

# *Will the sparrow ever return?*



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*“O Troupe of little vagrants of the world, leave your footprints in my words”*

**“Stray Birds” by Rabindranath Tagore**

*I dedicate this book to my granddaughter, Tara  
and her generation, hoping that what we  
collectively think and do today, will ensure for  
them a future that is benign*

**About the author**

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For the last seven years, FBV has been associated closely with civil society movements in AP and elsewhere against projects that deprive the people's livelihoods, violate the laws and damage the environment.

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## Preface

When my granddaughter found me giving final touches to the manuscript of this book, she rightly thought that I was writing about one of her favourite birds, the sparrow. Being fond of poetry, she quickly scribbled the following lines to express her genuine feeling for the sparrow.

*I am happy  
So I can sing  
My eyes are bright  
Like a diamond ring*

“A sparrow's words” by Tara Sarma

Tara even drew the following picture of the singing sparrow, hoping it will continue to feel happy and sing for ever.



The “sparrow” in this book symbolises the ecology and the environment of India. Like the sparrow which is fast disappearing, the environment too faces a serious threat in India today. The sparrow may not remain happy for long, nor is it going to sing for ever, considering the wanton destruction that we, the human beings, have already inflicted on the nature in most parts of our country.

The development policy in India is heavily tilted in favour of the urban elite. The divide between the rural and the urban societies is widening rapidly. In search of livelihoods, thousands of the rural poor are constantly migrating to the towns and the cities. Though they contribute significantly to the building of the towns and the cities, they are condemned to lead marginal lives in the slums that offer them no shelter, no sanitation and no basic human rights.

In the recent times, in the name of development, tilted once again in favour of the urban elite, the rulers have started displacing thousands of farmers, agricultural workers and fishermen to accommodate several ill conceived industrial projects in the rural areas. This has worsened the plight of the villagers and compounded the already acute problem of migration of people to the urban areas. While these industrial projects have caused displacement of the people, they have also robbed them of their community lands and polluted their environment beyond any repair. On the other hand, the urban explosion that is taking place is simultaneously destroying the natural assets all around. It is like a carcinogenic disease that seems to have no ready cure.

This book, based on real life stories, describes the growing threat to the environment in India from many directions, the human trauma that envelops it and the apathy with which the government has so far dealt with it. If this state of affairs is allowed to continue any longer, we will surely be robbing our grandchildren of their basic right to breathe clean air, drink unpolluted water and live in a clean environment. We will be destroying the delicately poised biodiversity of the planet, spelling a certain disaster for the human race itself.

To reverse these trends, we need to revisit the paradigm of development we have adopted, learn to respect the way the local communities visualise what development should mean and appreciate the close relationship that binds the people to the environment that surrounds them.

I have chosen to place this book in the public domain through my own personal website, rather than through any established publishing house, for a specific reason. Publishing houses seem to act as filters, adding their own tint to the work of the author, taking away to some extent, the originality and the spontaneity of the text.

I have had hilarious experiences with the publishers with whom I have initially tried my luck. One publishing house rejected my manuscript straight

away saying that, as a matter of policy; it would not publish any work on medicine! The readers will soon realise that this book addresses anything but medicine. I suppose that this particular publisher had far too many manuscripts on hand to be able to distinguish between medicine and environment! Another publisher said that the manuscript was too short in length, less than 55,000 words, to deserve its grand appearance in the form of a published book. I never thought that the length or the size of the book should really matter. Another publisher took my breath away by describing my book as “fiction”! I wish that some of the human trauma I have described in this book proved to be truly fictitious!

These entertaining brushes I had with the publishing houses made me look for an easier alternative as this one of placing it on my website.

While I was about to finalise the manuscript, several new developments took place that had a bearing on what I wrote. Some of these developments have further reinforced the apprehensions I had expressed in the first draft.

The State deployed coercive action at Kakarapalli in Andhra Pradesh to quell the local community's protests against a coal-based power plant. Two lives were lost in the incident which the State could have readily avoided had it heeded to the people's entreaties.

While the rulers of India were aggressively pushing forward their grandiose scheme of nuclear development, against the fears and apprehensions voiced by the local communities at the receiving end, a severe quake followed by a devastating tsunami hit Japan, causing a nuclear emergency that was widely witnessed by millions of TV watchers in India. As the events in Japan are slowly unfolding, it is becoming clearer and clearer that the technology associated with the nuclear power plants is so risk prone that such accidents could have taken place even in the absence of a quake or a tsunami. The history of nuclear accidents in Japan and elsewhere bears ample testimony to this. I sincerely hope that aggression will soon yield place to circumspection in the minds of those that seem to be dead set on littering the Indian landscape with nuclear power plants. It is high time that we realise that technologies should not be allowed to drive the nations and their people. It is the people that should dictate the terms to the technologists. The State should stand on the side of its people, not on the side of the private interests.

E.A.S.Sarma

I have tried to update the book with whatever that has happened in the recent past.

I hope that several people, all over the world, will wade through these pages. I hope that what I have stated in these pages will trigger a collective effort within the civil society to mobilise the public opinion against the monoculture of “development” that our rulers have unleashed on us, without much public consultation and thought. I hope that this book will facilitate, in its own modest way, a thought process that will persuade our rulers to revisit the definition of development so as to render it more people friendly and environmentally benign.

I hope that the sparrow will finally return, as a result of such a collective effort on the part of the civil society!

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April 6<sup>th</sup> 2011

### *Acknowledgements*

I wish to thank the thousands of the people who have been a part of this real life story on how they resisted the policies that tend to destroy the country's environment and deprive the people's livelihoods. But for their active involvement, this process of environmental degradation would have continued unabated. They are the real heroes of this story. They have displayed a rare sense of informed courage in demanding that the government should respect its own laws, protect the ecology and safeguard the people's livelihoods.

I thank the members of Paryavarana Parirakshana Sangham (PPS) of Sompeta that has set a telling example to the civil society bodies elsewhere in the country in leading their own movements against the ills of the present paradigm of development,

I am grateful to the members of Forum for Better Visakha (FBV), the civil society forum with which I have had the privilege of working during the last six years, for the help and the encouragement given to me in getting involved in the kind of effort that this book describes.

Sreekamal Bandopadhyaya of Ementrix Software Consulting & Services has helped me in building my website and placing this book at the website for public access. I thank him for this.

I thank my wife, Rani Sarma, for encouraging me to document this real life story into a book that can be read by one and all. Of course, I should confess that I am not a professional book writer.

I am grateful to my granddaughter, Tara for adding the nice poem and the picture to the preface.

I cannot name all those persons who have made it possible for me to bring this work to this stage. I cannot name them individually but they are very much in my mind while I set down these thoughts.

E.A.S.Sarma

Visakhapatnam  
April 5, 2011

Chapter 1: **Where has the sparrow disappeared?**



[www.wildlifemusings.wordpress.com](http://www.wildlifemusings.wordpress.com)

Behold, within the leafy shade,  
Those bright blue eggs together laid!  
On me the chance-discovered sight  
Gleamed like a vision of delight  
.....  
Stay near me---do not take thy flight!  
A little longer stay in sight!

- *The Sparrow's Nest* by William Wordsworth (1)

I spent my childhood in a small town called Srikakulam, on the east coast, midway between Calcutta (now Kolkata) and Madras (now Chennai). It was originally a part of the ancient *Kalinga*, I was told. In the modern times it was a part of the erstwhile *Madras Presidency* to begin with and later, a part of the present day *Andhra Pradesh* (AP).

Srikakulam was a sleepy little town; amazingly, with a composite culture. We were regulars at the *dargah*, in our own backyard, where we were assured of fistfuls of beaten rice and *jaggery*. The big mosque in the town was equally fascinating as it had a thickly wooded ground all around it, where we could play hide and seek. The shrub growth there had quite a few snakes and we would hide behind the mosque's pillars and watch them slither and slide. In fact, the field snakes were a common sight wherever there was greenery in the town. The main attraction at the famous Sun temple of Arasavilli, a couple of miles away, was the turtles, which we fed with bananas.

My house was set in a large orchard, with rare fruit bearing trees lovingly nurtured by my grandfather. There were all kinds of flowering and fruiting trees, brought from different parts of the country. A shallow well with a manually operated irrigation facility, known locally as *yetham*, provided water to the garden. As children, to my grandmother's utter chagrin, we would wallow in the cool water. We would watch the birds quench their thirst and the occasional snake put its head out. Scared, we would streak past our garden. On the auspicious day of *Nagulachavithi*, a snake festival popular in the south, the local people used to visit our garden to propitiate the snakes by offering milk and eggs at a few mounds where the snakes were supposed to take shelter. .

Those were the halcyon days, when towns like Srikakulam were less congested, with farmlands interspersing the urban patches and with the people living in harmony with the nature. Greenery was the rule and the larger brick and cement structures were the exception. Building activity used to be not as active as it is these days. Real estate greed was conspicuous by its near absence.

It was as if the people valued their peace more than anything else. Changes, if they disturbed their lives were actively shunned.

I still remember the story that my parents told me then. Our town had no direct rail connection. The nearest railway station was Dusi, about 6 kilometers away. The other railway station nearby was Amadalavalasa, 10 kilometers away. The latter was more easily accessible by a bus service that was both frequent and convenient. Those days, the railways still largely used steam locomotives that deposited hard lumps of coke all along the track and belched out dark smoke with a typical unpleasant smell. Srikakulam became the administrative headquarters of the newly formed district in 1950 and it gained importance overnight. Someone proposed that the town should have its own railway station and it should be connected to the main line between Calcutta and Madras. Many local residents seemed to have vehemently opposed the proposal, fearing that proximity to the rail track would pollute the surroundings and increase the prices of vegetables! I am not sure whether this story was an exaggerated version of how the residents feared any change from the status quo of a peaceful and quiet life they were leading. Ironically, the town has expanded since then to take both Dusi and Amadalavalasa into its urban reach!

When I look back on my childhood in Srikakulam, what strikes me most is the memory of how much in harmony with nature our lives were. One slice of memory that leaps back to me strongly is the presence of innumerable house sparrows in the house.

Ours was a sprawling two storied house, with tiled roofs and long verandahs. There were enough places for the house sparrows to nest, roost, breed, hatch their eggs and tenderly look after their young ones. They seemed to proliferate overnight. They were voracious eaters of grain, weed, insects, worms and even butterflies. They were busybodies of a sort. They went into frenzied activity during the breeding season; the house would be littered with grass and twigs; their eggs would sometimes fall to the

ground and mess up the flooring. Undeterred, they would make their nests at all the impossible places. They were the torment of my mother, and my grandmother, who constantly chased them away since they made a nuisance of themselves. They found the house sparrows a noisy, petulant and defiant lot.

The sparrows, along with their elder brothers the crows, marauded everything that they came across; be it the *dalls* spread on mats to dry or the paddy before being packed off to the mills to be dehusked.

As a little boy, I was fascinated by their activity and watched them closely. They would peck at their own reflection in the mirror; they would come close to me, but not close enough, to feed on the grain that I offered them. They were particularly excited when the paddy came home; as the grain was measured to the singsong rhythm of the count, the sparrows would literally dance around, fearlessly.

These sparrows seemed to zoom in and zoom out in sizeable flocks. They were indeed a gregarious lot. When they came into the house, or when they flocked out together, they made a ruckus of noise. In a way, they added a sense of vibrant activity to the surroundings. Like the immortal *Schrödinger's cat*, the sparrows seemed to be inside the house and outside, at the same time!

In the afternoon heat of the summers, when the household took its siesta, the tick tock of my grand father's clock and the chirping of the sparrows spelt peace and tranquility in the house.

A professional bird watcher told me that the scientific name for a house sparrow was "passer domesticus". I always wondered why the scientists made it so difficult by giving the flora and the fauna such tongue twisting, incomprehensible names!

The house sparrows were different from the smaller and more slender tree sparrows. The house sparrows took the human beings in the house for granted and treated the house as theirs.

No wonder that the Savaras, a *tribe* in *Orissa* and *AP* have immortalised the sparrow in their folk art. The sparrow is the central figure in the wall paintings of the Savaras.

The universal appearance of the free-wheeling sparrow in the villages and the towns of south India inspired the great poet, Subramanya Bharathi (2) to describe the bird as the symbol of freedom. The poet, who composed inspiring poems that spurred the people into action during the eventful days of the freedom movement, must have envied the unfettered way in which the sparrow led its life.

Today, six decades later, the sparrows seem to have receded into nowhere. I no longer see their nests nor hear their incessant chirp.

Of course, in the towns and the cities, the old tiled roofs have given place to concrete slabs that are not welcoming to the sparrow to build its nest. The city is denuded of its greenery. Thousands of trees are cut down every year in the name of new construction activity and widening of the streets. Tree planting has become yet another token component of a myriad government schemes that exist for the ubiquitous contractor and not for the people at large. While *crores* of rupees of the tax payers' money are spent ostensibly for creating an illusory "green belt" in and around the cities and the towns, there is hardly any evidence of the newly planted trees providing a breathing place for the people or the much needed shade from the scorching sun anywhere. Instead of relying more on the kind of tree growth that the nature provides on its own, the municipalities seem to be more intent on planting outlandish trees along the streets and covering the road dividers with modern lawns, both in need of constant watering. Since most cities and towns face a serious water shortage, such artificial greenery can rarely survive.

There are no longer enough twigs or grass for the sparrow to build its nest and rear its young ones. Even in the backyard gardens which have shrunk in size, the use of pesticides has robbed the sparrow of its insect and worm feed. The air in the cities and the towns is filled with toxic pollutants released every minute by industrial units and vehicular traffic.

It is not as though the sparrow has receded into the vast rural hinterland. Even there, concrete structures are fast replacing the traditional roofed buildings. Pesticides have seeped far and deep into the farm lands, the water sources, the rural terrain and everything else associated with agriculture. Polluting industry that is the mascot of modernism in India has filled all that nature has given us, the land, the air, the surface water bodies and even the ground water aquifers, with chemicals that have rendered living unsustainable. I am told that even the combustion of the apparently benign "unleaded" petrol releases a toxic chemical, methyl nitrite which kills the small insects that form the major source of diet for the sparrow! The sparrow has perhaps joined the ever increasing numbers of the species that are fast becoming extinct.

"Butterflies are sensitive indicators," Sir David Attenborough (3), an avid environmentalist himself, said. "They decline when habitats are destroyed and when man harms the environment." When butterflies are less, so is fruit production, as it is the butterflies that facilitate cross pollination that is necessary for sustaining it. Man seems to be in a self-destructive campaign, for no reason or rhyme.

One could replace the butterflies in David Attenborough's statement with sparrows. The decline in the population of the sparrows is perhaps yet another indicator of the impending ecological crisis we face today. Our ecology is a delicately balanced system, with each of its component species supporting the others. There are two important lessons one could perhaps draw from this. In ecology, no single species is more important than the other. Each is crucial for the collective survival of the total system of which it is a component. Once the ecological system starts breaking up, it could become a chain reaction of self destruction. Every day's delay in countering this process will render

the corrective action that much more traumatic and expensive. The burden of ecological degradation will fall first on the poor who depend heavily for their living on the commons that the nature has bestowed. In the long run, of course, the burden has to be borne by each and every one of us.

Does the rapid disappearance of sparrows and butterflies represent a whisper from the nature that we are on the path of decline? Is anyone listening to this? Is there a way to reverse this trend?

Will the sparrow ever return?

Chapter 2: **The urban contagion: The case of Vizag**



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But we, in traffic's rush and din  
Too deep engaged to let them in,  
With deadened heart and sense plod on,  
Nor know our loss till they are gone.

*-The Sparrow by Paul Laurence Dunbar (4)*

After a long, frustrating stint of three and a half decades in the government and after spending another three years in a teaching institution at Hyderabad, I decided in 2004 to move to a smaller place where I could settle down and have the freedom to do whatever I felt like. This was the motivation for me to move to Visakhapatnam, where I had my roots, as I went to the university there five decades ago

Visakhapatnam is a sprawling, fast growing city on the east coast of India. Some people say that the city got its name from Visakha, the Hindu god of valour. Those in the know of the Hindu mythology claim that the two epics, Ramayana and Mahabharata, had references to Visakhapatnam. Many Buddhist archaeological sites of the 3<sup>rd</sup> century B.C. have been discovered in and around the city. Gautama Buddha was born on the full moon day of Vaisakhi, a month in the lunar calendar. He attained nirvana and finally passed away on the same Vaisakhi day. Being thrice blessed thus, Vaisakhi is a sacred month for the Buddhists. It is possible that the city derived its name from it.

In any case, Visakhapatnam is a modern city with an ancient past.

Unable to pronounce this tongue twisting name, the English rulers of the bygone age called it Vizagapatam, which finally degenerated into Vizag. That is how many people chose to call it even today, long after the colonizers left.

Centuries ago, when Vizag had not yet morphed into an urban agglomeration, the entire place must have been a quiet coastal paradise, owned and ruled by the local fishermen. Even today, the city derives its personality and character from the fishing activity that dominates its life.

The city is spread out between the lush green, hilly slopes of the Eastern Ghats on its west and the dark blue expanse of Bay of Bengal on its east. The Eastern Ghats are a long range of thickly wooded hills running parallel to the east coast of the country. Vizag itself sits on a terrain that is uneven and undulating.

Not many residents of Vizag are aware of the treasures that surround their city. The city's sea front overlooks Bay of Bengal, one out of the sixty four largest marine ecosystems in the world. On the west, the Eastern Ghats are the habitat of the *adivasis* or the *tribals*, the original residents of the hills. The *tribal* communities ruled this area for thousands of years in the past, till democratic India marginalized them. They have a symbiotic relationship with the hill-based ecosystem in which they live. They have a unique cultural heritage of their own, from which one could draw many a useful lesson. The hills and the valleys where they live are among the richest biodiversity zones of the country. Vizag and its surroundings have enough archaeological evidence to suggest that both pre-historic and ancient settlements existed here on a fairly extensive scale.

Sometime ago, a foreign academic institution, not familiar with the urban concerns of India, unwittingly ranked Vizag among the "hundred fastest growing cities in the world". Vizagites felt truly proud and elated. Every important meeting on the future of the city would witness speaker after speaker recalling this "foreign" accolade and extolling the apparent virtue of the idea of fast growth. When one discerning speaker dared to point out that rapid growth in itself might not always have positive outcomes, as in the case of the cancer disease caused by uncontrolled, malignant growth of the body cells, the rest of the participants howled at him and brushed him aside, dubbing him as a cynic. Coming to think of it, I feel that there was something in what he said that should make us sit up and ponder!

True, the city's population grew in leaps and bounds during the last few decades. Around the turn of the 20<sup>th</sup> century, Vizag was a small town with a few thousands of people. The port brought many new industries and, along with them, a large influx of population. The building construction activity picked up. The migrant workers started coming in. During the last four to five decades, the rate of growth of the city has been phenomenal. It grew at 51% during the sixties, 29% during the seventies, 62% during the eighties and 17% during the nineties. The city's population in 2001 was a little less than a million. If the semi-urban areas on the fringe that have merged with the city are also

taken into account, it is around 1.3 million. One in every four people in Vizag is a slum dweller. This proportion will increase in the coming years, unless the planners wake up and do something to correct the trend. The city has grown in a chaotic way. It is getting congested. It is facing serious water problems. Industrial pollution has become the scourge of the city. The city's environment is getting destroyed. Are these not the signs of a malignant growth, as the isolated citizen suggested?

Parts of the city towards the ship yard and the airport were lush green wetlands till the beginning of the last century. They supported clusters of mangroves which, in turn, provided an excellent natural habitat for birds and rich marine life. *Yerada Konda*, standing well over 1,000 feet, was a hill covered with greenery, offering a panoramic view. It projected into the bay, standing sentinel at the mouth of a rivulet and offering a natural shelter from the sea; an ideal location for a port. This spot was indeed used in the past as a minor port handling limited consignments of cargo.

Dolphin's Nose, the seaward face of *Yerada Konda*, has an interesting story to tell. It derived its name from its shape, which roughly resembled a dolphin. Of course, the bay itself is known to have schools of bottle nose dolphins moving around freely, unharmed by the traditional fishermen, till modern mechanized fishing trawlers started entangling them in their fast moving nets and butchering them with their high revolution propeller blades.

Incidentally, the sea coast of Vizag is also known to be a nesting and breeding ground for Olive Ridley turtles. They too are not spared by the trawlers. Occasionally, tortoise carcasses are found scattered all along the beach. Considering the ecological importance of the tortoise, our ancestors deified the creature to safeguard the species for the posterity. In the Hindu mythology, tortoise figures among the *dasavataras*. It is known as the *kurmavatarata*. *Kurma* in Sanskrit is a tortoise. About 140 kilometers from Vizag, there is an ancient temple for worshipping this unique amphibian creature that has a greater longevity than the human being. The Indian postal department even released a stamp on the tortoise in August, 2008, to highlight the need to conserve the species.

The *dasavataras*, incidentally, visualize the ten incarnations of *Vishnu*, the maintainer and the preserver of the cosmos. Out of these, four are in animal forms and the rest are in the human form. Animals occupied an important place in the Hindu tradition.

Next to the Kursura submarine museum on the Rama Krishna beach, the model of a large tortoise looks enquiringly at the visitors who gather there everyday. Whenever I looked at it, I thought that its lack of mobility symbolised the fate of its species in real life.

Coming back to *Yerada Konda*, it was the *East India Company* that started ravaging the hill during the 18<sup>th</sup> century. With its strategic location overlooking the sea,

the front portion of the hill was used by the company's armed constabulary. In 1801, Captain Thomas Blackmore of the Vizagapatam Artillery, was granted 44 acres of land on the hill, and permission to “occupy, enclose and embellish the declivity of the hill next the sea.” (5) The hill was referred to for a long time as Blackmore's Hill. There was an old light house at its top, which was blown away by the great cyclone of 1876 that flooded many parts of the town and caused extensive damage.

Visakhapatnam was a port of importance as early as in the 12<sup>th</sup> century, long before the advent of the *East India Company*. Almost seven centuries later, it was Sir Arthur Cotton (6) who recognized the potential of Vizag as a natural port which could handle much larger volumes of exports to England. He was the great engineer who built the first major barrage on River Godavari near Rajahmundry that transformed the agricultural economy of the State.

Around the middle of the nineteenth century, Arthur Cotton built “groynes” or breakwaters to calm down the fiery waves at the mouth of the rivulet near Dolphin's Nose. He created a protected outer harbour for the first time.

Incidentally, in 1844, Arthur Cotton also built St. John's Church of England on Dolphin's Nose. The church is an important site that many tourists visit these days.

It took the English another seven decades to mobilize efforts to build the existing port which could receive larger vessels. In 1927, the work on the port started. It opened for traffic in 1933. Soon, in 1940, a ship-building yard came into existence. These facilities were sufficient to attract a whole lot of industrial units around that area. A large tract of land was acquired for an airport nearby. The wetlands that formed an integral part of Vizag at one time, and the mangroves that thrived in those wetlands, gradually disappeared. The birds and the marine life receded. The last vestiges of the mangroves disappeared recently when the managers of the local state owned refinery mowed them down to accommodate the refinery's expansion. The environment laws of the country require that wetlands are conserved and mangroves protected. When the state and its agencies themselves become the violators of these laws, the citizen can do nothing but watch helplessly.

The ravage that started over *Yarada Konda* more than two hundred years ago continued unabated. Dolphin's Nose, with all its erstwhile greenery, was the mascot of Vizag's scenic beauty for a long time. It is no longer the case. The hill stands there today, with its beautiful front excavated, cemented and built over, beyond recognition. The hill stands denuded of its greenery.

While the wetlands were being filled up, the increasing urban pressure also simultaneously inflicted extensive intrusions into the city's streams and drains. This reduced the ability of the drains to empty the rain water into the sea. The problem got

compounded by the deluge of plastics and other wastes casually thrown around by the people. The plastics which found their way into the drains clogged them further. Whenever there was a heavy downpour and the sea was in its high tide, the low lying residential areas of the city would get flooded. Flooding caused inconvenience to the people, spread disease and damaged property.

A few years ago, the flood waters entered the airport, damaging the airport's computer system and paralyzing the air traffic. Poverty in India drives people to be innovative and adventurous. Unlike the large private companies, the small private entrepreneurs are driven by need, not by greed. The pressure of poverty prompts them to convert threats into livelihood opportunities. They are not fettered by the inhibitions that exist in the more affluent echelons of the society. When the airport officials were trying to come to terms with the flood waters, a few enterprising people grabbed the opportunity to fish in the troubled airport waters to catch a few fish to fill their starved bellies! Private enterprise of the smaller kind has no bounds.

My university memories bring back to me a Vizag that was vastly different from the one I see today. During those days, it was a placid, green city in the making. Now, it is a busy, fast expanding, concrete city, bursting at its seams.

The Vizag I see today is a city of slums.

While the wealth of the country is getting more and more concentrated in its cities, the erstwhile prosperity of the rural areas is dwindling fast. The government's policies hurt the rural population and benefit the affluent urban dweller.

The small farmers, the tenant cultivators and the agricultural workers are the ones that constantly face displacement as a result of the wrong policies and the destructive projects of the government. It is they that come in hordes to Vizag to find alternate livelihoods. While the city's rich are busy making investments in developing multistoried luxury apartments, sprawling farm houses and mesmerizing shopping malls, it is these migrant workers that put in their sweat and toil to build those structures. Some of these migrants work at the railway station as porters, earning their daily livelihood, carrying head loads of heavy luggage for the passengers. Some are manual workers at the port, the ship yard and the hundreds of small roadside cafes. Several of them are vendors of all sorts, ranging from those that sit on the pavements, selling fruits and vegetables or artifacts of all sorts, to those that ply mobile carts to take their wares to wherever it pays them.

Those that live in these slums are also the ubiquitous rag pickers who silently move around the city in the dark hours before the dawn, glean the useful from the useless out of the city's garbage, assort the more useful and the less useful and sell it back to the traders for recycling. In Cairo where there is political turbulence as I write these lines, the rag pickers are known as zabaleen who live in Mokattam, a full fledged garbage village on the city's outskirts. In Paris, they are a part of an underground society called les glaneurs. Strangely, the rag picker is an anonymous but a universal citizen who

constantly strives to put resources to environmentally benign use and reduces the dirt that his richer urban brothers strew the streets with!

The migrants have no shelter worth its name. They live in makeshift shacks set up near garbage dumps, in the vacant spaces below the flyovers and along the railway tracks, on the banks of the city's drains and in any other place that is vacant and not fit for habitation by the others. They have no access to the usual social security cover that the others are entitled to. They do not have ration cards to buy food grains, sugar and kerosene at affordable prices, as the authorities routinely presume that they do not belong here. Many cannot vote, as they are not reckoned as voters by the officials. A random visit to any of these slums shows how sewage water flows across and along the narrow lanes, occasionally entering the residential shacks and how the men, the women and the children have no other alternative than to use any place, anywhere within the slum as a toilet. The indignities that these slum dwellers undergo for earning their daily livelihood should put the city to shame. I found in these slums many people bed ridden with malaria, dengue and many undiagnosed fevers. If the head of the family fell sick, the family lost its livelihood for the day. They led marginal lives. The municipality paid its public health officials well. But, they rarely visited these slums.

I wondered where the municipality spent all the *crores* of *rupees* provided to it in the name of the “*flag ship*” poverty alleviation schemes announced by the Prime Minister of India from the rampart of *Red Fort* in Delhi every Independence Day!

There are more than 700 slums of this kind in Vizag, as I said earlier, occupied by one fourth of the population of the city. Those that live in these slums are the builders of the city. They provide the services that keep the city going. They live in distress, while the rest of the city is shining.

While the city expanded in all its glory, its underworld of slums grew much faster to sustain that growth and keep the city's rich thriving and happy.

These slum dwellers are constantly under the threat of eviction and abuse. On a public interest petition filed by some concerned citizens in Delhi, the apex court of the country recently ordered the State to provide at least night shelters for these voiceless workers. The State is yet to comply with that order. On the other hand, every other day, the authorities treat these people as unwelcome intruders and dismantle their makeshift shelters made of waste metal strips and fallen dry coconut leaves! While we miss no opportunity to extol ourselves as a great democracy, we rarely think of these millions of people who are non-citizens for all practical purposes, in their own country.

These slums provide shelter to thousands of families who have migrated from the nearby tribal areas and the far away villages in search of livelihoods. It is strange that the government should spend thousands of *crores* of *rupees* in the name of its much touted Mahatma Gandhi National Rural Employment Guarantee scheme to “guarantee” employment in the rural areas and, still, many rural families, unable to eke out their livelihoods, should migrate to cities like Vizag in search of menial jobs in the wayside

shops and hotels. Some of them carry heavy head loads of luggage for the passengers at the railway station and the inter-State bus terminal. They work in sub-human conditions at their work places. They and their families lead marginal lives in their make shift homes. Their residences are surrounded by slush, sewage water, filth and garbage littered all over. No wonder that these slum dwellers are frequent victims of influenza, malaria, dengue, chikungunya and what not. Their children go to the neighbourhood school which is in an equally unhealthy environment. In India, the education sector has undergone a transformation. There are schools for the rich and they are truly rich. There are schools for the poor and no one seems to care for them.

Those among the slum dwellers, who earn slightly higher wages by doing heavy manual work, with no nutritious food to eat at home, contract tuberculosis and other debilitating diseases that erode their ability to work in the long run. Unless a philanthropic medical practitioner is willing to treat their diseases free of cost, they have no medical help. If the head of the family is down with fever, he loses his daily wage and the family is forced to starve. Democracies rarely pay attention to the day-to-day existence of these unfortunate people.

Their bond to the slum where they live arises from its proximity to the place where they work and earn wages. The Municipal Corporation which is supposed to provide civic amenities is non-existent as far as these slum dwellers are concerned. Of course, the officials of the Corporation appear on the scene once in a while to threaten the very existence of the residents by forcibly evicting them without any notice. There were occasions when the officials, all of a sudden, descended on the scene on a winter day, disconnected the Corporation's water taps nearby to starve the residents of drinking water and asked them to move abruptly to a housing colony fifteen kilometers away, with no assurance of any alternate livelihood. The sin committed by the slum dwellers was that they and their forefathers had occupied that public land without permission. But, the slum dwellers have been there for ages, as the records of the Corporation show.

Like broken gramophone records playing the same tune again and again, ad nauseam, the rulers in Delhi and those at Hyderabad have dinned into the ears of the people that they will "develop" the slums one day. Their raucous speeches are sometimes incoherent as they have also talked about making the cities "slum free"! To the slum dwellers, all these loud, grating voices have meant nothing except treating them like pawns on the ugly chess board of politics. As far as the politician is concerned, the slum dweller is a "vote" which, once cashed, can be thrown into the dust bin of memory for five years. After all, one cannot have a "slum free" city without destroying the slums!

When the officials of the Corporation demolished the dwellings of the slum residents, they did it with an acute sense of determination and a great deal of contempt. There was no evidence of any compunction pricking their conscience. The Corporation did not display the same sense of commitment and alacrity when it came to removing the illegal structures built in a routine way by the city's affluent families and individuals. One could see the officials displaying a subtle sense of "justice" in dealing with the rich, as it was the rich who were the guardians of the Constitution and therefore entitled to the

rights provided in it. The local authorities knew which side of their bread was buttered. They rarely enforced the law against the well-to-do. Even if they had to do it for some inescapable reason, they were clever enough to forewarn the law breaker to approach the courts and obtain an interim order against the Corporation so that the officials would not have to go through the avoidable irritation of enforcing the law. The ruling elite viewed such officials as “progressive”, “investor friendly” and “dynamic”, the terms that acquired importance in the reformist jargon of the country these days.

From the point of view of the ruling elite, the slum dwellers are dispensable. “Development” as understood by the rulers today is like a heavy bull dozer that can crush the rights of these marginal human beings to make way for a shining India. There are courts that can enforce the human rights but they are far away. Their procedures are far too complex and far too expensive. When I tried to convince a slum resident that his only hope was a possible order from the court, he took me into confidence and disabused me of any such idea by saying that those who could engage expensive lawyers were the ones who could get “justice” their way. For them, “today” is what really mattered and the entire future compressed into “tomorrow”. The future beyond it is obscure and therefore one need not bother about it unduly.

I wish I could sit down one day and paint the picture of India’s democracy as visualized by these marginal human beings. If ever I succeed in doing it, I am certain that the picture will appear truly surrealistic in its own way, with the Constitution resembling a tiny dot, the slum world looking vast and the arrogance of the rich dominating the colours.

The winter of 2012 was particularly severe in these parts. In my early morning walks along the beach, it was a common sight to see hundreds of beggars taking cover, from the debilitating cold, in the nearby bus shelters, on the pavements and under the projecting roofs of the shops that remained closed during the night. It was ironic that a bust shelter, on which the city’s prominent jeweler company proudly put up a colourful hoarding to advertise its expensive wares, also provided shelter for the beggars during the night! I suppose this is what an economist calls the “trickle down” effect in a shining economy! For the beggars, the “trickle down” effect meant only the rain water seeping through the leaky roofs and drenching them during the cold nights.

Looking at the way I clothed myself to ward off the winter chill, I could not help feeling a sense of guilt. During the next couple of days, along with a few friends, I tried to travel the length and the breadth of Vizag to locate the disadvantaged pavement dwellers and provide them blankets with which they could cover themselves. For me, it was a truly revealing experience in many ways.

Several among these destitute persons were physically impaired. Many suffered from one disease or the other. Several among them were patients of leprosy, unable to move about freely, shunned by the society at large. There were several families that migrated from far off places within and outside the State, as Vizag evidently offered better opportunities for begging.

One family that I met among them has left an indelible impression on me. Both the man and his wife were patients of leprosy. They were partially disabled, spending their lives on a pavement near a temple where the visitors dropped alms into their begging bowls and, occasionally, items of food. They had two charming children playing around the place. The parents told me proudly that both the children studied at a school located about thirty kilometers away. On that day, it was vacation time for the children. So, they came down to their parents to spend their vacation on the pavement! In the overcast sky of helplessness, I suddenly saw a shimmering ray of hope for India's democracy! These two children would soon join the mainstream of the educated society of tomorrow. It is they who will surely make a difference one day!

Vizag's transportation system has undergone a paradigm change.

When I was still a child, I used to visit Vizag occasionally. I was fascinated by the *petteballu*, the box-like covered carriages drawn by bullocks, ferrying the more affluent people from their residences to the workplace or the market. It is hard these days to find such bullock carts anywhere in Vizag or in the nearby villages. The manually drawn *rickshaws* came later. They were followed by pedaled *rickshaws*. They offered cheaper and more convenient transport to the people. I wondered then how those frail looking *rickshaw* pullers slugged their human luggage up the steep slopes that punctuated the city's terrain, especially towards the sea front. There were a few buses but they catered only to a limited number of prominent segments in the city. The rich owned cars and the not so rich owned two-wheelers. There were bicycle riders too but they had to get down often from their bikes and pull them up, in order to negotiate the steep slopes. The three-wheeled auto *rickshaw*, colloquially known as the "*auto*", is the more common mode of transport for the middle class today.

The city's public transportation system has grown quite a bit. But the traffic has outpaced it. Instead of using the public transport, the residents depend more and more on inefficient autos, petrol and diesel guzzling cars and vans which belch out poisonous pollutants in sizeable quantities. The two ports in Vizag also spread coal, chemicals and iron ore dust all over the city, as they import coal and chemicals and export iron ore. The refinery, the steel plant, the power station, the zinc smelter and the *pharma* units in and around the city add their own daily doses of pollution to the atmosphere.

Vizag's air probably contains more toxic pollutants than life giving gases like oxygen and nitrogen. Anything and everything in my house gets coated with a dark layer of these pollutants every day. The inner linings of my lungs must have got coated thick with these exotic particles!

Talking of pollution in more detail, the industrial complex in and around Vizag is ranked among the most polluted zones in the country by none other than the Central Pollution Control Board (CPCB). The *pharma* and the chemical units are known to dump hazardous chemical wastes that mix with the water on the ground that finally finds its

way to the sea. These chemicals also leach into the aquifers that lie under the ground. Some of us organized a rally the other day to highlight the dangers of industrial pollution.

