
Conference on
Environmental Issues & Climate Change
Jharkhand Chapter

# SOUVENIR

2015

Conference on

# Environmental Issues and Climate Change Jharkhand Chapter

on

10th & 11th October, 2015 (Saturday & Sunday)

at

Judicial Academy Jharkhand, Dhurwa, Ranchi

# SOUVENIR 2015

Organised by

High Court of Jharkhand

In association with

Judicial Academy Jharkhand

Co-sponsored by

National Green Tribunal

&

Department of Forest, Environment & Climate Change Govt. of Jharkhand


New Campus of Judicial Academy Jharkhand


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Wild Life in Jharkhand


Dalma Forest


Lodh Fall


Green Jharkhand


**Smt. Droupadi Murmu**
Governor of Jharkhand

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# MESSAGE

I am extremely pleased to learn that on the occasion of inauguration of New Campus of Judicial Academy, Jharkhand, a Conference on Environmental Issues and Climate Change is being organized by the Judicial Academy, Jharkhand in collaboration with Department of Forest, Environment and Climate Change, State of Jharkhand and co-sponsored by National Green Tribunal on 10 -11th October, 2015 in the New Campus of Judicial Academy Jharkhand itself.

Climate change and loss of biodiversity arising out of environmental degradation is the greatest threat to future of mankind. The gravity of the issue get further underlined by the intense negotiation going on as Kyoto Protocol under auspices of UN convention on climate change. Jharkhand being a forest and mineral rich state, topic of the conference is both relevant and useful.

I congratulate the Jharkhand Judiciary on the auspicious occasion of moving into the newly constructed campus of Judicial Academy, which I hope will develop as a landmark temple of judicial learning. I wish all success to the conference which is a befitting mode of stepping into the new campus of learning.

**(Droupadi Murmu)**

**Mr. Raghubar Das**
Chief Minister
Govt. of Jharkhand

# MESSAGE

I am happy to learn that Judicial Academy Jharkhand in collaboration with Department of Forest, Environment and Climate Change, State of Jharkhand is organizing a conference on **"Environmental Issues and Climate Change"** on 10th & 11th October, 2015 in the New Campus of Judicial Academy Jharkhand and also going to publish a **"Souvenir"**. The conference is being co-sponsored by the National Green Tribunal.

With environmental degradation and climate change being the foremost challenges confronting human civilization, the protection and prevention of the environment and its sustainable management have become one of our top priorities. The activities of humans result in significant changes in the environment that cause damage to various flora and fauna, ecosystems and ecological process. Therefore, preservation of integrity of such components is critical as they provide bio-physical base necessary for human life like water, land, air, forest and biodiversity.

I hope, the conference will provide a unique platform to discuss and analyze the various environmental issues facing the Jharkhand state-and reach out to a solid conclusion for its management.

I congratulate the organizers and participants of this conference and my good wishes for the successful publication of the "Souvenir".

**(Raghubar Das)**

**Hon'ble Mr. Justice T. S. Thakur**
Judge,
Supreme Court of India

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# MESSAGE

Judicial education and training of Judges is a relatively recent phenomenon in this country. It signifies a realization among those in Judiciary and the Government that continuing education and training is necessary for Judges as much as it is for professionals from any other field or discipline. At the most fundamental level, judicial education and training help improve quality of justice. In an age that increasingly demands greater independence and deeper understanding of problems of a complex and sensitive nature, the need for judicial education is perceived to be far greater than ever before. I am extremely happy to note that Jharkhand has taken a leap forward in this direction with the setting up of a State of the art Judicial Academy at Ranchi. I compliment the Chief Justice and his companion Judges and all those connected with the conceptualization and execution of the project which will forever be an invaluable asset for the judiciary in the State of Jharkhand.

I am particularly delighted to know that the Jharkhand Judicial Academy is organizing a Conference on 'Environmental Issues and Climate Change' on the occasion of the inauguration of the new campus of the Academy. The Academy will apart from providing much needed judicial training to those in the judiciary work as a think tank for contemporary issues like environment and climate change. It will promote convergence of thought and action for legislators, enforcement agencies, judiciary and environmentalists alike. Nothing would have been perhaps more appropriate to start with, in the new campus, than a conference on a subject that concerns not only the people of Jharkhand but the entire country in the wake of rapid industrialization raising concerns of resultant environmental degradation.

I wish the conference success and hope that it will while addressing issues of common interest take special note of the challenges relevant to the State of Jharkhand generally and its tribal areas and those living in the said areas in particular.

**(T.S. Thakur)**

**Hon'ble Mr. Justice Anil R. Dave**
Judge,
Supreme Court of India

10, Tughlak Road
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# MESSAGE

It brings me immense delight to know about the initiative taken by the High Court of Jharkhand of having its own Judicial Academy for training and grooming of judicial officers.

Any individual related with legal fraternity has to upgrade his knowledge not only limited to the field of law, but also in the fields of many other incidental subjects. Especially, in a field like law, if a lawyer or a judge ceases to remain a student, he would not be in a position to have any progress thereafter.

Importance of a Judicial Academy cannot be underrated; it is because of the help of good teachers and academicians, young judges can be groomed to deliver best of their potentials and I am sure that the establishment of a new campus of Judicial Academy Jharkhand will cater knowledge par excellence.

Hereby taking the opportunity, I congratulate to one and all for participating in establishment of the Academy and conveying my good wishes to all those who would be imparted legal knowledge in the Academy.

I also convey my good wishes to the High Court of Jharkhand and Judicial Academy Jharkhand for organising a Conference on Environmental Issues and Climate Change, beginning of a very important chapter in the State of Jharkhand.

Anil Dave

**(Anil R. Dave)**

**Hon'ble Mr. Justice F.M. Ibrahim Kalifulla**
Judge,
Supreme Court of India

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# MESSAGE

It is delightful to learn that Judicial Academy, Jharkhand is ameliorating its infrastructure by shifting to a new campus and I pray to the almighty that the academy achieve great success in its objectives and primary endeavor of providing judicial officers of such a high excellence that our judicial system is decorated with the trust it repose and may it uphold the celebrated values of democracy.

I congratulate *Hon'ble Mr. Justice Virender Singh The Chief Justice Jharkhand High Court,* Ranchi that since its constitution in the Jharkhand state, the High Court of Jharkhand (along with its subordinates) in its nearly 13 year old history of providing justice to the habitants has achieved tremendously to protect the ethos of the state and to prevent any force to disgrace its integrity.

I wish that this dedication and firm determination hails till eternity and it exemplifies the spirit of the judicial system of the nation.

I appreciate the effort of the academy, the forest department and NGT for organizing a conference to spread awareness and imbibe sensitivity in the audience towards *Environmental issues and Climate change* which is an important topic in contemporary India, as due to incessant and unorganized growth of industries this natural wealth is getting degraded and deteriorated every day and which eventually effects the connect human being enjoy with its natural surroundings.

The degradation of environment has since long been a point of concern for nations as it has drastic effects on the survival of human beings and since then various conventions and policy programs both at international and domestic levels have been taken by the countries to do its part for the protection and preventing further deterioration. Even the constitution of India mandates such a direction for e.g. in Article 48-A as a provision in Directive Principles brought by an amendment enjoins that "State shall endeavor to protect and improve the environment and to safeguard the forests and wild life of the country." Article 47further imposes the duty on the State to improve public health as its primary duty. Article 51-A(g) imposes "a fundamental duty" on every citizen of India to protect and improve the natural "environment. It is, therefore, not only the duty of the State but also the duty of every citizen to maintain hygienic environment.

The word *environment* is of broad spectrum which brings within its ambit hygienic atmosphere and ecological balance. The main issues to its degradation was well summarized in **T.N. GODAVARMAN THIRUMULPAD V UNION OF INDIA,** 2002 10 SCC 634 by Y.K. Sabharwal, C.J. that *"Industrialization, urbanization, explosion of population, over- exploitation of resources, depletion of traditional sources of energy and raw materials, and the search for new sources of energy and raw materials, the disruption of natural ecological balances, the destruction of multitude of animal and plant species for economic reasons and sometimes for no good reason at all are factors which have contributed to environmental deterioration"*

It also noted that *Duty is cast upon the Government under Article 21 of the Constitution of India to protect the environment and the two salutary principles which govern the law of environment are: (i) the principles of sustainable development and (ii) the precautionary principle.*

Sustainable development is essentially a policy and strategy for continued economic and social development without detriment to the environment and natural resources on the quality of which continued activity and further development depends.

