance about the economics of these new technologies. Most people think that these technologies are exotic, and that the costs are prohibitive enough not to warrant serious thinking about investing in them. For the prevalence of this kind of conventional wisdom the champions of these new technologies are themselves largely responsible.*** The companies in the business of these new technologies, being engineers, are excellent at developing these new products and technologies but do a poor marketing job of informing and educating potential customers. They believe in



the fiction that if I build a better mouse trap the market will find its way to my door. They forget that every successful product has to be successfully marketed.

***In investing in these new technologies, there are important aspects to note, about its economics.***

***# The costs are actually capital investments, and depreciation can be charged to them to retain cash.***

***# Many of these technologies are actually subsidized because they are environmentally friendly. These subsidies can be availed of by the user.***

***# There are no recurring bills and monthly costs once installed.***

***# The installed product works all the time, there are no power outages, and no work time is lost. The maintenance costs are minimal, and there is great consistency and quality of output.***

An example will clarify the point. Recently we used solar lighting in a sewing school factory where the ladies could work and earn for their families.

The solar light cost us INR 30 k. (We bought this from Tata BP. Buy from the best, because in any new technology there can be many pretenders). From the income the school generated, and we never lost any work hours because of power cuts which are rampant, we were able to charge depreciation on our P&L at 10% pa, avail of the subsidy, and of course we do not have to pay any bills to the state electricity boards, for another 30 years. We have covered the cost of the investment within one year, and for the rest of its life ***the solar light will be earning profits for us.*** Add to this that we are not degrading the environment by using power from fossil fuels, and we have got a win-win situation.

The Ben-Gurion National Solar Energy Center in Israel, under the leadership of their director David Faiman, has developed a remarkable technology. It is a 10sq metre reflector which is five times more efficient than the standard flat photovoltaic silicon panels. ***The power generated from this is of superior quality and is as cheap as power generated form fossil fuel gasses.***

***Why resistance to these renewable technologies:*** The logical question arises as to why these technologies are not being more widely used if they are so beneficial. ***One reason of course is the inertia of ignorance already mentioned, and the poor marketing of the companies in this business.***

***But there is a bigger and more pernicious enemy, Corruption.*** Thomas Hobbes the English philosopher and the author of the Leviathan, saw life as ‘nasty brutish and short’. He also cynically observed that when human interest and human reason clashed, human interest tended to win out. When I was working as the special assistant to the chairman of one of India’s largest corporations, I was privy to an interesting discussion. The chairman who was a person of unimpeachable integrity asked his finance chief as to where he should start looking for possible misdemeanors



in a study of the companies books of accounts. The finance chief replied that the large acquisition and disposal of assets, in the fixed assets column, and in the management of the cash, inventories, and receivables, in the current assets column along with the companies P&L statement, would be a good place to start the audit. ***He went on to add that so many things happened which were outside the balance sheet, and the books of accounts.***

If Prime Minister Lee Hsien Loong wants to make Singapore the world's first solar city, ***he will undoubtedly face resistance from those who have a vested interest in the existing technologies.*** His father Lee Kuan Yew did a tremendous job of 'keeping the government clean', with leadership, wisdom, and personal example. ***But the corruption racket whether it be the continuous bleeding of false billings, or using graft to bend and even break the law for gain at the cost of the nation is a major and dire threat.***

However Hobbes' 'human interest' is not always identified with the destruction of the environment, and we have champions to live up to that ideal. ***Mehda Patkar*** with the Narbada Bachao Andolan, and ***Bahuguna*** with the 'Chipko' movement in the hills of Garhwal and Kumaon, in India. ***Tos Barnett*** a retired supremecourt justice in Papua New Guinea, who exposed the pervasive corruption in the forest-timber marketing business, naming the companies Sanyo and Sumitomo who were involved in it. He escaped an assassination attempt. ***Chico Mendes*** in Brazil, who led and organized the rubber tappers, who harvest the *renewable* bounties of the rain forest. He opposed large land owners who were bulldozing the forests to make way for temporary cattle ranches. He was assassinated, but his movement continues. ***Wangari Mathai*** in Kenya who organized the woman's green belt movement, and who have planted more than 8 million trees. ***Marilyn Bullock*** in America who successfully led a movement called HALT (Humans Against Lethal Trash) and pioneered ground breaking legislation in that country.