The rally coincided with the twenty fifth anniversary of the infamous *Bhopal gas tragedy* in which thousands of unsuspecting people in the vicinity of the erstwhile Union Carbide's chemical plant in Bhopal in Madhya Pradesh died or are permanently disabled, as a result of a leak of the poisonous methyl isocyanate gas.

As a part of the rally, we visited many polluting industries around the city. We came across an irrigation tank, *Uracheruvu*, in Tanam village near Paravada, where the water emitted foul chemical smell. The villagers were furious that the local chemical units were allowed to let out the chemical wastes into the village tank. As usual, the representatives of the industry denied it. We then moved on to a nearby state-owned thermal power station where thousands of tonnes of coal were burnt every day and the resultant fly ash dumped all over. There was no way to move this fly ash anywhere outside, except as an input for making cement, provided a cement factory existed in its immediate vicinity. Cement manufacturing would also have been a polluting process. In the absence of an outlet, large quantities of fly ash had accumulated over the years into a huge ash pond. With more and more ash accumulating every day, the whole ash dump was moving like an avalanche into the nearby water bodies and into the sea. The local ground water sources had already got contaminated. Fly ash is known to be toxic. It contains sulphur, mercury, zinc, arsenic, cadmium and even radioactive isotopes. The chemical pollutants have already caused bronchial diseases and skin troubles among the people. A more comprehensive survey, if conducted, should reveal the genetic disorders that the radioactive isotopes would have already caused among the people. Neither the plant management nor the government seemed to have bothered about this at all.

The AP government is proud that the State continues to be an attractive destination for investment. I suspect that the foreign investors are eager to move into India because the environment laws are weak and the pollution control mechanism is lax. We are unwittingly creating many potential *Bhopals* all around us.

I always wondered why the industry was not eager to prevent pollution on its own. Of course, the pollution control authorities are, in a way helpless, as the government that controls them is not anxious to ruffle the feathers of the industry. When the pollution control board is not keen to act against pollution, why should the industry incur the cost of containing the pollution? The outcome of this is that the industry sets up waste management plants more for the appearances than for controlling the pollution. It cost them nothing to dump the pollutants surreptitiously in a nearby stream or in the adjacent backwaters of the sea. In Vizag, as a result of this, the fish catches have declined. The quality of the fish has deteriorated. The traditional fishermen are forced to venture deeper and deeper into the sea, risking their lives, to catch enough fish to be able to survive the day.

The chemically contaminated fish must be finding their way to the dining tables of everyone in Vizag. Of course, in these days of globalisation, those that have polluted

the local fish may have the luxury of savouring cleaner fish imported from abroad! The polluters do not always pay!

My student days in the university bring me back memories of the city during the early fifties when it had mostly houses with tiled roofs. A few houses were made of stone. The larger houses had thick foliage of greenery surrounding them. There were no high rise buildings in those days. A couple of buildings had two floors, at the most. The *zamindars* and the *rajas* of the erstwhile principalities in *Andhra* and *Orissa* owned a few palatial buildings, with gardens surrounding them.

The bus ride from Maharanipeta to the university took me along the beach, via Rama Krishna Mission, Harbour Park and Siripur Junction. In those days, the road to the university was not as congested and polluted as it is now. Between Rama Krishna Mission and Siripur Junction, one could see a wide expanse of beautiful red ravines stretching right up to the edge of the sea. These ravines have since disappeared. Posh residential colonies stand on their ruins. While walking along this road, one came across an occasional stream that drained the city's rain water with ease into the sea. Those streams have either disappeared or paled into narrow, constricted outlets into the sea, struggling to drain water through a mess of plastics and the city's dirt.

Is there no city planning in Vizag?

The Visakhapatnam Urban Development Authority (VUDA) is there to plan the city's growth, keep it green, protect its water bodies and ensure that the common man can access the land for housing at an affordable price. What VUDA does is exactly the opposite. It is partly the government's fault.

Spending more than it could afford has thrown the State's finances into a chaos. In turn, the State has forced VUDA to sell its public lands to raise funds to make up for the State's fiscal deficit. As a result, VUDA has rushed into an indiscriminate land selling spree. Public lands, whether they have hills, water bodies or coastal lands, are all put to sale. These indiscriminate sales have pushed up the land prices beyond the reach of the common man. They have also destroyed the city's environment and its greenery. In some cases, even heritage archaeological sites are not spared!

VUDA has a Master Plan to regulate the city's growth during the next two decades. The Plan, no doubt, provides a vision for the expansion of the city's residential and commercial zones. It does not however have a complementary plan to find a convenient place for housing the service providers, namely, the milk vendors, the egg suppliers, the carpenters, the electricians, the plumbers and the cleaners. As a result, around every cluster of high rise buildings, a larger cluster of slums comes up. The Plan prohibits commercial activity in residential zones. In reality, the officials collude with the developers to blur the distinction.

High rise buildings provide no set backs. Standing cheek to cheek, these buildings leave no breathing space for the residents. The commercial buildings rarely provide

parking space, though it is mandatory. Those that visit those buildings leave their cars on the roads. Many roads in Vizag are so congested that they block the traffic. Every five years, the municipality swings into action to widen the roads. It involves the demolition of the frontage of the high rise buildings. The trees in front of the buildings are also cut down, without being replenished. The whole process is an exercise in futility which could have been avoided had VUDA and the municipality displayed a sense of responsibility and foresight.

The Master Plan has provided zonal development plans for each zone, demarcating the residential and the commercial zones separately. Unfortunately, the municipality has become a willing party to indiscriminate and irrational changes in land use in favour of commercial establishments and corporate hospitals in the midst of residential zones. Evidently, this is an important area for rent seeking for the municipal officials. As a result of their complicity with the commercial establishments, the residential areas have got congested. In the case of hospitals and clinics, it is commonplace to find unhealthy medical waste including used syringes thrown casually into the municipal waste bins and sometimes even on the roads and the pavements. A foul smelling bakery was allowed to be set up in the residential area in one case and the waste fluids were allowed to be emptied into the open drain system, even though the municipality spent crores of rupees on an underground drainage system recently.

Urban planning is not unknown to the people of ancient India. As early as in the 3<sup>rd</sup> century (B.C.), *Kautilya*, in his famous treatise (7), *Arthashastra* (the science of politics and economics), laid down an elaborate set of urban norms that the King's subjects should follow. The Mauryan kings wanted their cities to be well planned and clean.

Kautilya's prescriptions in urban development (7) were far ahead of the modern times. He prescribed elaborate house building rules to ensure the safety of the buildings, their sanitation and rain water drainage. He prescribed building setbacks to ensure privacy for the neighbours. He prescribed the contribution that each citizen should make for creating space for the common facilities. He prescribed stringent penalties to be imposed on those that damaged plants and shade giving trees in the city parks.

Kautilya who advised (7) the Mauryan kings on many matters of the state, including urban planning, would have looked aghast at the present day urban planners of Vizag with distress and disdain!

From what I remember of Vizag of the fifties and the sixties, the city planners must have cut down far more trees that they have ever planted. Sometimes, trees are cut down without any provocation, despite opposition from the people. The old jail land, as it is called, is a telling example of this.

The city's central jail was set up by the British in 1908. It was located at a place that now stands at the centre of the city. The jail has been relocated to the city's outskirts.

The old jail land has quite a few trees that are more than a hundred years old. The citizens have a sentimental attachment to them. When the jail shifted out, this land became the target of the politicians and the real estate developers. They wanted to appropriate the land for restaurants, cinema theatres, entertainment parks and other commercial establishments. The citizens vehemently protested against it. When the government became adamant, the citizens filed a public interest writ petition before the State's apex court and got an order to save the trees. One is still not sure when the axe will fall on these heritage trees.

I have heard some prominent citizens proudly calling Vizag the "city of destiny". I have tried to ask some of them how they viewed Vizag, say, twenty years hence. They are not quite clear about it. Some said that Vizag would become an industrial hub. Some others said it would be a centre for information technology. Others visualized Vizag as a city that would soon become a major metropolis like Mumbai or Chennai. None of them ever tried to understand whether there is enough water in the city that can support its growth. No one visualised the way the city's traffic would grow. None of them tried to imagine the pollution that would bother the citizens. None of them tried to find out how the growth will impact their own lives. The destiny of the city will obviously depend on how its citizens want it to be.

Water is going to be the single critical constraint to urban growth in India. In the case of Vizag, it is going to pose a very serious concern. VUDA's Master Plan has indeed looked at the long-term water balance for the city and its suburbs. It does not give much solace. To understand this, one has to look at the water balance numbers in some detail.

There are six man-made water reservoirs that meet the city's water needs. The rivers that originate in Eastern Ghats fill these reservoirs with water during the *monsoons*. The water accumulation in the reservoirs is declining fast due to several factors. Mining and removal of trees in the hills have reduced the water and increased the silt in the rivers. This in turn has gradually shrunk the capacity of the reservoirs. The designed capacity of the reservoirs is 176 million liters per day (mld). It has declined to 54 mld. New mining activity now being permitted in the hills will bring it down further.

Instead of trying to restore the reservoirs to their original capacity, the government is going far and wide to locate new water sources for the city. Already, there is a canal bringing water to Vizag from the distant Yeleru reservoir. There are plans to augment supplies from it by 273 mld. This is not going to be enough for the city which is expanding fast. The government has therefore planned to bring another 810 mld from Polavaram project much farther away.

Polavaram is a huge multipurpose project that will submerge vast areas of AP, *Orissa* and *Chattisgarh*. In AP, it will displace 176,000 *tribal* families in the hills to irrigate a million acres of land in the plains, apart from providing water to Vizag. It will also displace many *tribal* families in *Orissa* and *Chattisgarh*. Those two States have filed

cases against AP in the apex court of India, contesting the project itself. The future of Polavaram will therefore depend on what the apex court will finally decide.

In the past, when the government was forced to divert water from a local reservoir from agriculture to meet the drinking water needs of Vizag, the farmers protested. To appease the farmers, the government then promised to make up for their loss by diverting a corresponding quantity of water from Polavaram, as and when it became ready.

Against the above background, the total water availability for Vizag within the foreseeable future will be 327 mld without Polavaram and 1,137 mld with Polavaram, subject to some water being diverted for agriculture as per the past commitment.

VUDA's estimate for 2021 of the drinking water needs of the city and its rural suburbs is 653 mld.

If Polavaram ever became a reality, this would leave an additional quantity of 484 mld for the existing and the future industries. On the other hand, if Polavaram, for some reason, failed to materialize, it would lead to a deficit of 326 mld. The authorities should have kept these estimates in view and proceeded cautiously in making commitments to new industrial units. The mad rush to industrialize has forced them to throw all caution to the winds and make new commitments which, if added to the water needs of the existing industry, will imply a total water requirement of 1,151 mld. This is a mind boggling figure in any scenario of water supply-demand for Vizag. With Polavaram, it will imply a deficit of 667 mld. Without Polavaram, the deficit will be 1,477 mld.

The officers seem to be blissfully ignorant of the implications of their estimates, as they continue to make new commitments every day. One day, they announced an "industrial corridor". Another day, they announced a "petroleum corridor". They are either unmindful of the water crisis that will befall the city, or they are trying to please their political masters at Hyderabad. It is the people of the city that are in for an unprecedented water shock.

What befuddles the concerned citizens of the city is the nonchalant way in which the Central Ministry of Environment & Forests (MOEF) goes about its usual business of rubber stamping clearances for all these projects! When I posed this question to one official of that Ministry, he appeared unruffled. He assured me that his Ministry has covered its tracks in the case of each project by obtaining a "certificate" from the Greater Visakhapatnam Municipal Corporation (GVMC) that there would be enough water for the project. If a paper certificate can give mythical water, why worry at all about projects?

The summer of 2010 was the season in which the Vizagites, for once, felt the water tremors of the impending crisis. Whenever the taps ran dry, the residents went in for deep tube wells. The more they pumped out water from these wells, the deeper they had to go, as the rate of depletion of the aquifers exceeded the rate of regeneration. Many wells on the coast became saline due to the sea waters entering the aquifers. In the

industrial areas, the water had turned chemical. Vizag's water crisis has already started building up in many ways.

What is happening in Vizag on the water front is true of most cities in India, whether it is Chennai, or Bangalore, or Delhi.

To a passing tourist visiting Vizag for the first time, a drive along the beach can be truly breathtaking. The beach road, starting from the heart of the city near Rama Krishna Mission, meanders its way northwards between the hilly terrain on the west and the casuarinas and cashew plantations on the east, giving occasional glimpses of the surf beaten stretches of the beach. One can see dark specks of traditional fishing boats dotting the sea. At the end of this road is the sleepy little town of Bheemunipatnam, a name compressed by the English as usual into "Bheemli". It was once a vibrant port town used by the Dutch and the English centuries ago. The Gazette of the district of *Vizagapatam* published in 1869 (8) described the importance of Bheemli in the following words. "*Bimlipatnam of late has become a port of considerable trade, both as regards export and import, and it is frequented by British and Foreign vessels of very large tonnage. The exports to Marseilles are greater than at any other port on the coast, and revenue of the place has increased materially*".

Incidentally, on the way to Bheemli, one cannot miss witnessing the marvel of a series of red ravines spread across the landscape on the west. These are the few ravines that have so far survived the onslaught of urbanization. One stretch of these, known locally as *Erramatti Dibbalu* (Mounds made of red soil), is a popular tourist spot where a natural stream running through a fairly large expanse of the ravines drains water into the sea. The ravines are canopied by green cashew plantations that provide sustenance to several poor farming families of the nearby village. Anthropologists have found some evidence of a pre-historic human settlement here.

Sites such as *Erramatti Dibbalu* are heritage assets that the nature has bestowed on Vizag. While tourism is no doubt important, the facilities created for tourism should be such that they do not diminish the value of such assets. The farmers who look after the cashew plantations of *Erramatti Dibbalu* have a natural stake in maintaining the ravines in their pristine glory. Instead of involving them in decision making, in the name of creating amenities for the tourists, the authorities were on the verge of destroying the beauty of the ravines by constructing an ugly cement concrete structure, bang in the middle of the stream. This area lies within the zone prohibited for any kind of construction activity by the Coastal Regulatory Zone (CRZ) notification issued by the Central Ministry of Environment years ago. Many such construction works seem to benefit the contractors more than the tourists. The contractor who was entrusted with the work in this case was more aggressive than the tourism department in going ahead with it at any cost, even though the villagers and some environmentalists of Vizag put up a stiff resistance. But for this, this unique patch of ravines would have met the same fate as the ravines I had earlier referred to near the Rama Krishna beach.

In fact, further up towards Bheemli, there are similar ravines on the left of the road. Many unauthorized buildings are coming up there, slowly effacing the ravines one by one. Governance in the local bodies is far too lax to prevent the destruction of these natural assets.

It is not the ravines alone that are under threat. Every hill that overlooks the Vizag-Bheemli road is vandalised in the name of 'development'.

I had earlier talked about VUDA's Master Plan. The Plan clearly prohibited any construction or quarrying on the hills. On the other hand, it required that the original greenery of the hills should be nurtured. It banned construction near the water bodies.

The hills along the Bheemli-Vizag road are monumental examples of how the local authorities, in collusion with the private developers, have surreptitiously compromised the Master Plan. Film studios, luxury housing, IT companies, tourist spas, religious buildings and others have taken over these hills, removed the greenery and inflicted scars on almost every hill. The remaining hills have been taken over by the contractors for illegal quarrying. A small detour into Madhurawada village on the way would reveal how one wide stream, Maddi Gedda, had been filled up to accommodate unauthorized buildings. There are other places in the city and its suburbs where hills, valleys and water bodies have been wantonly vandalised.

A drive from Vizag southwards on the national highway towards Tuni would show how the hills on that side too were similarly destroyed.

A couple of years ago, some of us tried to resist VUDA's moves by trying to get a judicial order on the basis of an old government order of 1989 to protect the hills and the water bodies. The government's response to this was quite unexpected! It withdrew the old government order to frustrate our effort!

I see an old couple next to my house feeding grains to the crows every morning. There is a belief among the Hindus that their ancestors appear everyday in the bodies of these birds to bless them. Many Hindus believe in repaying their ancestors' blessings by feeding the birds. The birds seem to carry their own accurate biological clocks, as every morning I find scores of crows gathering all around the spot where the couple would place the grain. They perch themselves on the nearby trees, on the walls of the balconies and even on the telephone and electricity lines, in anticipation of the sweet grain that the old couple would offer them.

These days, these birds are unable to locate nooks and corners where they can build their nests. Sometimes, they build their nests atop the electric poles, in the thick of the high voltage maze of interconnected lines. There is an occasional burst of a short circuit that interrupts the electricity supply to our houses. These are unmistakable signs of the nature and its creatures in direct conflict with the modern way of life. I am not sure

how long the old couple or their children will be able to feed the crows and pay respects to their ancestors. They may soon find these birds disappearing from the city.

I go for an early morning walk every day on the beach road. It is a walk that makes me ponder and meditate. Whenever I look at the vast and dark expanse of the sea at that time just before the sunrise, I think of the millions of the marine plant species that lie under and the millions more of the creatures that constantly move in the depths of the sea to maintain the complex marine ecological system that supports the life on the planet.

I see the misleadingly tranquil water in the distance gathering momentum, building up slowly into a threatening wave and then finally crashing down with fury on the sand, with a resounding splash. Why does the ocean look so angry? I have sometimes tried to “*reconstruct*” the thoughts that would have filled the mind of the ocean, had it been alive.

The ocean has in its innermost depths an ecological wealth of immeasurable value. It complements the ecology of the planet on its landed surface and the space that lies above it. Man is but a microscopic component in this giant cosmic system. Why does he constantly try to arrogate to himself a role that is not his? Why does he disturb the delicate balance of this complex system by his imprudent acts? Unlike the rest of the beings of this vast universe, he alone seems to intrude into the spheres that are not his. He alone seems to indulge in excesses that will soon poison the ocean and the planet. He is certainly in a self destructive mood for which there is no explanation.

Sometimes, I wondered whether Kursura, the decommissioned submarine, put up on the beach for the visitors to see, symbolized the marine life that would come to a standstill, if the humans failed to be vigilant over their own actions that imperiled it!

The city’s untreated garbage and sewage with bio-medical and other poisonous wastes are wantonly dumped into the sea every minute, every day. The two ports in the city are thoroughfares for incoming and outgoing cargoes of coal, iron ore, sulfur, ammonium nitrate and a host of other chemicals. The chemicals must be constantly spilling into the sea directly or spread into it through the air or carried into it by the rain water. The nearby power station’s ash is freely seeping into the sea water every minute. The untreated chemical wastes from the pharma units, the refinery and the steel plant too must be finding their way into the sea waters.

I can see the convex sky line over the bay, filled with a long chain of ships, like the beads on a string. Many of them are oil tankers meant for the local refinery. A few months ago, one such ship spilt oil off the coast near *Kakinada*, another port nearby, south of Vizag. The spill extended more than a kilometer along the coast. The regulators have no clue as to what they should do. The spill caused a great loss to the fishermen. The oil would have also seeped deep into the bowels of the sea and damaged the marine resources. There are no laws to prevent the damage. There are no laws to punish the guilty. In the coming decades, with the refinery expanding its capacity, more ships carrying oil will move around along the Vizag beach. More oil will spill into the sea. The

sea water contains a strong concentration of brine. Perhaps, the nature has provided the brine to decay and absorb the organic wastes that flow from the hills and the plains into the sea. How can the sea ever tackle the cocktail of the chemical wastes which is callously dumped into it by the irresponsible human being?

In the meditative mood I was in, I recalled the Hindu prayer to the nature, so aptly depicted in the *Adharva Veda* (12.1.62), as follows.

“O Mother earth  
Let Thy bosom be free  
From sickness and decay.  
May we through long life  
Be active and vigilant  
And serve Thee with devotion”

Can we remain vigilant enough to be able to conserve the unique marine ecosystem that the nature has given us as a bounty? The dolphins and the tortoises, the fish and the other marine creatures are surely facing a crisis. Being a part of the same ecological system, the human being too faces the threat.

“May the past be kind; the future benign” says Atharva Veda (19.9.1). The sins we commit today will affect our grandchildren and their grand children.

It is not as though the city’s geographic boundaries have remained static over the last few decades. Urban growth is like a contagious disease. It spreads fast to any place that comes in contact with it. Five decades ago, a bus ride from Srikakulam to Vizag would take me all along through the thickly wooded hills that stood on the city’s outskirts. I would sight the city’s lights in the evening hardly a few miles away from its centre near Jagadamba junction. Today, the city has spread its long tentacles far and wide, to places 20 to 30 miles from Jagadamba junction. It has devoured the hills, the forests and the water bodies.

Unplanned cities radiate destruction all around. Vizag is no exception to this.

Vizag’s buildings require more and more stone which is quarried from the nearby hills. Quarrying not only removes the greenery but it also destroys the hills that would have maintained its scenic beauty. Vizag requires more and more water for its people, especially since it uses the water inefficiently. The city, however, expands so rapidly that it devours the water bodies that would have provided it water. The city requires more and more electricity, as a result of the inefficient way it uses the electricity. The electricity generation projects displace the people in the city’s hinterland. They migrate to the city’s already large number of slums. Does it not sound like a malignant cancer that is spreading fast?

Should not the citizens raise their voice against these policies that will rob our future generations? The civil society of Vizag has indeed responded. Some of us have

joined together to form Forum for Better Visakha (FBV), a citizens' body to highlight these concerns and bring pressure on the government directly or, if it fails, through judicial interventions. The Forum uses the Right to Information Act as the weapon to extract information from the public authorities. The Forum also keeps a vigil over the election process.

Sustainable policies and good governance are what the citizen should get as an entitlement, not as a matter of charity from the government. Empowerment of the civil society is therefore the central issue of what I am going to say in the coming chapters.

### Chapter 3 **The impending water crisis**



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I sing because I'm happy,  
I sing because I'm free,  
For His eye is on the sparrow,  
And I know He watches me. (9)

Water bodies have come under a serious threat, as never before.

In the Hindu tradition, as I had already said earlier, water is one of the five elements of the nature, known as *panchabhutas*. The ancient Hindu texts dealt extensively with the importance of water for the existence and survival of the human race. Water played a defining role in creating and destroying the ancient civilizations in the subcontinent and elsewhere.

In the northern parts of India, compared to the south, the river water flows are more evenly spread over the seasons as a result of the melting of the snow in the Himalayas during the summer. In the south, heavy rains occur during the monsoon time for three to four months and the rivers and the rivulets receive floods during that time. Unless the water is impounded and used in due course, the surplus waters drain into the sea. Sometimes, floods cause enormous havoc. Historically, therefore, the people in the region depended more on networks of tanks and ponds that stored water during the rainy season and used the stored water for irrigation during the rest of the year. Shallow wells, recharged copiously during the monsoon period, provided enough water for drinking and also provided water for irrigating small agricultural holdings. In Maharashtra, in the rain shadow areas east of the Western Ghats, percolation tanks are extensively used to store the meagre water collected during the rainy season and it is used efficiently through percolation downstream to feed sugarcane and other crops.

The ancient human civilizations all around the world realized that water was a scarce commodity and it was necessary to conserve it in a prudent manner. Ancient urban

settlements provided for rain harvesting and careful use of water for drinking and other purposes.

For example, the Indus Valley civilization that existed four to five thousand years ago on the banks of the river Indus and in parts of the present Gujarat and Rajasthan had a highly evolved rain harvesting system supported by efficient urban water supply and sewage facilities.

At the Mohenjo-daro archaeological site, a part of the Indus Valley civilization, 700 step wells were discovered. These step wells were cylindrical with brick lined walls. They were perhaps the precursor to the large number of step wells found and preserved till today in Rajasthan, Gujarat, Delhi, Maharashtra and Madhya Pradesh. These step wells extended into the present day Pakistan where Losar Baoli located in Margalla Hills at Shah Allah Ditta is a well known well. These step wells were water harvesting systems. They were so deep that many of them were multistoried. Their importance in those days can be gauged by the fact that there were accompanied by exquisite architectural embellishments.

The Buddhist archaeological site, *Thotlakonda*, of the 2<sup>nd</sup> and 3<sup>rd</sup> centuries B.C. near Vizag, had cisterns cut into the rock over the hillock to harvest water for the use of the monks who inhabited the place. In Telugu, the word *Thotlakonda* means a hillock carrying water cisterns.

*Kautilya's Arthashastra*(7) described the monetary incentives granted by the king during the 3<sup>rd</sup> century B.C. to those who built new tanks or improved the existing ones by renovating them or removing the overgrown weed. The king permitted private ownership of reservoirs, embankments and tanks subject to the condition that the owner should assume the responsibility of keeping them in a good condition. Severe punishments were meted out to those that damaged the water bodies.

An ancient water harvesting system was found about 130 km from Pune near Naneghat in the Western Ghats. A large number of tanks were cut in the rocks to provide drinking water to the tradesmen who used to travel along this ancient trade route. Each fort in the area had its own water harvesting and storage system in the form of rock-cut cisterns, ponds, tanks and wells that are still in use today. A large number of forts like Raigad had tanks that supplied water.

According to a medieval inscription (10) from Hanumakonda (Warangal) in Andhra Pradesh, Andhradesa, as it was known at that time, had “hundreds of tanks and thousands of rivulets and they appear to be the ocean and its consorts, respectively”. Speaking about the Kakatiyas who ruled the area during the 11<sup>th</sup> to the 14<sup>th</sup> centuries A.D., Prof Yazdani said (10) that “they inherited a system of irrigation which had been in use in the land from time immemorial. The main feature of the system was the existence of a network of tanks in which rain water was caught and stored for utilization for the cultivation of the soil.”

We have not learnt much from the prudence of our forefathers. We are in a hurry to destroy our water bodies either by building structures on them or poisoning them with the toxicity that our modern industry constantly dumps in the surroundings. We are mining our ground water sources by drilling deep wells and mechanically pumping out the water, far in excess of the rate at which the aquifers are recharged. We are loading the ground water sources with chemicals and pathogenic contamination without caring to insulate them from industrial and urban pollution.

Talking about the plight of water bodies in Andhra Pradesh, there can be no better case study than Hyderabad.

Hyderabad is a city with more than four hundred years of history. It was a city that thrived on lakes.

The population of Hyderabad has grown in leaps and bounds over the last few decades. For example, it was 1.25 million in 1961. Its territorial reach and urban sprawl are so high that the population registered in 2001 was 5.7 million. With the increasing urban pressure, several water bodies progressively disappeared. In 1973, there were 932 water bodies. By 1996, the number came down to 834. The area covered by these water bodies declined from 118 square kilometers to 110 square kilometers during the corresponding period. Among the water bodies lost were 18 tanks in excess of an extent of 25 acres each and 80 tanks of lesser size (11).

Hussainsagar still occupies the pride of place among the lakes of Hyderabad. Its story is truly tragic.

This beautiful lake connects the twin cities of Hyderabad and Secunderabad. In a way, the lake itself symbolises the cultural ethos of the city and has remained the mascot of the city for about four hundred and fifty years. It was built in 1562 by Hazrat Hussain Shah Wali during the time of Sultan Ibrahim Kutb Shah to control the floods in river Musi and provide water to the residents. According to history, at that time, it cost Rs.2.5 lakhs to build this artificial reservoir! For a few years, the reservoir failed to fill up. The feeder channels for the reservoir had to be cleared to let the water flow freely into the reservoir. Hussainsagar provided water to the city's residents for more than three hundred and fifty years till 1930 when it became dysfunctional as a result of the callousness and the neglect that choked life out of it. Over the last few decades, the lake has shrunk in size from 1375 acres to 872 acres as a result of encroachments and indiscriminate construction activity within its catchment. The lake continues to shrink even today. The streams and channels that feed water into the lake pass through an industrial belt with more than 400 industrial units. They include chemical plants, drug units and paints manufacturing units. One hundred of these are categorized as "units generating hazardous wastes". The industrial units generate 15 million litres of effluents every day and they include nitrates, phenols, cyanides etc. In addition, 55 million litres of domestic sewage is also let into the channels that feed the lake. Of late, as a result of persistent pressure from the civil society, some effluent treatment plants have come into operation (11). However, it is doubtful whether the plants are functioning satisfactorily.

During the last few decades, in the name of developing the area around Hyderabad, the government opened the flood gates to industry and real estate activity, in and around the city. The resulting scramble for land, in the absence of any respect for prudent urban planning, led to indiscriminate destruction of the water bodies on which the local communities critically depended. On one side, the city's population increased in leaps and bounds, partly as a result of urbanization and partly as a result of migration from the neighbouring rural areas. On the other side, availability of water declined as a result of shrinkage of the local water bodies. This forced the government to take up expensive schemes to bring water from River Krishna which is 150 kilometers away to the south of the city. The city itself is located within a bowl-like feature on Deccan Plateau at an altitude of 536 meters above the sea level. There is a ridge that stands between River Krishna and Hyderabad. In other words, the water from River Krishna has to be necessarily pumped over the ridge to reach the city. It is a costly proposition with the burden falling squarely on the people of Hyderabad.

The continuing disappearance of the water bodies around the city, especially the rapid shrinkage of Hussainsagar and its increasing industrial contamination, has become a matter of serious concern for the citizens of Hyderabad. Over the last few years, several enterprising and socially conscious citizens have formed themselves into civil society groups to restore Hussainsagar to its pristine glory and save the lakes that have survived the onslaught of the building activity. The more prominent among these civil society groups are the Forum for Better Hyderabad, the Save the Lakes campaigners and many other concerned citizens acting individually. They filed at least seven public interest petitions before the apex court in the State and one similar petition before the apex court at the national level to save Hussainsagar. The courts have expressed displeasure at the destruction caused to the lake and ordered the State government to take all possible measures to restore it to the maximum extent possible. The Hyderabad Urban Development Authority and the Andhra Pradesh Pollution Control Board (APPCB) are still struggling to get their respective acts together. The State government launched a project five years ago to restore the lake, involving an investment of Rs.300 Crores, with foreign technical assistance. However, the project has not yet made any significant impact on Hussainsagar. Meanwhile, the lake continues to shrink and become increasingly toxic.

To control the floods in Musi river and to meet the increasing water needs of the twin cities, two artificial reservoirs were created during the time of the last Nizam, Osman Ali Khan, one on the main river, Musi in 1920 and the other on its tributary, Esi, in 1927. The first reservoir is known as Osmansagar and the second one is known as Himayatsagar. The catchment of Osmansagar is 738 square kilometers and that of Himayatsagar is 689 square kilometers. These two reservoirs alone are designed to provide 40 million gallons of water per day to meet the water needs of Hyderabad. The city gets additional water supplies of 105 million gallons per day from two locations on River Manjira in the adjacent Medak District. The city planners have been lax in regulating the spread of urban agglomerations all around. As a result, the capacities of all these four sources have steadily depleted. According to some estimates, the catchment of

Osmansagar has shrunk by 20% and that of Himayatsagar by 30%. Many polluting industrial units are springing up in the catchments of these two reservoirs. Even where there is agriculture within the catchments, the use of chemical fertilisers has caused contamination of the water in the two reservoirs. Water inflows into both these reservoirs are declining. These reservoirs would usually have enough carry-over water stored in them to tide over the drought years. In the past, the reservoirs rarely dried up completely during the drought years. However, these days, they seem to be drying up completely more often than in the earlier decades. At this rate, the two reservoirs are likely to dry up permanently within the next 25 to 30 years! (11)

Any progressive government would have woken up to this harsh reality, protected the existing water bodies and enforced efficiencies in the downstream use of water by the residents. In the case of Andhra Pradesh, or for that matter in the case of most other States as well, neither there is prudence nor any clear vision in the management of the water bodies.

It was against this background that some concerned citizens filed a writ petition before the apex court at Delhi for saving these two reservoirs. On December 1, 2000, the apex court pronounced a landmark order that perhaps should apply to all water bodies in the State. The court ordered that, within ten kilometers from the full tank level of each of the lakes, no polluting industries should be permitted to be set up and, if residential colonies were to be allowed, they should be mandated to leave at least 60% of the area in the case of each plot as open space. It was hoped that at least 90% of the catchment would remain under agriculture. Unfortunately, the nexus between the political executive and the private developers is far too strong to allow the government to remain compliant with the apex court's directions. The first violation of the order was in the case of the new private airport at Shamshabad that took away 11% of the catchment of the two lakes in one stroke. There have been other violations as well. Many unauthorised structures are coming up within the critical stretches of the two catchments. Those who are bent upon destroying the lakes seem to be having the upper hand over those who are struggling to save them. The water future of Hyderabad continues to be bleak.

There is no ambiguity about the critical portions of the catchments of the two lakes. They have been identified by the experts. If there is political will, it is still possible to protect those areas from construction activity and contain any further damage to the lakes. The State's leadership has remained indifferent to the impending crisis. Short term private gains continue to dictate the long term future of Hyderabad.

Hyderabad's ground water resources are limited. Over the last few decades, as a result of the declining availability of water from the surface water sources, the residents of the city have resorted to excessive tapping of ground water through deep tube wells run on mechanical pumps. As a result of overexploitation, the existing tube wells have dried up at many places and it has become hard to find water at new locations. The problem has got further compounded by the industrial effluents that have seeped into the ground water aquifers in many areas of Hyderabad.

Like in most cities in India, Hyderabad's water distribution network is outdated, with water leaking at many places and sewage water entering the system at several points. It is commonplace for the residents either to boil the tap water or pass it through expensive water filtering devices, before they drink it. In the slums, the residents draw water from the few crowded municipal taps or from water tankers provided by the municipality. In either case, despite the natural immunity to disease they have developed over the years, the slum dwellers are the victims of many water-borne diseases that sap their strength and productivity.

In a city that faces a serious water crisis, it is strange that there is water wastage everywhere. Apart from the leakages that seem to be omnipresent, the water use efficiencies of the appliances that the residents depend on are abysmally low. The municipality has many grandiose plans to bring water from unbelievably distant sources at a huge cost to the people but it has not apparently applied its mind to plug the leakages and mandate the adoption of high-efficiency water use appliances by the residents.

The story of each lake that has disappeared in Hyderabad is a story of how meticulously the rulers of the past planned and built those lakes for the benefit of the people and how callously the "modern" residents are trying to destroy them for short term private gain.

Talab-e-Maa-Sahaba was built during the time of Qutub Shah V. Its name became Maa Sahaba Talab, later anglicised into Masab Tank.

In its original form, Masab Tank was an artificial lake created by the erstwhile rulers by impounding the water that flowed into the city through streams and rivulets. The lake was meant to control the floods and provide water to the residents in the region. Today, there is no evidence of any lake there. What one sees there is a hideous sight; a tangled concrete jungle with thousands of vehicles stacked together in unending and disorganised formations, chugging along painfully along the crowded roads and spewing out toxic fumes into the lungs of the pedestrians and the local residents. No wonder the landscape of the so-called Masab Tank area is punctuated frequently by crowded hospitals and busy medical shops, perhaps to undo partially the mayhem caused by this modern way of living.

Ironically, in a city that is distressingly water-starved, one can see a ten-storeyed building in the midst of the present day Masab Tank; centrally air conditioned; decorated by colourful fountains inside, throwing up water as though the city's affluent sections are either unaware of the water woes of the rest of the citizens or they do not care a hoot for the water crisis all around them. This building always highlighted to me the ugly distinction between the shameless greed of the elite and the basic need of the poor. It is one small India mocking at another India that is much bigger!

At least two to three lakes in Banjara Hills and other posh areas in Hyderabad have disappeared during the last four decades. These lakes have given place to high rise buildings and shopping malls.

The tanks that were in existence in and around Hyderabad used to absorb the surplus water in the river and its tributary during the rainy season and provide water to the citizens during the rest of the year. With the disappearance of the tanks, a heavy shower for even a couple of hours floods the low lying areas, causing loss of life and damage to property. It is ironic that it is the poor who suffer the damage on account of the floods as it is they who live in the low lying areas of the city. The urban elite who have comfortably occupied the tank beds of Hyderabad and live in luxurious high rise buildings seem to sneer at their less fortunate brothers during the floods.

The water story of Hyderabad is similar in many respects to the water stories of most other urban agglomeration in the State and elsewhere. If Hyderabad has already lost many water bodies, the other cities and towns are on the verge of losing their own water bodies soon. Urban India is going down the abyss as far as water is concerned.

What is happening in Visakhapatnam today is more or less a repeat of what has already happened in Hyderabad.