It is also observed by me concurring with the judgment of A.K. PATNAIK J. in **GOA FOUNDATION V UNION OF INDIA**, 2014 6 SCC 590, that *the right to life under article 21 of the constitution is a guarantee against the state and for enforcing this right the court u/art 32 of the constitution can direct the state to prohibit doing those activities (mining around national parks, reserves in this case) as these constitute part of natural environment necessary for healthy life of persons living in the state. Environment is one of the facets of right to life guaranteed u/ art 21 of constitution and thus it is a matter directly under the area where if he court perceives any project or activity as harmful or injurious to the environment it would feel obliged to step in.*

It is a matter of jubilation that we are heading towards a regime that will ensure us a sustainable growth and will save our future generations from disastrous effect of non-availability of resources and non-favorable environment for its survival. Our constitution, the intent of the legislature and general conscience of the citizens is being progressive towards this goal. And at this point a well-informed judiciary will play a mammoth role to further its execution and I believe this conference will prove to be beneficial for this objective and hope that this initiative will spark the fire of organizing similar events in future relating to topics that will help us arrive at a just and effective adjudication.

And on this joyous occasion I wish that we dwell in a world that nurtures peace and healthy living, that we can add purpose to our lives.

I assume that this state and its instrumentalities are working tirelessly to the good service of humanity and for the betterment of the region. Similar to its symbols I pray that this state grows as big as an Elephant and voices its glory as melodious as a Koel and stand tall as upright as a Sal and blossoms as beautiful as a Palaash.

JAI HIND

**New Delhi; September 19, 2015**

**(F.M. Ibrahim Kalifulla)**

**Hon'ble Mr. Justice Madan B. Lokur**
Judge,
Supreme Court of India

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# MESSAGE

The High Court of Jharkhand deserves to be congratulated for taking the initiative of establishing the new campus of the Judicial Academy Jharkhand and holding a Conference on Environmental Issues and Climate Change.

For the last several years environmental issues have been on the agenda of all discussions, not only amongst environmentalists but also in civil society. That the High Court of Jharkhand is holding a Conference on Environmental issues indicates its concern for the protection of the environment.

Issues of climate change have also been on the agenda for discussions, particularly with the weather pattern being so uncertain and the vagaries of nature wreaking havoc in several parts of the country leading to a loss of life. In fact, concerns relating to climate change cannot be divorced from environmental issues and, therefore, the High Court of Jharkhand must be complimented for its initiative. The fact that the State Government and the National Green Tribunal are also participants in the Conference is a clear indication of the importance of the subject.

I am confident that the Conference will yield positive results and the Judicial Academy Jharkhand will continue to promote excellence in the judicial officers in the State with topical issues.

**(Madan B. Lokur)**

**Hon'ble Mr. Justice M.Y. Eqbal**
Judge,
Supreme Court of India

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# MESSAGE

September 9, 2015

I am delighted to know that the new campus of Judicial Academy, Jharkhand is being inaugurated on 10th October, 2015. I nurtured the dream of having the best Judicial Academy, ever since I had become Judge In-charge of the Jharkhand Judicial Academy. This dream of mine has become a reality with the virtuous and unstinting efforts put in by the Chief Justice, who completed the project started by me.

Jharkhand is a state of Mines & Minerals, Industries, Wildlife Sanctuaries and Forests. Jharkhand is endowed with vast natural resources specially different variety of minerals ranging from Iron ore, Copper ore, Coal, Mica, Bauxite,. Eire clay. Graphite, Kyanite, Sillimanite, Lime Stone, Uranium and other minerals. To preserve existing natural resources, climate change is to be controlled as it affects people and nature In countless ways, and it often increases existing threats that have already put pressure on the environment. Hence, holding the maiden conference on "Environmental Issues and Climate Change" in the State shall be another landmark decision taken by the Chief Justice, keeping in view the drastic change in the climate not only of this State, but also globally due to rapid industrialization, mining, deforestation, which has serious implications for people and our economic system.

I feel privileged to be a part of this Conference, and conclude by taking this opportunity to thank the Chief Justice and all those who have contributed to make this Conference a huge success.

With best wishes

**(Justice M.Y. Eqbal)**

**Hon'ble Mr. Justice A.K. Sikri**
Judge,
Supreme Court of India

Tel. : 23016022
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# MESSAGE

September 21, 2015

Jharkhand meaning 'forest tract', is one of the most productive mineral-bearing states, which also has a forest cover far higher than the national average. Jharkhand, for instance, accounts for 9 per cent of India's forests - it also holds 29 per cent of India's coal and 14 per cent of its iron ore reserves. But for all its natural wealth, Jharkhand performs very poorly in protecting its environment.

Jharkhand is a text-book case of the reckless destruction of environment in the name of development. As a State blessed with the bounty of natural resources, it held out the promise of being the Ruhr of India. Almost all important minerals, including the high-grade mica which was used for electrical insulation in NASA's rockets, can be found in the region. Unfortunately, the potential remains unutilized because of a rapacious short-sighted approach.

Between 1985-2004, more than 9000 hectares of forest land of the State was diverted for mining in the State. Yet, the actual area of land lost to mining is much more than the simple lease area, as every mining enterprise requires additional land for constructing roads, railways, housing for the employees, etc. Unscientific mining, coupled with the absence of a proper monitoring mechanism, has wreaked havoc not only on the land, but also polluted the major rivers of the State, significantly degraded the bio-diversity, and has caused air and noise pollution. Worse, the royalty on minerals in the State, amounting to about Rs. 3200 Crore annually, goes to the State exchequers, and not to the local communities or in devising adequate environmental safeguards. Moreover, Justice M.B. Shah Commission reported in 2014 that illegal mining to the tune of over Rs. 22,000 Crore is taking place in the State.

The issue here is not about whether mining and other industrial activities should be undertaken or not - it is about how these activities can be conducted in an environmentally and socially acceptable manner.

Organising Conference on Environmental Issues and Climate Change by the High Court of Jharkhand, in the aforesaid perspective, is a timely move which will go a long way in sensitizing all the stakeholders including the Judges.

I also commend for opening a full-fledged Judicial Academy of Jharkhand which is, in fact, a. necessity now-a-days. I hope that this Judicial Academy, in cooperation with the National Judicial Academy as well as Judicial Academies of other States, will impart meaningful judicial education to its officers.

I sincerely hope that the Judicial Academy of Jharkhand helps to inculcate a poignant concern for the environment in the judiciary, and thereby positively contribute to the environmental jurisprudence of Jharkhand and India as a whole.

I wish the Conference a grand success!

**(A.K. Sikri)**


**Hon'ble Mr. Justice Shiva Kirti Singh**
Judge,
Supreme Court of India

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# MESSAGE

It is a matter of justified pride and satisfaction for the entire judicial fraternity that the State of Jharkhand has now acquired a **New Campus for the Judicial Academy Jharkhand** with buildings and infrastructure which can match the best. On this happy occasion I congratulate all concerned including Brother Virender Singh, Hon'ble Chief Justice of Jharkhand High Court and his companion Judges. It is a matter of further satisfaction that this auspicious occasion is to be heralded by a Two Day Conference on **Environmental Issues and Climate Change** on 10th & 11th October 2015. The subject is not only of immense national importance but also of special significance for the State of Jharkhand which is blessed with large tracts of natural forest that require care and protection in a manner effectively espoused by the National Green Tribunal.

I wish for a very happy and purposeful functioning of the Judicial Academy in the New Campus so as to justify the cost and efforts for its acquisition. I also wish the Conference a grand success in addressing Environmental and Climate Change Issues, particularly in the context of State of Jharkhand. I am sure that the Souvenir to be published on this occasion will be useful in spreading general awareness and also in promoting all round development of Jharkhand.

Jai Hind!