***The roll of honor goes on. We must prevent the impression that its champions are only social activists who are named herein to emphasize the catholicity of the environment movement. The environment movement as we know is a very serious issue and is on the agenda of many leaders and publics right down from the United Nations, national leaderships, industry fora and up to the village panchayats and schools. Right now talks are proceeding between Secretary of State Hillary Clinton, and the Indian government on the control of greenhouse gas emissions. The environment obviously includes everybody, and this is aptly reflected in a photograph of the earth taken from outer space. The caption reads, 'Look after me I am the only one you have got!'***

***Governments must govern: But in the final analysis governments must govern and play their anointed role in making the ball park, setting and implementing the rules of the ball game, and coaching and encouraging the ball players to make new realities possible. When the budget was presented and there were congratulations all around, one silent screaming question remained unheard. What about the environment? Are we going to see policy frameworks for development which factors the environment into the equation? We need to see leadership in giving tax and investment breaks- at some rate at which the new technologies preserve the environment- for the use of renewable energy technologies: and we need to ensure***



***tax and other penalties for the polluter who must pay. We need the introduction of laws which make it mandatory for all economic activity to be undertaken under a comprehensive umbrella of environmental health criteria. We need an educational system which teaches our citizens from primary to higher education levels about the verities of our environment, and how civility in behavior is seen in respect for the environment. We need to change the environment issue in our socio economic activity from being something cosmetic, to being the practiced norm. Most of all we need zero tolerance for corruption.***

We have had six decades of development living uneasily with sometimes more, and some times less corruption. Our position in the Transparency International (TI) index of corruption is not a matter for great pride but we have moved on. Yet there is still lack of indignation at corrupt practices, and a tendency to rationalize it by saying that it happens everywhere, without seeing the differences in the magnitudes of pervasiveness in different places. Perhaps a new generation can make quantum changes and now take a lead in moving the country towards “that heaven of freedom”, into which our national poet Tagore hoped the country would awake!

As a rider I should emphasize that I may have given the impression that all thermal power plants should be shut down and that there should be no further investments in thermal energy. This is certainly not the case, and as Nagpur is the home of the Western Coal Fields (WCL) it is our collective hope I am sure, that they continue to prosper.

***The point is being made that where technology choices are available the decisions should be made wisely.*** It should be noted, that in using fossil fuels to generate power; in producing 1 Unit of electricity, we release 1kg of CO<sub>2</sub>. India produces 500 billion units of electricity, and we are the 5<sup>th</sup> largest contributor to global pollution, though we account for 3.5% of green house emissions.

Quoting Vice President and Nobel Laureate Al Gore, “Sulfur Oxides cause crop losses down wind from the power station, along with materials damage, visibility losses, and medical bills for the treatment of respiratory distress..... work has gone into calculating the real cost of effects associated with each additional ton of sulfur dioxide emissions... these valuations are... less precise than the values established by the market for electricity. Still that difficulty should not be used as a convenient excuse for asserting that the cost should be placed at zero; there is a well accepted and agreed upon range, and some value within that range could and should be used in calculating the costs and benefits of each ton of coal burned.”

***Conclusion:*** This is a ‘Discussion Paper’, which will hopefully generate debate and even wisdom from the opinions it generates. The focus has been essentially on the Nagpur Vidarbha region, but the natural scope of many areas of the discussion have encompassed the country and have even been of global relevance.

We certainly need to eschew copy cat models of linear growth and incremental development which short change the potential of the region. Do we really want Nagpur to become just another Bangalore or Hyderabad? (No offence meant to either, but many who live in those cities lament the directions and the problems that



‘progress’ has created for them. Any way their preferred choices may be the best for them, but does it make it the best for Nagpur-Vidarbha?)

Taking a leaf out of international experience Switzerland, Holland, and Japan, the growth models suggested have been founded on the assets and the strengths of the region. These being, Eco and Adventure tourism, coupled with investments in Technologies for Renewable Energy, which sustain and even nurture the environment. These choices will power the growth process, but as a multiplier will generate economic activities and promote entrepreneurship across the region in a wide spectrum of industries.

When Japan was bombed with nuclear weapons critics predicted that it was finished for at least a century. The critics did the same with Singapore, and Israel. But they had not contended with the will of the people and visionary leadership. Leon Uris the author of the book Exodus, quotes from the prophet Isaiah in the rebirth of Israel in the 20<sup>th</sup> century. “Prepare ye the way of the Lord, make straight in the desert a highway for your God.” They have done that. Lee Kuan Yew the architect of Singapore, tells the Singapore Story with deserved pride, how they went from the third world to the first in one generation, from 1965 to 2000. The Japanese had the unrelenting will to make Japan again ‘The Land of the Rising Sun’, and rose like the sphinx from the ashes, to unprecedented levels of prosperity, development and global leadership.

Leadership then is the key. Leaders with Vision, Courage, and the capacity for Risk and Sacrifice. Nagpur and Vidarbha for all its gentility is historically capable of demonstrating great courage, once they are convinced about the truth of their cause. It is imperative to understand that the development of the region should be based on its strengths and assets, and development strategies should not be merely copied blindly, but re invented to fit the regions potential. These thoughts are reflected in a paraphrased verse from the Rubaiyat of Omar Khayyam.

“My friends if you and I could with fate conspire,

To grasp this sorry state of things entire,

Would we not shatter it to bits?

And re mould it nearer to the hearts desire.”

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