A few years ago, I attended a meeting to celebrate the birth anniversary of Sir Mokshagundam Visveswaraya, the eminent engineer who is credited with his signal contributions to the development of Karnataka State and to urban planning in Hyderabad, prior to Independence. At that meeting, I was asked to say a few words on his contributions. At such meetings, it is customary to garland the photograph of the celebrity and wax eloquent on his personality and his achievements. The anniversary comes once a year. During the rest of the year, the celebrity and his ideas are conveniently forgotten. In India, such tokenisms often provide an excellent cover for inaction.

No doubt, Visveswaraya was an extraordinary person with a far reaching vision that is rare to find these days. He helped the Nizam at that time to reconstruct the city of Hyderabad into a well planned urban settlement, functionally efficient, convenient for the residents and aesthetically appealing. He was responsible for planning the drainage system of the city. His contribution to controlling the frequent floods in Musi river led to the design and construction of the two reservoirs, Himayatsagar and Osmansagar about which I have already talked about.

I thought the best way to drive home the point about the vision of Visveswaraya was by first recounting briefly what he did for Hyderabad during his time and then show how the present generation of Hyderabad had been deliberately undoing what Visveswaraya did a century ago. In the recent times, Hyderabad has grown into an ugly, congested concrete jungle, where moving from one location to another a few kilometers away, has become a Herculean task demanding a great deal of patience, composure and extraordinary navigational skills. The city's drainage systems stand clogged. They overflow during the rains. A brief cloud burst can paralyse the city's traffic and bring its life to a standstill. The reservoirs that Visveswaraya had created have shrunk in size and stand highly polluted. Visveswaraya's statue, once revered by all, now stands helplessly at a junction of roads near Raj Bhavan, appearing to plead with the government sitting next

door to listen to his sane advice and save the city from the impending doom! Coming back to Vizag, instead of merely garlanding Visvesvaraya's photograph, I therefore suggested that the residents of Vizag should feel forewarned about the future of their own city and act collectively to preempt the kind of crisis that Hyderabad is presently facing.

Recalling what I have said in the previous chapter, the region surrounding Vizag, that comes within the purview of VUDA, faces a water deficit of 667 mld by 2021, if Polavaram project becomes a reality and, a much larger deficit of 1,447 mld, if Polavaram fails to materialise. Blissfully indifferent to this harsh reality, both the State and the local authorities are merrily announcing the setting up of new water guzzling industrial projects every day. Every drop of water that is diverted to new industrial units will deprive the citizen of a corresponding drop for drinking. Compounding this emergent crisis, the existing ground water aquifers are running dry and getting poisoned with industrial chemicals and urban wastes.

For decades, Vizag has been leading a hand-to-mouth existence as far as water is concerned. The city faced serious water problems from time to time. The responses to addressing those problems have always been short sighted and unsustainable. While moneys are spent on the creation of new reservoirs, the old ones are getting neglected. No one has ever tried to understand the emerging pattern of the water inflows into the reservoirs, the critical areas in their catchments that need to be protected and the downstream restrictions that should be imposed to ensure greater efficiencies in the use of water. The following details of the water sources of the city illustrate this.

A reservoir was built on Gosthani river in 1957 with a designed capacity of 19.10 mld. The capacity progressively came down to 16.38 mld, as a result of reduced inflows and siltation. As discussed earlier, construction activity in the catchments of these reservoirs has affected the water flows into the reservoirs. The water availability from Gosthani has become highly uncertain as it dries up frequently.

In 1962, a reservoir was built on Gambhiram Gedda with a capacity of 8.20 mld. It is a seasonal source that cannot be relied upon throughout the year. Like Gosthani, Gambhiram too remains dry most of the time.

Another reservoir, Mudasarlova, was constructed in 1963 with a capacity of 2.72 mld. Its capacity steadily shrank to 1.82 mld. Even this remains dry most of the time.

In 1967, the Thatipudi reservoir was created to provide 45.50 mld. The capacity shrank in due course to 36.32 mld. Similar to it is the Meghadri Gedda reservoir built in 1972 with a designed capacity of 45.5 mld, which shrank to 41 mld. Its present capacity may not exceed 18 mld.

As the water problem persisted, additional water supplies were arranged in 1994 from Raiwada reservoir which was essentially meant for agriculture. This created dissatisfaction among the farmers who resisted the plan to divert water from agriculture to meet the City's needs. The government then had to yield to their pressure and assure

them that the deficit on account of the diversion would be made good in due course when water from Polavaram became available for Vizag. Of course, Polavaram continues to be a pipe dream for the State. In addition, water supply to the city was arranged from Yeleru canal drawing water from Yeleru Project located about hundred kilometers south of Vizag. Together, these two sources provided additional water supplies to the extent of 68.2 mld to the city. The Yeleru canal is in need of repair and its capacity has already started shrinking.

In the rural areas around Vizag, there are many tanks that impound water during the rainy season and provide water for irrigation and drinking during most part of the year. These tanks are disappearing fast, as a result of real estate development. Even new minor irrigation tanks planned in the recent times are falling prey to building construction all around the city.

To cite one example, there is an irrigation project under construction on a stream known as Jeggamma Gedda in Anandapuram Mandal of the district, around thirty kilometers from the heart of the city. The water impounded by the dam across the stream would submerge the agricultural lands of seventy tribal families who lived in a nearby hamlet. When I visited the project, I found that the tribals were cultivating small bits of public land for generations along the rivulet, upstream of the location where the project was proposed. It is the policy of the government to grant ownership rights to landless farmers who were in occupation of the public lands for a long time. In accordance with that policy, the local authorities did grant *pattas* or ownership rights to the tribals, though the *pattas* covered only parts of the land cultivated by each one of them. These tribals were far too diffident to approach the officials and demand that they should be given *pattas* that covered whatever residual land that each one of them tilled. The land assignment policy, as it is known, allowed ownership rights being conferred on the landless farmers up to five acres of dry land and two and a half acres of wet land in the case of each individual farming family. The individual holdings in the instant case were well within these limits.

When I met these tribals, they thought that I was a government official and requested me to help them in getting ownership rights for the entire land in their possession. I explained to them that I was no longer with the government but I would certainly bring their request to the notice of the District Collector. I did write later to the District Collector as promised. These tribals gathered head loads of fuel wood from the adjacent forest and sold them in the nearby town to supplement their income from the land. Poverty was prominently written on their faces.

The new threat they faced was the minor irrigation project that would submerge their lands and rob them of their livelihoods. They had no inkling about what they would do, once uprooted from their village and once dispossessed of their agricultural land.

When I tried to find out how the project would benefit the lands downstream, I came in for a rude surprise. The lands that were supposed to get water from the project had already been bought by affluent residents of Vizag for building up a residential

colony! There were large sign boards erected at several places announcing the name of the real estate company that was in charge of the construction work. The idea of constructing a dam across the rivulet and irrigating the agricultural land downstream was evidently conceived much earlier, well before the real estate agents started prowling in this area for buying up the agricultural land. The contractor who was entrusted the job of constructing the dam acted fast and was about to start the work on the dam. He might have come to know about the possibility of a housing complex coming up over the land that was proposed to be irrigated by the project but his mission was to construct the dam and earn his profit quickly, irrespective of the outcome. The officials were either far too lax or far too comfortably in league with the contractor to scrap the dam proposal in time. I wondered how the local Revenue officials gave their nod to the change in the classification of the downstream land from “agricultural” to “residential” use, knowing well that the government had taken up the project upstream to irrigate that very same land. Evidently, there is a great deal of corruption that drives urban sprawl of this kind.

I came across an irrigation tank of a different kind near a village known as Kapulauppada, a few kilometers away from Vizag. I was trying to assess the impact of the Employment Guarantee Scheme that the government had introduced to create employment opportunities for the villagers. Those that receive wages under the scheme are expected to create productive assets for the community. In the village that I visited, those that benefited from the scheme said that they had improved the condition of an existing irrigation tank by removing silt from it. Prima facie, it was a good idea as repairs to an irrigation tank should increase agricultural production and contribute to the food security of the region. When I made further enquiries, I was surprised to find that the lands that should have received water from the tank had already slipped into the hands of the real estate agents. A residential colony was about to come up there! I am sure that Kapulauppada is only the tip of the iceberg as far as the outcomes of the scheme are concerned. The emphasis of the scheme is apparently more on payment of wages than on the creation of durable assets. The scheme is well intentioned but its outcomes may not be quite satisfactory.

I have tried to get information on the number of water bodies that VUDA has inherited since its inception. There was a Town Planning Trust in Vizag from 1962 till 1978 when VUDA came into existence. The Master Plan of VUDA is strangely silent on the number of water tanks and lakes, other than the six reservoirs I have already mentioned. The Master Plan did refer to Kondakarla Ava, a wetland that I have referred to in more detail in Chapter 5. From the Master Plan, one cannot make out the details of the water bodies that have disappeared in the region and those that need to be conserved.

Sambhuvanipalem reservoir is one such reservoir quietly ensconced in the hills near Madhurawada, a twenty-minute drive from the heart of the city. When someone mentioned to me that such a reservoir existed but it did not find any mention in the Master Plan, it was truly a revelation to me. I wondered why that reservoir had never been considered as a source of water for the city. I was surprised that those that prepared the Master Plan never cared to look around the topography of the area they were supposed to consider and investigate the possible water sources. Sambhuvanipalem is a

reservoir that finds place in the records of the State Irrigation and Revenue departments. Evidently, the Consultant who prepared the Master Plan was in far too much of a hurry to collect his remuneration to bother about understanding the terrain of the region, identify the water sources and factor them into the urban planning process!

While I was still thinking of visiting this reservoir, a number of incidents that took place there forced me to make a rushed visit it.

It all started on January 25, 2011 when a TV reported telephoned me to say that someone had surreptitiously cut down a number of fully grown trees on the bund of this reservoir. Since I heard about the scenic beauty of this place earlier, I rushed to the spot to ascertain the factual details. As soon as I reached the edge of the reservoir, I realized what a breath taking sight it presented. At that time, there was abundant water stored in the reservoir. The reservoir itself presented a scene of tranquility, surrounded by beautiful, lush green hills. Since it was hidden among the hills, not many people were aware of its existence. Later, when I looked at the map of the notified forest areas of Vizag and the map of Kambalakonda Wild Life Sanctuary, I realized that the reservoir was a part of the sanctuary. It received water from a rivulet known as Thumuru Gedda. There was a small tribal hamlet on the slope of one of these hills. Sambhuvanipalem reservoir was built during the seventies. At that time, it was meant to be an irrigation tank. However, before it could be used as such, the land under its command became a paradise for real estate agents, as it was conveniently located at the rim of the city and there was pressure from the people to own house sites there. The State government notified the forest around Sambhuvanipalem as a wild life sanctuary in 2002. Even after this, some land grabbers had encroached over the edge of the forest area and started constructing structures. Apparently, the local forest officials were in nexus with the real estate agents. Even now, such an unholy nexus seems to prevail. If this state of affairs continues, neither the forest nor the sanctuary will survive. To have such a rich natural heritage within the precincts of the city and to destroy it deliberately is a crime that the society should never condone.

On that fateful day, to my surprise and distress, I found that a private film company had already destroyed parts of the grassy reservoir foreshore to construct a number of ugly looking cottages protruding into the middle of the reservoir, partially filling it up! Apparently, some senior officials of the local Forest Department had allowed the film company to do what they liked in the name of film shooting. The site at which these cottages were built presented a pathetic picture of plaster of paris and other undesirable debris littered in the waters all around. While the Forest officials contended that the permission given to the company was only for film shooting, they had apparently closed their eyes to whatever the film company wished to do in the name of film shooting. The company undertook heavy unauthorized construction activity, polluted the reservoir, cut down a large number of trees and laid out an unauthorized pathway to the cottages, right through the protected forest. Around seventy to hundred trees were removed from the bund of the reservoir, apparently to clear the view for the shooting of the film. In the absence of any alternate drainage facilities at that remote location, even sewage water was wantonly released into the reservoir.

When I tried to move closer to have a look at the extent of the damage caused by the cottages, I found the approach blocked by a gate erected by the film company. A private security watchman stopped me saying that it was “private” property where outsiders were not allowed. The film company apparently laid out the approach road by cutting some trees and removing the forest shrub. Excavators were apparently deployed to scoop out the soil from the hill slopes and fill the reservoir with it to create enough space for the cottages and the ornamental arches that the company had erected at the film shooting arena.

I have come across many instances of Forest Department preventing the poor from collecting fuel wood from the reserve forest areas. In some cases, the head loads of fuel wood carried by the people are mercilessly “seized” and cases filed against them. Laws seem to apply only to the poor, not the rich. In the instant case, the private film company had the audacity to disturb a notified wild life sanctuary, fill up and spoil the tranquil waters of the reservoir that served as a water hole for the wild animals and cut down huge trees with mechanical saws to clear the view for their cameras. The company built a road, cleared the trees there and controlled it by posting a private security watchman in an area that should have been guarded and protected by the forest officials.

Apparently, the company violated several laws. They included the Indian Wild Life (Protection) Act of 1972 and Forest Conservation Act of 1980. The State has a legislation known as A.P. Water, Land and Trees Act of 2002 that sought to protect, among other things, both water and trees. That law stood infringed as no permission had ever been obtained by the company as required. The Water (Prevention and Control of Pollution) Act of 1974 was also violated as the company contaminated the water in the reservoir. The Environment (Protection) Act of 1986 stood violated as a project of this size would not have been permitted anywhere without a proper environment impact assessment and prior clearance under the Act. The State government issued instructions to the local authorities in 2003 to identify all water bodies, include them in the Prohibitory Order Book of each village and prevent their diversion for any industrial or other construction activity. In this case, those instructions too were given a go by.

I was curious to find out how the reservoir appeared in satellite pictures prior to the damage. Picture 1 is a snap shot view of the reservoir from Google Earth, as on April 29, 2009. Picture 2 shows how the reservoir appeared from the forest road prior to the construction of the cottages. Picture 3 shows the reservoir after the construction of the cottages. The case of Sambhuvanipalem is a clear illustration of how callous we are in protecting our natural heritage. The officials who were supposed to protect this heritage were not even aware of its value to the society.

In monetary terms, the cost of the damage caused to the forest, the sanctuary and the reservoir would run into hundreds of crores of rupees, if not more. Are the forest and the environment laws sufficiently stringent to permit recovery of the costs with an exemplary penalty from those that caused the damage? Are the penalties for these

offences strong enough to discourage the repetition of such offences in the future? Time only can tell.

The State government came to know about the destruction of the reservoir only when I sent these pictures to them and pointed out the statutory violations. Unable to elicit an effective response from the State agencies, I had to file a formal complaint before the Central Empowered Committee (CEC) constituted by the apex court of India.

The story of Sambhuvanipalem did not end here. Six months after the above mentioned incidents, I visited the reservoir once again to assess the ground situation. The cottages were still there. The debris had not been cleared. The water in the reservoir stood contaminated as it was six months ago. The Forest Department posted a few forest officials to keep vigil over the place. It was like closing the stable door after the horse has bolted! Apart from this, nothing significant seemed to have happened. I then thought that I should go a little deeper into the forest to see the tribal hamlet of Sambhuvanipalem. On my way to the village, I was surprised to find a couple of expensive cars moving around. I came to know the reason for this as soon as I reached the village. To my surprise, I found that some real estate developers had already purchased lands near the village and set up formidable boundary walls around them. In one such enclosure, an enterprising developer had set up an emu farm. I always thought that no external species of birds and animals could be so casually introduced in a protected wild life sanctuary. Apparently, the local forest officials had no inkling of this till I brought it to their notice. I thought that these officials would serve as the eyes and ears of the government as far as the protected forests were concerned. It is possible these eyes and ears stopped functioning in the case of those that had the necessary political clout to defy the law of the land. I have brought these facts to the attention of the government. I am not sure whether the government itself chooses to respect the law and take corrective steps to save the wild life sanctuary and the reservoir.

A few months later, once again to my surprise, I came to know that the local urban development authority had caved in to a proposal put forward by a politician-cum-contractor to construct a road connecting Sambhuvanipalem to Dabbanda village right through the prohibited area around the wild life sanctuary! Evidently, neither the urban planners nor the politicians had any sensitivity to the need to conserve the reservoir and the sanctuary.

What I have described above relates to a few known reservoirs. In many villages in the State, the village tanks meant for the community are being filled up and converted into residential and commercial plots by influential, unethical developers. The regulatory bodies that are supposed to protect the tanks are in cahoots with the encroachers. In some cases, activists campaigning with the help of RTIA have resisted these attempts but their efforts remain far too sporadic to stem the rot. No wonder that India's political musclemen are up in arms against these RTIA activists and whistle blowers. I have heard the Constitutional head of a State repeatedly cursing the RTIA activists for "misusing" the Act!

Water bodies are an important part of the ecology that surrounds us. They support a wide range of biodiversity, apart from sustaining our lives.

While I talk of water and its critical importance for human survival, I recall a verse from Rig Veda that reads in English as follows.

O powerful waters  
I might have violated  
The laws of Nature  
Knowingly or unknowingly,  
Foolishly or impudently.  
Take away whatever is wrong  
Or deficient in me. (Rig. 1.23.22)

Those that violate the laws of the land may get away with it for the time being. However, those who violate the laws of Nature will certainly reap the sins they have committed!

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Chapter 4: Ecology under threat; livelihoods in peril



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*I see your planet that once was so green  
your carbon footprint to show where you've been  
your trees and your plants are nearly all gone  
surely you see this cannot go on*

*Destroying your world where billions live  
you poison your rivers of the life blood they give  
the rich and the powerful are all who will gain  
billions will die only they will remain*

Source- "Don't destroy your planet: An alien view"

by [Michael Oldacre](#) (12)

India's economy opened up in 1991. The erstwhile "license raj" started getting dismantled. It was hoped that economic liberalisation would bring down corruption. The *Nehruvian model* of central planning was expected to be given up. The private sector was expected to expand, shrinking the public sector. Market forces were expected to determine the course of the economy. More and more investment and higher and higher rates of growth were expected to provide the panacea for all the ills of the country. This new paradigm of liberalized economic planning was expected to reduce poverty, remove the income disparities, ensure greater social inclusion, improve the quality of life and fill the air with prosperity and happiness. It was expected to lay the foundation for a sustained growth.

Two decades have passed since 1991. No doubt, the level of investment in the economy has shot up since then and the rate of growth has registered an equally steep increase. The number of billionaires who figured in the Fortune rankings has sharply increased. The Parliament today has more billionaires than ever before. The metropolitan

cities are shining with the Western kind of malls, multi-star hotels, winding flyovers, and entertainment parks. One India is truly shining. It would soon be the envy of the world.

There is a much larger, less articulate India that seemed to taint the shine. That India is found in the vast rural landscape of the country, thousands of the fishing villages that lie along its long sea coast and among the millions of the tribals living in the remote areas of the country. Nearer home in the cities, they live in the numerous slums, on the pavements near the malls and the star hotels, beneath the flyovers and around the entertainment parks. When the beggars and the vagabonds of Delhi appeared to take the shine off the Commonwealth Games in 2010, the Delhi government conveniently moved them out to far off places, lest they should shame the country in the eyes of the foreign visitors. To think that anyone could hide this larger, impoverished India is like the proverbial ostrich closing its eyes.

Has the soaring GDP removed the poverty? The planners are still quibbling on the definition of poverty, six decades after Independence. On the other hand, the hard reality is that more than a half of the population remains starved, distressed and deprived of their basic human rights. The *dalits* and the *tribals* who constitute a quarter of the population continue to remain marginalized politically and socially.

The growth obsessed planners have not paid enough attention to the dignity and the rights of the marginalized communities. While the government at Delhi spends 16% of its public funds on defense, it spends hardly 1.1% on health and 3.2% on education. This is despite the fact that seventy out of every thousand children do not live beyond the age of five years. Three hundred million people, out of a total population of one billion, are still illiterate.

UNDP's Human Development Report for 2010 (13) has a few interesting things to say about the status of human development in India.

In terms of UNDP's Human Development Index (13) computed for 164 countries, India ranked quite low, at the 119<sup>th</sup> place!

The report (13) also looked at the trends in economic growth in different countries since 1990 in relation to the human progress achieved by those countries. On that basis, UNDP came to the "surprising" finding about "the lack of a significant correlation between economic growth and improvements in health and education". It further said that "understanding this result is enormously important for development policy". It evidently took decades of analysis and volumes of glossy reports for UNDP to come to this path breaking conclusion that was so obvious to the common man on the street in India! Evidently, the state cannot wash its hands off development, in the name of liberalization. Markets and growth can at best have a limited role.

Has the buoyant growth really brought down corruption, as expected? Not really. The spectrum of corruption has widened and perhaps even intensified; certainly not reduced. If the old form of licensing has disappeared, a more virulent form of it has emerged.

Is this growth sustainable? Not many people know that the growth of GDP in our case is partly on account of the minerals we constantly deplete and the ecology we wantonly destroy. GDP calculations fail to capture the annual loss of these natural assets. We are robbing our future generations to keep ourselves falsely happy in the short term.

Has economic growth brought down the income inequalities? Certainly not. If at all, the income inequalities across the population have registered an increase during the last few decades.

Have the regional inequities reduced as a result of the rapid growth trajectory on which India seems to be moving these days? This is certainly not the case. Apart from the sharp and growing regional variations in terms of income, poverty and socio-economic development, even in each of the more rapidly developing States, there are pockets in which the indices of socio-economic development continue to fall short of even the sub-Saharan situation.

Genuine liberalization is all about openness and competition. It will yield benefits when the economic environment becomes truly competitive. Then, the right kind of investment will flow in, through competitive routes. The private sector will then enlarge its role, not by monopolizing the market, but by subjecting itself to competition and, where necessary, regulation. It is the law of the land that should regulate the growth of the private sector; not lawlessness. It is the people at large that should derive the benefit of liberalization to the fullest extent; not a few brokers and intermediaries. Where there are natural monopolies or *externalities*, an independent, apolitical regulator should regulate the private players in accordance with a set of transparent rules and regulations. This was certainly not the case with the last two decades of economic reform in India.

What transpired in the name of reform in India should enlighten the planners elsewhere in the world as to how misplaced policies that ignore the basic principles of reform can play havoc with the economy. Openness and competition were given a go by. The government blessed a few domestic private players to exercise monopoly over the market, choking competition. Opening floodgates to investment was misinterpreted to mean opening floodgates to lawlessness, as the government itself often became a violator of the law and allowed the investors to do likewise. In some cases, laws were twisted to accommodate the investors. Regulators were appointed to satisfy the multilateral funding agencies. The regulators were neither apolitical nor independent. As a result, liberalization benefited the influential more than the people at large.

Post 1991, the services and the industry sectors received an undue impetus at the expense of agriculture. The planners' focus was more on taking *SENSEX* (the stock

market index) to dizzy heights, than on addressing the woes of the farmer, or enhancing the purchasing ability of the poorest of the poor.

Modernisation no doubt brought a paradigm change. The change had its pluses and minuses. The tractor displaced the bullock cart, enhanced the productivity of agriculture but hurt the village carpenter. Commercial crops whose prices fluctuated replaced the more benign and essential food crops, exposing the subsistence farmer to enormous risk. Deep tube wells and electrically driven pumps, which the richer landlords could afford, lowered the ground water tables, hurting the interests of the smaller farmers. Big industrial projects grabbed land from the farmers, rendering them homeless. These changes explain the spate of suicides that continued to plague the rural landscape throughout the country. The government had no safety nets to offer to the victims of these changes.

It is the industrial policy of the government that hurt the people most.

In the eyes of the government, industry and development became almost synonymous. Setting up an industrial unit in a given region was perceived to be the best way to develop that region. The promoters usually made tall promises of employment but none in the government ever tried to monitor the fulfillment of those promises. Employment opportunities in the industry were limited and confined to those that were highly skilled. Such skills were not locally available. The people in the project area were employed at best in a few menial jobs. On the other hand, the project directly and indirectly displaced farmers, fishermen, artisans and other rural workers. The environment impact assessment studies made on the project rarely mentioned about them.

Industrial policies in India have revolved around State largesse; in the form of cheap land and subsidized water and electricity. The project developers were rarely chosen on the basis of objective criteria and competitive procedures. In 2001, under pressure from the funding agencies, AP promulgated a progressive law, the AP Infrastructure Development Enabling Act, 2001. It mandated that the project developers should be selected through transparent, competitive procedures. The Act was rarely put into practice, as it was thought that competition would inhibit investment inflows. Once the government decided to allow a developer to set up a project at a site chosen by him, the developer was expected to have a cake walk in securing the necessary clearances. No one should ask inconvenient questions. No one should oppose the project. The nicety of an elaborate public consultation process or the desirability of a scientific environmental appraisal should not place hurdles in the way of the project.

In 1992, one year after India launched its economic liberalization programme, the Parliament took the extraordinary step to amend the Constitution to empower and strengthen the three bodies at the lowest tier of the country's democratic system, the *Panchayat*, the *Gram Sabha* and the *Municipality*. This amendment truly echoed the first five path breaking words of the Constitution, "We, the people of India", as it would introduce a participative decision making process at the grass-root level. It was a dream that was never fulfilled. These bodies remained totally muted and helpless.

The Constitution safeguards the human rights. Part III of the Constitution has listed several fundamental rights of the citizen. In particular, Article 21 protects the life and the personal liberty of every individual. As far as the environment is concerned, Article 48A requires the executive to protect the environment. Article 51A casts an obligation on the citizen, as well as a company, to “protect and improve the natural environment including forests, lakes, rivers and wild life, and have compassion for living creatures”. These are important safeguards. In practice, however, the state chose to give a go by to these salutary provisions, setting a negative example to the citizen.

In the laissez faire framework created by the government, a project developer could choose any site for his project, without bothering about its importance from the environment point of view and without worrying about the number of livelihoods it supported. The rest of the procedure became a mere formality. A professional consultant was required to evaluate the impact of the project on the environment. His report is known as the Environment Impact Assessment (EIA) report. This report was supposed to be placed before the public for consultation. In reality, it was the project developer that appointed a paid consultant to carry out the study. He who paid the piper called the tune. The consultant produced a report to the liking of the developer. Public consultation became a ritual. The district officials ignored the ground realities at the site; whether the land in question supported agriculture; whether there were water bodies in it; whether the land provided livelihoods to the people and so on. There seemed to be an unwritten understanding in the government that the concerned officials should send reports that would pave the way for the government to hand over the land to the project developer without any hiccups.

In the west, the financial engineers came up with the brilliant idea of “financial leveraging” that initially allowed the corporate honchos to take their companies’ balance sheets to dizzy heights. Of course, those very same bloated financial statements turned out to be hollow bubbles that inevitably burst in due course, shaking the foundations of their economies. The political bigwigs of India understood the meaning of the word “leveraging” long ago and perfected the art of generating black money from the economy through rent seeking, investing it in the tax havens all over the world and recycling it back into the economy either to proliferate it further or to finance the elections periodically. Between one election and another, they used the tax payers’ money as opium by launching populist schemes to benumb the voters’ sensitivities temporarily. The voter rarely realized that what he got by way of charity was what he would have anyway got as a matter of a Constitutional right.

In this game of transnational financial leveraging, the tax treaties subtly worded by the political leaders provided them the necessary confidentiality and covered their tracks in the atrocities committed by them at home. As I write this, the apex court is quizzing the government on the sources and the uses of the black money, the magnitude of which seems to be truly mind boggling.

In this highly liberalised economic environment, there was scramble from the investors for three crucial, scarce resources, namely, the land, the minerals, and the access to the sea.

Land could be either public or private.

The public lands usually comprised of the community's "commons", such as, the pastures, the wetlands, the coastal stretches, the hills, the water bodies and so on. They provided a rich variety of bio resources to the people whose livelihoods critically depended on them. These commons were an essential part of the local ecology. They supported its flora and fauna. Though the government was the titular owner of the commons, it was the community that was the de facto owner and the manager of these lands for generations. There were customary rules that governed the way they were managed. The community respected those rules.

The well established "doctrine of public trust" (14) viewed the government as the trustee of such public lands on behalf of the local community. The trustee cannot unilaterally transfer these lands to private ownership, that too, for setting up an industry and destroying the bio resources. The government devised an ingenious way to breach this doctrine. It first transferred the lands to the state-owned Andhra Pradesh Industrial Infrastructure Corporation (APIIC) for the ostensible purpose of putting it to "public use". APIIC in turn gave the land at a dirt cheap price to the project developer for setting up an industry which was redefined to mean a "public purpose". Thus, the difference between "private" and "public" became blurred.

For private lands, the procedure was slightly different. The government first invoked the colonial, draconian law, the *Land Acquisition Act* of 1894 and forcibly acquired the lands from their owners and handed them over to the project developer, as usual, at a subsidized price. APIIC became the fig leaf for "public purpose". Sometimes, the developer could also directly buy private lands at distress prices, once the public lands in the vicinity had already been acquired at a low price. It was always the cultivator who lost in the bargain.

Minerals are mostly found in the hilly areas where the *Fifth Schedule* to the Constitution, meant to protect the *tribals'* interests, came in the way of non-*tribals* taking up mining. Either the *tribals*, or their cooperatives or a company wholly owned by the government could legitimately mine in these areas. The Panchayats Extension to the Scheduled Areas (PESA) Act mandated that the government should per force consult the local village bodies in such matters. To get over the "irritant" of the non-*tribals* not being permitted to mine, the State government deployed the Andhra Pradesh Mineral Development Corporation (APMDC) as the façade and handed over the mining activity through APMDC to the non-*tribal* private company. The government gave away the minerals to the private companies at heavily subsidised prices. The State also winked at the companies openly violating the laws that applied to forest conservation, environment protection and mineral development.

The framers of the Indian Constitution were visionary. In Article 39, they specifically laid down the principles of policy that the State should follow. One of these is that “the State shall ...direct its policy towards securing ...that the ownership and control of the material resources of the community are so distributed as best to subserve the common good”. The mining policy of the government clearly came in conflict with this.

Kautilya’s Arthashastra (7), as early as in the 3<sup>rd</sup> century B.C., prescribed a ceiling on the rate of depletion of the “high valued” minerals. I wish our planners had learnt a lesson or two from this ancient treatise. The mineral development policy of the government is silent on this. With the flood gates opened for foreign direct investment, India’s minerals, especially, the strategic ones, will not last long. There is no clear vision on conservation of the strategic minerals. When minerals are doled out to the developers at a heavy concession and the developers are allowed to export the same without any restriction, a time will come when India will be forced to depend on the finished products manufactured outside from its own mineral wealth. Some Western countries are trying to corner strategic minerals all over the world to sustain their own defence and other important sectors. Their strategy is to allow the initial processing that pollutes the environment and displaces the people to take place in the developing world and allow the environment friendly finishing touches within their shores.

As I had earlier mentioned, the hills, where minerals were mined, constituted the source of all water that flowed into the streams, the rivulets and the rivers which, in turn, irrigated the crops in the plains and provided drinking water for the people. Mining destroyed some of these precious water sources and affected the water inflows into the rivers.

Coming to the scramble for access to the sea, the political executive and its obedient civil service have come up with incredible innovations in AP. One such innovation is the newly evolved concept of granting to a few chosen private port developers an “exclusive right” over thousands of acres of the ocean front. To understand this, one needs to appreciate the provisions relevant to the ports in the Constitution.

In the Constitution, “major ports” are at Item 27 of the Union List whereas the so called “non-major ports” are at Item 31 of the Concurrent List. In other words, the “major” ports are exclusively within the ambit of the Union government, whereas the “non-major” ports can be administered by both the Union and the State governments. The framers of the Constitution would have perhaps thought that the word “non-major” ports should imply minor ports of local significance. They however underestimated the ingenuity of the modern day politicians. Whatever be the case, the present day rulers of AP interpreted this word liberally to suit themselves and allowed private operators to set up large ports along the coast of the State. They did not stop there. They allowed the port operators to appropriate large tracts of the hinterland and also vast stretches of the ocean front in the name of “port exclusive zones”, unheard of hitherto.

A major port like Vizag has a leeway of hardly 15 kilometers along the coastline. This port has successfully carried out business over the last eight decades. On the other

hand, the private port operators have been allowed to appropriate much larger stretches of the coastline. For example, three port operators, all chosen through non-transparent selection procedures, have been granted exclusive rights over a coastal stretch of 346 kilometers out of a total of 975 kilometers of the AP coast! They have gained control over the coast, its hinterland and the ocean front from Machlipatnam to Krishnapatnam. It is rumoured that all these three operators have many commonalities that give rise to the feeling that a few influential investors, acting in tandem, behind the scenes, have got control of almost one-third of the State's coast. Indirectly, some of these investors are also trying to get control over the other coastal stretches of the State, as well as inland areas in the name of SEZs.

This dubious model of privatising and plundering the coast, devised by the AP politicians, has quickly found favour with their counterparts in the other States of India. Bad practices seem to be more contagious than the good ones! No wonder that the investments in the private ports have often been traced to questionable sources of funding from the tax havens outside India.

Unless the Union government quickly brings out a law to protect the coast from the predatory investors by integrating the Indian Ports Act of 1908 with Major ports act of 1963, it is doubtful whether the coast and its marine resources can ever be protected.

Article 39 (Directive Principle) of the Constitution requires the State to ensure that the “ownership and control of the material resources of the community are so distributed as best to subserve the common good” and that the “operation of the economic system does not result in the concentration of wealth and means of production to the common detriment”. In this case, what AP has done goes counter to this Constitutional directive.

The coastline is in the nature of a public resource and the government can at best be a trustee for managing the same on behalf of the people. Alienation of such a public resource to private parties goes counter to the doctrine of public trust, which is a well established judicial principle, as already stated earlier.

In particular, the coast is the common resource of the fishing communities in India. These communities have enjoyed fishing rights over the sea for generations. The establishment of private ports and industrial units along the coastline on a large scale in India has affected the fishing communities and deprived them of their livelihoods. In many cases, industries are allowed to be set up along the coast in violation of CRZ requirements.

The fishing communities considered CRZ norms as their only hope of saving the resources of the sea front, especially the coastal wetlands and the mangroves that were a part of it. CRZ would also have protected the sea waters from industrial pollution. For generations, the fishing communities have depended on the sea.

On the 26<sup>th</sup> of December every year, the fisherfolk of Vizag worshiped *Gangamma Thalli* (In Telugu, it means Mother Goddess of Water), praying that She should save them from a future tsunami, like the one that hit the East coast of India on the same day in 2004. The Indian Ocean Tsunami of 2004 wrought havoc on the fishing communities all along the south eastern coast of Bay of Bengal. The fishermen called this annual event the “tsunami *puja*”, a ritual that signified the worship of the tsunami itself!

Hinduism has evolved over the millennia around the Nature. The Hindus pacified the nature in every possible way. The *Panchabhutas* denoted the five elements of the nature. They are the earth, the water, the air, the fire and the sky, which were all held in great respect. The Hindus worshiped the hills, the trees, the water, the sky, the air, the rain and so on. Respecting and conserving the ecology became an essential part of the religion itself. I am sure that it holds good for the other religions too.

Ironically, the fishermen all over the country are going to be soon engulfed by a much bigger and more ferocious tsunami, created by the government's policies. The government has already allotted vast stretches of the coastal lands to the industry. More of it is in the offing. In many of these cases, CRZ and other environment laws are violated. One of the reasons for the companies scrambling for these coastal lands is the convenient dumping outlet that the sea provides for the industry's untreated effluents. The fishermen may soon lose their legitimate access to the sea. They may soon be forced to give up their professions and become menial workers in the cities. Instead of empowering them and boosting up their morale, the government seems to be deliberately eroding their self pride.

CRZ notification itself became a victim of the continuing assault on it by its violators.

The notification issued in 1991 under the Environment (Protection) Act prohibited any kind of activity that polluted the coast or affected the coastal resources, within a zone of 500 meters from the high tide line along the coast. It prohibited mechanical pumping of water to prevent ground water aquifers from becoming saline. Pollution of the sea waters reduced the fish catch and affected its quality. It eroded the livelihoods of the fishermen. CRZ would discourage such pollution.

During the last two decades, CRZ notification became the victim of the building contractors, the industry promoters and the officials acting in collusion with them. In Vizag, some concerned fishermen approached the apex court of the State and obtained a landmark order in 2007 that directed the authorities to remove the illegal structures along the coast. Either as a result of the pressures exerted by the violators or due to sheer inaction, the authorities have not still complied with the court order.