**(Shiva Kirti Singh)**

**Hon'ble Mr. Justice Swatanter Kumar**
Former Judge, Supreme Court of India
Chairperson, National Green Tribunal
New Delhi

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# MESSAGE

The Principle of Inter Generational Equity' mandates to every generation, to pass to its next generation, the Earth, the Air and the Land, if not in a better state, then atleast as they had received it. This is possible only when there is social awareness and proper administration of environmental justice. There could not have been a better time to spread such awareness and sensitize the members of the Judiciary, than at the auspicious occasion of inauguration of the Judicial Academy of the State of Jharkhand. The administration and judiciary of the State have come together to build such an exquisite complex for training of their judges while holding Conference on "Environmental Issues and Climate Change".

Establishment of such an institution is a Capital Investment while the learning provided in the institution serves both ends of creating wisdom and spreading environmental consciousness.

I heartily congratulate the Chief Justice of Jharkhand and the State Government for establishing such aesthetic infrastructure and for holding this Conference on the most sensitive subject of the present day.

**13th September, 2015**

**(Justice Swantanter Kumar)**

**Hon'ble Mrs. Justice Gyan Sudha Misra**
Former Judge,
Supreme Court of India

# MESSAGE

It is very heartening to know that Judicial Academy Jharkhand is shifting to its New Campus and on this occasion a Conference on Environmental Issues and Climate Change is also being organized. I am also very happy that as a mark of gesture to these glorious occasions, a Souvenir is also being published.

The occasion is a very special one for me inasmuch as I was a part of foundation laying function of the campus which took place on 17th May, 2009 when I was Chief Justice in Jharkhand. It is very gratifying for me to have opportunity to witness Inauguration of the Campus of Judicial Academy Jharkhand. One would agree that though it took more than six years counting from the date of foundation, it is satisfying that the campus is complete in all respects to meet each and every requirement of Judicial Academy Jharkhand.

The Conference on Environmental Issues and Climate Change being organized, I feel, was very much needed keeping in view the issues and challenges that are being faced in the State of Jharkhand in this field and with the presence of eminent persons from all over the country participating in this Mega Conference, I am confident that the Conference would fetch good results in providing solutions to the issues and challenges.

I wish the Judicial Academy Jharkhand and the Conference being organized every success.

Gyan Sudha Misra

**(Gyan Sudha Misra)**

**Hon'ble Mr. Justice Virender Singh**
Chief Justice,
High Court of Jharkhand

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# MESSAGE

It is very fortunate for the Judiciary of the State of Jharkhand that Judicial Academy Jharkhand is getting a New Campus of its own and on the occasion of Inauguration of the New Campus of Judicial Academy Jharkhand a ***Conference on Environmental Issues & Climate Change, Jharkhand Chapter*** is being organised, which is beginning of a new chapter in the State of Jharkhand.

The organization of this Conference was first conceived in the month of March this year when International Conference on Global Environmental Issues was held on 14th - 15th of March, 2015 at Vigyan Bhawan, New Delhi under the aegis of National Green Tribunal and two Brother Judges, Hon'ble Mr. Justice Aparesh Kumar Singh and Hon'ble Mr. Justice S. Chandrashekhar, of this Court actively participated in the said conference. In course of taking stock of the deliberations that took place in the said conference, it was felt that certain facets of environmental issues are covering State of Jharkhand as well and thus, organizing s Conference in the State of Jharkhand was visualized at that stage. Accordingly, we moved ahead in this venture. Hon'ble Mr. Justice Swatanter Kumar, Chairperson of National Green Tribunal, New Delhi, also assured us of His Lordship's guidance and co-sponsorship for the Conference by National Green Tribunal. The topics chosen for deliberations in the Conference during its Working Sessions are all concerning and centric to the State of Jharkhand. Waste Management, Protection of Forest Resources and Wildlife are prime areas of concern in the State of Jharkhand where, in fact, the State of Jharkhand, if I may say so, is just in the crawling stage due to lack of proper planning and awareness. A lot has to be done in this field. This is only one example of many challenges and issues concerning the State of Jharkhand so far environment and climate change is concerned, where sensitization and awareness can play a pivotal role.

I may say that there could not have been any other apt occasion than the present one and thus, the occasion of inauguration of New Campus of Judicial Academy Jharkhand has been considered to be befitting for organizing a Conference of this magnitude, which beholds in it great treasure of knowledge for the participants. We are very fortunate that a number of Sitting and Former Hon'ble Judges of the Supreme Court of India including ***Hon'ble Mr. Justice Tirath Singh Thakur***, who is also the Member of General Body, Governing Council and Executive Committee of National Judicial Academy, will be part of this Conference to share his profound expertise.

In this background, I solicit optimum contribution from each of the participants for a grand success of the Conference with fruitful yields.

**(Virender Singh)**

**Mr. Prakash Javadekar**
Minister of State (Independent Charge)
Environment, Forest & Climate Change
Government of India

# MESSAGE

I am very happy that the High Court of Jharkhand is organizing ***Conference on Environmental Issues & Climate Change, Jharkhand Chapter*** in association with Judicial Academy Jharkhand and co-sponsored by Department of Environment, Forest & Climate Change, State of Jharkhand and National Green Tribunal, New Delhi on 10th & 11th of October, 2015.

The subject matter and topics of the Conference have direct bearing on the State keeping in view its geological and environmental aspects. As it is well known that the State of Jharkhand is full of mineral resources and surrounded with dense forests. Keeping in view the mineral resources available in the State, in addition to the existing industries, a number of new industries are also being set up.

All these aspects lead to various issues concerning environment, climate change, forests, wildlife etc. in the State. The State of Jharkhand being a new State, a lot has to be done to cope with the existing issues as also issues trending that have an impact on environment, climate change, forests, wildlife etc. of the State.

In this backdrop, the Conference being organised is a step in the right direction and with the collective efforts of the organizers, Hon'ble Judges of the Supreme Court of India and the High Court, the resource persons from various organizations and the participants, I am sure this mega Conference would return good results.

I wish the Conference a grand success.

**(Prakash Javadekar)**

**Mr. Rajiv Gauba,** I.A.S.
Chief Secretary to Government of Jharkhand

Government of Jharkhand
Mantralaya, Dhurwa
Ranchi - 834 004, Jharkhand

# MESSAGE

I am happy to learn that a souvenir is being released by the Judicial Academy Jharkhand coinciding with the holding of a conference on Environmental Issues and Climate Change on 10th & 11th of October, 2015. This conference, organized by the Judicial Academy Jharkhand in collaboration with the Ministry of Forest, Environment & Climate Change, GOI and the Government of Jharkhand and co-sponsored by National Green Tribunal, will be one of its kind in the state and it will be attended by many eminent stakeholders. I am sure the deliberations of the conference will lead to meaningful conclusions and practical solutions regarding major environmental issues.

I extend my best wishes for the success of the conference.

**(Rajiv Gauba)**

Jonha Fall

"Environmental law is an instrument to protect and improve the environment and to control or prevent any act or omission polluting or likely to pollute the environment. In view of the enormous challenges thrown by the industrial revolution, the legislatures throughout the world are busy in this exercise."

Virender Gaur v. State of Haryana (1995 AIR SCW 306)

# Contents


Saranda Forest

# Rising Population - Its Impact on Environment

Justice R.R. Prasad[1]

Today India is the second most populous country in the world. It is likely to become the most populous country in the world soon overtaking China. The population of India is increasing by about 70 Million a year which is equivalent to the population of Australia. Though China is at present the most populous country in the world but India is more densely populated than China. India is heading towards a population of 2 billion around 2050 AD. It is now estimated that by 2050 India will most likely overtake China to become the most populous country on the earth with 17.2% population living here.