Meanwhile, those that violated CRZ were anxious to get their structures “regularised” by getting the notified zones reclassified, a euphemism for legitimising the violations. While the laws should be adapted to serve the larger public interest from time

to time, they are often twisted to suit the interests of the influential and the affluent. This was what happened in the case of CRZ too. There is a standing national committee to secure the effective enforcement of CRZ restrictions. Instead of discouraging the violations, the committee has often helped change CRZ areas to suit the violators.

When there was an outcry against CRZ from the industry and the building contractors, the government appointed an expert committee, as it usually did in such cases, to “review” the concept of CRZ itself. The committee, without consulting the main stakeholder, that is, the fishermen, gave a somewhat open ended report that would have unwittingly relaxed the existing restrictions and opened the floodgates to a much larger scale of destruction of the coast. The fishermen opposed the report in one voice. Strangely, the government asked the same expert committee to review its own report. The second report once again left many gaping loopholes. Instead of tightening the earlier CRZ norms, the Environment Ministry has issued a whole new set of CRZ rules that had enough gaps to permit a further damage to the coastal resources.

The existing laws are far too inadequate to protect the fisherman's access to the sea. MOEF has come up with a draft law to safeguard the rights of the traditional fishermen. One has to wait and see how it is going to fare.

Among the violators of CRZ are some Special Economic Zones (SEZs), the latest craze of the government.

India adopted the Chinese model of the SEZ. While China went about its own SEZs rather cautiously, step-by-step, the political executive in India found the idea a singularly brilliant one, as it could hand over vast stretches of land to the developers chosen by them, with a bag full of bounties. Some provisions of the Special Economic Zones Act are truly bizarre. It is the developer who is allowed to choose the land arbitrarily and ask the government to notify it as a SEZ. The same developer is also entitled to select the adjacent lands too and get them included in the SEZ. There is only a minimum limit on the extent of land to be so chosen, not an upper limit!

In one case, there was a large stretch of fertile, irrigated agricultural land of 12,500 acres that belonged to the local farmers. The farmers enjoyed water rights in that land for decades. One influential developer liked that land and asked the government to notify it as a SEZ in his favour. Without consulting the people, the government issued a notification to that effect. The farmers vehemently opposed the SEZ and demanded a referendum to be held to ascertain the people's views. Unable to resist the overwhelming opposition, the authorities condescended to conduct a referendum. The referendum went in favour of the farmers. Defying the people's verdict, the developer still wanted the government to allow him to start the work on the SEZ. The government finally yielded to his pressure. The SEZ has now become a bone of contention between the people and the government. The government is hesitant to displease the developer. The people are unwilling to give up their lands. Some farmers became so incensed at this unholy SEZ deal that they even composed songs in their language taunting the developer and his

unethical maneuvers to grab their land. I took part in a public hearing on the SEZ conducted by the people and many other concerned citizens from outside the State.

As I write these lines, on February 19, 2011, the State government finally bowed down to the people and scrapped the SEZ!

It is not just the land that is attractive about the SEZ. There are other bounties as well. Once the SEZ is notified, the developer would automatically get entitled to a cocktail of tax concessions, both from the State and the Centre. According to some official estimates, the concessions so given run into billions of *rupees*. No one in the government has ever evaluated the actual costs and the actual benefits of a given SEZ. A back-of-the-envelope count showed that these SEZs had a negative societal benefit!

The SEZ is a “no go” area for the local people's institutions like the *Gram Sabhas*, the *Panchayats* and the *Municipalities*. It is also a “no go” area for the regulators who are supposed to enforce the laws meant to protect the environment. The SEZ Act has provided a special body of the SEZ officials to regulate the SEZ. These officials are evidently there not so much for enforcing the laws but for making sure that the investors do not run away.

The SEZ idea has caught on in a very big way in India. There is a mad rush for notifying more and more SEZs. More than 1,100 SEZs stand approved in the country; one-third of them have become operational. Andhra Pradesh is on the forefront in this game. There are 188 SEZs approved; out of them 109 operational. They cover huge extents of fertile agricultural lands taken forcibly from the farmers. There is widespread discontent among the farmers displaced by the SEZs.

We are quick to borrow ideas from China. We do not however care to learn lessons from China's experience with its SEZs. China's SEZs are much larger in size. China too rushed into setting up SEZs hoping that they would bring enormous benefits. Subsequently, thousands of them had to be closed down, as they posed a serious threat to arable land and food security. Many SEZs in China triggered land speculation and corruption.

China's Shenzhen SEZ with 81,750 acres has been acclaimed as a great success. Snap shot satellite pictures of the land in Shenzhen showed a sharp continuing degradation of its environment during the last two and a half decades. In the words of Zhao Xiao, an economist and a former adviser to the Chinese State Council, “among Chinese economic planners, Shenzhen's recipe is increasingly seen as all but irrelevant: too harsh, too wasteful, too polluted, too dependent on the churning, ceaseless turnover of migrant labour”. “This path is now a dead end.” After cataloguing the city's problems, he said, “Governments can't count on the beauty of investment covering up 100 other kinds of ugliness.” (15)

I hope that the planners in India listen to what Zhao Xiao has said. I hope they wake up well before we allow the SEZs to destroy the environment and threaten the food

security of the country. I am sure they would not like these SEZs to become “special exploitation zones”, as many displaced families have described them.

Coal-based merchant power is another obsession with the Indian planners. It has both local and global ramifications for the environment.

Whenever a power plant was proposed to be set up earlier, the Central Electricity Authority (CEA), the premier national statutory regulator would carefully see whether the project fitted well within its demand projections, whether the site selected was the best among the alternatives and whether there was enough transmission capacity to convey the power to the consumers. In particular, CEA would consult the environment regulators about the impact of the power plant on the local environment.

In the new policy paradigm, the government has diluted the role of CEA by adopting a laissez faire approach, as in the case of the other industrial projects. CEA can no longer question the rationale for the project, or the acceptability of the site. As in the case of the other industrial projects, it is the developer that decided the capacity of the plant and chose its location. Once the developer decided on the site, transferring the land to him became a formality.

Like the other industrial projects, coal-based power plants physically displaced the people. These plants burnt large quantities of coal and generated huge amounts of fly ash. The ash spread out into the surroundings in all directions, polluted the air all around; contaminated the adjacent lands, the surface water bodies and the ground water aquifers. It affected the health of the people. In the areas surrounding the existing coal-based power plants, the people complained about the fly ash causing bronchial and skin diseases. They complained about their wells getting polluted. The people living near the sites of the newly proposed power plants have interacted with those living in the vicinity of the existing plants. They knew what was in store for them once similar power plants came up in their own vicinity. In one voice, they opposed the new power plants.

Those in the cities and the towns, located far away from the power plants, argued in favour of the new power plants on the ground that they could not live without electricity. They needed electricity to light their homes. They needed it to run their fans. The more affluent needed it to run their air conditioners and their washing machines. They needed it to charge their laptop computers and their mobile phones. They perceived electricity as one form of energy without which modern civilization could not progress. They were right in saying it, as electricity had indeed become the driver of human development ever since Michael Faraday and Thomas Alva Edison came up with innovations that revolutionized the world.

However, these city dwellers do not fully understand what lies behind an electric bulb; or a fan; or an air conditioner; or a washing machine. They do not know how much of electricity these lights, these fans, these air conditioners and these washing machines gobble up themselves and how much of useful energy they finally deliver. They do not know what it takes for the utility to deliver one kilowatt hour down the line at their end.

They do not know how much of the heat from the coal is converted into electricity and how much of it is frittered away into the atmosphere. They do not know how much of coal needs to be extracted from the earth to generate that much of heat. They have not talked to the people uprooted from their ancestral lands to allow the coal to be mined nor have they shared the trauma of those that were forcibly dispossessed of their habitats to allow the power plants to be set up. Those that lost their lands on account of the coal mining projects and those that got displaced similarly by the power plant are leading their lives as shelterless workers in the cities or menial employees of the projects that displaced them. The city dweller should talk to the villagers who were not displaced by a power plant but were living in its vicinity. The fly ash, with all its toxic pollutants, has filled their lungs and their bodies. Their wells are contaminated. Their lives are in disarray.

One cannot help but recall the 2006 movie, “Blood Diamond” directed by Edward Zwick that depicted so graphically the trauma that lay behind the diamond trade in Africa and how the Kimberly Process Certification (16) was introduced in the year, 2000 to ensure the certification of the origin of diamonds in order to curb the trade in conflict diamonds. If one were to insist on a similar certification approach to every kilowatt hour that is used so inefficiently in the cities and the towns, it might make the electricity consumers to think twice before gobbling up electricity as they wish! Like blood diamonds, there could be many “blood kilowatt hours”!

If the electricity supply system were to be more efficient, much less electricity would be needed by the economy. Coal-based electricity could be avoided to a very large extent. Efficiency is not a matter of choice. It is an urgent and inescapable necessity.

There are essentially three primary purposes for which electricity is needed. One is for lighting. The other is for heating. The third one is for moving fans, motors, compressors and so on. What matters for the consumer is the “useful” energy that is available to him in the form of luminosity, heat and motive energy, not the distant electricity that is produced at the power plant. From the point where it is produced to the point where it is converted into useful energy for any of these three purposes, there are losses that could easily be avoided to a large extent through rational planning and prudent investment.

Let us start at the consumer’s end. Whether it is a lamp, or a heater, or a fan, the efficiency of conversion of the electricity consumed by it into useful energy, whether it is light, or heat, or movement, is at present very low, in the Indian context. There are both energy inefficient and energy efficient devices available in the market today. By replacing the inefficient appliances with more efficient ones, it is possible to reduce the electricity use quite significantly. If the incentives are appropriate, even the market could come up with far more efficient appliances. By using solar lamps, solar pumps and solar water heaters, or devices based on wind power, the dependence on electricity from a new thermal power plant could be largely done away with.

Next is the transmission and distribution (T&D) system that conveys the electricity from the power plant to the consumer's end. If a power plant generates, say, 100 units of electricity, about 35 units are lost in T&D systems we have in India. The consumer pays for this dissipated electricity for which he is not responsible. T&D systems in India are weak, as we have not invested sufficiently in them. Had we made the necessary investments on T&D, the energy losses would have been far lower. Along with it, the quality of electricity supply would have also improved. The consumer would have paid less for the electricity he has used. He would have also got rid of the inverters, the voltage stabilizers and the uninterrupted power supply systems altogether. Every time there is a power supply interruption, the consumer tends to link it to a shortage in the generation capacity. He does not know that the majority of such outages are the result of the weaknesses in T&D system; perhaps, a badly maintained transformer giving way; or an insulator breaking down; or the short circuiting of a distribution line. One does not require a new power plant to rectify this!

In a thermal power plant, coal is burnt to produce heat, water is heated to produce steam and the steam is used to run a turbine to generate electricity. If a given quantity of coal has, say, a hundred units of heat, roughly one-third of it is captured to generate electricity and the rest, two-thirds, is wasted. There is a limited scope to reduce the waste heat and use it to produce electricity. Waste heat recovery saves a corresponding quantity of coal. Indirectly, it saves that much of generation capacity also.

Coal is a non-renewable resource. We cannot depend on this resource for long. Instead, we should look for alternate sources of energy such as solar, wind, biomass and so on.

There are other operational reasons why exclusive dependence on coal will make the electricity unconscionably expensive.

The demand for electricity is not steady throughout the day. It has peaks when more generation capacity is needed. During the off-peak hours, one could do with less generation capacity. In the Indian conditions, the steady demand is usually not more than 50-60% of the peak demand. Such power stations, which can economically operate only when they run steadily for long periods of time, are the ones that are ideally suited to cater to this off-peak demand. These are known as "base-load" power stations. These include coal-based and most gas-based power plants and nuclear power stations. On the other hand, hydroelectric power stations based on storage reservoirs can be switched on and switched off at ease. They are suited for catering to the peak demand. Therefore, for a given level of demand, not more than 50-60% of the demand can be economically met by electricity from plants based on coal, gas and nuclear plants taken together. If the proportion of the capacity of the base-load power stations is in excess, it will add to the cost of the electricity and correspondingly burden the consumer.

Taking the specific case of AP, the State has a generation capacity of more than 9,363 MW, out of which thermal generation is more than 4,382 MW. According to CEA (17), whose estimates are usually overoptimistic, the total generation capacities required by the State in 2016-17 and 2021-22 will be 21,845 MW and 28,215 MW respectively. If half of it is to be met by thermal power, the corresponding capacity requirements will be 11,000 MW and 14,107 MW respectively. If the existing capacity of 4,382 MW is taken into account, the balance requirements will be 6,618 MW and 9,725 MW respectively. This includes all kinds of base-load power, coal, gas and nuclear, taken together. As against this, the coal-based merchant power plants already decided by the State government add up to more than 40,000 MW! The state-owned A.P. Power Generation Corporation (APGENCO) is also planning to add its own coal-based capacity. This shows how the State is going ahead with the setting up of new coal-based power plants even though they are not required at all in the near future.

The position is no different at the national level. During the last four to five years, the Environment Ministry had already cleared 193,000 MW of thermal power generation capacity, which is mostly coal-based generation. In addition, another 509,000 MW of thermal capacity is at different stages of processing for environment clearance and is likely to materialize before 2015 (46). This makes the cumulative thermal capacity addition as high as 701,900 MW. In other words, by 2015, the country will have a total thermal capacity of 819,200 MW which is 2.4 times the thermal capacity requirement projected by Planning Commission for 2031-32, in its Integrated Energy Policy report (47). The thermal generation capacities cleared by the Environment Ministry are not only far in excess of what is required but they are several times in order of magnitude compared to what is needed. Such large base-load power will create serious operational problems for the grid and increase the cost of electricity for the consumer. On the other hand, such large coal-based generation will wreak havoc on the ecology of the country, displace large numbers of people and increase India's contribution to green house gas emissions.

If we can focus attention on replacing the existing energy inefficient lamps, heating devices, fans, air-conditioners, water heaters and other appliances with energy efficient ones, invest on T&D systems to reduce the losses and invest on improvements in the efficiency of the existing thermal power stations, we may not require most of the thermal power plants now being proposed. If we can progressively shift to renewable energy sources, the requirement for new power plants would go down further. Such measures constitute a win-win situation in which the consumer will pay less and he will get electricity of a better quality. This approach will obviate the scope for new power capacity that not only pollutes the environment but also displaces the people. A saved megawatt is cheaper and cleaner, compared to a new megawatt!

A back-of-envelope calculation shows that, by 2031-32, the capacity savings that result from a 10% improvement across-the-board in the thermal efficiency of coal-based generation plants will be 36,750 MW. If T&D losses can be reduced by 10%, the capacity savings can be as high as 155,600 MW. If the efficiency of the lighting devices can be

improved by 20%, the capacity savings can be 28,000 MW. In reality, there are state-of-art technologies that can yield much higher efficiencies than this.

In his path breaking book, “Soft Energy Paths: Towards A Durable Peace” (18), Amory B Lovins aptly called the saved megawatt, a “negawatt”. We need to plan for these negawatts which are less expensive, before we think of new megawatts.

Those that argue vehemently in favour of new coal-based power plants should realise that, behind every kilowatt-hour of electricity used by them, lay hundreds of lost livelihoods, scores of trees cut, several acres of wetlands destroyed and many water bodies and villages polluted permanently. Is there a choice between using and not using that kilowatt-hour? Do they want the planet’s greenery and the climate destroyed? Do they want to leave their carbon footprints for their grandchildren to see?

India is an immensely large country with myriad cultures and a billion voices. Just as nature’s biodiversity is crucial for its survival, for the all round, sustainable development of its people, these diverse cultures and these numerous voices should be allowed to determine its course. “Industry at any cost” has become the poisonous monoculture of India’s development strategy. In biological systems, it is found that one shared weakness can spell disaster for the whole lot (19). The sooner we realize it, the better it will be for our survival.

Chapter 5: Assault on the commons: The saga of Sompeta



[www.commonswiki.org](http://www.commonswiki.org)

*We come in peace they said  
To dig and sow  
We come to work the lands in common  
And to make the waste ground grow  
This earth divided  
We will make whole  
So it will be  
A common treasury for all  
.....  
From the men of property  
The orders came  
They sent the hired men and troopers  
To wipe out the Diggers' claim  
Tear down their cottages  
Destroy their corn  
They were dispersed  
But still the vision lingers on*

Source- Billy Bragg's Lyrics (20)

AP is endowed with a number of coastal and inland wetland systems of great ecological importance. Pulicat lake on the State's border with Tamil Nadu was referred to as an important entry point for boats as early as in the 1<sup>st</sup> century AD. Ptolemy referred to it in the 2<sup>nd</sup> century. The other brackish water lakes are Neelapattu in Nellore district, Nizampatnam in Guntur district, Interu in Krishna and West Godavari districts and

Naupada and Sompeta in Srikakulam districts. Kolleru is a large fresh water wetland system in Krishna and Goadavari districts. It is a Ramsar site.

The lake was notified as a wildlife sanctuary in November 1999 under India's [Wildlife Protection Act of 1972](#). It is recognized under the Ramsar Convention on Wetlands (21) as a wetland of international importance. About two million migratory birds visit Kolleru every year. The satellite pictures of the lake in February, 2001 showed 42% of the lake bed already encroached upon by aqua farms owned by influential people in the State (22). Those who have developed an undue stake in those farms have mounted enormous pressure on the government to denotify a large annulus around the lake for further encroachments! Unless there is a global uproar, this Ramsar wetland will soon disappear. I hope that Kolleru will not become an unfortunate example of Garrett Hardin's idea of the "tragedy of the commons" or the more general idea of the tragedy of the "open access resources". (23)

Kondakarla Ava is the other fresh water wetland in Visakhapatnam district. Real estate threat looms large on this scenic wetland system.

All these wetlands are known for their rich bio diversity. They are a part of the local folklore and they occupy an important place in the lives of the local communities. They are the people's commons. As in the case of Kolleru, they have come under the threat of human greed. The story of Sompeta (24) is the story of this threat.

The quiet town of Sompeta is located on the northern side of the border district of Srikakulam. The headquarters of the district are located at Srikakulam where I grew up as a child. Uddhanam (In Telugu, it means a beautiful garden), known for its unending clusters of coconut groves and greenery, is within a walking distance from the town.

As the crow flies, Sompeta is around 5-6 kilometers from the sea on its eastern side. The intervening terrain that lies between Sompeta and the sea constitutes a unique system of natural wetlands and water courses that constantly drain water into the sea. In the local parlance, these wetlands are known as "*beelas*", "*tamparas*" and "*chitthadis*". Interestingly, the Telugu word, *tampara* means a wetland where a lotus plant could easily thrive. These *beelas* support a rich natural heritage of biodiversity, including rare species of migratory birds that pass through this area every year. The spot-billed pelican, also known in scientific parlance as **pelecanus philippensis**, nests and feeds here. These pelicans face imminent extinction. The local fishing communities have enjoyed customary fishing rights here for generations. There are at least a thousand families of fishermen, marginal farmers, agricultural workers and shepherds who eke out their livelihoods from these *beelas*.

From Yerrametta (Telugu word for "a red hillock"), a small mound on the south eastern border of Sompeta, this entire wetland terrain presents a panoramic picture of greenery, with intervening patches of water, extending right up to the coastline. When I stood on the hill some time ago, I thought I was in a paradise of tranquility with the nature enveloping me from all sides, in all its glory. I could see the bright green canopy

of coconut groves of Uddhanam beckoning me from the northern side of the hillock. I could see the shepherds and the grass cutters quietly working in the *beelas* in their effort to sustain their daily livelihoods. I saw Pamulametta standing out in the heart of the *beelas*, a lush green mound, known to be a breeding ground for a variety of snakes and reptiles.

Sadly, the quiet of Yerrametta was disturbed on the fourteenth day of July, 2010.

On that eventful day, the *beelas* suddenly exploded with anger and loud protests from the local people, especially the fishing community from the surrounding villages, against the forcible entry into the wetlands, by scores of security personnel employed by a private company, backed up by hundreds of armed policemen. The *beelas* were about to be handed over to the company for setting up a large coal-based power plant. For more than a year, the villagers from the surrounding areas had tried to express their dissent and oppose the project. They were reluctant to lose their livelihoods. They were opposed to getting uprooted from their lands. They were not prepared to allow their *beelas* to be polluted and destroyed.

The government, for some reason, failed to respond to their appeals. The people argued that the wetlands belonged to the community for generations and none had the right to take them away from them. They knew that the local officials sent wrong reports to the government under the company's influence. They felt that MOEF wrongly issued "environment clearance" (EC) for the project in undue haste, without appreciating the ground realities and the people's concerns. They also knew that the company had not yet obtained the required "consent for establishment (CFE)" from the State's Pollution Control Board (PCB)". In view of this, they asked the local officers not to allow the company to start any work at the site. They found the officers to be adamant; the officials were taking sides in favour of the company. The villagers were afraid that the company would meddle with the land and its water flows, disturbing the ecology of the *beelas* permanently. They felt frustrated at the officials not heeding to their concerns. The officials even went to the extent of warning the villagers of stern action if they resisted the project. A senior political leader from that area, for reasons best known to him, became an ardent campaigner for the company. The villagers resented it.

The incident that took place on the 14<sup>th</sup> of July was unfortunate. It could have been avoided altogether, had the officials agreed to sit down with the people and discussed their concerns with an open mind. On that fateful day, the company, supported by a posse of its own musclemen, forcibly tried to enter the land. The police lent support to the company. The people stood firm and resisted their attempt. What followed was an ugly scuffle that went out of control of everyone. Many people were injured. Two lost their lives. One more injured villager died a few days later. A few policemen got hurt. Even some journalists who tried to cover the incident got roughed up. From what some press reporters said, the company's musclemen unlawfully joined the fray and roughed up the villagers. The TV footage, if replayed, should reveal the facts more vividly.

The Indian press is ever vigilant. The live TV channels are omnipresent, covering everything, everywhere, every minute. They are the citizen's eyes and ears. The moment they heard about the impending show down, the TV reporters rushed to the project site en masse, took minute-to-minute pictures of the happenings and broadcast them live to the people all over the country. It was amazing how the live media could blow the lid off the official lies.

When the State Ministers were telling the legislature that the project site was barren, the TV channels showed a lush green stretch of land with agriculture interspersing the patches of the wetlands. They showed the coconut groves of Uddhanam marking the horizon. When the Ministers were trying to portray the villagers as the offenders, the channels showed several frail looking, unarmed men, women and children, trying to ward off the blows inflicted on them by the police. When the officials said that there were no musclemen of the company at the site, the channels showed suspicious looking men wearing blue scarves and blue headbands roughing up the villagers. Later, the people came to know that the blue scarves and the headbands were identification marks donned by the company's security personnel for the police to know! These scenes were witnessed by the entire country for several days. Overnight, Sompeta, the quiet little town, became a household name throughout the country for people's legitimate anger against the rulers.

The consultant who carried out the mandatory EIA study showed the capacity of the plant as 2,640 MW and the extent of the land required as 1,905 acres. The lands selected were in Rushi Kudda, Gollagunda, Baruvapeta and Benkili villages near Sompeta. The capacity of the plant was later trimmed down to 1,980 MW. The company accordingly asked the government to give them 1,046 acres of government land, hoping that once it got hold of that land, it could force the adjacent private owners to part with their own lands.

In its first phase of 1,980 MW capacity, the plant would burn 34,245 tonnes of coal, generate 14,380 tonnes of ash and deposit 226 tonnes of sulphur every day. In addition, it would also generate significant quantities of other toxic pollutants such as mercury, lead, zinc, cadmium, arsenic and chromium. Some pollutants could be radioactive isotopes which some Indian and foreign coals were known to contain.

The plant would consume 250 million cubic meters of water drawn from the sea.

At its originally envisaged capacity, the power plant would have provided employment for 750 skilled persons. At its reduced capacity, the number would be less. It is doubtful whether the local people, who are largely untrained, can ever aspire to secure employment in the plant. At the most, they will get a few petty jobs.

While the company was reticent to take the people into confidence on the pollution and the havoc that the plant would inflict on the people, the latter got together and gathered the information in ingenious ways. They filed applications under the Right to Information Act (RTIA) to get the facts from the official agencies at different levels. They cross checked the bits of information given by different agencies to ascertain their

internal consistency. They networked with the civil society elsewhere in the State to know its own experience with similar plants located in their own neighbourhoods. They visited the places next to a few thermal power plants in the State and interacted with the villagers to get a first-hand understanding of the possible impact of the power plant on their own lives. Some professionals in Sompeta, like doctors, engineers, advocates and traders, accessed the ubiquitous internet and downloaded a wealth of information from the web, using Google and other search engines, on the characteristics of different domestic and imported coals, the nature of the coal that the Sompeta plant would use, the extent of pollution that the plant would generate and its likely impact on the health of the people. They gathered information on how coal burning and wetland degradation would also jointly contribute to increased emission of the greenhouse gases. They discussed the information with the local farmers and the fishermen. They succeeded in familiarizing the public with the technical aspects of the project. Once the people had all the facts necessary, they could discuss and debate the pluses and the minuses of the project in a meaningful manner.

The people came to the near unanimous conclusion that the power plant had more minuses than the pluses. They felt that the employment opportunities it offered would be miniscule compared to the ecological destruction it would lead to and the number of people's lives it would affect. For them, to protect the wetlands meant much more than the few jobs that the plant managers offered. They resented the highhandedness of the company and the adamant attitude of the officials. The fishermen on the coast joined hands with the villagers inland. They all joined hands with the doctors, advocates, the engineers and the other professionals of Sompeta. The movement, which was modest in proportion when it started, gained momentum quickly and culminated in the founding of an environment protection group that represented the people in the area. In the local language, they called it "Paryavarana Parirakshana Sangham" (PPS). They were prepared to resist the company. They were prepared to bring pressure on the officials. They were even prepared to fight the project in the courts.

While the company and the local officials were busy misreporting the facts about the site, PPS countered the reports with facts based on authentic information. When the authorities failed to respond to them, the members of PPS, along with some of us, filed cases before the concerned judicial forums.

It was strange that the people affected by the power project should plead with the official agencies to respect the laws of the land and the official agencies in turn should insist on acting in defiance of those laws. It looked as though the state's role had somehow got fundamentally altered, from the one to enforce the laws on behalf of the people to the one violating them to benefit the private company. The world seemed to have turned upside down!

There is another interesting aspect to it. When the people were genuinely concerned about the environment laws being infringed and when they feared the danger of pollution affecting their health, the responsibility of proving that there was no such violation of the law in the first instance, that there was no scope whatsoever for such

pollution being caused and that there was no danger to the public health should have rested squarely and entirely with the government. This is a well established judicial norm, known as the “precautionary principle” (25), accepted by the courts all over the world. In the case of Sompeta, the government conveniently breached this principle, ignored its own obligation and callously shifted the burden to the people.

It went to the credit of PPS that its members consistently chose to express their concerns through peaceful, participative and legal ways, unprovoked by the official harassment meted out to them at every stage. For them, the laws were like the Pole Star that should guide them in whichever direction the government and the company tried to push.

The corporate world in India, especially that part of it that is dominated by a few influential families, is state-sponsored. In this world, facts are often twisted into fiction, as otherwise this kind of capitalism will not be able to stand on its own feet. It cannot thrive without state largesse. The state’s laws should conveniently adapt themselves to accommodate this kind of corporate capitalism, not the other way. In this world of capitalism, less the democracy, the better it is. The case of Sompeta is a classic example of this *avatar* of capitalism.

The environment laws are unambiguous and so are the rules and the regulations. For example, MOEF brought out an excellent manual in January, 2001 on how an EIA study of a project should be conducted and what aspects it should cover, so that it may become the foundation for the public consultation process and the subsequent appraisal of the project by the Ministry. Evidently, EIA study should identify the potential environmental risks of the project, state whether it is in harmony with the state policy or not and how it impacts the local community. Any one with commonsense would know that a study of that kind should cover the seasonal variations in the local environment and how the project will affect the environment during each season. The main purpose of the study is to allow the appraisal agencies to interact with the people to understand their concerns. This purpose will get vitiated if EIA report itself is not made available to the people in a language that is understood by them. The consultant who prepares EIA report is commissioned by the project developer. He is paid by the latter. Unless the consultant is of a very high professional caliber and integrity, his report does not fulfill the purpose for which it is prepared.

In the case of Sompeta, it was a paid consultant who prepared the EIA report. The report had a few glaring omissions. For example, it failed to say that the site was a part of a larger wetland system, though the land in question was classified as such in all the available official records and, to the naked eye, it appeared as such. Having ignored this crucial bit of information, the consultant kept silent on the biodiversity of the land, the flora and the fauna it supported and the number of livelihoods it sustained. As though to commit one mistake to cover up another, he omitted any reference to India’s policy statements on wetlands and its commitments to the international community under the Ramsar Convention on Wetlands (21) and the two other treaties on biodiversity and protection of migratory species of birds. Had the consultant visited the site and interacted

with the people, he would have noted the existence of three lift irrigation projects that drew water from the wetlands at the site. He made no mention of this. He missed out on the existence of the streams that flowed through the site, the cultivation of crops that was going on and the mound that hosted snakes and reptiles. Anyone with commonsense would not expect such a sketchy report to serve any useful purpose in a public consultation process. An illiterate villager would know the environment of the area better than what was presented in that glossy report! The people knew the intricacies of the project and its likely impact on the environment better than those that presided over the public hearing.

It was the *District Collector* whose reports on the public lands to be given to the company served as the official basis for evaluating the project in conjunction with the EIA report. The Collector's reports more fiction than fact.

He admitted that the lands in question were wetlands, as the land records failed to hide the fact. He reported that a large chunk of 395 acres at the site was occupied by a stream. He mentioned that there were a few fishermen carrying out traditional inland fishing in the wetlands. He also reported that a patch of 110 acres at the site was cultivated by small farmers. He even recommended the exclusion of that patch from the site. Up to this, his reports represented the facts.

Coming to the nature of the land, the Collector reported that it was mostly barren and uncultivable, though the wetland system fed three lift irrigation projects that irrigated 750 acres. His reports conveniently failed to reveal the existence of these lift irrigation projects. The wetlands supported a thousand families directly and indirectly. The Collector was silent on it. The government issued orders in 2003 to notify all wetlands and exclude them from diversion to the industry. The Collector's reports suppressed this fact. In one of his later reports, under pressure from the company, the Collector reversed his earlier recommendation to exclude the patch of 110 acres cultivated by the small farmers and suggested to hand it over to the company. Nowhere in his reports did the Collector ever inform the government of the public opposition to the project and the reasons for it.

In the scheme of things as they existed, the *Panchayats* had no say in deciding whether the lands lying in their respective areas should be given away to the industry or not. At the same time, the *Panchayat's* nod in favour of the industry would always be welcome. Anything in favour of the project would be welcome. Anything that stood in its way would be unwelcome. In the case of Sompeta, the *Panchayats* of all the four villages where the public lands in question were located had no objection to the lands being given away to the company. The officials were quick to lap up those resolutions, as they supported the project. However, the information obtained later under RTIA showed that all the four resolutions were worded exactly the same way. They bore the same date. They all came to the concerned officials through the same fax machine of the company!

While more than 1,000 acres of government land was alienated to the company, it was reported that the company had also bought another 600 to 700 acres of private land from the farmers. Once the company got hold of the nearby public lands, it had no difficulty in forcing the private owners into parting with their lands. It appeared that some of these lands were originally public lands. The landless farmers cultivating them got ownership titles some years ago under the government's much publicized land assignment scheme. The AP Assigned Lands (Prohibition of Transfer) Act, 1977 prohibited anyone from purchasing such lands from the original assignees. The District Collector should have taken action against the company, after ascertaining the truth. His reports were silent on this aspect.

Within the State, it was the Department of Environment and Forests (DE&F) that had the responsibility of protecting the wetlands. The Forest department functioning under its control had the primary duty to conserve the wetlands. DE&F got its inputs from both the District Collector and the Chief Conservator of Forests (CCF). If the District Collector's reports were misleading on some of the facts about the site, the Forest department should have at least put its foot down against the diversion of the wetlands to the company. The Forest department knew that discretion was the better of valour. DE&F, ably equipped with the reports of both the Collector and the Forest department battled for the company before Expert Appraisal Committee (EAC). EAC was the highest expert body of MOEF to recommend or reject industrial projects for EC.

As a body of experts, one would expect EAC to be the custodian of the country's ecology. EAC need not be entirely guided by the State's reports. It had the advantage of getting inputs from the local communities, environmental groups and other concerned citizens. If necessary, the Committee could organize site visits to ascertain the facts. In the specific case of Sompeta, the Committee did receive such inputs. Some environmentalists felt that parts of the site lay within the prohibited CRZ. Some said that the site being a wetland should not be given for the power plant. Several people said that the project would affect thousands of livelihoods. EAC rightly considered these concerns and deputed a subgroup of its members to visit the site and report on whether (i) there were any mudflats in the land, (ii) it was a marshy land, (iii) it was subject to any tidal action and (iv) it had CRZ characteristics

The subgroup visited the site in April, 2009. They found that the land in question was marshy and it was a wetland. They found that it had no CRZ characteristics. Knowing quite well that no industrial unit should be set up in such a wetland, EAC could have straightaway asked EAC to reject the project. The subgroup did not do it. Instead, for some strange reason, it picked up the isolated issue of CRZ and, since the site had no CRZ characteristics, recommended that the project should be cleared. EAC was quick in recommending the project to MOEF. It looked as though that EAC and its subgroup had already made up their mind to clear the project, even before the site visit.

On receiving EAC's "yes", MOEF lost no time in issuing EC. The company was all set to start construction at the site. In their first attempt to make a forced entry into the site, the company deployed a few musclemen supported by hounds to intimidate the villagers from stopping them. Since the villagers remained adamant, the company gave up. That was prior to July, 2010 when the final show down took place.

The villagers hoped that MOEF would listen to their woes and stop the project. They expected MOEF to respect their demand to protect the wetland from the power plant. When the Ministry issued EC, they felt betrayed.

At this stage, some of us resorted to the last available legal remedy, that is, appeal to APPCB not to issue CFE in view of our concerns. Fortunately, a few right thinking officials of PCB listened to our woes and withheld CFE. APPCB's action was truly fortuitous as it came to PPS's rescue at the crucial time in saving the wetlands of Sompeta.

I sometimes wonder whether MOEF is really committed to saving the wetlands at all. The National Environment Policy (NEP), approved by the Union Cabinet in Delhi, talked about MOEF putting in place a set of rules to protect the wetlands of the country. The Ministry did place a draft set of such rules on its website in 2008. Several of us made suggestions to improve upon it. The draft remained on the website for several months. It suddenly disappeared one fine morning. We thought that the Ministry would issue the final rules shortly. It did not happen as expected. Meanwhile, some environmentalists approached the courts to stop a few coal-based power plants being set up at sites located in wetlands. The Ministry was a party to these cases. The Ministry's representative nonchalantly told the court in one case that, at that moment, the Ministry had no authority to protect the wetlands as the rules meant for it were not in place. Then, it dawned on us why the draft rules mysteriously disappeared from the Ministry's website. Apparently, it was a ploy to help the private companies to go ahead with their power projects and make it a fait accompli! The damage was done. During early 2010, MOEF quietly brought back the same old draft rules to its website and, once more, called the public to offer their suggestions all over again! One can never predict how corporate pressures work!

When the executive failed to respond, the only alternative available to the civil society is to approach the judicial authority. In the case of Sompeta, some of us joined hands with PPS and the local fishermen to contest EC given by MOEF.

Meanwhile, the Standing Committee of the National Wild Life Board (NWLB) of MOEF deputed Dr. Asad R Rahmani (Bombay Natural History Society) and Prof. Asha Rajvanshi (Wild Life Institute of India) to visit the wetland project sites in AP and give their findings on the desirability of setting up the power plants. The team visited Sompeta in December, 2009. One look at the site was enough for the two experts to conclude that it was a part of an ecologically important wetland that should not have been proposed for the power plant in the first instance. They straightaway recommended that the project should be dropped altogether. Their recommendation was unanimously adopted by

NWLB. Instead of accepting this finding, MOEF chose to wait and watch while the company was trying to enter the site and damage the wetland system.