India is one of the few countries in the world that enshrines in its Constitution a commitment to environmental protection and improvement. 42nd Constitutional Amendment, 1976 enacted two Constitutional provisions, one has a directive principle of State Policy and another has a fundamental duty. Article 48A of the Constitution makes a specific reference to environmental protection as an obligation of the State where it is stipulated that the State shall endeavour to protect and improve the environment and to safeguard forest and wildlife of the country. Article 51A imposes similar duty on every citizen to protect and improve the natural environment including forest, lake, river and wildlife and to have compassion for living creatures. Hon'ble Supreme Court of India has given new dimension to Chapter III of The Constitution of India. Article 21 of the Constitution says that no person shall be deprived of his life or personal liberty except according to procedure established by law. The expression 'life' in Article 21 has been extended to mean the "Right to Clean Environment" free of pollution. Since Constitutional commitment is there for environmental protection

1 Judge, High Court of Jharkhand, Ranchi

and its improvement, various laws in this field have been enacted for the protection and improvement of environment but the problem of environmental deterioration continues to worsen and one of the reason is population pressure on environment. The rapid population growth in India has resulted into more and more pressure on natural resources like land, water and forest. The energy intensive production technologies and prospective consumption pattern would facilitate higher consumption of commercial and biomass energy and lead to higher contribution towards growing concentration of Carbon dioxide in the atmosphere which would lead to more of global warming. Prospective increase in population pressure would further enhance the Bio-diversity losses and over exploitation of natural resources. The impact of population growth is multi dimensional.

1. Population Growth and Forest Cover

   Forest wealth is dwindling due to overgrazing, overexploitation, encroachments indiscriminate sighting of development project in the forest areas etc. Over exploitation of forest resources for withdrawing of forest product including fuel wood, timber etc. are much beyond the carrying capacity of the forest. The gaps between withdrawing and carrying capacity are tremendous which in the near future can create a chaotic situation. The encroachment led to diversion of forest area for non-forestry purposes. According to study, India's forest cover at the beginning of 20th century was 40% of the total land area. It declined to 22% in 1951 and to 19% in 1997, despite legislative and regulatory measures being in place. The process of forest degradation could not be arrested. Overgrazing, illegal encroachment indiscriminate sighting of development projects in the forest areas as stated above, are the factors which are nullifying the effect of legislative and regulatory measures. That apart, corruption, connivance of foresters and timber merchants and so on also play an important role in forest degradation. The primary uses of forest are fuel wood, fodder, timber and grazing. The demand of fuel wood because of population growth and the increasing demand of timber and paper because of urbanization have contributed to forest degradation to a great extent. Firewood is still the most prevalent primary source for cooking. Thus, the rising demand for fuel-wood because of population growth and the increasing demand for industry wood because of urbanization have contributed to forest degradation in the past decade.

2. Population Growth and Diversity

   The threat posed by rapid population growth to Bio-diversity is tremendous. The conflict between the human need and need of wildlife causes disappearance of our wildlife and many of the wildlife are on the verge of extinction on account of ever growing population.

3. Population Growth and Air Pollution

   The main factors contributing to urban air pollution are growing industrialization and increasing vehicular pollution. From the study made in this regard, it is discernible that pre-dominant contributor of air pollution in Mega Cities is vehicular pollution. More than 70% of the area population in Delhi is contributed to vehicular traffic followed by industrial and other resources of air pollutants.

## 4. Population Growth and Water Pollution

Because of rapid population growth, the availability of renewable fresh water per capita in India fell from around 6000 cubic meters in the year 1947 to about 2300 cubic meters in 1997. It is estimated that in the year 2017 India will be water stressed because water availability will go down to 1600 cubic meters.

Over exploitation of ground water is emerging as an increasingly serious problem in many of the States. Different study made in this field shows that main cause of water pollution in India is unmanageable population.

According to study, out of total 3000 crores liters of sewage waste water generated each day in India only 200 crore liters are treated before discharging the sewage into river and other water bodies. Continued concentration of population in cities due to increase in population and energy intensive production, improper management of solid waste would further worsen the situation of water pollution in India.

Solid and water waste disposal of towns and cities into the river Ganga and Yamuna have polluted its water to the extent that contaminated water has become health hazard in down stream areas where safe drinking water facilities are yet to be made available. Rising volumes of industrial and household effluents in big cities overwhelm municipal treatment capacity which contaminates surface and ground water. Untreated waste from industrial units involved in environmentally hazardous production process is becoming unmanageable.

The Government of India has taken up large number of steps in Constitutional, Legal and Administrative field to protect the environment from further degradation. In spite of such efforts made by the Governments, the problem of environmental disruption has not been controlled. One of the basic reasons for this is that existing environmental law, policy and legal institutions could not link the problem of degrading environment with ongoing increase of population in the country.

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"…… Environment is one of the facets of the right to life guaranteed under Article 21 ofthe Constitution. Environment is, therefore, a matter directly under the Constitution and if the Court perceives any project or activity as harmful or injurious to the environment it would feel obliged to step in. …."

... In Re: Construction of Park at NOIDA near Okhla Bird Sanctuary [(2011) 1 SCC 744]


Dasam Fall


Elephant crossing road at Dalma Forest

# प्राणी, परिवेश और पर्यावरण

*न्यायमूर्ति ध्रुवनारायण उपाध्याय*[1]

*प्रकृति प्राणी मात्र की धात्री-विधात्री शक्ति है। मानव सभ्यता की उत्पत्ति, विकास एवं उत्थान प्रकृति के इसी अनुराग अंचल के मध्य हुआ है। मानव ने विश्व-क्षितिज पर जब प्रथम नयनोन्मेष किया तो हवाओं ने उसे थपकी दी, धूप ने सहलाया, नदियों ने जीवनामृत पिलाया और धरती ने अपने करुणा-क्रोड़ में मीठी नींद सुलाया। जब मानव-शिशु ने सभ्यता के सोपानों पर चरण-न्यास आरंभ किया तो यही प्रकृति उसकी प्रथम शिक्षिका बनी। इसी प्रकृति को विशद् रूप में पर्यावरण के रूप में जाना समझा जाता है। समस्त प्राणी जगत्, ज्ञात, अज्ञात और अगोचर शक्तियाँ इसी पर्यावरण से नियंत्रित और प्रभावित होती रही हैं और इसे प्रभावित करती रही हैं। वर्तमान परिवेश में इस महत्त्वपूर्ण अंग पर गंभीरता पूर्वक विचार और मंथन की आवश्यकता है। यदि हमने इस पर अविलम्ब ध्यान नहीं दिया तो समस्त मानव संस्कृति ऐसे चक्रव्यूह में फँस जाएगी जिससे बाहर निकल पाना कभी संभव नहीं होगा।*

*पर्यावरण हमारे लिए बेहद महत्त्वपूर्ण है। भारतीय आर्य परम्परा ने इसके महत्व को बड़ी गंभीरता से सोचा था और अपनी सुदूरगामी दृष्टि का उपयोग कर इसकी सुरक्षा में स्थायित्व के लिए इसे धर्म तथा आस्था से जोड़ दिया था। नदियों को माता, पहाड़ों को देवता, पेड़ों पर देवता एवं पितरों का निवास, वन में देवी तथा जानवरों, पक्षियों को देवी-देवताओं का वाहन बनाकर उन्होंने पर्यावरण की सुरक्षा का ऐसा प्रबंध किया था कि हम इस दिशा में सदा-सर्वदा निश्चिन्त रहते, लेकिन वैज्ञानिक प्रगति से उत्पन्न अनास्थावादी दृष्टिकोण*

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1 *न्यायाधीश, झारखंड उच्च न्यायालय*

ने समस्त समीकरणों को ध्वस्त कर दिया। मनुष्य विकास की अंध दौड़ में इस तरह भागने लगा कि इसके भयावह दुष्परिणाम उसे कभी नजर नहीं आए।

औद्योगिक क्रांति के फलस्वरूप समस्त 'शहर चिमनियों की गंध में डूब गया और सुरमई शाम कारखानों में थकने लगी। असहज पर्यावरण से प्रकुपित प्रकृति का तांडव हम देख भी रहे हैं–कश्मीर की बाढ़, नेपाल का भूकम्प, महाराष्ट्र का सूखा, औसत से कम मॉनसून, असामान्य ऋतु परिवर्तन और असमय ओला वृष्टि से फसलों का नाश पर्यावरण को बारम्बार अंगूठा दिखाने का ही दुष्परिणाम है। उन्नीसवीं शताब्दी से अब तक वायुमण्डल में कार्बन डाइऑक्साइड की मात्रा में सोलह प्रतिशत तक की वृद्धि हो गई है इससे वायुमण्डल के ताप क्रम में इजाफा हो गया है, संचित हिमखण्ड पिघलने लगे हैं, ऋतु चक्र विसंतुलित एवं विछिन्न हो गया है। वन विकास की भेंट चढ़ गए है, कारखाने का प्रदूषित पदार्थ संवहित करती थकी नदियाँ सागर–संगम के पूर्व ही दम तोड़ने लगी है, शीतल मंद सुगंधित समीर स्वप्न बन गया है। अगर यह क्रम आगे भी निर्बाध रूप से चलता रहा तो ऑक्सीजन की मात्रा दिन प्रतिदिन कम होती जाएगी और एक दिन समस्त प्राणी जगत नष्ट हो जाएगा। इसका दुष्परिणाम अभी से दिखने भी लगा है – ऐसी–ऐसी बीमारियाँ उत्पन्न होनी लगी हैं, जिसके बारे में हमने कभी सुना भी नहीं था। आज नदी, झरने, तालाब, वन, वन्य–प्राणी, हवा हर जगह ऐसी चुनौती नजर आती है कि मुझे सहज ही ये पंक्तियाँ स्मरण हो आती हैं–

"कुल शहर बदहवास है, इस तेज धूप में,
हर शख्स जिन्दा लाश है, इस तेज धूप में,
नंगी हरेक शाख हर फूल है यतीम,
कैसी अजीब प्यास है, इस तेज धूप में।"

अगर हम समय रहते सावधान नहीं हुए तो पर्यावरण चुनौती की यह तेज धूप हमारा सर्वनाश करके छोड़ेगी।

अब सवाल यह है कि इसका उपाय क्या है ? क्या कारखाने बंद कर दिए जाएँ ? सड़कें न बनाई जाएँ ? रेल लाइने न बिछें ? मकानों को तोड़कर जंगल लगा दिए जाएँ ? बिल्कुल नहीं, मेरा मंतव्य ऐसा नहीं, मेरा विचार है कि विकास के कुप्रभावों के निराकरण की कोशिश भी साथ–साथ होनी चाहिए।

आश्चर्य की बात यह है कि इतने महत्वपूर्ण पर्यावरण की सुरक्षा के लिए कोई सख्त कानून या नियंत्रक संस्था हमारे पास नहीं है। जो व्यवस्था इसके लिए की गई है वह नाकाफी और असफल सिद्ध हुई है। इस सम्बंध में एक समर्थ विभाग की स्थापना और सख्त कानून की व्यवस्था कर उसे पूरी ईमानदारी से लागू करने की परम आवश्यकता है। एक प्रश्न और भी है कि एक आदमी पर्यावरण के लिए क्या कर सकता है ? मैं इस सम्बंध में कहना चाहता हूँ कि बूँद–बूँद से ही घट भरता है। साधारण इन्सान फैक्ट्री का धुआँ नहीं रोक सकता, लेकिन अपने घर के कचरे को सड़क पर फैला देने के बदले कचरे की पेटी में डाल सकता है। वह नदियों में गंदा पानी मिलने से नहीं रोक सकता है, परन्तु अपने घर से निकलने वाले गंदे जल का उचित निस्तारण तो सहज ही कर सकता है और कुछ नहीं तो पोलीथीन बैग का उपयोग तो वह तुरंत बंद कर सकता है। थोड़ी दूर जाना हो तो वाहन का उपयोग न कर पैदल चल सकता है– इससे स्वास्थ्य तो ठीक रहे ही, पर्यावरण की हानि भी रुकेगी। यह इतना संवेदनशील मामला है कि केवल सरकार की सख्ती या कानून से निस्तार संभव नहीं है। इसके लिए जन–जन को जागने ओर परस्पर हाथ मिलाकर आगे बढ़ने की जरूरत है। पर्यावरण पर मंडरा रहे

खतरे को पहचानने और उससे भविष्य में उत्पन्न होने वाले महाप्रलय को समझ कदम उठाने की आवश्यकता है। स्वार्थ में डूबे रहकर आत्म सुख की गहरी नींद का त्याग कर सृष्टि की रक्षा के निमित्त उठकर खड़े होने का समय आ गया है। उठिए हम निश्चिन्तता की गहन तमिस्रा से बाहर आकर संसार को बचाने के लिए उठ खड़े हों। अंत में दुष्यन्त कुमार के शब्दों में कहना चाहूँगा–

"हर सड़क पर, हर गली में, हर नगर, हर गाँव में,
हाथ लहराते हुए हर लाश चलनी चाहिए।
सिर्फ हंगामा खड़ा करना मेरा मकसद नहीं,
मेरी कोशिश है कि ये बुनियाद हिलनी चाहिए।"

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"By destroying nature, environment, man is committing matricide, having in a way killed Mother-Earth. "

K.M. Chinnappa, T.N. Godavarman... vs Union Of India And Ors.

Hundru Fall, Getalsud

# Environmentalism, Spiritualism and Religion: the need to connect the dots

Binod Poddar[1]

"There is hope, if people will begin to awaken that spiritual part of them, that heartfelt knowledge, that we are caretakers of this planet."

In normal parlance, when we make the usage of the term 'environmentalism', it comes across to us as a fight or a movement for the protection and amelioration of the environment. It is also understood as a "social movement" or may be a body of thought which propagates the need for protecting our environment by limiting the human activities detrimental to the environment. The question we need to ask is that what compels us to protect the environment? Is it the modern economic notion of sustainable development? Or are we bound by a moral duty to preserve the mother earth and the diverse living creatures fed by her?

In this context, when we talk about 'spiritualism', we must refer to the one which is engaged in 'earth-based' or 'nature-based' spirituality. It entails nexus between environment and human afterlife. Transcending beyond different cultures and way of life, almost every human settlement possesses a firm belief that the air we breathe, the land we sow and the water we drink are stringently bonded by their ancestral lives. We need to connect with the nature in a spiritual way, so to say, that we must instill the ideology of conserving our nature within our souls, in a way, which doesn't let us destroy it anymore, specially the way we have been doing it in past few decades by the rapid growth of urbanization, industrialization, population and

1 Advocate General, High Court of Jharkhand

luxury based consumption in the modern era. These processes are associated with loss of natural habitats and endangerment of species, land degradation, natural resource depletion, and pollution of air, land, and water due to waste products.

The wasteful consumption of natural resources and destruction of ecology are caused by humankind's psychological craving for convenience and wealth which conflicts and take over with the spiritualism. We must imbibe and talk more often about 'sustainable consumption'. Luxury based consumption shall be discouraged as it is the prime reason behind the ecological imbalance. This theory of 'sustainable consumption' can be adapted by us pragmatically, only if we are able to instill this habit in a spiritual form and not by getting policed by the government and judiciary. We must voluntary adopt a habit of sustainable consumption in our routine lives.

In contemporary parlance, people increasingly substitute the term 'religion' for 'spirituality'. The crying need to protect our environment needs to be taken up seriously and we need to promote a contemporary earth-based movement, regardless of it's nomenclature and form. It can be recognized even as a form of earth-based religion, if this is what it takes, for people to follow the path of environment protection, sustainable development and sustainable consumption. I can convincingly say that earth-based religion is not an alien thought which needs to be introduced to the world anew. In recent days, environmental science and ecology are disciplines of modern science under which study of environment and its constituents is done with minute details. As Science, they are established in 20th century, but their origin can be traced long back in the Vedic and ancient Sanskrit literature. The concepts of environment differ from age to age, since it depends upon the condition, prevalent at that particular time.

The oldest and simplest form of Nature-worship finds expression in Vedic texts. In modern Sanskrit, the word 'Paryavarana' is used for environment, meaning which encircles us, which is all around in our surroundings. But in the Atharva Veda words equivalent to this sense are used; such as Vritavrita, Abhivarah, Avritah, Parivrita etc. One such Vedic outlook on environment is articulated in a verse of the Atharvaveda where three coverings of our surroundings are referred as Chandamsi: 'Wise utilize three elements variously which are varied, visible and full of qualities. These are water, air and plants or herbs. They exist in the world from the very beginning. They are called as Chandamsi meaning 'coverings available everywhere.' It proves the knowledge of Vedic seers about the basic elements of environment.