In connection with the appeal filed by us before NEAA, the single-member Authority had the benefit of looking at the Rahmani Report. The Member visited the site in June, 2010 to ascertain the facts. On July 15, 2010, a day after the fracas at Sompeta, he pronounced his order setting aside EC for the project once for all.

The environment clearance for the project was set aside on several grounds. The site was found not only to be a wetland but also that it had CRZ characteristics. Diversion of the land for the power plant was found to affect a large number of families who depended on it. The order rightly mentioned that the clearance for the project was obtained on the basis of factually incorrect reports. Finally, the order suggested a comprehensive evaluation of all the projects taken up in the district and their impact on the wetlands. The order came as a great relief to PPS and the villagers. It symbolized a victory for those that respected the law over those that did not. It demonstrated how an independent authority could go to the rescue of the people and serve the overall public good.

A couple of days after the landmark order of NEAA, yet another expert group visited the site, even before the wounds of July 14<sup>th</sup> began to heal. The team found what the other experts said earlier, that the wetlands of Sompeta should not be given away to any industry.

Following NEAA order, one would have thought that the State government would cancel the order in which it transferred the public land to the company, take action against its own officers for misreporting and come up with a plan to save its wetlands. No such thing happened. The misdeeds of the officers and the company's men on the 14<sup>th</sup> of July should have been investigated and the errant ones punished. The State in fact decorated them. The District Collector should have proceeded against those that illegally purchased the government-assigned lands. He did not ever try it. The members of PPS are still bearing the brunt of the cases filed against them.

The story of Sompeta was therefore a story of how the collective will of the people effectively overcame the executive's excesses. It showed how the people's lives were closely interwoven into the ecology that surrounded them. It showed for once the falsity of many government-sponsored projects being imposed on the people against their will. Sompeta soon became the trend setter for similar people's movements elsewhere in the country.

Chapter 6: **More ash, more pollution, more livelihoods lost**



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*I have no barn or storehouse:  
I never sow or reap:  
God gives me a sparrow's portion.  
But never a seed to keep*

*The Sparrows- Unknown author (9)*

Sompeta was only the tip of the iceberg. The environment of the State has come under the threat of many more coal-based power projects whose carbon footprint will last for many more generations to come, as long as the planet will last.

In one case, the wetlands of the coast were being destroyed.. In another case, it was an irrigated land for the tribals that came under threat. The coastal stretches within CRZ faced the threat of two power plants. In yet another case, a huge complex of a mind boggling number of coal-based power plants that threatened the coast and the entire ecology of the region. The story is unending. The future of the ecology of AP looks bleak.

South of Sompeta was yet another system of wetlands known the world over as Naupada Swamps. Naupada was the salt capital of the east coast of the country for centuries, as this salty marsh was an ideal ground for harvesting salt crystals. This swamp extended linearly towards the south, parallel to the coast, right up to the village of Kakarapalli where the local people possessively called it Kakarapalli Swamp. It had a history of its own.

The Salt Satyagraha launched by Mahatma Gandhiji in Dandi on the west coast in March, 1930 had its reverberations on the east coast as well. One of the important locations where the Satyagraha started on the east coast was Kakarapalli Swamp, opposite a salt factory where East Coast Energy Pvt. Ltd. (ECEPL) is now setting up a highly polluting coal-based power project.

In April, 1930, the Sub-Collector, a young Indian Civil Service (ICS) officer, wrote to Cotton (26&41), the then Chief Secretary of Madras Province thus:

*“Some Satyagrahis collected a small quantity of salt earth from Kakarapalli Swamp near Naupada. The Inspector in consultation with the Deputy Superintendent of Police who was on the spot did not interfere though this was an offence against salt law”*

Seven decades later, on February 28, 2011, Kakarapalli and the neighbouring villages woke up to see brutality and bloodshed unleashed by the State against its own citizens who opposed the power plant and appealed to the authorities to save their wetland. Two innocent persons lost their lives in the police firing that ensued. One person was permanently paralysed by a bullet wound inflicted on his spine, when he was running away from the police. About a hundred houses got burnt by the “smoke bombs” shot at the villages by the police. Hundreds of villagers, including an eighty year old frail looking woman, were incarcerated for “attempting to murder”! Those that were really attempting to murder the democratic traditions of our society have got away!

What a contrast with the attitude of the Sub-Collector and the Deputy Superintendent of Police on a similar day, on a similar occasion, at that very same spot, when India was still one and a half decades away from attaining Independence! Has democracy turned the country upside down? The Mahatma would certainly have felt let down by the State on this day, which is a blot on our democracy.

The well known Thelineelapuram bird sanctuary is a few kilometers away from Kakarapalli. The sanctuary and the swamp provided a seasonal habitat for 113 rare species of migratory birds, including the spot billed pelican, the adjutant pelican and the painted stork. These birds came here every year for nesting and feeding. Some of these birds are known to travel 7,000 kilometres from Siberia and other places every year to visit the coastal wetlands, including Thelineelapuram and Kakarapalli Swamp. These birds are known locally as “devatha pakshulu” (divine birds). The villagers held them in great respect and protected them. Customary practices are thus based on a strong commitment of the local communities to environment conservation.

The swamp provided livelihoods for hundreds of fishermen for generations. There were patches of land within the swamp under cultivation by small farmers. Indirectly, the swamp supported thousands of farmers and shepherds in the area.

As usual, when a private company approached the government for allotting land in Kakarapalli Swamp for a power plant of 2,640 MW capacity, the entire machinery of the government from the State headquarters at Hyderabad to the sub-divisional headquarters at Tekkali moved at lightning speed to clear the decks, without asking a single question (41). As in the case of Sompeta, there were clear orders of an earlier government in 2003 that wetlands should, under no circumstance, be diverted for industry. The same District Collector who misreported on Sompeta, ignored this order,

and recommended the transfer of 3,333 acres of Kakarapalli Swamp to the company, through the usual official conduit of APIIC, to provide a façade of “public purpose”.

A 2,640 MW power plant would not require more than 2,000 acres of land as per the norm stipulated by Central Electricity Authority (CEA), the country’s highest statutory authority in such technical matters. The government, in an extraordinary gesture of magnanimity, allotted 3,333 acres of the wetland in this case to Andhra Pradesh Industrial Infrastructure Corporation (APIIC) for the specific purpose of re-allotting it in favour of the private company for the power plant.

To facilitate the transfer, the District Collector went out of the way to describe the land as “not suitable for agriculture or forest use”, ignoring the cultivation that already existed there. He suppressed the report of the local Forest officers that the wetlands of Kakarapalli should be protected. He ignored the report of the local Fisheries department that the swamp was rich in fish resources on which the local traditional fishermen critically depended. According to the instructions issued by the government in 2003, the local revenue authorities were required to include this entire stretch of wetland in the Prohibitory Order Book and preclude the same from diversion to any industry. The District Collector suppressed this in his report.

The Kakarapalli wetland supports many livelihoods. A thousand fishing families in three villages have exercised customary fishing rights in this wetland for generations. A number of farmers harvest salt from the swamp waters that are saline due to the tidal action. The reports sent by the District Collector to the State government were silent on this.

The *District Collector* was fully aware that four streams, Garibula Gedda, Bheemapuram Gedda, Enugula Gedda, Sandemma Gedda and surplus water from Vamsadhara left Canal brought water into the wetland system. The swamp drained the water into the sea through its mouth near Naupada. If the swamp bed were to be raised by even a few feet, the surplus water would flood the adjacent agricultural fields. A power project would necessarily involve raising the level of the bed of the swamp. Flooding would cause a great loss to the farmers in the area. The *Collector* never reported this fact to the government, lest it should pose a hurdle to the project. In fact, this has become a major source of trouble now for the adjacent farmers whose fields are flooded and crops are damaged. What the authorities did in this case was an example of public deception for private gains.

Emboldened by the active support extended by the government, the company started the construction work of the project without any prior permission, a requirement that was mandatory under the Environment (Protection) Act.

As in the case of Sompeta, the State’s DE&F became a strong advocate for the project. CCF as usual ignored the reports of his own officers at the field level and certified the suitability of the site for the project, even though it was his department that was responsible for protecting the wetlands. Sufficiently equipped with these two

misleading reports, DE&F argued the company's case before EAC in an admirable manner.

The residents of the villages around Kakarapalli Swamp and several environmentalists appealed to EAC not to permit the project as it would destroy the wetland system and cause immense pollution in its surroundings. They brought to the notice of both MOEF and EAC that the company had illegally started construction work at the site.

EAC considered these pleas and asked, as usual, a subgroup of its own members to see the site and report the facts. The subgroup visited the site in July, 2008 and found a great deal of substance in what the villagers and the environmentalists said. The subgroup suggested that the proposed power project should not be set up within the swamp area. EAC accepted this suggestion and asked the company to shift the site outside the swamp. Instead of complying with this decision, the company came back to EAC and said that it surrendered 455 acres on the southern side of the site in deference to the ecological concerns expressed by the Committee. In reality, this was tantamount to the company retaining most the land allotted to it within the swamp. Instead of either forcing the company to fall in line or rejecting the project altogether, the Committee, for some strange reason, changed its stance overnight and accepted the company's version. The Committee quickly cleared the project and MOEF lost no time in issuing EC for the project.

The surrender of 455 acres appeared to be a ploy for clearing the hurdle in the way of the main project. In the surrendered land, another power project was soon proposed, though the ostensible reason for the surrender was that the land should be left free from any industry. The size of the new project was deliberately limited to 500 MW to permit its appraisal by a State committee. The latter asked the State PCB to hold a public hearing. The hearing took place in August, 2009. As usual, it was a ritual ably accomplished. The project was about to be put up for final clearance when the public made a hue and cry. The villagers and NGOs brought the fraud to the notice of MOEF. MOEF put the project on a temporary hold. They thought that they could save at least 455 acres of the swamp for the time being. One is never sure when the second power project will suddenly come back to life!

While this was going on, the villagers and NGOs filed appeals against EC for the main project before NEAA. The 2009 report of Asad Rahmani and Asha Rajvanshi clearly showed the site to be a part of the wetland system. The report found fault with the location of the project at that site. The member of NEAA visited the site in June, 2010. He saw the swamp and interacted with the villagers. Still, NEAA rejected the appeals mainly on the ground that the company had already started construction work at the site and, if EC for the project were to be annulled at that stage, the company's investment would become infructuous. The appellants were trying to get NEAA's order reviewed by the Green Tribunal which succeeded NEAA recently.

This “fait accompli” argument put forward by the company in this case raised an important issue about enforcement of the environment laws in India. If an offender were to put forward this fait accompli argument and win his case every time he violated the law, would it not make a mockery of the law itself? Would it set a bad precedent for the other offenders?

Meanwhile, on a public interest writ petition filed by a concerned citizen before the apex court at Hyderabad, the State government strangely argued in favour of the private company on the ground that the site of the project was not within a wetland system, unmindful of its obligation under Article 48A of the Constitution, the Environment (Protection) Act, 1986, the National Environment Policy adopted by the Union Cabinet and the country’s commitment to Ramsar Convention on Wetlands. Picture 4 is a Google Earth satellite picture of the project site squarely ensconced in the already identified Naupada Wetland system. In the same case, the Union Ministry of Environment & Forests (MOEF) argued that there was no legislative sanction for protecting the wetlands, though that Ministry was fully committed to safeguarding the wetlands under the National Environment Policy. The Ministry had, in fact, sought the views of the civil society earlier on a draft set of wetland conservation rules but withdrew the same from its website just in time to put forward such a fallacious and patently suspicious argument.

The story of Kakarapalli did not end here. While the company made EAC believe that it would confine its construction activity to only 1,960 MW, it did not inform EAC that it was allotted 3,333 acres in all. Apparently, the balance of 1,373 acres of the wetland is still with the company and no one knows when the government and the company would come up with either a new power plant or another industry in it. Meanwhile, the company recently informed the local press reporters that they had 2,050 acres in their possession, which was at variance with the assurance given by them to EAC.

In its order of September 7, 2010, NEAA cleared project subject to the following conditions

*“No filling and raising of land beyond 1317 acres within wetlands of which 150 acres would be greenbelt”*

*“No activity in identified 483 acres of land which includes 8 acres of proposed pond near the temple”*

It appears that the company has already deviated from these conditions by erecting a bund partly outside its site, but within the wetland, thereby diverting water from the site into the neighbouring agricultural lands. As a result, the villagers fear that around 20,000 acres of their private land would get submerged. The civil society has brought these facts to the notice of MOEF and the State Chief Secretary but they failed to respond. Clearly, the Kakarapalli swamp land is under a continuing threat. The entire

wetland stretch including the one on which the company is building the plant should have been declared as a “Conservation Reserve” to save the biodiversity of the area.

The farmers, the salt harvesters and the fishermen, driven by the common urge to save the wetland that supported their livelihoods, came together and blockaded the movement of the vehicles of the private company. Some of us exhorted them to be peaceful and law abiding; at the same time, appealed to the State authorities to open a dialogue with them to appreciate their concerns. The private company and the government had other ideas. The company was in a great hurry to start construction work. The State was ever willing to toe its line. On the 24<sup>th</sup> of February, 2011, the State mobilized thousands of policemen all around the project site and started deploying coercive measures. The villagers resisted. We renewed our appeals to the people and the government to be peaceful and open a channel of discussion. Neither the company nor the government relented. Their confrontation culminated in the police firing at the villagers killing two innocent persons and injuring many others. A bullet wound on the back of a person has paralysed him. One does not know how long he will have to be under close medical care. Many thatched houses and paddy heaps were burnt. Hundreds of villagers, including an old octogenarian woman, were arrested. Many more became homeless.

The whole country witnessed what happened at Kakarapalli on that fateful day. It was a repeat of Sompeta. The government seems to learn its mistakes only after a bloodshed like this. The legislators belonging to both the ruling party and the opposition raised their banner against this senseless violence of the state. The Union Environment Minister at last condescended to stop the ongoing work at the project site and order an investigation. EAC of the Ministry will hear the company’s version, not the people’s views.

Many in the government doubted whether the project site was within the wetland system, without trying to ascertain the facts at the ground level. Picture 4 shows a panoramic satellite view of the wetland and the project boundary taken by Bhuvan, the premier remote sensing agency of the Indian Space Research Organisation (ISRO). The doubting Thomases should look at this picture before raising such unfounded questions.

Will the wetlands of Kakarapalli survive? Will the spotted pelican, the adjutant pelican and the painted stork continue to visit Kakarapalli in the coming decades? Will the future generations of Kakarapalli continue to worship these devatha pakshulu, as their forefathers did? Only the future can tell.

There is another power project in which the ecology stood compromised and the tribals stood betrayed. It is the coal-based power project near Komarada.

Komarada Mandal is in a remote area, located within a few kilometers of the State’s border with Orissa. It is essentially a tribal tract. There is a stream known as Vanakabadigedda that passed through this area. In order to benefit the *tribals* and, along with them, many other small farmers, the government set apart some funds meant for

tribal development, and asked the Irrigation Department to construct a dam across the stream, impound the water and irrigate the lands downstream. The government spent Rs.6.8 Crores on the project and created an irrigation potential of 1,037 acres for the small farmers downstream. One *tribal* village got submerged under the impounded water. The government spent more funds from the *tribal* budget for rehabilitating the villagers affected thus.

A private company entered the scene at that stage and chose the land that was to be irrigated by the irrigation project, for setting up a coal-based power project of 2,640 MW capacity. The company required 1,675 acres in all. It started buying some lands that belonged to the *tribals* who were far too diffident to put up resistance or negotiate on equal terms. Within the area chosen, there were public lands covering an area of 640 acres. The company asked the government to allot those lands for the project. Once it got hold of those lands at a dirt cheap price, it would become easy for it to buy away the private lands at a distress price. The government obliged the company by promptly allotting those public lands at a heavily subsidized price.

Out of the 640 acres of the public lands, 249 acres were cultivated by small farmers who were given those lands in the past under a government scheme meant for the landless. Another 80 acres were cultivated by similar landless farmers who were waiting to get ownership rights under the same scheme. There were water bodies over another 79 acres. As already said, a government order issued in 2003 prohibited such water bodies being handed over to the industry. The public lands contained a hillock with quartz that could be mined on behalf of the government. The government transferred that land to the company without any hesitation. Some portions of the public land were set apart already for rehabilitating about three hundred tribal families displaced some years ago in another irrigation scheme nearby. Within the ambit of these public lands, there were two villages that lost their right of way as a result the transfer of those public lands to the company.

The *tribals* were unaware of the dangers of pollution from the power plant. They did not know that their wells would get contaminated. They did not know that their health would be imperiled. When the local environmentalists tried to explain the facts to the tribals, the officials asked them to keep out. The pollutants from the power plant would mix with the waters of two important rivers nearby, Nagavali and Jhunjhavati. The people downstream were never told about this. There were several forest blocks with rich biodiversity within ten kilometers from the project site. They would get affected by the fumes of the power plant. There are some villages in *Orissa* that came within the reach of the power plant's pollution effects but they were never invited to attend the public hearing. The public hearing itself was a farce.

The local Irrigation officials as well as *NGOs* brought these facts to the notice of the *District Collector* who ignored their pleas. They brought this to the notice of the State government, EAC and MOEF. They too chose to ignore their pleas.

The *District Collector*, as usual, sent reports that suited the company. The State government in turn recommended the project to EAC. EAC quickly "appraised" the

project and recommended it to MOEF for issuing the environment clearance. Knowing well that the site was sitting within an irrigated area, MOEF issued EC for the project in a great haste. Left with no other alternative, *NGOs* filed appeals before NEAA. The Authority was wound up towards the end of 2009 before the appeals could be heard. *NGOs* are taking the matter up to the Green Tribunal. It has taken minutes for MOEF to wind up NEAA but months to fill the vacuum with the Green Tribunal.

We now move from Komarada, where the *tribals* are betrayed, to Devada where another company is threatening to set up a coal-based power plant that will destroy the coastal environment.

Devada is a small agricultural village on the sea coast near Visakhapatnam. The land in the village was held by the *Waqf Board*, a statutory institution that was supposed to utilize the proceeds from the land for maintaining the local religious structures. The farmers of Devada depended on the land for their livelihoods.

More than a decade ago, a private company approached the government for land for setting up a power plant of 1,000 MW capacity in Devada. As soon as the request was received, the government proceeded post haste and forcibly acquired the lands cultivated by the tenant-cultivators at a nominal price. In fact, the government came up with an ingenious formula for compensating the cultivators for the lands taken away from them. The compensation amount fixed per acre was in itself a pittance, of the order of a couple of lakhs of rupees, whereas the market price there would be a multiple of it. Even within that government determined compensation rate, the government retained one-third of it, gave another one-third to the *Waqf Board* and gave the cultivators the remainder, that is, one-third. With that meager compensation, none of the cultivators could buy alternate land.

The government transferred 1,122 acres of land to the company at a highly subsidized price. The cultivators protested but the government did not relent. The company approached MOEF and obtained EC in September, 1996. It is still a mystery how MOEF cleared the site at that time as 733 acres out of 1,122 acres were a part of CRZ where a power plant could not have been permitted.

For more than a decade, the company remained inactive. No project ever came up. The displaced farmers continued to agitate for their lands.

As per the statute, an environment clearance once given would lapse at the end of five years, if the project failed to come up. This was what happened in this case. The clearance lapsed in 2001. The land remained in the hands of the company. Since it was within CRZ where a power plant could not have been set up in the first instance, the civil society and the farmers demanded that the State government should take back the land and return it to the original cultivators. The government did not respond.

The company meanwhile started leasing out the lands in its possession to the original cultivators at annually escalating rentals. The company also stipulated that the

cultivators should pay them rentals at the highest rate offered in a year. It was a clear case of feudalism in a corporate garb, facilitated and abetted by the State itself! Since the company failed to use the land for the purpose for which it was forcibly taken from the farmers, the government should have taken back the lands and restored them to the farmers. The government had no intention to do it.

All of a sudden, the company approached MOEF in December, 2008 and asked the Ministry to treat the environment clearance of 1996 as valid on the ostensible ground that it started construction work well before 2001, that is, within the mandatory five year time period from the date on which it originally obtained the clearance. Since most of the land at the site was in CRZ, any construction activity within it would be illegal. On that ground alone, MOEF should have rejected the company's request straightaway. There was no reason why the company should remain silent from 2001 to 2008 and suddenly come up with the request that the environment clearance given for its project in 1996 should be considered as "revalidated". MOEF should have become suspicious of the intentions of the company and got its request investigated to ascertain the facts. Instead, MOEF issued a strange communication in March, 2009 treating the old clearance as "valid". Certainly, something was wrong somewhere in this strange affair!

MOEF should have known that during the thirteen years that had passed since the original environment clearance was given for this power project, many new industrial units had sprung up in the area, contributing to their own share of pollution. Their cumulative pollution load on the environment should have been first looked into by MOEF before giving a green signal to the power plant that was never set up.

There were many strange omissions that took place in the case of this mysterious project. No industrial project is ever cleared unless its impact on the environment is assessed by a professional consultant a public hearing conducted to ascertain the views and concerns of the people. Strangely, no public hearing was ever held for this project. On that ground alone, the clearance given for the project would stand vitiated.

Another strange aspect of this project was the double speak of the government and the company on the question whether it was a "merchant power plant" or a power plant committed to supplying 100% of its power to the State at a prescribed price. In December, 1995, the company signed a Power Purchase Agreement (PPA) with the State government to supply all its power to the State at a predetermined price. Apparently, PPA remains valid even today. It has not been cancelled by the State. It was on this understanding that the State resorted to the use of the Land Acquisition Act in the nineties to dispossess the cultivators of Devada and hand over the land to the company at a nominal price. If the plant were to be considered as a merchant power plant now, it would imply that the company would only supply not more than 10-20% of the power to the State and trade the rest at a higher price. When the State agencies recently called for tenders for the supply of power by merchant power plant owners, this company too had participated in the tendering on the premise that it had the status of a merchant power plant. The State government seems to have considered its offer. If that were to be true, it would clearly militate against the originally signed PPA.

The farmers and the environmentalists are still trying to stop this project. The company in question has recently asked the government to give it additional land at the old subsidized price, a demand that does not stand to reason. One is not sure whether and when the government would succumb to the company's pressure.

An influential family-owned company with practically no experience in running power plants approached the State government for land near the Machlipatnam Port in Krishna District in A.P. He wished to set up a power plant, the investment on which would be around Rs.10,000 Crores or, roughly, \$ 5 billion, a mind boggling figure by any standard. Once the developer expressed his wish, it was like a command to the State government. In this case, there were hectic telephone messages to the district authorities who in turn rushed into allotting a large stretch of 1,200 acres of public land near the coast to APIIC to enable the latter to transfer the same to the developer. All this happened in April, 2008.

This land was a CRZ land prohibited for use for any industry. The District Collector who was the custodian of CRZ lands was the one who violated CRZ restrictions and transferred the land to APIIC illegally. The land was full of mangrove plantations. It was a part of a wetland system. When the tsunami hit this coast in 2004, it was these mangrove plantations that saved the coastal villages from the calamity.

Within a couple of months after the transfer of the land, the developer employed the local villagers to cut down the mangrove plantation to clear the way for project construction, without waiting for the necessary clearances. When the civil society brought this to the notice of the State and the district authorities, they chose to be silent. A public hearing was conducted in a hurry and the State government was all set to recommend the project to MOEF for appraisal and clearance. At that moment, I along with a few other concerned citizens approached the apex court at Hyderabad for judicial intervention to stop the project. The court ordered an independent enquiry. Fortunately, the enquiry report brought out the facts. Temporarily, the project was put on hold. However, the developer approached the political executive of the State to move its counterpart at Delhi to ignore CRZ prohibition and allow the project to go through. The developer even went to the extent of identifying a pliable "expert" to redraw the boundaries of CRZ near the site so as to show that it was not within the restricted zone! Some experts see things in a different way, for no clear reason.

Some of us pressed our point with the authorities at Delhi. We even hinted that we would seek an independent probe into the manipulations going on. Finally, in January, 2009, the developer thought it prudent to shift his project to Nellore district where the State seemed to have adopted a truly laissez faire approach of allowing merchant power plants without questions.

The story of Nellore truly marks the culmination of the policy of the government to encourage coal-based merchant power plants in the State. Instead of allowing individual plants, in Nellore, the government has adopted a novel strategy, that is, to

permit a large cluster of such projects together around a private port, without understanding the adverse implications of such a strategy.

Within ten kilometres of Krishnapatnam Port, the State allotted sites for more than a dozen power projects with a cumulative capacity of 28,500 MW. This included the 2,640 MW power project I had earlier referred to, that was originally slated to come up near Machlipatnam Port.

One single coal-based power plant of 1,000 MW is in itself a serious threat to the environment. To imagine more than twenty eight such plants as a cluster within a small area is mind boggling. A quick calculation shows that such a large capacity would occupy 17,540 acres of land, burn 3,70,000 tonnes of coal, generate 1,55,000 tonnes of fly ash, deposit 2,500 tonnes of sulphur and consume 64,00,000 cubic metres of water daily. In addition, they will generate mercury, arsenic, zinc, cadmium and possibly some radioactive isotopes as pollutants in large quantities in a highly concentrated manner around the port. MOEF cleared a few individual projects, without evaluating the cumulative impact on the environment on account of all these power plants taken together. EAC's impact appraisal process rarely took into account the radioactive contamination caused by these coal-based power plants.

It is necessary to highlight the radioactive contamination that possibly arises from burning coal in power stations, a fact that is usually glossed over in environment impact assessment procedures in India.

Coal is a highly impure substance inherited by us from the nature as a non-renewable resource. It contains trace quantities of many metals, including uranium and thorium. It contains larger quantities of aluminum, iron and sulfur. When coal is burnt, it generates "oxides of carbon, nitrogen, and sulfur; carcinogenic and mutagenic substances" The amount of thorium contained in coal is usually 2.5 times that of uranium. Radioactive elements released in coal ash and exhaust material generated by coal combustion contain fissionable material (see 27 & 28).

Some studies (see 29) carried out on a coal-based power plant in the Punjab showed that uranium contamination from coal burning has had an adverse impact on pregnant women and children and caused cancer among some people. Uranium seemed to have leached into the local ground water sources and contaminated the aquifers in excess of the safety standards set by the global health agencies.

I have not come across any proceedings of Expert Appraisal Committee (EAC) of MOEF in which this aspect has been considered. In my view, this is an important risk associated with coal-based power generation and it should not be lost sight of.

The Nellore story is still incomplete as more and more projects are getting added to the cluster. The local people have serious reservations about the benefits that are supposed to accrue to them from these projects. They are highly apprehensive about the pollution impact. The government however thinks that there is a price tag for everything

and the people could be bought over with cash compensation. Whatever be the cash compensation, the displaced farmers are unable to get hold of alternate lands for agriculture. They are at a loss to put the cash to gainful use. Many have ended up frittering away the cash. The Nellore power projects will surely create a socio-cultural vacuum that is difficult to fill.

As already mentioned, more than 40,000 MW of coal-based power generation capacity is on the anvil in AP. Maybe, a couple of decades from now, a visitor from the outer space will hover above Krishnapatnam and find to his horror an ash covered terrain with no green cover anywhere in sight, with signs of sickness and gloom all around! I only hope that MOEF will realize this before any permanent damage is done.

As I write these lines, more and more coal-based private power projects are being allowed to be set up along the coastline of Andhra Pradesh. The State has cleared a 4,000 MW power plant to be set up by National Thermal Power Corporation (NTPC) a few kilometers south of its existing Simhadri power plant near Visakhapatnam. The location of the power plant is such that it violates CRZ restrictions. It will burn about 52,000 tonnes of coal every day, belch out 21,750 tonnes of ash and deposit 350 tonnes of sulphur, apart from the heavy metals, nitrous compounds, carcinogenic pollutants and radioactive isotopes. It will consume about 900,000 cubic meters of water every day. It will certainly place an enormous amount of stress on the local environment and pollute the global atmosphere as well.

I understand that another private power plant has also been cleared and I am awaiting its details. In my view, it is sheer madness to open the floodgates to coal-based power like this. While those that have invested their ill gotten, black moneys in foreign coal mines are applauding this madness, the fisher folk and the local communities feel traumatic. They wonder whether the governments they elect act on their behalf or for private interests.

I cannot complete the story of pollution by mentioning only the coal-based power plants. There are other projects that not only pollute the environment but also disrupt the lives of the people.

Among them are the mining projects in Andhra Pradesh and elsewhere.

In particular, the two bauxite mining projects in the hilly areas of Vizag are ecologically destructive, traumatic from the point of view of the tribals and financially imprudent from the government's point of view.

The Araku and Chintapalli hills lying within the tribal tracts notified under the Fifth Schedule to the Constitution are rich in bauxite deposits. It is estimated that there are 565 tonnes of bauxite in these hills extending over an area of 8,900 acres. All these are also areas notified under the relevant forest laws of the country. There are 100,000 tribals living in this area. They comprise of Nooka Doras, Konda Doras, Bagatas and

Khonds. Some of them are primitive tribes that need special attention. The lives of these tribals are closely linked with the hills that have the bauxite deposits.

Every tonne of aluminum metal requires 1.93 tonnes of alumina. One tonne of alumina requires 2.9 tonnes of bauxite. An alumina refinery of an annual capacity of one million tonnes will require land to the extent of more than 1,500 acres for the plant and the wastes coming out from refining. The conversion process from bauxite to aluminum metal is highly energy intensive. A tonne of aluminum requires 13,460 kilowatt hours of electricity. An alumina refinery of an annual capacity of one million tonnes and an aluminum smelter of an annual capacity of 0.25 million tonnes will require a 500 MW captive power plant. When bauxite is refined into aluminum, large quantities of toxic “red mud” waste is generated. It is dumped at the site of the refinery. Both mining and refining are guzzlers of not only electricity but also water. A million tonne alumina refinery of the kind mentioned above will need 10 million gallons of water per day. Bauxite mining is known to destroy the aquifers of the hills where mining is carried out. The hills of Araku and Chintapalli are the catchment for many rivers and rivulets that feed the reservoirs on the west towards AP-Orissa border as well as on the east towards Vizag.

For example, on the west, these hills provide inflows into Sileru river that in turn supports both upper and lower Sileru projects that generate electricity for the region. On the east, they provide inflows into several rivers such as Sarada, Gosthani, Chilikala Gedda and Tandava which in turn feed several reservoirs that provide water for agriculture and drinking water for Vizag and other urban agglomerations. These reservoirs include Raivada, Tatipudi, Andra and Meghadri Gedda. Bauxite mining in Araku and Chintapalli will thus affect the water availability for Vizag and for electricity generation from Sileru.

The State government signed agreements with two private companies, Jindal and ANRAK, chosen through the non-competitive route, to mine 523 million tonnes of bauxite from these hills, set up in the plains two alumina refineries of annual refining capacities 1.4 and 1.5 million tonnes respectively. Jindal’s refinery is being located in Srungavarapu Kota in Vizianagaram district and ANRAK’s refinery will be in Makavaripalem Mandal of Visakhapatnam district.

ANRAK will set up an aluminum smelter of an annual capacity of 250,000 tonnes. ANRAK has proposed a captive plant of 90 MW capacity. Both Jindal and ANRAK will need access to the sea for importing coal and exporting alumina or aluminum. Jindal will perhaps use Gangavaram private port near Vizag. ANRAK has demanded from the government further land for a captive jetty in Nakkapalli Mandal of the district. The captive jetty will displace 5,000 fishermen from seven villages. As usual, the State government has invoked the draconian Land Acquisition Act to acquire the land ostensibly for a “public purpose” by citing A.P. Industrial Infrastructure Corporation (APIIC) as the beneficiary, though the real beneficiary will be ANRAK.

I have discussed already how the water balance in this region is in the red and any diversion of water for industry will cause a serious water crisis for the residents of Vizag and other towns in the area. The local municipal corporation has blissfully made commitments to supply water for the Alumina refineries, knowing well the water shortage. When private gains override the public interest, nothing should come in the way of these private companies. In a market economy, for every decision, there is perhaps an appropriate market determined price tag!

Down the line in these projects, the government and the companies have jointly infringed the law of the land. The mining franchises violate the spirit of the Fifth Schedule. The Panchayats (Extension to Scheduled Areas) Act (PESA) has been violated as neither the tribal Panchayats nor the Gram Sabhas have been consulted. The Forest laws relevant to the tribals and the forests have been given a go by. The Tribal Advisory Council (TAC)'s advice has not been given due weight. In the case of the refineries and the captive jetty, consultation with the Gram Sabhas has not taken place.

When there were protests from the tribals and the larger civil society against bauxite mining, the Union Ministry of Mines has suspended the mining projects. However, knowing well that they have the necessary political clout in their hands, both the companies are going ahead at full speed with the construction on their respective refineries.

Another important feature of these mining leases is the way bauxite ore is priced. According to rough calculations based on the London Metal Exchange price of aluminum and the known cost profile of a refinery-cum-smelter, the annual income from these franchises to the government work out to no more than Rs.75 crores, whereas the net profit for the two companies can touch rs.3,500 crores per year. We are selling our bauxite at a distress price for no reason.

The State has granted similar franchises to private companies for mining iron ore, barites, granite and so on. The story of each of these is no different from the story of bauxite. In Bayyaram in Khammam district, iron ore is given away at a price that is 1/10<sup>th</sup> of the world market price to a private agency chosen at will. The mining franchise violates the forest laws and the Fifth Schedule provisions. It violates PESA.

In Kannedhara in Srikakulam district, a granite mining franchise is given arbitrarily to an influential individual, violating the forest laws and betraying the local tribals. The hill on which mining has been allowed is a place of worship for the tribals. Who can ever value the disruption to the lives of the tribals in such cases?

In Obulapuram which has hit the headlines of almost all the news papers in the country, iron ore mining franchises are granted to a family by two adjacent States, AP and Karnataka. There are cases going on against the developers for infringing the law of the land in several ways. Both the States are struggling to demarcate the boundaries of the

leases and the extent of unauthorized mining. The mining activity in this case has caused extensive ecological destruction.

These mining projects are no different from Vedanta in Orissa in the case of which MOEF has displayed such bravado and righteous anger! MOEF requested a committee headed by N.C. Saxena to look into the concerns of the tribals (Dongarias and Kutia Kondhs) on account of Vedanta Company's mining project in Niyamgiri Hills. I quote below from the report submitted by that committee:

*“The two communities regard the Niyamgiri hills as sacred and believe that their survival is dependent on the integrity of its ecosystem. The PML (proposed mining lease) site is amongst the highest points in the hills and it is considered especially important as a sacred site. All the Dongaria and Kutia Kondh villagers that the Committee conversed with emphasized the connection between their culture and the forests of the Niyamgiri hills. The proposed mining lease (PML) area is used by both Dongaria and Kutia Kondh and is part of their Community Reserved Forests as well as their habitat, since they depend on it for their livelihoods as well as socio-cultural practices. Their reverence for the hills is rooted in their strong dependence on the natural resources that the mountains provide. Their customary practices in the area include agriculture, grazing and the collection of minor forest produce. The age-old access of Kutia and Dongaria Kondh to the PML area and the surrounding forests has been recognised in several forest settlement reports and Working Plans, and was also confirmed by the forest staff to the Committee members during their field visit”*

The case of Dongaria and Kutia Kondhs illustrates how closely these local communities are associated with the ecology that surrounds them. When they are uprooted for a project, their lives get disrupted and their habitat shattered. How can anyone attach a price tag to such displacement? In fact, in a case like this, it is the local community that knows best how to manage the ecological resources of its own habitat.

MOEF has accepted the findings of Saxena Committee and set aside the clearance given earlier for Vedanta mining project. The bauxite mining franchises given in Visakhapatnam, the mining lease given in Bayyaram in Khammam district for iron ore mining and the granite mining lease given in the Kannedhara in Srikakulam district are all similar to the Vedanta. In all those cases, as in respect of Vedanta, the forest laws are infringed and the lives of the tribals are disrupted. The Fifth Schedule requirements are given a go by and the local bodies ignored. Even the Polavaram irrigation project that displaces lakhs of tribals in AP is similar to Vedanta. What worries me is the selective treatment given to individual projects, giving a go by to institutional reform.