According to one indigenous theory established in the Upanishads, the universe consists of five basic elements viz., 1. Earth or Land, 2. Water, 3. Light or Lustre, 4. Air, and 5. Ether. The nature has established a balance between these constituents or elements and living creatures. Any alteration in percentage of any constituent of the environment beyond certain limits would curtail the natural balance and such disturbance would cause a domino effect, eventually leading to suffering for the living creatures of the universe. Different constituents of the environment exist with certain relationships with one another in order to manifest life in the space.

Referring to one of the modern religions, Buddhism, whose foundation have been laid down on the basis of values concerning humanity, peace, love, tolerance, etc. places great emphasis on environmental protection. Buddhists regard the living environment as their own bodies.

The Buddhists' life of spiritual practice is by all means very simple, frugal, and pure and it is inspired by the ideology of its own based on the above mentioned values and beliefs.

According to the Islamic law and Sharia the conservation of the environment is a religious duty demanded by God, "Do good, even as God has done you good, and do not pursue corruption in the earth; Verily God does not love corrupters." God said further: "Eat and drink, but waste not by excess; Verily He loves not the excessive." "Do not cause corruption in the earth, when it has been set in order." Prophet Mohammed's behaviour and speech, Sunnah, is considered another source of Islamic Law. All Muslims are bound to follow the Sunnah. Prophet Mohammed ordered Muslims to protect their environment when he said in a prophetic speech "If any Muslim plants a tree or sows a field, and a human, bird or animal eats from it, it shall be reckoned as charity from him." Moreover, he said: "if the day of resurrection comes upon any one of you while he has a seedling in hand, let him plant it."

If we take into account, Jharkhand's one of the most popular festivals, Karma Puja (which is related to the harvest and to the Karam tree), we could easily decipher the place of eco-system in the hearts of the tribals of this spiritual state. The ritual starts with the planting of the trees. On this day people visit the forest to collect fruits and flowers and worship Karma Devi, a goddess who is represented with a branch of Karam tree. Land, water and forest are the blood and life of Adivasis and hence they firmly believe that environment must be worshiped.

In the modern world, several symposiums are conducted and people are concerned about making the other aware on protection of living environment, reusing and recycling, but one needs introspection prior to the worldly concerns. We are still consuming substantial amounts of energy resources every day and producing tremendous amounts of refuse and pollution. In the former agricultural and pastoral ages, garbage could become the fertilizer and soil, returning to nature; in contrast, the natural resources consumed by the modern industrial and commercial sector are non renewable. Contemporary civilization produces a huge amount of pollution, and this act as horrible as generating a tremendous quality of cancer cells in the body of Nature.

The environmental tasks of people in general are mostly restricted to the material aspects, but this task has to go deeper from the material level to the spiritual level of society and thinking. Environmental protection must be combined with our respective religious beliefs and philosophical thinking into an earnest mission, so that environmentalism will not become mere slogans. So, strictly speaking, the purification of humankind's mind is free from evil intentions and is not polluted by us. We must start by cultivating the habit of protecting the material environment in the form of sustainable consumption, and go deeper, step by step until at last they can cultivate environmentalism on the spiritual and religious level.

An integrated approach is being taken by all the three wings of the government i.e. Executive, Legislature and Judiciary to enact and promulgate stricter laws pertaining to Environment protection. The Government has launched various programmes pertaining to environmental cleanliness, such as Swachh Bharat Abhiyan, Clean Ganga, sulabh shauchalaya etc. The legal fraternity from both sides i.e. bar and bench is getting involved more than ever to combat the environmental issues. Judiciary is passing deterrent orders and imposing hefty fines against the industrial sector to keep the environmental pollution at the lowest possible form and

making it clear that the ecological balance cannot be compromised at the cost of industrial growth. There is also an influx of Public Interest Litigations through the lawyers in all the high courts of India filed against the violation of environmental laws by the industrial houses and conglomerates thereby bringing the pragmatic situation to the knowledge of judiciary who have been conferred the power to pass strict orders against these violations.

The three wings of the government is doing all that it can, within a legal framework of the Constitution. Each day a new campaign is launched, or a new order is passed to protect the problem of environmental pollution which has been recognized as a worldwide disaster. However, this mission can never be accomplished until we, the common people unite together to carry out the task of environment protection and conservation. We need to ponder upon the spiritual and religious outlook in the context of issue in question and imbibe the task of environmental protection as a moral and religious obligation. We must adapt sustainable consumption as a habit and not a notified order.

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"The basic insight of ecology is that all living things exist in interrelated systems; nothing exists in isolation. The world system is weblike; to pluck one strand is to cause all to vibrate; whatever happens to one part has ramifications for all the rest. Our actions are not individual but social; they reverberate throughout the whole ecosystem."

A.P. Pollution Control Board vs Prof.M. V.Nayudu (Retd.) & Others

# Sustainable Development – The Basic Tenet of Environmental Jurisprudence

Vandana Singh[1]

Om dyauh shaantih Antariksham shaantih
Prithivee Shaantih Aapah shaantih

Oshadhayah shaantih Vanaspatayyah shaantih vishvedevaah shaantih
Brahma shaantih

Sarvam shaantih Shaantireva shaantih
Saamaa shaantiredhih Om shaantih, shaantih,shaantih[2]!

> O Supreme Lord, Thy celestial regions are full of peace and harmony; peace reigns on thy earth and Thy waters. Thy herbs and trees are full of peace. All thy forces of nature are full of peace and harmony. There is peace and perfection in Thy eternal knowledge; everything in the universe is peaceful, and peace pervades everywhere. O Lord, may that peace come to me! (Meaning given by Swami Shivananda , Rishikesh)

## Introduction

I have deliberately chosen these shanti mantras as the opening lines of this article on sustainable development because these are a gratitude to nature. The Vedic scriptures, Upanashids, Smrities and Puranas all disclose environmental harmony and conservation

1 Advocate, High Court of Jharkhand

2 Shanti Mantra.

since sun, air, fire, water and earth were the manifestations of divine personification. Environmental ethics had been an integral and inherent part of Indian Philosophy and the sacred Vedic textures are epicenterd around the relationship between man and nature in particular about his responsibility to preserve and protect his environment. In ancient India every individual's dharma was to protect and worship nature. The Indian philosophy of vasudhaiva Kutumbkam ( the world is one family) is also reflective of the concept of fraternity with the environment . Later on, in the Gupta period, Kautilya the Prime Minister of Magadh made specific laws for protection of forests and infact introduced a system of punishment for felling of trees[3].

However, the later years saw a massive decline in the observance of eternal wisdom contained in the ancient texts. The technological advancement and Man's ever increasing desire for one up-manship led to the destruction of environment. The colonial culture devastatingly destroyed India's agricultural roots by massive commercialization of crops . The Factory system overtook cottage industries, villages were abandoned, agriculture was no more lucrative and began an infinite journey of consummation of natural resources. The deep sense of reverence of gratitude towards environment and nature was discarded and environmental ethics became a forgone chapter.

## Environmental Jurisprudence

The post industrial revolution coupled with the world war II, witnessed large scale pollution and degradation of the environment which was beyond the sustainable capacity of environment. The depleting state of affairs of the environment has been very lucidly put forh by V.R. Krishna Iyer.

> Our century, before it expires, has a choice to make. It faces a Hamlotian dilemma. To be, or not to be. That is the question- if we care or dare at least to frame the question and fact the problem. I mean here not the nuclear terror in the hands of some of whom one holds mankind to horrendous ransom. Human survival is menaced by another equally homicidal missile euphemistically described as environmental pollution. If I may mint an odd expression, 'thanatology through technology' is the Frankenstein's monster that science and Industry, promising global progress, have created. If dehumanized industrialization, with all its profit- hungry vulgarity and its ecological insensitivity , invades Nature without enlightened resistance from society and poisons or depletes all the resources of land, water and air, the crucifixion of humanity is a certainty and the resurrection of the race a lost possibility unless we begin the battle for human values against barbarity incorporated, right now. Today is late; Tomorrow may be too late[4].

Thus, commenced the realization era and it dawned on the human civlisation that we are on our way to prove W.S.Gilbert right as he had said; 'Man is Natures's sole mistake'. The awakening of environmental preservation led to several national and international conferences and conventions like the Stockholm Conference, Nairobi Declaration, Rio declaration , Vienna

3 V.Gupta, Kautilyan jurisprudence 1 ( 1987)

4 Justice V.R. Krishna Iyer, Off the Bench , P.227 ,228.

convention and hence a new branch of jurisprudence namely environmental jurisprudence emanated for enviro-social justice.

The 42nd Amendment in 1976 was the follow up procedure of the Stockholm Conference, which introduced new provisions, wherein the state shall endeavour to protect and improve environment and to safeguard forest and wildlife of the country[5]. A corresponding duty was cast upon the citizens to protect the environment. Every citizen shall have a fundamental duty to protect and improve the natural environment including forests , lakes, rivers, and wild life and to have a compassion for living creatures[6].

## Sustainable Development

The emerging social order and its requirements were face to face with the environment. An era of confusion crept in, where development and environment were pitted against each other. The developing environmental movement drew attention towards the relationship between economic growth and development and environmental degradation. In 1987, the United Nations world commission on environment and development came out with the report Our Common future, commonly known as the Brudtland Report. This report still holds one of the most widely recognised definitions of sustainable development.

Sustainable Development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it, two key concepts:

- The concepts of 'needs' , in particular, the essential needs of the world's poor, to which overriding priority should be given;
- The idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

It would not be out of place to mention here that, much before the rest of the world woke up to environmental consciousness, our father of the nation, Mahatama Gandhi had reasonable apprehensions of Man's infinite and unending desires, and as such he had opined way back– "Mother Nature has enough for our needs but not enough for our greed". Mahatma Gandhi might not be an environmentalist in the modern sense, but much before the coining of the term sustainable development by the Brudtland Report , here was this epitome of simplicity who believed, "without the cooperation and sacrifice of both human beings and non- human beings evolution is not possible. Being rational human beings, we are custodians of the rest of the creation and should respect their rights and cherish the Diversity. It is for these reason that taking more than required resources is seen as theft."

The Gandhian philosophies of gram Swaraj, Swadeshi, non-violence, simple life style were indicative of reducing one's wants to a minimum, bearing the poverty of the other in mind. In other words, taking minimum from nature and using it in consonance with the requirements of the needy, the poor, the deprived , the last man in the last row is what the twentieth century defines as sustainable development and which this great genius felt much before.

5 Constitution of India , Art. 48 A

6 Ibid , Art. 51(g)

## Sustainable Development :
## The Basic Tenet of Environmental Jurisprudence.

In N.D. Jayal Versus Union of India[7], the apex court opined regarding sustainable development, "It is a guarantee to the present generation and a bequeath to the future generations".

The Judicial Institutions across the globe have a full commitment to contributing towards the realization of the goals of sustainable development through the judicial mandate to implement, develop and enforce the law, and to uphold the Rule of Law and the democratic process.[8]

Immediately thereafter, in Tehri Bandh Case,[9] the supreme court observed that the adherence to sustainable development principle is a sine qua non for the maintenance of the symbiotic balance between the rights to environment and development and went on to declare that, the concept of " Sustainable development" is to be treated as an integral part of " life" under Article 21.

The salient features of the principle of sustainable Development has been very elaborately discussed by Justice Kuldeep Singh in the case of Vellore citizen's Welfare Forum Versus Union of India[10] as the "The Precautionary principle" and "The Polluter Pays" principle.

(A) The "precautionary" principle:- The underlying concept of this principle is 'Prevention is better than cure'. This principle involves anticipation of environmental harm likely to be caused due to environmental degradation and taking all possible efforts to avoid it or to adopt a mechanism so as to eliminate such harm. This principle in particular is extremely relevant for industrial owners or manufacturers of hazardous products who are supposed to install anti pollution devices or adequate treatment plants to dispose of pollutant and hazardous wastes detrimental to environmental health.

In Research Foundation for Science V/s Union of India[11] the Supreme Court has explained the concept of precautionary principle as an approach to the protection of the environment or human health based around precaution even when there is no clear evidence of harm or risk of harm from an activity or substance. It is a part of the principle of sustainable development, it provides for taking protection against specific environmental risks before specific harms are experienced.

(B) The "polluter pays" Principle:- The "polluter pays" principle has been officially incorporated in the Environment protection Act 1986 as well as the Public liability Insurance Act 1991[12]. The objective behind the principle is to attack the root cause at it source so that it does not result in damaging the environment. The polluting Industry / Unit pays for the expenses incurred in adopting measures to prevent pollution caused by it.

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7 2004 (9) SCC 362

8 The Johannesburg Principles on the Role of Law and sustainable development adopted at Global Judges Symposium held in Johannesburg, South Africa, on 18-20 August 2002.

9 2004 (9) SCC 362(382).

10 AIR 1996 SC 2715 (2721).

11 2005(13) SCC 186.

12 Sections 3 and 5 of the Environment protection Act 1986 and Section 5 of the Public liability Insurance Act 1991.

In Indian Council for Enviro-Legal Action Versus Union of India[13] the Supreme Court applied the principle of "polluter pays" and directed the respondents to pay for the removal of sludge deposited on account of the production of 'H' acid from the Sulphuric Acid plant of the respondents and also to carry out all necessary remedial measures to restore the soil, water sources and the environment in general of the affected area to its former state.

However, the "polluter pays" principle cannot be construed to be a ticket for the polluter Industry to cause damage by not following the environmental norms and then made to pay after the damage is caused. In Research Foundation for Science V/s Union of India[14] the Supreme Court has opined that the principle of "polluter pays" does not mean that the polluter can pollute and pay for it.

## Sustainable Living : Need Of The Hour

It is time to go back to the Gandhian way of sustainable living. The principle of sustainable development cannot be a one man and a one day show . The whole society has to make conscious effort as Friedman says, "No Law can be imposed on utterly hostile Community". Hence, we see a plethora of legislations on environment conservation, probably more than 200 but even then environmental degradation is increasing every year. Until and unless, the citizens of India wake up to the call of nature and realize their responsibilities towards the mother earth, environmental legislations would keep on failing.

The following small suggestions/ measures in day to day life shall be mini steps towards the achievement of sustainable development:

(i) Awareness/Education- Awareness is the key mantra. Until and unless the people know the importance of environment and its preservation, they cannot be a participant in the process of sustainable development. This can be done through media and by incorporating the subject of environment in school curriculum.

(ii) Plastic Menace- If every citizen of the country says no to plastic, this non-biodegradable artificial material which has become a global concern, shall not be the only gift we shall be leaving for our future generations.

(iii) Population Legislation - An American Agency named 'Population Reference Bureau' has estimated that looking to the existing rate of population growth, Indian population would be around 163 crores in the next fifteen years, which is a serious concern for policy planners and environmentalists[15]. It is ironically true that population grows in geometric progression and production in arithmetic progression. Population is one of the biggest threats for the nature and hence urgent legislative intervention is required to curb this burden on the environment.

(iv) Tapping of solar, wind and other renewable sources of energy – The renewable power sources like the sun and wind have limitless and infinite energy unlike the coal. The Government ought to take sincere efforts to promote these renewable sources of energy by way of solar panels and wind mills. To begin with, the Government Offices

13 1996(3)SCC 212(Popularly known as H-acid case).

14 Supra at 10, Para 29 at page 201.

15 Environmental Laws and Management in India, Dr. N.V.Paranjape, P.120.

and buildings should run by solar energy and the usage of the same by the public in general should be promoted by the grant of subsidy and such other measures.

(v) Sustainable Transport - Transportation is a large contributor to green house emissions. Walking and cycling can be encouraged by providing wide pedestrian path ways and cycling lanes. The simple rule is, avoid transport where legs can take you.

(vi) Water Conservation - Rain water harvesting shall be a must for each and every house hold. The alarming situation can be understood from the prediction that water is going to be the reason for the third world war. It is to be understood that when a major population of the world is devoid of drinking water, the use of swimming pool is criminal.

(vii) Making the surroundings green – Trees attract rain is an age old concept and hence plantations should be the norm of the day. Again , the initiative at the Government level is required like at all Government functions , planting of trees should be made part of the programme. School going children should have it mandatory to plant one tree at least. Whenever, in the name of development one tree is cut, it should be ensured that two trees are planted and the most important part is that responsibility should be fixed and penalty should be imposed on the erring individual.