In the ultimate analysis, it is clear that all these projects are such that they pollute the environment in an irreversible way, disrupt the lives of the people and involve serious human rights violations. It is unfortunate that the government that should be the custodian of the Constitution and its laws should become its violator. To call all this as “development” is not only irrational but counter productive.

## Chapter 7: Nuclear power; unclear risks



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I threw my window open wide  
And beckoned him to come inside  
He looked at me and blinked an eye  
Then turned and flew into the sky

Source: The Sparrow by William J. Schrader (30)

Ever since Enola Gay dropped its deadly cargo on Hiroshima in August, 1945, nuclear energy has become the symbol of power in the global circles. In March, 1944, well before this tragic day, Homi. J. Bhabha, the father of nuclear science in India requested Tata Trust to set up a nuclear research institution in India. The outcome of this was the creation of Tata Institute of Fundamental Research (TIFR) in December, 1945. With this, India joined the elite club of nuclear nations of the world.

India soon enacted the Atomic Energy Act in April, 1948 and set up the Atomic Energy Commission (AEC) a few months later. The Commission, which was also the Department of Atomic Energy (DAE), worked directly under the Prime Minister. It had many special privileges that were not available to the other departments of the government. The Act itself had many non-disclosure clauses that rendered the activities of AEC and its successors totally non-transparent. For a long time, there was not even a regulatory watchdog to oversee the safety of what AEC was doing. It was in November, 1983 that the government constituted the Atomic Energy Regulatory Board (AERB). The Board functioned under the DAE whose work it was supposed to regulate. AERB continues to be subordinate to DAE even today.

While nuclear research gave India an edge in defense, its activities by and large revolved around the use of nuclear science and technology for peaceful purposes.

The first atomic power plant at Tarapur started functioning on October 2, 1969, the birth centenary of Mahatma Gandhi. India never looked back after this in building its capabilities in nuclear power. It has an existing nuclear power generation capacity of 4,780 MW and another 5,300 MW under construction. Necessarily, since it involved an

entirely indigenous effort, the capacity expansions in nuclear power have remained slow but steady.

The country has an ambitious plan to develop nuclear power indigenously in three stages, the first stage based on Pressurised Heavy Water Reactors (PHWRs) and the second on Fast Breeder Reactors (FBRs), both using Uranium as the fuel. The third stage will use thorium as the fuel in FBRs. The sea sand along the Indian coast is known to contain abundant thorium resources.

The byproduct of nuclear power generation is plutonium, a material that is central to nuclear weaponry. India did not have to wait long before testing its capability in making a fission bomb. On the 18<sup>th</sup> of May, 1974, India exploded an atomic device at Pokhran in Rajasthan. It was the first confirmed nuclear test by a nation outside the permanent membership of the UN Security Council. With this, the world started looking at India's plans to produce nuclear power as closely entangled in its attempt to develop a parallel weapons capability. In fact, as if to corroborate this impression, India conducted the second series of tests at Pokhran in May, 1998.

There is an interesting story about the two Pokhrans. The first Pokhran was given the code name "Smiling Buddha" to convey the message to the rest of the world that India's intentions were truly peaceful. Even though Buddhism is an ancient religion in its own right, it originated from the Indian subcontinent and had been closely associated with Hinduism in some ways. As already mentioned, many people consider the Buddha as one of the ten *avatars* of the Hindu tradition. Over the centuries, Hinduism had the uncanny tradition of assimilating the ideas and even the deities of the other religions!

The first Pokhran nuclear test was conducted on Vaisakhi Purnima or the full moon day of the Vaisakhi month of the lunar calendar that happened to be the thrice blessed day of the birth, the nirvana and the death of the Buddha, two and a half millennia ago. When the first Pokhran became successful, the head of the project, Dr. Raja Ramanna seemed to have telephoned Mrs. Indira Gandhi, the then Prime Minister and said in the same code language, "Madam, the Buddha has finally smiled". The Buddha smiled once again in 1998!

Irrespective of the tests, India was sailing along slowly and steadily with its nuclear power development plans. While the goals always remained highly ambitious, the achievements fell short, largely because of the slack that was inescapable in any tenacious indigenous effort put in by the country's scientists and engineers. While nuclear power's contribution to energy at present is around 2.4 million tonnes oil equivalent (mtoe), the Integrated Energy Policy (45) document of the Planning Commission placed its goal for 2031-32 at 96 mtoe, almost a forty fold increase in three decades! In terms of the equivalent capacity, the addition contemplated was equivalent to 63,000 MW, compared to the existing 4,780 MW. Even this projection was based largely on indigenously built reactors, with imported ones contributing only 6,000 MW.

India opened its doors to nuclear commerce by signing the Civil Nuclear Cooperation Agreement with the United States in March, 2006. Despite nationwide opposition, the agreement became a fait accompli during the following four years. India soon signed similar agreements with France and Russia. Under international pressure, India enacted a Civil Nuclear Liability Act in August, 2010 to limit the liability of the suppliers of nuclear reactors on account of accidents. The purpose of this was to clear the way for imported reactors without forcing the suppliers to take on the full liability for accidents. Some argued that this would dilute the safety of the imported reactors.

What followed was a deluge. The companies abroad were looking for business in the developed world. In USA and the other developed countries, there is intense opposition to nuclear power, in view of the deadly accidents that took place at Three Mile Island (USA) and Chernobyl (Russia). When India opened its doors, the western companies were more than anxious to firm up deals quickly with Nuclear Power Corporation of India Ltd. (NPCIL).

The developments thereafter were truly bizarre. For the post 1991 reformers of India, the age old Parkinson's Law of Triviality seemed to appeal admirably. The less they knew about a technology, the more enthusiastic they became to welcome it. Without understanding much about the dangers of nuclear reactors, the Central leadership took upon itself the challenge of launching India into the cauldron of nuclear power. The State Chief Ministers competed with each other to invite NPCIL to set up nuclear power projects in their respective States. Overnight, these projects became political trophies to be won. The Chief Ministers and their officials queued up to receive foreign companies willing to supply the reactors through NPCIL. Nuclear projects became the fashion of the day. They were looked upon with grudging admiration. Some called them “nuclear parks” not digesting the fact that each of these projects would strip the area of its greenery, pose serious radioactive exposure to the people and look anything other than a park that gave enjoyment to the people.

As of now, seven States have succeeded in winning these nuclear trophies. Knowing the business appetite of the Western companies and sensing the vulnerability of the Indian leadership, one could expect more to follow. Going by the trend in the capacity additions accepted at each site, the total new capacity that would get added at these sites is anywhere around 90,000 MW, far in excess of what Planning Commission's projections for 2031-32 (45) indicated. All of it will be base load generation that the Indian electricity grid will find it difficult to absorb. Most of this will be based on large sized reactors of capacities ranging between 1,000 MW to 1,650 MW each. Many of these higher sized reactors are yet to be operationally tested and their safety parameters established beyond doubt. India has thus become a willing guinea pig in the global laboratory of nuclear experimentation. After all, in this era of globalization, the developing world is expected to be the guinea pig and the elite developed nations, the experimenters to enable the latter to ascertain what is good for them and what is not. Are not the poor of the developing countries subject to clinical trials for the deadly vaccines produced by the west? Is it not true that the developed countries are dumping their

polluting industries to countries like India, where, in the name of “liberalization”, the laws can be wantonly violated and the people’s human rights trampled upon?

The western multinational corporations manufacturing nuclear reactors have run out of business, as their parent countries have decided to go slow on nuclear development. The best way to keep their businesses viable and keep them happy is to push their ware into the developing world, which is conveniently called the “market” in the lexicon of today’s economic reform. In any meeting that took place during the last few years between a visiting foreign dignitary and the leadership in India, this topic invariably occupied the first place on the agenda for discussion. Before such a meeting took place, the Indian leadership was always expected to get fully equipped, with the laws remade and the rules reframed, to please the visiting leader. Nuclear power has been no exception to this.

Nuclear power has its own inherent risks. Since radioactive isotopes are handled extensively in the power plants and the associated fuel reprocessing facilities, there are risks of leakage of radioactive material. This material could leach into ground water aquifers or spread into nearby water bodies. In USA, there have been many instances of ground water contamination with radioactive tritium. There has been a public outcry against it.

In our living memory, apart from the deliberate bombing of Hiroshima and Nagasaki, we have the two spine chilling nuclear accidents that occurred at Chernobyl and Three Mile Island, in addition to the more recent Fukushima disaster in Japan.

In the case of Chernobyl, the radioactive contamination spread through air far and wide, over many parts of the erstwhile Soviet Union and over extensive areas of Europe, with the radioactive winds touching even Japan. While 4,000 deaths were directly attributed to the accident, the long-term impact of it on the health of the people is still being assessed. About 336,000 people were evacuated from the site of the accident. The incidence of cancer increased in the area. The accident caused radioactive contamination of the flora and the fauna in large areas around the project. As a result of the contamination, the reproductive ability of many animals and birds in the area is reported to have declined. There were reports of the radioactive isotopes spreading into the river systems. There was bio accumulation of radioactivity in the fish found in the water bodies.

As an interesting aside to this, scientific studies have shown that the birds in the affected areas around Chernobyl became cautious in choosing their nesting places depending on the level of radioactivity at the location! There is a lesson from this for the humans.

The Chernobyl reactors that were affected by the accident posed a potential danger for the environment. They could not be decommissioned as they presented a mess of tangled structures and a contaminated mass of material. Finally, many donors came forward to enable the local government to build a concrete sarcophagus (a tomb) for it!

It was after seeing the extensive damage caused by Chernobyl that the regulators the world over have adopted a zoning system around each project site to monitor the risk of an accident.

While the occurrence of a major accident in a nuclear power plant may be infrequent, minor accidents are known to take place more frequently, despite the precautions taken. It is such accidents that result in exposing the workers of the plant and the population living in the vicinity to life-endangering radioactivity.

Man's unrelenting pursuit to translate knowledge quickly into action has often forced him to rush into adopting complex technologies without fully understanding the risks and awaiting solutions to the known problems. This is exactly what has transpired in the case of nuclear technology. While he has succeeded in breaking the atom and unleashing its enormous energy, he is yet to come to grips with the deadly wastes that the process generates. He is at a loss as to how to neutralize the wastes. He is therefore quietly dumping the toxic radioactive wastes into time capsules and burying them, hoping that the posterity will find a more sensible solution. In any civilized society, one would expect the present generation to bless its progeny. As far as our generation is concerned, we seem to have given a go by to this basic human value!

Not many nuclear plants in the world have yet been successfully decommissioned after they have lived their age, because these plants leave behind them a complex trail of radioactivity that is not easy to get rid of.

Coming back to the grand "nuclear rush" that our rulers have unleashed on us, the States have been vying with one another to get as many "nuclear parks" as possible by offering large tracts of land, unmindful of the number of people that would get displaced and the magnitude of the risk the local communities would get exposed to. Among the States, AP has won the largest number of these nuclear trophies. There will be three nuclear complexes, one at Kovvada in Srikakulam district, another at Nizampatnam in Guntur district and the third one near Pulivendula in Cuddappah district. As of now, the capacity of each of these will be anywhere around 6,000-10,000 MW. The final contours of these projects are not yet known.

Kovvada is a quiet, scenic village overlooking the Bay of Bengal, in Ranasthalam Mandal of Srikakulam district. This place has suddenly found itself dragged into the thick of the ongoing debate on nuclear power.

It all started when the government, without taking the people into confidence, invited NPCIL to choose a site for one of its three nuclear power plants in northern AP. The site chosen was near Kovvada. While the people in the villages near Kovvada were in need of better public healthcare facilities, good schools, skill enhancement for the youth and support for their agricultural and fishing activities, the government felt that a nuclear power project would make up for all this more effectively. A project of this kind will displace the people physically, occupationally and culturally. In the government's

eyes, cash compensation can make up for this loss. The State can deprive its people of their basic human rights by dangling the carrot of cash compensation and assurances of employment that will remain unfulfilled for ever. The personnel operating a nuclear power plant will need special skills. Such skills are not readily available in the rural surroundings of Kovvada, nor has NPCIL ever tried to train the local youth for the kind of employment that the proposed nuclear plant would offer. Even assuming that such skills exist, the number of livelihoods that are lost as a result of displacement would far outweigh the number of jobs that the plant can ever offer to the people. Such a comparative assessment is considered both mundane and irrelevant in the paradigm of development that India's planners are pursuing today.

When some villagers questioned NPCIL's officials about the dangers of a nuclear power plant of this kind, the company chose a few prominent persons and took them on an excursion to Kalpakkam and the other nuclear power plants in operation. This conducted tour was meant to dispel the fears of the villagers and show them how apparently safe NPCIL's existing plants were. If these villagers had known about the radiation leaks that had occurred in the past in these very same power plants, they would have tried to find out more about them. Neither the villagers knew anything about it nor the company representatives ever tried to inform them of such trivialities. The villagers did not know about the radioactive wastes that came out of the plant and the way those wastes were handled. NPCIL's officials had no occasion to explain such matters to the villagers, as they were busy taking the visitors around their more impressive, air-conditioned buildings. If at least one villager had read about Chernobyl, he would have asked the company representatives about the likelihood of occurrence of an accident of that magnitude. Blissfully, none in the group knew about it. The question of the company officials talking about it never arose. In effect, the conducted tour turned out to be a successful public relations exercise from the point of view of NPCIL.

Initially, it was not clear whether the first phase of this "nuclear park" would have two 1000 MW capacity reactors. NPCIL thought that the people of Kovvada and the other villages in the vicinity should not be informed about such mundane details. More recently, the State government issued an order asking the local authorities to initiate forcible acquisition of land for the project. According to this order, it has now become clear that the project would have a total capacity of 6,000 MW (six reactors each of 1000MW capacity) and, initially it would require 1,939 acres of land. In addition, NPCIL's township would require another 313 acres, 5km to 10km away. Meanwhile, NPCIL has cleverly refrained from informing the people of Kovvada and the nearby villages and towns about the zoning concept and its implications, as the Corporation perhaps thought that any such disclosure would raise apprehensions in the minds of the people and slow down the implementation of the project itself.

According to the zoning system adopted after Chernobyl, there will be an "exclusion zone" demarcated all around the project site at a radius of 1.5 kilometres from it. In the annulus space between the perimeter of this and the perimeter of the site itself, no habitation will be permitted. Around the exclusion zone, at a radius of 5 kilometres, there will be a "sterilized zone" in which there is a "potential for contamination in the

event of a severe accident”. No development activity is encouraged in this zone. Other than the natural growth of the population, no increase in the population is allowed. Around this zone lies an “emergency planning zone” demarcated at a radius of 16 kilometres from the site where, in the event of an accident, emergency evacuation could be ordered. Finally, the “impact assessment zone” demarcated at a radius of 30 kilometres from the site is an area in which the radiation dosages are closely monitored. Of course, depending on the direction of the wind and the local conditions, evacuation of people around the affected site could further extend to a larger area.

Many villages and urban agglomerations in the vicinity would come within the emergency planning zone and the impact assessment zone which extend to 16 kilometres and 30 kilometres respectively from the site near Kovvada. The residents of those villages and towns are unaware of this. The authorities, fearing that the people would oppose the project, have not publicized this among those likely to be affected.

Incidentally, the Nuclear Regulatory Commission (NRC) of USA has more stringent standards of zoning. There are two concentric Emergency Planning Zones (EPZs) around the nuclear power station, one known as “Plume Exposure Pathway EPZ” extending up to 16 km, and another known as “Ingestion Exposure Pathway EPZ”, extending up to 80 km. Post-Fukushima, these limits may be subject to a review and adjusted upwards.

In India, the citizen has the fundamental right to be informed about the decisions taken by any public authority, which are likely to impinge upon his life. The least that NPCIL should have done in this context is to announce the implications of this zoning system to all those who live within a radius of 30 km from the project site before going ahead with acquisition of land.

It is curious that NPCIL’s township is proposed to be located 5km to 10km away from the project itself. Evidently, NPCIL does not wish to have its personnel within the “exclusion” and “sterilised” zones whereas the residents living in those zones could continue to remain there!

When a project of this kind is to be set up for generating electricity, MOEF is required to apply its mind to the choice of technology and process for generating an equivalent amount of electricity and consider several alternative sites where the project could be set up to minimise its environmental impact. MOEF is also required to consider a given project in the context of the other industrial units in the region and ascertain whether the region can bear the cumulative pollution load and disturbance to the socio-economic conditions in the region with the new project proposed to be set up. In the instant case of Kovvada, no such application of mind is visible on the part of MOEF.

A large number of polluting industries have moved into Ranasthalam Mandal and the other nearby areas during the last decade. When one travels along the national highway from Visakhapatnam in the south towards *Orissa* in the north, Srikakulam town welcomes the visitor on its outskirts with the stink and the stench of several chemical

industries that function nonchalantly, without being subject to any kind of regulation. There are other polluting industrial units that have sprung up in the district over the last decade or so. The regulators have not questioned them about the effluents they release in a routine manner into the streams and on the ground.

Added to this are the coal-based power projects with a total capacity of 10,000 MW that are coming up in Srikakulam district. Their total capacity may go up further in the coming years. The coal burnt in these projects will also release radioactive isotopes into the environment, in addition to the other toxic pollutants.

The ecology of Srikakulam district is under a serious threat.

In November, 2010, MOEF issued a conditional environment clearance for the 9,900 MW Jaitapur nuclear power plant in Konkan in Maharashtra. The fact that there were 35 conditions attached to the clearance showed the premature and the hasty manner in which MOEF had to issue the letter to keep up with the impending visit of the French President to India. The French company, Areva, will supply six reactors, each of 1,650 MW capacity, for the Jaitapur plant. One is not certain about the safety of these reactors as such large French reactors are yet to start functioning anywhere in the world.

When the people of Konkan protested against Jaitapur plant, the Central Minister in charge of Environment was reported (31) to have rebuked them, saying,

*"from an environmental point of view, it is really tragic that nuclear energy is red rag to the green bull."*

*"All the greens are anti-nuclear...It's paradoxical actually. All the greens want clean energy to control global warming but when it comes to nuclear...The current debate on Jaitapur, it is more political than technical."*

He further said (31) nuclear energy was necessary to curb the greenhouse gases emitted by India. *"38 per cent of the green house gases by India are produced due to electricity generation."*

At the time he made this statement, ironically, he was unaware that his Ministry had already cleared 1,46,000 MW of coal-based power during the previous four years. Nor was he aware of the green house gas emissions that the entire infrastructure associated with the nuclear power industry would generate indirectly. In Konkan region where Jaitapur is located, the Ministry of Environment had already cleared more than 15,000 MW of coal-based and gas-based power generation capacity and another three bauxite mining projects. Konkan is among the few regions in the country that have the richest heritage of bio-resources. As a result of the indiscriminate clearances given by the Ministry of Environment, Konkan will soon rank among the most highly polluted regions of the country. Added to this will be the risk of a nuclear accident at Jaitapur which stands close to the Western tectonic fault line. One has to stretch one's imagination to call this situation "clean"! When technology lobbies try to push their technologies that they

cannot defend on the basis of reasonable grounds, they coin words such as this to obfuscate the real issues of safety. The Minister's statement is a telling example of this.

It was somewhat strange that the environment clearance for the project was issued without a proper assessment of the radiological safety aspects of plant, as EIA consultant had no expertise in that area (32). The clearance given for the project was therefore a conditional one! It was like a water regulator saying that he was concerned only with the water part of the horrible looking liquid and another regulator should look into the impurities! What can environmental safety mean when it does not care for the safety of the human beings that form part of it?

While I initially wrote down this chapter to express my apprehensions about the potential dangers of nuclear power, the disaster at Fukushima in Japan was yet to take place. When Japan was hit by a powerful earthquake on March 11, 2011, followed by the devastating tsunami, the reality of a nuclear holocaust became clear to the world. Even in those countries where nuclear energy had hitherto been considered to be a part of the ultimate form of "green" energy development, questions are now being asked about the efficacy and the safety of nuclear power. The safety norms adopted by the nuclear power group after the disaster at Chernobyl are being revisited and the boundaries of the "exclusion", the 'emergency" and the "impact assessment" zones are being redrawn.

While the earthquake and the tsunami that shook Japan were indeed unusual events, one should not overlook the fact that, even in the absence of any quake or a tsunami, Japan has had a history of nuclear accidents of its own. Fukushima Daiichi nuclear power plant, in which several explosions took place during the days that followed the quake, had a troubled history of accidents in the past (42). During the period 2005 to 2009, it had the highest accident rate in Japan. Apart from Fukushima, there were accidents at Tokaimura (year 1999), Mihama (year 2004) and other nuclear facilities that caused injuries, radioactive exposure and, in some cases, even deaths. Similar accidents have been reported from the other countries that operated nuclear power plants.

The events in Japan have exposed the risks involved in the "spent fuel pools" created near the nuclear power plants (42). In fact, no nation has yet found a safe way to deal with the large stockpiles of used nuclear fuel. It is ironic that Japan which had the only first-hand experience of the widespread and traumatic destruction wrought by a nuclear attack should choose to adopt an energy supply system that is heavily reliant on nuclear power with all its associated risks.

It is all the more ironic that the nuclear evangelists of the world should feel justified in coaxing the nations to treat nuclear energy as a 'green" form of energy, knowing well that its risks are unknown and costs unquantified. For the human society, it is not a choice between the "unclean" but less calamitous coal and "green" but potentially disastrous nuclear power. Neither is genuinely green, as radioactive contamination even of a low intensity can cause genetic disorders. The choice therefore is between safe, renewable, environmentally benign sources of energy and the rest.

While the people of Japan stood traumatised by the nuclear calamity in their country, it was strange that our Foreign Secretary should visit Tokyo immediately after the Fukushima disaster and describe nuclear energy as a “clean” form of energy for the promotion of which India and Japan should work together. Her words must have been out of tune with the trauma in the minds of the Japanese at that very same moment!

The latest indications (44) are that the liabilities on account of the nuclear disaster in Japan could run into several billions of dollars. The liabilities could drag on for decades, in terms of the impact of radioactivity on the health of the people. In the case of the previous accidents, there was evidence of an increased number of thyroid cancers observed among the people exposed even to lower levels of radioactivity. An accident in a nuclear power plant may be rare but its consequences will be enormous. Statistically, such events can be explained by "fat-tail distributions" or "black swans" in the case of which the possible risks, the product of the probabilities and the consequences, are usually understated and not provided for in working out the mitigation measures (43).

The nuclear industry's very existence is dependent on hidden public subsidies; the costs to be borne by the society in the event of a nuclear disaster, as well as the costs of the still-unmanaged disposal of nuclear waste, which is conveniently transferred to the future generations, not to mention about the enormous cost of decommissioning a nuclear power plant. Not many aging nuclear power plants in the world have so far been decommissioned. Fukushima will take ages to decommission, if it ever happens. The nuclear industry typifies the dictum “privatise the profits; nationalise the costs'.

Despite opposition from the civil society, India's legislation on civil nuclear liability provides a ridiculously low cap of Rs. 1,500 crores on the liability that a nuclear power plant operator could pass on to a reactor supplier in the event of an accident attributable to the deficiency of the reactor. As usual, those that have brokered this law had, at that time, argued that such a cap would “encourage” foreign investors to invest funds in the nuclear power projects in India, as though the country's future would depend critically on such imported reactors. Of course, this argument was motivated more by the pressure of the multi-nationals than what was good for the public. In the light of what has happened in Japan, this law as well as the ceiling on the liability that it has imposed sound atrocious, to say the least. The latest estimate of the burden on the Japanese tax payer on account of Fukushima's three stricken reactors and the devastation that followed is placed at US \$ 16 billion or Rs. 80,000 crores. Considering that the capacity of these reactors is a little over 2,000 MW, the contingent liability per MW works out to Rs. 40 Crores, several times more than the initial cost of setting up an equivalent capacity! It is high time that the Parliament intervenes and rescinds the law itself, as any such cap on the liability would only encourage the reactor suppliers and the operators to dilute the safety standards in nuclear technology, thus shifting the huge cost and its physical dangers to the people at large.

While the Indian law on civil nuclear liability with its unimaginably low cap is in itself a gross violation of “polluter pays” principle, the rules recently notified by the

government have gone one step further, by placing an artificial time limit of five to ten years on the operator placing a claim on the reactor supplier. The life cycle of a nuclear power reactor may run into three to four decades or even more. It is quite likely that an accident will take place anytime during that life cycle. The rules now framed by India, apart from their being not in tune with the Act itself, literally exempt the reactor suppliers from bearing the liability, if the accident takes place, say, after ten years from the date of installing the reactor, which is quite likely as it happened in the case of Fukushima. It is significant that these rules were notified on the eve of the Prime Minister's meeting with the leaders of the reactor supplying countries at Bali during the last quarter of 2011. Indirectly, the government had no hesitation in subsidizing the foreign reactor suppliers at the expense of the Indian tax payer. More importantly, the government was not sensitive to the fact that such an exemption would encourage the profit-seeking foreign multi-nationals to cut the corners in ensuring the safety of the reactors they supply to India.

The Indian leadership is prepared to extend heavy subsidies to the foreign suppliers of nuclear reactors in the name of "encouraging" foreign investment. The same leadership is reluctant to accept the concept of providing food and fuel subsidies to the poor or giving fertilizer subsidies to the farmers. In the modern world of globalization and reform, there seem to be two sets of economic logic, one for the poor and another for the rich, domestic and foreign!

The companies that operate the nuclear power plants all over the world tend to get into a denial mode whenever confronted with questions about the safety of their plants. NPCIL is no exception to this. As soon as Japan declared a nuclear emergency, the Indian government was quick to assure its own people that NPCIL had recently carried out a safety audit of all its power plants and found them to be compliant with the internationally adopted safety standards. Apparently, there were several similar safety audits conducted in the past. However, no one knows the findings of these audits and the action taken by NPCIL.

The problem with India's nuclear facilities is that there is no autonomous regulatory authority that could oversee the activities of DAE and enforce the safety standards rigorously. The Atomic Energy Regulatory Board (AERB) is an agency that is controlled by DAE. The Atomic Energy Act has many secrecy and non-disclosure clauses that render DAE's activities non-transparent to the public. Unless these issues are addressed in a forthright manner, the kind of concerns that continue to bother the public will persist. In the ultimate analysis, nuclear energy may not offer a sustainable solution to India's energy problems, in view of the potential risks that it poses.

While I write these lines, many concerned citizens have raised their voice against the misleading assurances given by Department of Atomic Energy (DAE) about the safety of the existing and future nuclear power plants. The residents living around Jaitapur carried out a series of protests culminating in the State Government deploying coercive measures to suppress their dissent. This resulted in the loss of one innocent life

and injury to many. Following this, instead of appreciating the genuine concerns of the people, both the State and the Central governments swung into action to spread further misinformation to justify the project.

As recently as on May 30, 2011, an accident at Kakarpar Atomic Power Station (KAPS) resulted in a serious radiation exposure to four workers. A news report stated, “the matter became public when the workers petitioned Tapi district collector seeking permanent jobs as compensation last week. The collector sought an explanation from KAPS”. At no time, NPCIL had ever tried to take the public into confidence on this radiation leak till the local District Collector, by chance, came to know of this. Such is the cover of secrecy under which NPCIL continues to function!

Millions of people in India have watched on the TV screens what happened at Fukushima. For the first time, there is a serious, widespread public debate on the safety of nuclear power. Close on the heels of the assurances given by the nuclear establishment on the infallibility of nuclear technology, the news channels announced the nuclear accident that took place at Marcoule in southern France in which some workers lost their lives and several others got exposed to radiation. Knowing what happened earlier at Three Mile Island and Chernobyl and the events unfolding at Fukushima, the people living in the vicinity of the new nuclear power projects have become alert to the inherent dangers of the technology.

Following widespread public resistance to another nuclear power project to be set up at Haripur in Purba Medinipur district of West Bengal, the State’s newly elected Chief Minister, Mamata Banerjee lost no time in announcing the scrapping of the project altogether.

In the wave of public opposition to nuclear power in India, the latest causality has been NPCIL’s project under construction at Kudankulam in Tamil Nadu State.

The history of the public outcry against Kudankulam is typical of how the successive governments, driven by the technology lobbies and the commercial interests of the multi-national companies, ignore the people who have elected them to power and trample upon their sentiments.

Public opposition to Kudankulam dates back to immediately after Rajiv Gandhi and Mikhail Gorbachev signed an agreement in November 1988 for the construction of two 1,000 megawatt units at Kudankulam. “Eljens, a fisherman of Periyathalai in Tuticorin District, recalled how about 20 years ago, the authorities ensured that the protests by fisherfolk fizzled out. Others cited the police firing on a May Day rally of fishermen at Kanyakumari in 1989 as the main reason for the abrupt end to the first phase of the campaign against the Kudankulam project. The Bishop of Tuticorin Diocese, Rt. Rev. Yvon Ambroise, who was part of the delegations that met Chief Minister Jayalalithaa in September and Prime Minister Manmohan Singh in October, 2011 recalled that since the late 1980s, the campaign had been sporadic, but had picked up some momentum over the last four years (47).”

The vivid television pictures that showed the magnitude of the nuclear disaster at Fukushima and the human trauma that followed revived the fears of the local residents about their safety in the vicinity of Kudankulam power plant which was about to be operationalised. The operating company would not take the people fully into confidence while conducting the mock drills aimed at dealing with the likely emergencies at the power plant, forgetting that it was the public that would be the major stakeholder in any such event!

The public outcry against Kudankulam culminated into a major confrontation between the government and the people. The government tried to assuage the feelings of the people, though belatedly, by appointing an “expert” committee to listen to their concerns and clarify how safe the plant was. Unfortunately, the operating company, in an undue haste to start operating the plant without waiting to listen to the people’s views, persuaded a few celebrities to write articles to convince the public that nuclear power was infallible, that it was the key to solving India’s energy problems and that Kudankulam was “100%” safe, a term that no statistician worth his or her profession would ever dare to use in describing the safety of a nuclear reactor. Those who were supposed to meet the people to appreciate their concerns are expected to be have an open mind. Unfortunately, there are several scientists and technologists in India who are generally proud of their own knowledge of the scientific and technological complexities of the discipline to which they belong and are contemptuous of the ignorance of the people who are the ones that are expected to bear the brunt of their technological handiwork. They seem to ignore the fact that technologies are there to subserve the public interest as perceived by the people themselves.

A genuine scientist is the one who not only knows his subject well but also knows its limitations. In the case of nuclear power plants, a genuine seismologist would be aware of the limitations of his or her ability to predict the seismic events and their magnitude that could trigger a nuclear accident. Similarly, a genuine nuclear scientist or an engineer would be aware of the gaps in the knowledge of the likelihood of a nuclear accident taking place as a result of a human or a mechanical failure. A good scientist would be aware of the constraints faced in decommissioning an aged or a stricken plant and the technological limitations of processing the waste generated from nuclear power generation. Unfortunately, such genuine scientists and technologists belong to a minority.

Indians, like many others, have often fallen victims to xenophobia. A well known cartoonist of the erstwhile years illustrated this graphically by portraying how the Indians blamed the ubiquitous foreign hand for the defeat of its national cricket team at the hands of a foreign team that was decidedly better equipped in the skills of the sport than the Indians!

In the instant case of Kudankulam, instead of trying to understand the genesis and the evolution of the public agitation, someone within the government came to the ad hoc and somewhat routine conclusion that there was a “foreign hand” behind it. Enquiries are still going on to find out the source of the foreign funds that fuelled the agitation (47). The government seems to forget conveniently that the bilateral agreements it had signed with the foreign powers during the last few years to import nuclear reactors and fuel were meant more to sustain the business interests of the multi-national companies than to ensure India’s energy security. India has many benign alternatives to the risk-prone nuclear power for meeting its energy needs. Can the government deny the fact that it has enacted the civil nuclear liability law and notified the rules, only to accommodate the business interests of the foreign multi-nationals? Why has it abandoned the competitive bidding route to opt in favour of awarding contracts for nuclear reactors to the western multi-national companies, except for paving the way for their smooth entry into an arena that has always been reserved for indigenously manufactured nuclear reactors? Talking about a foreign hand is therefore like closing one’s own eyes, as the proverbial ostrich does!

The debate on the safety of nuclear technology is going to become more intense and widespread in India in the coming days. Unlike the other power generation technologies, the risks inherent in the case of nuclear power are enormously more life endangering. However efficacious a technology might be, even if there is a minute likelihood of its affecting the lives of the people, not only of the present generation but also the future ones, the State is obligated under Article 21 of the Constitution to come clean on it and act on behalf of the citizen to protect his or her fundamental right to life. Clearly, in this respect, the burden of proof of the safety of the technology rests on the State. One should not be surprised if this issue attracts judicial scrutiny in the near future.

While considering the need for nuclear energy, we come to the basic questions that we have posed in fourth chapter on the whole gamut of electricity planning in India. A time has come when we should be planning the demand for electricity rather than approaching the sector from its supply side. Those that use electricity should realise that every kilowatt hour they consume comes at an enormous social cost that has not been fully quantified and factored into its price. We cannot continue to eat into the precious natural assets we have to sustain the bottomless pit of electricity consumption that our present day life styles demand. For that matter, we cannot continue to indulge ourselves in the short term euphoria of a highly resource intensive paradigm of economic growth that may not last for long. We should realise that the planet's future critically depends on how frugally we can manage our resources and how carefully we can address the central concern of the mankind, that is, the need to uplift the disadvantaged sections of the population.

In the Indian context, the nuclear technologists of the country on the one hand and the business interests of the west on the other, seem to influence and guide the public policy towards a strong bias in favour of nuclear power. Technology should at best be viewed as a tool. In the case of nuclear technology, it is potentially a dangerous tool that

could go out of control at times. The sooner we realise this, the better will it be for the future of the planet.

Even after the world witnessed the full blast and horror of Fukushima in Japan, the nuclear lobbies in different countries continued to spread misleading information on the safety of the technology, its costs and its “cleanliness” from the environment point of view, making it as though the planet could not survive without it. Even Japan was initially reluctant to anger these lobbies.

However, within days after the declaration of nuclear emergency in Japan, as its horrors started unfolding, the Japanese Prime Minister, Naoto Kan defied his country's entrenched nuclear industry by ordering the closure of another nuclear power plant, Hamaoka, as it sat near a seismic fault line. He went further to announce that "Japan would abandon plans to build more nuclear reactors"; saying his country needed to “start from scratch” in creating a new energy policy. Germany's Chancellor, Angela Merkel has also scrapped plans for new nuclear power plants in Germany, stating that Germany would make a "measured exit" from nuclear power. Both these countries depend on nuclear power for more than 25% of their electricity needs. Many other countries are trying to come out of the shackles of their respective nuclear lobbies to review their own energy strategies. On the other hand, India is still dithering on responding effectively to the global rethink on nuclear power.

When the people living in the vicinity of Jaitapur continued to express their opposition to the project, the Prime Minister who was apparently guided by DAE and none else, announced that, no matter what happened, the government would go ahead with Jaitapur. The justification that was cited by the Prime Minister's Office (PMO) was based on many questionable grounds. On safety, even though independent audits were promised and transparency assured, DAE continued to remain opaque to public scrutiny. Kaiga, Tarapore, Jaitapur, Kalpakkam, Kudankulam, Pulivendula and other projects are located dangerously close to either the western or the eastern tectonic faultline where seismic events can occur anytime. It will be imprudent on the part of DAE to ignore the possibility of an accident being triggered by a seismic event. PMO's assurance about the cost effectiveness of nuclear electricity does not stand to reason as the imported reactors for the projects at Jaitapur, Kovvada and other locations are being procured through highly non-competitive procedures and their costs are going to be astronomical.

The Prime Minister's office assured the nation that a new law would be enacted to create an independent nuclear regulatory authority to oversee the functioning of DAE and NPCIL. The government has since formulated such a law for the Parliament to approve but, on the face of it, it has many weaknesses that will render its functioning ineffective.

The information that is emerging everyday from Fukushima should make the nuclear regulators the world over to sit up and introspect on the fragile assumptions on the basis of which they have been assuring their respective countries about the safety of the nuclear power plants operating in their areas. For example, the meltdown of Reactor 1 of Fukushima and the leakage of thousands of tonnes of radioactive material into the

earth below has made a mockery of the assumption that the containment structures are infallible. The problems associated with the spent waste pools should remind the regulators about the complacency with which they have so far dealt with the storage of the wastes. Fukushima has reopened the thinking on the boundaries of the zoning system around a project site, making it necessary to enlarge the same for the future plants. While the latest estimates place the liabilities on account of Fukushima at US \$ 16 billion, the actual liabilities may cross the mark of US \$30 billion. The present estimates say that Japan will take 40 years to decommission the stricken reactors of Fukushima. In reality, they may meet the same fate as that of Chernobyl. India is yet to grasp the full horror of Fukushima. The Department of Atomic Energy (DAE) is still in an inexplicable denial mode as far as the need to introspect on Fukushima.

Industry lobbies are powerful as they have the advantage of their money power. They are in a position to capture the political leaders who depend on the former for funding their election expenses. They choke competition and create virtual monopolies in the name of reform. The industry lobbies are so influential that they can even capture the regulatory authorities. They can fund research to justify their technology and underplay its deficiencies. They control the media to influence the public opinion. They even create the consumer demand that is necessary to drive the growth of the industry and maximize its profitability. In today's political economy, they are omnipresent and omnipotent. We are living in a dangerous world in which democracies are humbled in the presence of these strong industrial lobbies.

The ongoing debate on the planet's climate is an example of how the nuclear lobby has cleverly manipulated the course of the debate and tilted the scales in its own favour. The thrust of the climate negotiation has been in the direction of reducing the emission of carbon into the atmosphere. If we are desperately in need of a carbon-free planet, we are equally in need of a planet on which the human beings are not exposed to the hazards of nuclear radiation that will cripple the race for ever. The climate arguments are cleverly used to justify a highly unsafe technology like nuclear power. It is ironic that the climate debate should hasten the world towards nuclear power, which is invariably associated with nuclear proliferation and the consequent threat it poses to world peace. What is urgently called for today, in terms of a global collective effort, is to campaign for and move towards a world that is free from the climate endangering carbon-based electricity, a world not dependent on the risk-prone nuclear electricity and a world that uses safe energy resources in an environmentally benign and sustainable manner. It is a difficult challenge for the humanity but there is no choice.

Germany has found it politically expedient to announce an embargo on nuclear power and move away from it within a decade, in favour of renewable sources of energy, including solar electricity. Nuclear energy contributes as much as 26% of the total electricity consumed in Germany, whereas the most optimistic projections of the Indian Planning Commission (45) show that the share of nuclear power will not exceed 7% of the country's total electricity needs by 2031-32. If Germany, with its year long cloud cover, can think of using solar energy, it is high time that India, fortunate enough to have

the sun shining all over, decides to move away from nuclear electricity in favour of solar and other renewable sources based on distributed generation.

When one takes a world view of the way the nuclear industry is now set to expand, the situation appears to be scary. The global community seems to be riding a nuclear tsunami (49) over which it has no control whatsoever and which will surely engulf the planet in the immediate future.

Soon after the ghastly bombing of Hiroshima and Nagasaki, nuclear technology found its immediate application in 1958 for powering US nuclear sub-marine, USS Nautilus. Thereafter, with the technology slipping into the hands of the MNCs, nuclear power became a commodity to be sold for profit at any cost. In the corporate world of the west, profits are the index of progress and those who queer the pitch by pointing out the risks are branded as “anti-progress”. That was what happened during the two decades of nuclear development that followed.

By far, the most aggressive among the western countries was USA where, during the next two decades, a nuclear power generation capacity of 1,01,229 MW was set up to meet a little over one-fifth of the country’s electricity needs. France followed with a total nuclear capacity of 63,236 MW, contributing more than three-fourths of the electricity consumed in that country. The corresponding figures for Japan, Russia and Germany are 47,348 MW (29%), 23,084 MW (18%) and 20,339 MW (26%) respectively. The nuclear establishment conveniently assumed that its technology was infallible and it would provide an unlimited source of energy.

The Three Mile Island (TMI) accident in March, 1979 in Dauphin County in Pennsylvania gave a jolt to both the nuclear establishment and the political leadership in USA. For the first time, it became clear that nuclear power was not all that infallible. An accident could cause extensive damage and evacuation of the people residing around the nuclear power plant. Exposure to radioactivity could cause cancerous diseases.

TMI marked a period of immediate lull in nuclear development in USA. The more devastating accident at Chernobyl in Ukraine in Russia in April, 1986 reinforced the fears over the safety of nuclear power. As a result, during the three decades that followed TMI, no new reactor was set up in USA.

Meanwhile, undeterred by the tremours of TMI and Chernobyl, France and the other countries in the west perceived nuclear power as a permanent solution to their energy problems. This kept the businesses of the MNCs going for a while.

However, the MNCs looked around for a much steeper trajectory of demand for electricity that could enhance their profits and sustain their businesses in the long run. The economic growth models of the west, based on investment-driven, growth-centric development, found ready acceptance among the developing countries. By selling the idea that there was an unquestionable relationship between electricity demand and economic growth, the western countries, by using their Bretton Woods clout, could

persuade the leaders of the developing countries to plan massive additions to their electricity generation capacities, irrespective of how inefficiently they use electricity and how much of human trauma those electricity generation projects cause through people's displacement.

Strangely, the Bretton Woods angle did not work much in favour of nuclear power for valid reasons. All said and done, the Bretton Woods institutions have a banker's mind. They knew that nuclear power was inherently risky and the accident liabilities could be mind boggling. They knew that no insurance company in its right mind would ever think of insuring a nuclear power plant. The one and only nuclear power plant that was ever funded by the World Bank was in 1959. The Bank gave loan assistance of US\$ 40 million for a 150 MW plant in Italy. The plant started operation in 1964 but was shut down in 1978 and declared to be out of service in 1982 due to a turbine failure. Meanwhile, the nuclear industry led a somewhat stagnant life, forcing the parent countries to cover its risks and pass on the burden to the tax payers.

More recently, the climate evangelists stepped in to condemn anything that leaves a carbon footprint. This gave a new life to the otherwise stagnant nuclear industry. They joined the bandwagon of the climate activists to call nuclear energy "clean" and "green", obfuscating the fact that nuclear electricity also leaves radioactive fingerprints, if not carbon footprints! By the beginning of the last decade, the nuclear industry honchos started campaigning for a major thrust in nuclear development in the emerging economies. USA took the lead and, as though to justify its commitment, cleared two 1000MW reactors to be set up in Georgia, for the first time after three decades. USA signed bilateral agreements on nuclear cooperation with India and other countries. The other western governments lost no time in joining the queue. India alone signed such bilateral governments with USA, France and Russia. Soon, TMI went into the oblivion and Chernobyl was given a decent burial. New names were coined for describing nuclear power plants. In India, the political leadership called them "nuclear parks", though no nuclear plant can ever resemble a park! Those scientists and engineers and those evangelists and celebrities who would unflinchingly support nuclear power and keep quiet about its risks were defined to come within the privileged category of the "thinking" segment of the society. Those that opposed were branded as "ant-national" and "unthinking".

As if to remind the nuclear activists of the dangers of nuclear technology, an earthquake and a tsunami hit Fukushima, throwing Japan into a nuclear trauma. Though some countries like Germany responded to this by announcing a shift away from nuclear, the public relations managers of the nuclear industry have succeeded in blurring the Fukushima memory through a sustained re-boot campaign to bring back the fervour in favour of the nuclear option. The nuclear establishment is apparently funding carefully designed seminars and workshops to bolster nuclear energy in the public perception.

It is helpful to look at the status of the nuclear industry today and see how it is set to grow in the coming decades.

At present, there are thirty one countries operating 441 nuclear reactors, generating 380 Giga Watts (GW) of power and contributing roughly 14% of the electricity consumed in the world. Out of these, 50 plants have already outlived their age and 80% are more than 20 years old, posing the risk of accidents. Complete decommissioning of these plants is not going to be easy.

Another 60 new reactors are already under construction and 150 more are at the planning stage. More are in the offing. China plans to expand its existing nuclear capacity of 10 GW to 200 GW by 2020! India plans to add 55 GW to its existing 5 GW by 2031-32. South Korea plans to add around 10 GW to its existing capacity of 18.7 GW. If all these projections turn out to be accurate, the world will soon be littered with nuclear power plants of different vintages, denominations and designs. As has been the experience in some of the developed countries, radioactive contamination from the plants spreads in to both ground water aquifers and surface water bodies. They pollute the air all around. There are minor and major radioactive leakages that affect the human health. No one really knows accurately the health implications of low-intensity radioactivity.

There are more serious implications in store for the humanity. First, it is the huge quantity of radioactive waste that these new reactors will generate every year. Rough estimates show that one GW of nuclear reactor processing will generate 27 tonnes of waste every year. In other words, China, India and South Korea alone will throw up 6,858 tonnes of waste every year, hereafter, in addition to the waste generated by the existing 380 GW to the tune of 10,260 tonnes! In ten years, the world will have an additional quantity of 1,68,750 tonnes of toxic waste that it does not know how to process! Where will it be dumped? I am sure that our posterity will not thank us for this poisonous legacy.

That is not the end of the story. Each GW produces 230 kilograms of weapon-grade plutonium. In ten years, the planet will have an additional quantity of 1,438 tonnes of plutonium to play with. Are we consciously paving the way for a nuclear holocaust, knowing well that such a holocaust will annihilate most parts of the planet.

I sometimes wonder whether we have visionary statespersons to sit back and meditate on these obvious trends. Is there enough sanity left in the human race? By now, all those interested in the future of the planet should have come together to consider these questions. Will they ever do that?

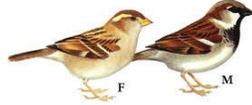
The nuclear evangelists who seem to be omnipresent are trying to equate nuclear energy with “human progress”. Some of them have gone overboard and christened it the “gateway to progress”! When I come across such courageous statements, I am reminded of the words of the famous Guatemalan poet, Louis Alfredo Arrago who wrote the following poem more than four decades ago (48).

*I saw them bury a dead child*

*In a cardboard box  
(This is true, I don't forget it)  
On the box there was a stamp.  
General Electric Company  
Progress is our best product"*

In these profound words, Alfredo Arrago used the name of General Electric Company as a symbol of the corporate world to drive home the true meaning of words such as "progress" and "development". Little did he know that the reactors for Fukushima came from this company. It is indeed a coincidence that the same company is likely to supply the reactors for Kovvada!

Chapter 8: Is India's environment safe?



House Sparrow  
www.indiacurrentaffairs.org

*Ageless voices carried beneath swift wings,  
as darkness falls upon the midnight sparrow.*

*Countless songs envelop her spirit,  
as she soars the depths of her paradise.*

*Boundless senses echo in the shadows,  
as she glides on the waves of her ancestry.*

*Whistling winds drive her into endless heights,  
as she drinks in the flavor of a sparrow's night...*

Source A sparrow's night by Angela S. Petrusch (33)

We have seen that the forests, the wetlands, the hills, the water bodies, the ground water aquifers, the air, the greenery and the sea have all come under intense stress, as never before. Our natural resources are dwindling fast.

The forest cover of the country continues to dwindle in most States, especially in large States like AP. There are not many dense forests worth their name left in the country today. Along with the forests, the wild life, the birds and the fauna associated with them are also disappearing. It is not uncommon these days to find wild animals, disturbed from their habitat, stray frequently into the nearby towns in search of prey. This is a sure indicator of the pressure that is mounting on the forests.

India has several fresh water and brackish water wetlands that support a rich biodiversity. These wetlands support exotic species of animals and birds. They provide the feeding and nesting ground for many rare species of migratory birds. One-third of the country's wetlands have been lost as a result of urban growth, diversion of land for industry and industrial pollution. AP has 259 coastal wetlands covering an extent of 18,552 square kilometers. In AP alone, in addition to the disappearing wetlands, one-third of the mangrove plantations have disappeared during the last decade. Their degradation has not only impacted

the bio diversity of the coast but also contributed to increased carbon emissions into the atmosphere.

Quarrying has taken its toll on the hills and the greenery around the urban settlements. Unbridled real estate development has destroyed water bodies. In addition, both surface water and ground water sources are getting contaminated with industrial pollutants. Along the coast, unregulated mechanical pumping of ground water has led to the subterranean aquifers turning saline.

In the cities, many inefficient modes of transportation have proliferated to pollute the air, causing bronchial and skin diseases.

These trends should cause us worry about the long term sustainability of the development paradigm we have chosen.

“Is there a way to conserve our precious natural heritage? Can we assure our grandchildren and their grandchildren of clean air and water?”, a concerned citizen had asked me a few days ago. His question made me ponder over the increasing threats to the environment of the country today and worry about the sustainability of the development path we have chosen for ourselves. Do we have laws that fully address these concerns? Do we have institutions that enforce those laws? The answers to these two questions are perhaps negative.

Article 48A of our Constitution, no doubt, asserts that “the State shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country.” We have myriads of laws to protect everything on the surface of the earth that is a part of the environment, starting with the forests, the trees, the wild animals, the birds, the fish, the fowl, the coast, the sand, the continental shelf, the land, the hills, the lakes, the rivers, the air and what not. It is indeed an impressively long list! The Environment (Protection) Act is the overarching law that should have, in the normal course, addressed all kinds of threats to the environment. The States have also their own laws to deal with the environment.

The citizen is bound by Article 51A to “protect and improve the natural environment including forests, lakes, rivers and wild life”. This applies equally to the citizens and the companies that run industries.

Are these laws sufficient? Do they leave any gaps?

Of course, there are some gaps, like the one in the case of the wetlands. Despite the policy pronouncements, we did not have an explicit set of rules to protect the wetlands for a long time. The Ministry tried to fill the gap in 2008 by drafting the rules for public consultation. Mysteriously, they were withdrawn from the public domain after a few months and not reintroduced till 2010 when they were finally issued at the end of that year. Some wetlands disappeared during the intervening two years. Even the latest wetland conservation rules will not be enough to stop destruction of the wetlands. We need laws to protect the hills and the lakes. We require laws to protect our marine resources, not only within the 12-

nautical limit but also beyond it. Our laws to prevent oil spillages in the sea are inadequate. The bulk of our minerals lie in the hilly areas notified under the *Fifth Schedule*. The *Fifth Schedule* protects the interests of the tribals. Our mining laws are not fully consistent with it. They need to be made compliant with it.

However, have we been able to do something with the existing laws? Have we been able to make a dent on the otherwise dreary scene of the declining quality of our environment?

Not really.

There are two factors that have blunted our effort. The first one is the fact that the environment offenses do not attract a penalty that matches the social cost of the offense itself. The second one is that the institutions that are supposed to enforce the laws are weak, subdued and ineffective.

Coming to the first factor, the societal cost of a vandalized hill, or a polluted water body, or a contaminated ocean, or a devastated forest or a degraded wetland, or polluted atmosphere could run into immeasurable numbers of *crores* of *rupees* that far outweigh the kind of penalties provided in these laws. For example, the Environment (Protection) Act provides a fine of less than a *lakh* of *rupees* and a jail term of less than five years for any environmental offense. The story is the same with the other laws. The offenders know that the incremental profits they earn by committing such offenses and saving the costs far exceed the penalties they pay, if at all they pay.

One could perhaps *reconstruct* the way the polluting industry looked at it. “The laws are weak. APPCB is anyway not eager to act. Every industry around here is merrily polluting. No one has ever asked them a single question. Why should I be the outlier trying to set a new benchmark in treating the pollutants? What will I get out of it? If I go along with the rest of the industry, I have their collective strength to come to my help whenever I am in trouble. After all, the costs I save by not treating the chemical waste properly are much more than what I might gain by complying with the law. Let me join the herd of the polluters. Nothing is going to happen, anyway”. Obviously, there is no incentive, or a disincentive, for the industry to comply with the law as it is framed and as it is enforced at present.

Coming to the second factor, there are at least three sets of institutions that are expected to swing into action whenever an offense is likely to be committed or already committed. The pollution control boards are the main actors. The forest officials are the ones that deal with the offenses committed against the forests and the wild life. For the other offenses, there are departmental officials designated to act and impose penalties. What has been their track record? Why are they not in a position to act effectively?

The government uses the heaviest sledge hammer to put down the smallest offender. When it comes to the larger offenders, it somehow becomes overnice and uses the soft kid gloves. It is the larger offenses that really hurt the society. It is not uncommon to find a petty municipal official using the strong arm of the government to dismantle the helpless vegetable vendor’s mobile cart; not a senior official demolishing the illegal concrete structures that have vandalized the hills or destroyed a water body. The vegetable vendor who contributes to

the food security of the country is not a private entrepreneur sponsored and blessed by the State, whereas the owner and the builder of the illegal concrete structures that vandalized the hill or the water body are certainly the ones who have the State's blessings and its license to infringe the law.

In this respect, both the political executive and the "committed" bureaucracy have been proactive. The political executive appoints only the "committed" civil servants to head those that regulate the industry and those that sponsor that industry. For example, the pollution control boards are headed by the State's Chief Secretary who is also the head of the bureaucracy in the State that sponsors the projects. It is the same bureaucracy that decides the site of a project. The officers of the pollution control board are chosen by that bureaucracy. Down the line, all these officials obey the commands of the political executive and deliver the outcomes it desires. Those that clear the legal hurdles in the way of the project are acclaimed as "dynamic", while those that ask inconvenient questions are branded as "negative" and moved elsewhere like the pawns on a chess board..

In the Decide-Announce-Defend (DAD) arrangement that the State follows, the State decides the site for the project without keeping its environment regulators in the picture. Once the project is announced, the site becomes a fait accompli. After that, if any environmentalist or the local community questions it, the entire bureaucracy comes to the rescue of the project and defends it. It is a neat and tidy arrangement. At a later stage, if the project is found to pollute, PCB merely winks at it. No questions asked.

The 1991 economic reform underplayed the need for competition, over played the need to get investments and looked upon the regulatory bodies as avoidable irritants. In this approach, ready made reform packages became the answer to questions that were never asked.

In India, procedures are initially introduced in good faith to serve a few well defined objectives. After sometime, the objectives fall into the oblivion. The procedures become supreme. That is what happened to the public hearings which precede environment appraisal of projects.

The magnum opus of this process is the spiral bound, shining report prepared by a consultant company on the likely impact of the project on the environment. It has all the embellishments of a well-paid-for document; with impressive tables and figures, multi-coloured maps and lay outs, exciting chapters that seem to cover every aspect listed out in EIA guidelines of MOEF. Of course, it is the project developer that paid the piper. The piper should call his tune. The piper glosses over all the inconvenient things about the project, like the number of farmers and fishermen that will lose their livelihoods, the damage that it will inflict on the environment, the pollution burden it will inflict on the people, whether the site is the best among the alternatives if at all considered and so on. In his report, the piper consultant prints in bold enlarged fonts, how essential the project is for adding shine to India's already shining economy, the mythical employment opportunities it will create overnight for the people, how it will transform the region into a paradise of sorts and how the people have all the while missed the opportunity of having such a great project in their backyard. This is supposed to serve as the subject of discussion among the people and at the mandatory public hearing to be held shortly.

These EIA reports are usually loaded with enough, unintelligible technical jargon that the people of the area can hardly understand. Except its sketchy summary, all the rest is set out in English. So, it makes it all the more inscrutable. The English language has the additional advantage of making many paragraphs highly portable, with the help of the modern age computers, from one report on a project in one State to another report in another State, through the cut-and-paste maneuver. This maneuver is so slick that sometimes those that have plagiarized have forgotten to change the name of the State and the location of the site, because of the intense rush that exists today for manufacturing such reports to keep pace with the fast developing economy. Do not forget that India is next only to China in its GDP growth! If one has nothing else by way of entertainment, some of these EIA reports can provide truly hilarious reading material.

I recall an interesting encounter I had sometime ago with the senior manager of a consulting company that seemed to have become the hot favourite of many project developers for preparing EIA reports. I found that the company's reports usually left out the essentials and highlighted the inessentials. I found the reports somewhat unprofessional. Unwittingly, I made a statement to that effect to a journalist. My statement found its way to the news paper. The company was quite unhappy about it. One of its managers flew down to Vizag to meet me and assure me about the glorious track record of the company and its impeccable professional capabilities. He insisted on giving me an unsolicited but a highly unconvincing explanation about how well the company was equipped with reputed professionals. I was not convinced by his explanation. I said I would give him a few questions that he should answer satisfactorily to convince me of the company's credibility. He looked nonplussed but reluctantly agreed to answer the questions.

The first question I asked him was about an EIA report prepared by his company on a power project located entirely within the prohibited CRZ area. I asked him to show anywhere in the EIA report the three letters C, R and Z appearing together. I had a copy of the report readily available with me. He tried to argue with me that the site was not within CRZ but, when I showed him the map of the area and the official classification of the land, he agreed that it was a serious omission on the part of his team. The District Collector who was supposed to be the custodian of CRZ conducted the public hearing for the project on the basis of such a shoddy, inaccurate EIA report. The Collector brushed aside the objections raised by the environmentalists at the public hearing. MOEF even tried to twist the fact of the land being in CRZ by deputing an "expert" to the site to say that the characteristics of the site were not those of CRZ!

There were at least three other projects on which his company had prepared EIA reports. In each case, there was a similar significant omission and MOEF had issued ECs for all the three projects. Even after bringing these facts to the notice of MOEF, the latter failed to blacklist the company.

During mid-2011, a series of public hearings took place in Srikakulam, Visakhapatnam and other districts of A.P. for a large number of bulk drug manufacturing plants being set up there. There was one smart consulting company that seemed to be highly proficient in preparing EIA reports on such drug units. For some strange reason, almost all

the project developers rushed to that particular consultant for preparing EIA reports for their projects. Initially, we were unable to fathom the reason for this.

When some of us tried to digest the contents of these EIA reports, to our utter consternation and amusement, we found that the crucial fourth chapter in each of the reports, dealing mainly with the environment impact of the project, had been lifted verbatim from an EIA report on a sponge iron project being set up elsewhere! Either the consultant was himself unaware of the distinction between sponge iron and bulk drugs, or he was in far too much of a hurry to bother about such mundane things as attempting a genuine environment impact study for a given project at a given location, or he thought that the local community was so ignorant of the complexities of a bulk drug unit that they would never know the difference between sponge iron and drugs! After all, the project developer was more interested in somehow getting over the irritant of a “public hearing” than worrying about the contents of the report. The project developer has paid a handsome amount to the consultant for the report. The consultant is more interested in quickly collecting his remuneration by preparing the report clothed in an attractive cover, spirally bound, containing a lot of colourful maps and diagrams and complicated tables with letters in super- and sub- scripts. Why should he be bothered about what should transpire at the public hearing?

The State Level Expert Appraisal Committee, which was supposed to determine the terms of reference for the EIA study in the first instance and use it later to assess the environment impact before recommending the project for environment clearance, is perhaps far too busy rubber stamping hundreds of polluting projects to worry about what garbage the EIA reports really contained. The Committee’s efficacy is measured by the number of projects it cleared; not by the quality of the projects approved. Truly, it is a fraud played on the public by the government, the project developer and the consultant, all acting in unison and perfect symphony. India is certainly going to “shine” with pollution, toxicity and environmental destruction. To the rulers at Delhi and the State capitals, what matters is the dubious index of a fast growing GDP, not the crimes committed within the black box that GDP stands for!

In the instant case of the bulk drug units, it was the local communities that opposed the projects, lock stock and barrel, at the public hearings. To them, the consultant’s EIA reports mattered little, as they were written in unintelligible English and equally unintelligible technical jargon. What mattered was the experience of their friends and relatives who lived nearby in the vicinity of similar industrial units that contaminated the ground water and surface water sources and polluted the air with their obnoxious fumes which could be felt miles and miles away. They knew how hollow were the tall promises made by the project developers on the employment opportunities their projects would offer. They knew how those units adversely affected the health of the residents of the surrounding areas.

What surprised us in this case was the cavalier attitude displayed by the State agencies and the Central Ministry of Environment in going ahead with the public hearings despite being informed about the fraudulent way the consultant had prepared the EIA reports. None of them had ever considered blacklisting the consultant for the fraud he had played on the people. India’s environment truly stands threatened!

This EIA report is supposed to be read, digested and debated among the people. It is supposed to be discussed in the villages by the *Gram Sabhas* and the *Panchayats* and, in the municipal towns, by the *Municipalities*.

By the time even the sketchy summary in the local language could reach the people, the pollution control board, in its extraordinary display of efficiency and commitment to the project, announces the date for the public hearing. Sometimes, the notice itself is sketchy; such is the rush. The details of the exact location of the site are sometimes misquoted. This is a mundane matter that can be easily corrected by getting an erratum in small letters published in an insignificant corner of a newspaper, even a few hours before the public hearing. Meanwhile, most project developers carry out their own socioeconomic survey of the opinion makers in the local community who could be subject to the usual market compulsions to mobilize support for the project and say how good the project is for the public good. At the public hearing, one should not be surprised to find these converted opinion makers invited to occupy places of importance and deliver long and tedious speeches in support of the project. There may be a few among the public who do not support the project. Either they are filtered out at the entrance to the meeting venue or silenced at the venue itself in the interest of conducting the meeting in an orderly manner. In one case, even the bus in which the dissenting villagers were traveling to reach the distant venue of the public hearing was diverted by the police on the ground that they would oppose the project.

In Visakhapatnam district, in the case of a public hearing held on a mining project, the authorities were so insistent on ensuring orderliness that the meeting hall remained empty throughout but, still, the “public hearing” was held and the minutes were sent to the State headquarters!

At some of these public hearings, an ornithologist who studied the migratory birds at the project site for a life time and an environmentalist who was genuinely worried about the degradation of the wetland at the site and its impact on the global climate were branded as “outsiders, obstructionists” having nothing to do with the project and kept out of the public hearing. If some fishermen tried to say that they did not want the project as it would rob them of their livelihoods, the authorities would dismiss them contemptuously on the hypothetical ground that they would have been misled and incited by the others. If they persisted, they would be branded as a “radical thinking” group. There are enough legislative weapons in the arsenal of the government to silence them beyond any further protest. India’s democracy has equipped itself with many legislative weapons to silence the inconvenient dissenters.

To be fair to those that conduct the public hearing, one should know that the public hearing per se does not really matter in the final appraisal process. I have not come across any case in which MOEF has turned down a project on the ground that the people opposed it at the public hearing. The minutes of the meeting are one more ornamental leaf added to the thousands of pages of the proceedings that finally clear the way for the project. The presence of it is necessary, in case there is litigation at a later stage, to satisfy the courts that the various institutions of the government are fully compliant with the mandatory requirements. What all is required is to have a piece of paper that has the semblance of the minutes, whatever be its contents.

In this DAD strategy, there is no doing away with the reports that go from one level to another in the complex hierarchy of the government; the compromise is only with respect to the contents of the reports. The district authorities have the knack of adapting the site chosen for a project to suit the wishes of the developer. Agricultural lands get reported as uncultivable lands. Wetlands become barren lands. Farmers unwilling to part with their lands are pressurized into agreeing to part with the lands. If there are some laws that prohibited the use of the land for industry, the district officials display a rare sense of amnesia and forget to report it. It is an interesting topic for academicians and researchers to compare these reports with the ground realities and find out the innovative patterns of misreporting that emerge.

DE&F is bound by the compulsions of Article 48A as much as MOEF. However, that department cannot be expected to run with the hare and hunt with the hounds. It cannot ask questions while trying to get the project cleared at any cost. That's what DAD means! Luckily for it, the district officials' reports are handy. So, feign ignorance, act as a post box and send them to MOEF and its EAC. When it comes to appearing before EAC to explain the project, explain the positives and ignore the negatives. DE&F will get accolades from the political executive, if a project is cleared; not when it is rejected.

The story of how EACs function has already been told. No one knows whether its members have any conflict of interest, until an intrusive *NGO* points it out to the Minister in charge of MOEF, if he is prepared to listen. EAC appointments are purely political. Most members are there to expedite project clearance; not to block it. The faster they clear the projects, the faster would be the growth of GDP, the divine index that is central to India's golden story of development, as seen through the tainted glasses of the economists that rule the country's destiny.

EAC's ways are unique and strange. When environmentalists pointed out in one case that the EIA report was silent on many items listed out in MOEF's own standard manual, the Committee remained stoic and unresponsive, accepting the EIA findings as an end in itself. When the civil society persisted, it formed a subgroup of its own members to visit the site in person and report. When the subgroup tried to report the facts that differed with the EIA report, EAC asked the developer himself to clarify, accepted his version and recommended the project for clearance. A person chairing one EAC that appraised one kind of projects also functioned as a part of the management of a company that executed such projects. He thus became the appraiser and the appraised at the same time. In one case, it was rumoured that a member of one EAC that cleared a project was later employed as a lobbyist by the developer whose project it was! No wonder that EAC for electricity cleared coal-based power projects of 1,46,000 MW capacity during the last four years, without batting its eye lids; especially at a time when the whole world is having a relook at such carbon-obsessed power development strategies.

EACs seem to have a highly myopic view of appraising projects. In Nellore, as already mentioned, within a small pocket near Krishnapatnam, the State has allowed 28,500 MW of coal-based power projects to come up. EAC seemed to be happy clearing individual projects, project by project, despite the known fact that the pollution load in such a case increased non-linearly with reference to the number of projects added. The same is the case with Jaitapur nuclear plant in Konkan where 15,650 MW of coal-based capacity and three

bauxite mining projects are also in the pipeline. EAC has not for once looked at these industrial clusters in a holistic way. Not once has EAC tried to find out whether the baseline studies that form the foundation for the impact assessment studies are internally consistent among the projects in each of these clusters. The appraisal process is a ritual to be completed somehow, quickly, without looking at these irritating issues, as MOEF is under enormous pressure to clear projects to boost up the overarching macroeconomic indicator, that is, GDP!

There is this interesting case of a natural gas development project being executed by a private company in the Krishna Godavari (KG) basin in AP. There has been a great deal of euphoria about the project all around, as it is expected to fuel power plants in different parts of the country, provide cooking gas to the households in AP and so on. Gas development projects are also known sometimes to cause land subsidence in the areas where gas is extracted from the gas bearing strata, as it has happened in the Netherlands and California. Land subsidence by itself could destroy agriculture, introduce salinity to ground water and cause flooding in some cases. Considering that the KG basin is a fertile area that forms the lifeline of AP's economy, land subsidence in that area could disrupt AP's prosperity. Strangely, this aspect was never investigated in the environment appraisal procedures nor did EAC ever had the foresight to raise questions on it. The farmers of KG basin had to organise themselves into an environment protection group, inform themselves of the technical aspects of land subsidence with the help of a socially conscious academic who has researched on the subject and, along with him, seek judiciary's help in getting MOEF to investigate the possibility of subsidence of their lands. But for the judicial intervention, this crucial concern would have gone unaddressed by MOEF. For that matter, the adverse implications of even hydraulic cracking, a technique usually deployed to enhance gas recovery, has not figured anywhere in the appraisal process. What caused me consternation and distress has been the apathy and indifference displayed by the State's Chief Secretary in putting forward the case of the State before the apex court of the State, despite the fact that he has been repeatedly alerted on this, by the author and others. One wonders whether MOEF and the States are genuinely sensitive to the damage that such projects cause to the ecology of the country.

This is certainly not the end of the story. Once EAC has recommended a project, as it always does, MOEF issues environmental clearance without raising any questions, even though it has received representations from the people, NGOs and the civil society at large. There were instances in which at a much later stage, when the concerns against certain projects got fully politicized, the Minister came up with a magic wand, bypassed all the judicial processes, constituted ad hoc committees to reinvestigate the projects and set aside the clearances in an overarching show of extra-judicial intervention. The outcomes were certainly good in those specific cases because the interventions were well intentioned. However, we face the age old question; should the ends justify the means? Did it not clearly imply that something is drastically wrong somewhere with the way we govern the environment? Such subjective and discretionary interventions will never be equitable; they could be misused at times and they would certainly send an uncomfortable signal to all those who wish to see the institutions strengthened rather than weakened by the polemics of individuals.

There is a threat to the environment from another quarter. It revolves around the vexatious question of coal mining vs. forest conservation. Unfortunately, the forest cover of the country overlaps the coal bearing areas to some extent. Some portions of the coal mines are also lie under urban agglomerations. It is easy to remove the forests, not the urban

settlements. The onslaught is therefore on the forests. MOEF has identified 35% of the forest cover within nine major coal mining zones. With a view to protect the forest cover, MOEF has declared these zones as “no go” zones for mining. Hell broke loose. The coal companies were furious. The Minister in charge of coal protested. Coal India Limited (CIL), a large public sector coal company that contributes to 80% of India’s coal production found that this no-go policy would exclude 44% of its mining area. The other Ministries that dealt with mining also found the no-go policy thoroughly unacceptable. During the war of words that has gone on for sometime, none tried to find out whether India’s forest cover as it stood now was what it should be. None tried to understand that forests are critical for the survival of the human race in the long run, as forests provide a rich biodiversity, generate valuable bio resources, conserve the nutrient soils, contribute to the monsoon precipitation and act as a “sink” for green house gases. Cutting down nature’s forest cover is like amputating a healthy limb of the body.

Still, the usual debate on environment vs. development, that obfuscates the real human concerns, drove the Union Environment Minister to the wall to defend himself against the cacophony of the development evangelists. The government has appointed an oversized group of Ministers to pass a verdict on whether to respect the forest laws, whether to conserve nature’s bounty or to cave in to those that are eager to delve into the bowels of the earth to bring out coal that would finally be burnt in an inefficient way and its heat frittered away in an inefficient system. As I write these lines, it looks as though MOEF is being forced to make compromises that will threaten the forest cover of the country, add more misery to the otherwise marginalized tribal communities and push the country further on the path of “progress” that cannot sustain for long. I hope that the planners of this country have a moment to heed to what Atharva Veda said some millennia ago

Whatever I dig from thee, O Earth,  
May that have quick growth again.  
O purifier, may we not injure thy vitals or thy heart.

(Atharva 12.1.35)

Coming back to the troubling question, “is India’s environment safe?”, one gets the uncomfortable feeling that it is not. On a pessimistic note, unless the system is overhauled, our grandchildren and their grandchildren may not be fortunate enough to breath in air that is clean, drink water that is pure, see an ocean that is sublime, a sky that is blue, look at the hills that are green and feel the freedom of the birds.

Recalling *Atharva Veda* (19.9.1) once again, “May the past be kind; the future benign”. The laws we infringe and the institutions we weaken today will surely impinge on the lives of the posterity. Do we or do we not wish our grandchildren a benign existence?

Chapter 9: **Environment vs. Development: The debate**



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*Sure my sparrows are my own,  
Let ye then my birds alone,  
Come poor birds from foes severe  
Fearless come, you're welcome here,  
My heart yearns at fate like yours,  
A sparrow's life's as sweet as ours.*

Source- "Summer Evening" by John Clare (34)

"What the caterpillar calls the end, the rest of the world calls a butterfly" said Lao-tzu, the great mystic [philosopher](#) of [ancient China](#). We live in a world of perceptions. What is visible to one is not necessarily visible to the other. This is indeed the crux of the ongoing debate between the "development" evangelists and the "environment" activists. Each is in a hurry to provide ready answers, without trying to find out what the questions are. The schism or the duality between "environment" and "development" is the creation of the way we appreciate either of these two concepts.

If a person, sitting comfortably in far away Delhi or in Hyderabad, tries to define what should be "development" for the tribals living quietly in a remote village in the hills of Vizag, he will perceive a schism between what he thinks is development and how the tribal looks at it. If one were to ask the same tribals to define "development" as they see it, the schism would surely disappear.

Before we explore what 'development' is, it is necessary to see what "development" is not. In order to do this, the sooner we get away from the two clichés, namely, "inclusive growth" and "GDP", the better it will be for understanding the key requirements of development. These two clichés have gained apparent importance because our leaders make us believe that they are the guideposts of development.

We had earlier considered how UNDP, in its Human Development Report for 2010 (13), came to the inevitable conclusion that economic growth did not necessarily lead to progress in health and education of the countries. It talked about the multidimensionality of development objectives as the central theme of the concept of

development. Human progress is not just how the country's GDP grows. It is much more than that. It has something to do with the empowerment of the least advantaged sections of the population. It is about their rights. It is about their ability to govern their resources and shape their destinies. Economic growth on the other hand is a far too restricted a measure that can never capture these dimensions of human development. We should therefore, once for all, get out of the obsession with "growth" as the indicator of human progress.

The phrase "inclusive growth" is an equally deceptive one used liberally by the planners to justify anything and everything in their plans. The Planning Commission's Approach Paper for the Eleventh Five Year Plan provides a good case study to understand how hollow this phrase is.

The main thrust of Planning Commission's Approach Paper was to achieve the mythical objective of "inclusive growth". That was the ornamental part of the document. The rest of the document focused its attention on how to accelerate the rate of growth. The primary focus in this was on the two sectors, namely, the industry and the services sectors. Among these two, the Plan document relied heavily on expanding the industrial activity as the driving force for accelerating the growth. In industry, we may take the two examples of SEZs and the mining industry. The planners considered both these sectors as the driving forces of growth.

Both SEZs and the mining industry are anything but inclusive. Both led to the displacement of thousands of hapless families, physically and occupationally. Both destroyed their habitats and their environment. Both effaced their cultural identity. SEZs went one step further and banished all participative decision making processes. Mining, which was largely located within the areas notified under the *Fifth Schedule* to the Constitution, deprived the *tribals* of their special rights. What was then so inclusive about the Eleventh Five Year Plan that did nothing but exclude many disadvantaged groups? If the Plan provided a few "flagship" poverty alleviation schemes, the benefits that accrued from them were in the form of charity, not entitlements. The phrase, "inclusive growth" therefore denoted a hollow, ritualistic idea without any substance. It was used to legitimize many aspects of the plan that were not so legitimate.

A GDP that is the outcome of activities that displace and exclude people is equally objectionable. A GDP of that kind should perhaps be more aptly called the "gross displacement product".

Before we can appreciate the meaning of true "development", it is necessary to understand the artificial conflicts in thought introduced by the "schism school" of development theorists. They first unilaterally define the word "development" as an activity imposed by the rulers on the local community without its consent or involvement, on the ground that the given activity is good for the community and it will contribute to the growth of the economy at the macro level in one way or the other. It may or may not benefit the local community. The local people may look at it differently.

The scheme or the project in question may be a brilliant one designed by the planners of *Yojana Bhavan* or mooted by the leaders sitting at Hyderabad. It could be a power project near the coast, impinging on the lives of the fishermen, or a mining project in the hills, uprooting the local *tribals* from their habitat. The local people who are at the receiving end of the project may oppose it on the ground that the activity in question will displace them physically and occupationally or it will deprive them of their rightful access to the community land in the village. The schism protagonists will refuse to give up the project because they have a mindset of their own. They will counter the public opposition by throwing in the usual economic argument of a “trade off” between “development” on the one side and “livelihoods” and “environment” on the other side.

In this trade-off language, anything including the soul of a human being can be assigned a cash value and exchanged through the usual compensation mechanism. “Pay them a little more and silence them” is what their approach is. The villagers who are strangers to the economic language of Delhi and Hyderabad feel distressed as they are unaware that a soul can be bought and sold so easily in the market like any other commodity. They desperately argue that the cash compensation offered to them will not make up for what they will lose in terms of their social and cultural identity. They have their fundamental right to live as they wish to. They would much rather lead their lives as proud fishermen or self-respecting farmers than give up their occupations to become faceless daily wage earners.

The debate between the schism theorists and the villagers is not likely to converge anywhere because there is no point of convergence. Fundamentally, there is a perceptual difference. To the schism theorist, some costs perceived by the villager are not visible at all. He is blind to the sentimental attachment of the villagers to their local environment. He cannot see the importance of the commons to the local community. He believes that a few petty jobs offered to the villagers in the name of the project will far outweigh the losses suffered by the later. He cannot perceive those costs unless he goes to the village and positions himself literally in the shoes of the villagers. This is in fact the crux of the debate. Who should decide what is good for the local community?

Before we look at this question, we should note that the schism argument can lead to several serious negative outcomes. It is a multi-edged weapon in the hands of the clever urbanite that generally happens to be on the side of the schism protagonists.

The first and foremost of these is the argument usually put forward by the middle class urbanite in India that some one somewhere should necessarily forego his or her livelihood to keep the urbanite happy and prosperous. Here, he relies heavily on the trade-off logic of the schism protagonist. The urbanite is not even bothered to find out the identity of those that should sacrifice for his sake, as in his perception, those unfortunate beings are faceless. In case the identity of that person is known, it will prick the urbanite’s conscience. Why bother about that person’s details?

The schism approach overrides the participative aspect of decision making in a democracy. In the name of the “unavoidable” schism, people’s movements against

undesirable projects are usually abhorred by these schism protagonists. They feel that such movements have no place in a democracy. They forget that the essence of any democratic society is to listen to dissent. They brand such public opposition to projects as “radical” thinking. If the people continue to agitate, the schism theorists would say that some radical groups are “inciting” them. In short, they will find every excuse to quell the public opposition to the project in the name of pursuing development.

This schism theory negatively impacts the environment. Every time a project comes up for clearance, the trade off logic is put forward and the environment is allowed to be destroyed step-by-step, to keep pace with the unending economic growth that gobbles up the natural resources without an end in sight. Environment laws are bent to accommodate this process. That way, for those that wish to grab land, minerals and access to the sea, the schism argument comes in handy.

If “development” is looked upon as a choice exercised by the local community, the schism between environment and development will disappear. Since the livelihoods of the people are closely intertwined with the environment that surrounds them, it will also ensure that all development looked at this way will fully converge with both environmental conservation and livelihood protection. It will fundamentally reorient the government’s policies and strategies and make them truly inclusive.

By way of an example, we can consider here the case of the strategy of coal-based electricity development we had discussed earlier.

The argument of the schism protagonists is as follows. You cannot stop coal mining to save the forests, as coal is required for generating electricity. You cannot stop generating electricity, as without it, the city’s lighting cannot work. You cannot switch off the lights during the daytime as the building is built in such away that the sunlight is cut off.

No one ever asked the reverse set of questions like, “could you have avoided the daytime lighting by constructing buildings that allow the sunlight to come in?”, “could you have thus reduced the demand for electricity generation?” and so on. If the questions could be reframed that way, at the other end of the chain, the duality between the environment and the power plants as well as the duality between the environment and the people’s livelihoods will disappear. That way, we will ensure that we do not rob our grandchildren and their grandchildren of their rightful ecological inheritance.

Genuine development is the one that emerges from the choices exercised by the local communities. It is certainly not something that is imposed on them. If we pursue a development trajectory defined this way, the policies of the government and their character will undergo a radical change. This is indeed the singularly unique point at which all the three ideas, that is, the need to conserve the environment, the need to protect the livelihoods and the need for human development converge.

When we talk of development, there cannot be anything more relevant than what Mahatma Gandhi said long ago.

“I will give you a talisman. Whenever you are in doubt, or when the self becomes too much with you, apply the following test. Recall the face of the poorest and the weakest man whom you may have seen, and ask yourself, if the step you contemplate is going to be of any use to him. Will he gain authority by it? Will it restore him to a control over his own life and destiny? In other words, will it lead to *swaraj* for the hungry and spiritually starving millions? Then you will find your doubts and self melting away”

This is indeed an acid test to decide whether a given activity amounts to genuine development of the human being. Does that activity empower the poorest of the poor? Does it provide them the control over their own lives and destiny? Gandhiji described it as *swaraj* which meant self governance.

Amartya Sen, in his path breaking work, “Development as Freedom” (35), has looked at the concept of development in a slightly different way. In his words,

“development can be seen.....as a process of expanding the real freedoms that people enjoy”

Development is therefore about expanding the freedoms of the people. Its process should be such that it enlarges the people’s freedoms. At the end of the process, the outcome should be evident in the form of expanded freedoms. This idea gels admirably with the Gandhian thought of *swaraj* as the essence of development and human progress. Gandhiji’s emphasis is, of course, on the empowerment of the poorest.

Where do the *Gram Sabhas* and *Panchayats* figure in this new paradigm of development? Once we have redefined the paradigm, all these democratic institutions will fall in place as its natural corollaries. In the existing paradigm, these village level bodies have no voice. Once the people are fully empowered, these bodies should become vibrant, articulating their voices. They will become the vehicles of public participation. They will take decisions on whether to mine a mineral or not and, if they think it should be mined, in what manner it should be mined. As the apex court has suggested in its landmark judgment in the Samata case (36), they could form cooperatives like the milk cooperatives or the sugar cooperatives which have worked successfully elsewhere in India.

These ideas lead us to some interesting corollaries.

This approach will lead us to sustainable development. The way we have formulated the concept of development, it is convergent with both long-term environmental conservation and sustainable human development. Any activity that fails to pass the test of sustainability will automatically fail to fulfill the requirements of development as we have defined here. In a way, once development becomes people-

centric, the schism between it and the other two ideas, namely, the environment and the people's livelihoods will disappear. In turn, it will restructure the government's policies to be consistent with this. Long-term sustainability is the natural outcome of such restructured policies.

The new approach will pave the way for non-polluting development. In this new paradigm of development, it is the people that exercise the choice on what they need, not the government. They are the best judges of which activity is environmentally destructive and detrimental to their health and welfare. The question of imposition of a project on them will not arise. The development activities that emerge out of such a participative decision making process are bound to be benign from the people's point of view.

In this new approach, there is no place for any violence. In fact, the present approach generates conflict situations. The Sompeta story (see Chapter 4) showed how a project imposed on the people had led to a confrontation between them and the State. Had a participative approach been adopted by the government, this would not have happened. The use of force in itself is a sure sign of something being wrong somewhere. Violence usually breeds further violence. In a genuine people's democracy, violence has no place whatsoever. The government must recognize this. The radical groups that espouse violence have no place in a participative democracy that should form the basis for development.

The new approach will promote compliance with the laws. The laws have their own rationale. They protect the rights of the people. They provide them entitlements. They ensure equity. Only when they are violated or enforced in a discriminatory manner, they affect the larger majority. Compliance with the law is what PPS of Sompeta demanded from the government and the power company that tried to usurp the people's rights illegally. In the discussion that follows, we will see how the local communities have evolved their own customary rules to protect their commons. It is interesting to compare those rules with the established judicial principles and the state-of-art economic logic in relation to the management of the commons. The way we have set out the idea of development here will secure its maximum compliance with the law of the land.

In this people-centric paradigm of development, the question of forcible land acquisition should not arise, as it is the people that will decide which activity is beneficial to them and how it should be undertaken. It is interesting to see how this concept has developed across the different countries.

In the United States, this concept is called the "eminent domain" authority of the State. There are three elements that it captures. One is that the acquisition is forcible and compulsory. The second one is that it should be for a public benefit. The third one is that a reasonable compensation should be paid to the person from whom either the property or a right to the property is acquired thus. This eminent domain concept is called by different names in different countries. The nomenclature includes "compulsory purchase", "compulsory acquisition", "expropriation" and so on.

The phrase “public benefit” was originally interpreted restrictively to imply public use or the use by a public authority. In the past, it was restricted to purposes of public safety, right of way, public health, public education and such limited uses. Over the years, its ambit has got enlarged to mean the larger public benefit. It is difficult to limit the meaning of public benefit as any activity of a private profit earning company could also be brought within its purview.

Certainly, forcible acquisition of land from the people is draconian. There is no way to determine whether the purpose for which land is taken is truly beneficial to the people. If agricultural land is diverted for industry through this route, how does one compute the relative costs and benefits of the incremental industrial product vis-à-vis the loss in food security? This kind of State’s exercise of its sovereign authority goes totally counter to the idea of development we have evolved here. The use of eminent domain can at best be considered when its application is restricted to the barest minimum necessary for providing the right of way to the public, providing them public healthcare and public education. It can be justified if it is used for the benefit of the poorer sections of the population. It cannot be used for anything else.

A progressive government that believes in a genuine people’s democracy should think of getting away from the present way of using the eminent domain for private gains.

Even in cases in which private individuals and private companies negotiate to purchase lands from the villagers, the terms of the negotiation are loaded against the villagers whose bargaining strength is low. In such cases, the government should stand firmly on the side of the villagers, not on the side of the companies. The government should insist that the companies, instead of restricting the compensation to cash alone, should agree to involve the land losers as the equity partners in the projects or the leaseholders of the land on the condition that the lease rental is properly benchmarked and indexed.

These are the kind of reforms that will make the country truly democratic.

The case of managing the “commons” has engaged the attention of the jurists and the economists alike in countries across the world. This has something to do with the need to protect the ecological heritage of a place. It has something to do with the livelihoods of the people who are a part of that ecology. It has also something to do with the role of the State in the management of the public lands.

First, let us look at the legal dimension.

The courts all over the world have recognized the “Doctrine of Public Trust”(14) that enjoins upon the State the responsibility of acting as the trustee of such lands on behalf of the people. The reason for this is that the public lands such as the hills, the water bodies, the wetlands, the coastal lands and so on, which have a great ecological importance, are in the nature of the people’s commons or community-owned lands that should not, under any circumstance, be handed over to private individuals or private

companies. The State has a legal obligation to ensure this. Any act of the State that infringes this doctrine should be construed to be illegal. Any activity that involves such an illegality cannot be construed as “development”. The apex court in India has, time and again, reminded the governments of their role in the management of the public lands on the basis of this preeminent doctrine. Incidentally, this doctrine should apply to any resource that is public, such as the water bodies, ground water aquifers etc.

While we look at the legal aspect, we should remember that the local communities have evolved their own traditions for centuries to protect these commons. There are unwritten rules followed by them in the interest of protecting their own natural heritage. It is the community that penalizes the offenders. Some of these traditions have become a part of the local religion. These rules are time tested and robust. They fit neatly into the doctrine of public trust.

Coming to the economics of the commons, in a way, it has something to do with the local traditions. The way these traditions have evolved over the centuries, they have captured the best ways to use the resources available from the public lands for the benefit of the community as a whole, the present and the future, not for a few individuals or for short term gains. This equilibrium gets disturbed when parts of the public land are handed over to private individuals for commercial exploitation as the community will then lose its access to those parts. Sometimes, one individual with a more advanced technology can upset the equilibrium as it has happened in the case of mechanical pumping of groundwater aquifers which are a public asset. The local communities have depended on shallow wells for centuries, without mining the ground water aquifers. The equilibrium gets disturbed when a new resource (e.g. mineral) is discovered in a public land and handed over to a few people for private use. In AP, an entire hill known as Kannedhara in Srikakulam district, was handed over to an individual for mining granite whereas the local tribals had depended on the hill for centuries for its biodiversity and its medicinal herbs. There was a public uproar against the miner. This certainly ran against the legal doctrine as well as the economic logic.

The importance of the so called “common pool resources” or CPR has become such an important subject of academic investigation in economics that the Nobel Prize for economics for 2009 was awarded to Elinor Ostrom for her path breaking work on the subject. Her work has considered how societies have developed diverse institutional arrangements for managing natural resources and avoiding ecosystem collapse in many cases.

An interesting modern parallel to the idea of commons can be found in the hyperspace of the internet! As it has evolved, the internet has indeed become a public asset or the electronic commons. Over the decades, the users have evolved their own rules of its use. If suddenly, some country or an agency tries to privatize it, there will be a public uproar against it. Does the doctrine of public trust or the economics of CPR apply to it?

In the present paradigm of development, we have kept the people outside the realm of the governance of our ecology and the human resources. We have created an artificial wedge between environment and development and made the two entities, adversarial rather than mutually complimentary, thereby pushing ourselves towards a certain ecological doom. The choices before us today are limited. Time is running out. Do we go the business-as-usual way towards an ecological doom or do we collectively come out of this mindset to shift to a development model that is more people centric and environment friendly?

Our future will critically depend on the choice we make today.

Chapter 10: **Will the sparrow ever return?**



[www.worldquest.org](http://www.worldquest.org)

So birds of peace and hope and love  
Come fluttering earthward from above,  
To settle on life's window-sills,  
And ease our load of earthly ills;

*-The Sparrow by Paul Laurence Dunbar (37)*

The load of the earthly ills is difficult to measure but it's after effects are easy to experience.

Global Footprint Network's 2010 report (38) based on 2007 data provides an approximate idea of the ecological footprint for India. The human demand on the Indian ecosystem is roughly 1.8 times of what the Indian system can sustain, compared to the corresponding figure of 1.4 for the planet earth! We are certainly going down the path of ecological decline.

What is more worrisome is the decline in the biodiversity because the planet's future will depend critically on how balanced its ecosystem is. WWF's Living Planet Report (39) for 2010 has computed the Living Planet Index for the planet as a whole, by taking into account the trends in the case of 7,953 populations and 2,544 species. The study found that the biodiversity of the planet has declined by 30% between 1970 and 2007. One should not be surprised if the corresponding index, if prepared for India, would be equally worrisome, if not more. As the years go by, the rate of decline is sure to accelerate, as a result of our increasing ecological profligacy. The planet as a whole and of course we, as a part of it, are sliding down into an unfathomable abyss.

Should this not wake us up and spur us into action? For once, can we think globally and act locally? Is there a global view among those that are in a position to influence the opinion where it matters?

I recently came across a report on how a vast stretch of land, quite rich in biodiversity, was being acquired for a project and how a person, highly qualified in advanced technology, who was pushing the project against intense public opposition, tried to defend it by saying that the people should not unnecessarily worry about the loss of biodiversity, as his organization would replace it with much "better biodiversity"! The educated elite who are more at ease with the concrete jungles in which they live have not

tried to understand how delicately balanced is the ecology that sustains life on the planet and how a tiny missing link or an intrusive toxic pollutant can quickly destroy the balance and take us to the precipice from where it is not easy to come back.

Come to think of it, it is the humble “illiterate” villager whose life is inextricably interwoven with the nature around him that has a better understanding of the importance of biodiversity and the forces that pose a threat to it. The more fortunate urbanites should learn a lesson or two on biodiversity from their less fortunate rural cousins.

Coming back to Vizag where the wetlands and the mangroves have mostly disappeared, where the hills are being depleted rapidly, where the water bodies are being destroyed, where the greenery is being denuded and where the sea is being mercilessly polluted, is it not ironic that the citizens remain unperturbed and indifferent to the impending disaster, both global and local?

People who inhabit these urban agglomerations are fortunate to have the best educational facilities and a wide ranging access to the vast knowledge portals of the world through the ubiquitous internet. While they may be preoccupied with their professions and their urban worries, they should perhaps play a decisive role in turning the tide of ecological decline and become the harbingers of the much needed change in the paradigm of development, a change that will usher in ecological regeneration based on people’s participation in shaping the course of development.

Coming back to the house sparrow, I came across an interesting story (40) about how this unique bird spread its kith and kin all over the world. Some people say that the species originated around the Mediterranean Sea and moved into different parts of Europe. It is not clear whether the house sparrows found in India had their origin in the Mediterranean or they are the original residents of India.

Its migration across the Atlantic Ocean to the United States took place hardly one hundred and sixty years ago. When the green inch worms were decimating the greenery in New York’s Central Park, someone thought that the antidote to the pest was the house sparrow which lived on a similar worm in Europe. The first eight pairs brought to the city failed to survive the colder climate of New York. Later, a few more were introduced in the city and they survived, adapted themselves to the climate, even multiplied and spread across the continent. They fed themselves with the grain that spilled from the horses’ feed. Many sparrow-friendly people helped them nest in artificial nests.

In the Netherlands where the sparrow ruled the roost a century ago is now put on the endangered list to be carefully protected!

The disappearing house sparrow in India is but one delicate link in the ecological chain. There may be many other similar links that have either disappeared already or will soon disappear. These missing links symbolize the impending doom. Can we regenerate the ecology to save our ecosystem? Will the sparrow ever return?

It was the civil society of Orissa that came to the rescue of the dwindling numbers of Olive Ridleys along the State's coast line. During the nineties, the villagers formed themselves into Rushikulya Sea Turtle Protection Committee (RSTPC) to save the Olive Ridleys. The same committee has now extended its helping hand to the house sparrow.

“Sparrows have again become part of daily life at the village. They can be seen perching on heads of children and elders; they are regular visitors at the local grocery shop to get their quota of grains” says a report that appeared in the Hindu on February 19, 2011. The lesson that can be drawn from this is that ecological restoration is squarely in the hands of the people. If there is a will, there is a way. I hope what I have described in this book will move the civil society at large to appreciate the true meaning of development, the inseparable association between the livelihoods of the people and the ecology that surrounds them and the central role in democracies that public consultation processes should play.

Mahadevi Verma, the great Hindi writer, in her story, Goraiya, hoped that one day the sparrow would return and enrich our lives.

Let us hope it does!



*Picture 1: Sambhuvanipalem Reservoir prior to damage; A satellite image*



*Picture 2: Sambhuvanipalem Reservoir prior to damage*



*Picture3: Sambhuvanipalem reservoir after damage*



*Picture4: A thermal power project site in Kakrapalli wetland*

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### **Abbreviations**

**AP:** Andhra Pradesh, a southern State of India

**APGENCO:** Andhra Pradesh Generation Corporation. It is a State owned power generation company

**APIIC:** Andhra Pradesh Industrial Infrastructure Corporation; it is a State owned undertaking. It is expected to provide infrastructure facilities for new industries.

**APMDC:** Andhra Pradesh Mineral Development Corporation. It is a State owned undertaking for the development of minerals.

**APPCB:** Andhra Pradesh Pollution Control Board

**CCF:** State's Chief Conservator of Forests

**CEA:** Central Electricity Authority. It is a statutory technical authority entrusted with the task of planning electricity development in the country. CEA's role has got diluted over the years as a result of the creation of the Central and State Electricity Regulatory Commissions and also as a result of relaxation in statutory clearances.

**CFE:** Consent for Establishment issued by the pollution control boards of the States. It is a prior statutory requirement for starting construction of a project.

**CPCB:** Central Pollution Control Board. A statutory authority set up by Government of India to control pollution under the Water (Prevention and Control of Pollution) Act, 1974

**CPR:** Common Pool Resources

**CRZ:** Coastal Regulatory Zone. The Ministry of Environment & forests, Government of India issued CRZ notification in 1991 to protect the sea coast under the Environment (Protection) Act, 1986

**DAD:** Decide-Announce-Defend approach. It implies the present approach of the government agencies deciding the setting up of a project at a chosen site without seeking the regulator's approval, announce it to make it a fait accompli and defend it against public opposition

**DE&F:** State's Department of Environment & Forests

**EAC:** Expert Appraisal Committee of the Central Ministry of Environment & Forests

**EIA:** Environment Impact Assessment. It is a study carried out on the possible impact of a project on the environment

**EC:** Environment Clearance issued for a project by the Ministry of Environment & Forests, Government of India. It is a prior statutory requirement for starting construction of a project.

**GDP:** Gross Domestic Product. It denotes the market value of all goods and services produced within an economy in a given period. It is often used as an indicator of the economic development of a country.

**Kwh:** kilowatt-hour (a measure of electrical energy)

**mld:** Million litres per day

**mgd:** Million gallons per day (An imperial gallon is equivalent to 4.55 litres)

**MW:** Mega Watt (a measure of power generation capacity)

**MOEF:** Central Ministry of Environment and Forests

**NEAA:** National Environment Appellate Authority. It is a statutory body empowered to hear appeals against the environment clearances given by the Central Ministry of Environment & Forests. It has since been replaced by the Green Tribunal, an equivalent but more independent statutory authority

**NEP:** National Environment Policy; a document that enunciated the officially approved policy of the Central Government on the subject of environment.

**NGO:** Non-Government Organisation; a voluntary organization of the civil society

**NPCIL:** Nuclear Power Corporation of India Ltd., a nuclear power generation company owned by the Central government

**NTPC:** National Thermal Power Corporation; a thermal generation company owned by the Central government

**NWLB:** National Wild Life Board of the Central Ministry of Environment & Forests

**PCB:** Pollution Control Board of the State

**PESA:** Panchayat (Extension to the Scheduled Areas) Act, 1996

**PPA:** Power Purchase Agreement

**PPS:** Paryavarana Parirakshana Sangham; a collective body of villagers and professionals who resolved to protect the local environment in Sompeta

**RTIA:** Right to Information Act, 2005

**SEZ:** Special Economic Zone created under the Special Economic Zones Act of 2005

**T&D:** Transmission and Distribution

**UNDP:** United Nations Development Program. UNDP's Human Development Reports provide a useful analytical picture of the comparative status of human development in different countries.

**VUDA:** Visakhapatnam Urban Development Authority, a statutory authority of the State

### Glossary

**Adivasis:** Sanskrit The word implies the "original residents" often used to describe the tribes of India

**Andhra:** It is the coastal part of the bigger State, Andhra Pradesh in India

**Andhra Pradesh:** It is a State of India, situated in the south

**Arthashastra;** (Sanskrit): The science of the well being of the people, as described under "Kautilya" above

**Atharva Veda:** Vedas are the oldest scriptures of Hinduism. They are the embodiment of the knowledge that was revealed through sruti (what is heard) in Hinduism. Rig Veda, Yajur Veda, Sama Veda and Atharva Veda are the four Vedas. Atharva Veda is divided into 20 books, 31 hymns and about 6,000 verses.

**Auto:** A colloquial word used to describe a three-wheeled covered carriage powered by a two stroke engine used for transporting people over short to medium distances.

**Avatar:** (Sanskrit) An incarnation

**Avatara:** (Telugu) An incarnation in the Hindu tradition. Vishnu appeared on the earth in ten incarnations during the four yugas or epochs of the cycle of time. During Satya Yuga, he appeared in four avatars, as Matsya (fish), Kurma (Tortoise), Varaha (Wild boar) and Narasimha (Half lion and half man). During the Treta Yuga, he appeared in three other avatars, as Vamana (Dwarf), Parashurama (Man with axe) and Rama (the famous benevolent king of Ayodhya). During Dwapara Yuga, he appeared as Krishna (the dark flute playing cowherd) and Balarama (the man with the plough). He is supposed to

appear as Kalki (the sage prince, the destroyer of the evil) in Kali Yuga or the present epoch. The Buddha is sometimes known as the tenth *avatar* in the place of Balarama.

**Batthai:** (Telugu) Mosambi in Hindi Sour and sweet lemon A citrus fruit rich in vitamin C grown in India

**Beela:** A swamp; a marshy land; its other Telugu names are chitthadi and tampara

**Bhopal & Bhopal gas tragedy:** An industrial catastrophe that occurred on December 2-3, 1984 at the pesticide plant of Union Carbide India Ltd. near Bhopal in Madhya Pradesh. There was a fatal leakage of methyl isocyanate gas that caused a very large number of fatalities and disabilities among the people living in the vicinity. The official death toll due to the catastrophe was 3,787 but the actual death toll attributed to the catastrophe was many times more. Inadequate compensation to the victims and laxity in taking penal action against the managers of the company in India and abroad continue to rankle the minds of many Indians.

**Chattisgarh:** An Indian State that has borders with *Andhra Pradesh* and *Orissa*.

**Chitthadi:** A swamp; its other Telugu names are beela and tampara

**Collector:** District Collector, a term explained under that head

**Crone:** Anglicised version of a karod in Hindi. It is a number that denotes ten million

**Dalits:** The suppressed sections of the population. India's deep rooted, pernicious caste system has been its scourge for generations. Untouchability is still practiced in many parts of the country. Though the Constitution has specifically provided some safe guards for certain castes and groups notified as the Scheduled Castes, Scheduled Tribes and the Backward Classes, discrimination against them continues in many ways.

**Dargah:** A Sufi shrine built over the grave of a revered religious person, often a saint. Both the Muslims and the Hindus offer worship at a dargah.

**Dasavatara;** (Telugu) The ten *avatars* listed against *avatara*

**District Collector:** He is the head of the district which is an administrative unit of a State in India. The District Collector who is armed with authority under many statutes occupies a pivotal position in governance. He is not only responsible for maintaining the law and order within the district but also for implementing the development programmes of the State.

**East India Company:** The English joint stock company formed in 1708 for pursuing trade with India and a few other countries in the east.

**Erramatti Dibbalu:** (Telugu) Mounds of red soil or ravines formed by a stream draining water into the sea

**Externalities:** In economics, an externality an economic transaction is an impact on a party that is not directly involved in the transaction. In such a case, the prices do not reflect the full costs or benefits in production or consumption of a product or service. In the present context, it is used to refer to the impact of a private transaction on the society.

**Fifth Schedule:** It is a schedule attached to and a part of the Constitution of India. It provides special provisions for the protection of the tribals in areas notified under it.

**Flag ship schemes:** Special schemes adopted by the Central Government as nationally important ones to reflect its planning priorities

**Gangamma Thalli:** (Telugu) Ganga is water. Gangamma denotes that that water is considered in its feminine form. Thalli in Telugu is also the mother.

**GDP:** Gross Development Product. The Indian planners use it as the all-in-one indicator of the country's progress, though many have reservations on the way it is measured and the factors that it fails to capture.

**Gram Sabha:** The word means a "conference of the villagers". It is a village level democratic body created in 1992 by an amendment to the Constitution. It is expected to function as a legislature of a State

**Jaggery:** A traditional unrefined cane sugar, brown in colour. It is used extensively in Andhra Pradesh and other states for making sweet condiments

**Kakinada:** The headquarters of East Godavari district adjacent to Visakhapatnam district. Located about 130 kilometres south of Vizag

**Kalinga:** An early kingdom of central east India between Damodar and Godavari rivers. Emperor Ashoka fought the famous Kalinga War in the 3<sup>rd</sup> century B.C. here before he became a Buddhist.

**Kautilya:** Also known as Chanakya, he lived during the Mauryan period (3<sup>rd</sup> and 4<sup>th</sup> centuries B.C.) in Indian history. Historical evidence suggests that he authored the monumental work, The Arthashastra, a treatise on the science of well being of the people. The book was a remarkable compendium of the ideas and practices that prevailed during Kautilya's time on a variety of matters relating to statecraft, warfare, taxation, public finance, administration and the duties of the king and his subjects. Kautilya was the mentor of Chandra Gupta Maurya, a well known Maurya empire.

**Kurma:** (Sanskrit) A tortoise

**Kurmavatar:** The incarnation or avatar of Vishnu as a tortoise..

**Lakh:** An anglicised version of lakh in Hindi. It is a number that denotes the number 1,00,000.

**License Raj:** Prior to 1991, India had a highly controlled economy in which the capacity of most industries were controlled through a licensing system that choked competition and bred corruption. In 1991, this system was dismantled to a large extent.

**Madras Presidency:** It was also known as Madras Province created as an administrative unit by the British. It comprised of the existing areas of Tamil Nadu, parts of Andhra Pradesh, Karnataka, Kerala and Orissa. Andhra state was bifurcated from it in 1953. In 1956, it became a part of Andhra Pradesh.

**Monsoon:** The rainy season in India. The word has its origin in "mausam" in Hindi which denotes "season". Eastern Ghats receive rain from June to September every year from the South West monsoon.

**Municipality:** It is equivalent to the Panchayat in the urban areas

**Land Acquisition Act:** This is an Indian law promulgated by the British in 1894. It embodies the “eminent domain” concept that is invoked by the government to acquire private lands forcibly for public purposes on payment of a reasonable amount of compensation.

**Nagulachavithi:** It is a day on which the Hindus worship the snake. It is celebrated on the fourth day after Deepavali, the New moon day of the month of Karthik in the lunar calendar.

**Nehruvian model:** This refers to the central planning model of the erstwhile Soviet kind adopted in India after the country attained independence. Jawaharlal Nehru, the first Prime Minister was instrumental in adopting it. He felt that the State should control investment and direct it towards the infrastructure sectors and heavy industry, vital for the economic resurgence of the country that was fettered in many ways during the colonial rule prior to 1947.

**NGO:** Non-government organisation; usually non-profit voluntary bodies that represent the civil society

**Orissa:** It is a State of India. Its present name is Odisha.

**Panchabhutas:** (Sanskrit) The five elements of the nature.

**Panchayat:** Democratically elected bodies at the village, intermediate and district levels.

**Patta:** A document that signifies the right to own the land specified in the document

**Petteballu:** Telugu Pette in Telugu denotes a box. Bandi (singular) denotes a cart or a carriage. Ballu is its plural form. It is a cart drawn by one or two bullocks. It was used by the more affluent families in the city as a mode of short distance transport.

**Pharma:** It is a short form for “pharmaceutical”

**Puja:** It denotes “worship” in most Indian languages

**Rajas:** (All Indian languages) Kings, small and big

**Reconstruct:** I have used the word “reconstruct” here in contrast with the French philosopher, Jacques Derrida’s well known concept of “deconstruct”, a process to critically analyse a text to demonstrate its inherent contradictory meanings. The word “reconstruct” implies here the concept that one cannot understand the description of a scene by a second person unless one places himself or herself literally in the shoes of the person describing that scene. This assumes that the apparent contradictions in the description of a given scene by the second person will become clearer, if one looks at it from the second person’s perception. I believe that this “reconstruction” approach will resolve many conflicts in life by explaining the reasons for the conflicts. This denotes a way of looking at people and their perceptions.

**Red Fort:** Lal Quila in Hindi. The 17th century [fort](#) complex was constructed by the [Mughal](#) emperor [Shah Jahan](#) in the walled city of [Old Delhi](#). It is customary for the Prime Minister of India to deliver the ceremonial speech on the fifteenth of August every year

to commemorate India's independence. It is customary for the Prime Minister to announce a number of policy initiatives on that occasion

**Rickshaw:** A small two-wheeled, hooded carriage drawn by a man, or powered by a man on a bicycle

**Rig Veda:** Vedas are the oldest scriptures of Hinduism. They are the embodiment of the knowledge that was revealed through sruti (what is heard) in Hinduism. Rig Veda, Yajur Veda, Sama Veda and Atharva Veda are the four Vedas. Rig Veda is the oldest among the Vedas. It is divided into 10 books (mandalas) and 1028 hymns..

**Rupee:** The Indian currency

**Satyagraha:** (Sanskrit) It means "anger for the truth", an approach that Mahatma Gandhi adopted as the weapon against the British in his freedom fight. It implied "holding on to the truth at any cost without resorting to non-violence.

**Savara:** An endogenous tribe living in south Orissa and the northern part of Andhra Pradesh. Many savaras still depend on shifting cultivation and terraced cultivation on the hilly terrain where they live. They grow cereals and depend on the minor forest produce for their living. They have a culture based on deep rooted religious beliefs. Many savaras have benefited from the educational facilities available now in the tribal areas. Some of them have become senior political leaders and civil servants.

**Schrodinger's cat:** It was the famous thought experiment put forward by the well known Austrian physicist, Erwin Schrodinger in 1935 to present the seeming paradox of the concepts of quantum mechanics applied to everyday objects. The thought experiment presents a cat that might be alive or dead, depending on an earlier random event. Extending it a little further, the cat could be inside and outside a given space at the same time but it becomes real when it is actually observed.

**SENSEX:** It is a value-weighted index of thirty largest and most actively traded stocks in the Bombay Stock Exchange. It started on January 1, 1986. The base value of the index is 100 on April 1, 1979. It is considered to be a reliable indicator of asset pricing in the market. Its composition is periodically reviewed.

**Swaraj:** Self governance; it also implies a democratic system

**Tampara:** A swamp; its other Telugu names are beela and chitthadi. Tampara denotes a land where there is just enough water for lotuses to flourish

**Thotlakonda:** In Telugu, this name suggests a hillock with water cisterns. Thotlakonda is a few kilometers north of Vizag on the Bheemli road. It has a Buddhist archaeological site of 3<sup>rd</sup> Century B.C.

**Uracheruvu:** It is the name of a small lake in Tanam village, adjacent to the Pharma City, an industrial complex making drugs near Vizag. In Telugu, the word means a lake that is fed by a natural spring.

**Vishnu:** In Hinduism, the cosmic functions of creation, maintenance, and destruction are personified by the forms of Brahma the creator, Vishnu the maintainer or preserver, and [Shiva](#) the destroyer or transformer

**Waqf Board:** It is a statutory body entrusted with the governance of the affairs of the properties owned by Muslim religious bodies in the State.

**Yerada Konda:** A proper noun of a hill standing adjacent to a village, Yerada near Vizag. Konda means a hill in Telugu.

**Yetham:** (Telugu) A cantilever device made of wood used in Andhra Pradesh to lift water from shallow wells for irrigation. A worker walks on the cantilever, shifting his weight to operate the device

**Yojana Bhavan:** Building that houses the Planning Commission of India in New Delhi

**Zamindars:** (Urdu) Persons authorised to collect taxes and discharge certain administrative functions in clusters of villages. The zamindari system has been abolished in independent India.