(viii) "Jodi Tor Dak Shune Keu Na Ase Tobe Ekla Cholo Re" - This song composed by Rabindranath Tagore that if no one responds to your call, then go your own way alone is very relevant in the journey of environmental consciousness. If one's neighbor is spreading litter on the street, or is wasting water or contributing to environmental destruction, let us not follow him or her. We can only spread knowledge/ information about environment and contribute by doing our part, but if others do not follow, we have to be the lone crusaders. If others are not caring for the environment, I will also not do is lethal and should be avoided.

## Conclusion

As I conclude my article, I am reminded of the story of the foolish woodcutter heard in childhood, one who was cutting the branches of the very tree on which he was sitting. Mankind today represents the foolish woodcutter as he is doing the same thing with the mother earth. Legislations and Governments alone cannot prevent the environment. Let us start afresh, each one of us, at individual level towards amassing a bank balance of natural heritage for the coming generations. Little efforts and endeavors can create wonders as has been beautifully penned down by a learned writer,

"Little drops of water,
Little grains of sand,
Make the mighty ocean,
And the pleasant land,
Little deeds of kindness,
Little words of love,
Help to make earth happy
Like the heaven above."

> Our century, before it expires, has a choice to make. It faces a Hamiltonian dilemma. To be, or not to be. That is the question- if we care or dare at least to frame the question and fact the problem. I mean here not the nuclear terror in the hands of some of whom one holds mankind to horrendous ransom. Human survival is menaced by another equally homicidal missile euphemistically described as environmental pollution. If I may mint an odd expression,'thanatology through technology' is the Frankenstein's monster that science and Industry, promising global progress, have created. If dehumanized industrialization, with all its profit- hungry vulgarity and its ecological insensitivity, invades Nature without enlightened resistance from society and poisons or depletes all the resources of land, water and air, the crucifixion of humanity is a certainty and the resurrection of the race a lost possibility unless we begin the battle for human values against barbarity incorporated, right now. Today is late; Tomorrow may be too late3 thanatology through technology' is the Frankenstein's monster that science and Industry, promising global progress, have created. If dehumanized industrialization, with all its profit- hungry vulgarity and its ecological insensitivity, invades Nature without enlightened resistance from society and poisons or depletes all the resources of land, water and air, the crucifixion of humanity is a certainty and the resurrection of the race a lost possibility unless we begin the battle for human values against barbarity incorporated, right now. Today is late; Tomorrow may be too late.

Thus, commenced the realization era and it dawned on the human civlisation that we are on our way to prove W.S.Gilbert right as he had said; 'Man is Natures's sole mistake'. The awakening of environmental preservation led to several national and international conferences and conventions like the Stockholm Conference, Nairobi Declaration, Rio declaration , Vienna convention and hence a new branch of jurisprudence namely environmental jurisprudence emanated for enviro-social justice.

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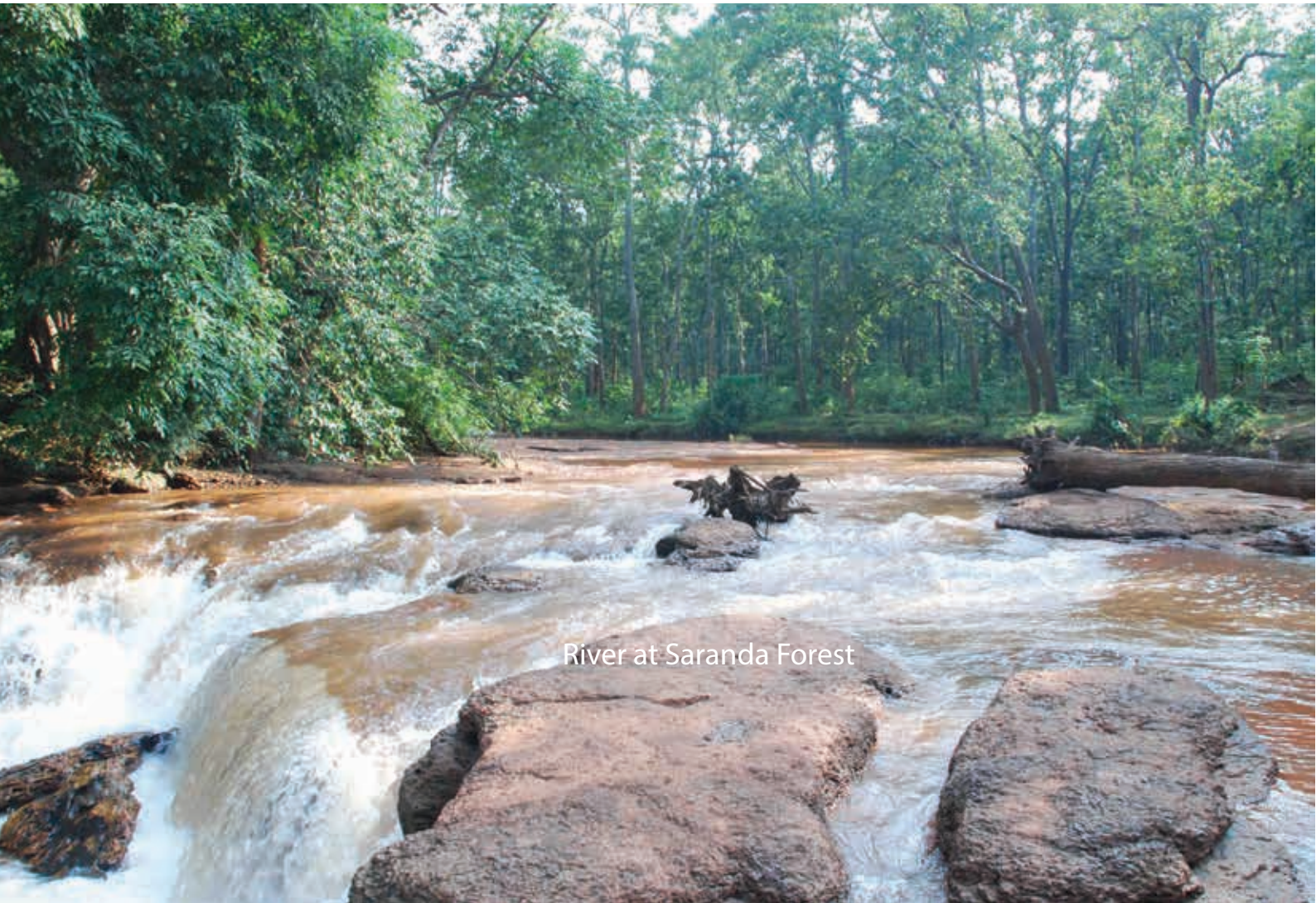
Deers at Saranda Forest



River at Saranda Forest

# Conserving Natural Capital for Sustainable Development

Priya Ranjan Sinha[1,2]

Forests and Wildlife are part of Natural Capital bestowed upon humanity by Mother Nature. The other components of our natural capital are soil, water and air. This natural capital provides us about twenty five types of goods and services. Ability of our Natural Capital to provide these services depends upon integrity of its various components. Erosion in its integrity compromises these services. With a view to ensure that these assets are managed in sustainable manner for uninterrupted flow of services, Government of India has formulated Laws and Regulations. There are five major Acts governing the management of our Natural Capital. These are as under:

1. Environment (Protection Act)1986
2. Forest (Conservation) Act 1980
3. Wild Life (Protection) Act 1972
4. The Water (Prevention and Control of Pollution) Act 1974
5. The Air (Prevention and Control) Act 1981
6. Indian Forest Act 1927

1 Country Representative, India, International Union for Conservation of Nature (IUCN)

2 The views and opinions expressed in this article are those of the author

These Acts have been put in place to meet India's Commitment made at various conventions including the UN Conference on Human Environment held in June, 1972 at the Stockholm (Refer objective part of Air, and EP Acts). With a view to insulate these acts from uncertainties associated with Governance, the Constitution of India has been amended by inserting Article 48 A and 51(g) under Directive Principles of State Policy and Fundamental Duties. These two articles enjoin upon STATE and the Citizens to protect and conserve our Ecology & Environment. Though these provision are not justiciable by courts, actions on the part of the Government contrary to the spirit of these two provisions are subject to judicial scrutiny and review. This is exemplified in judgments of Courts in many cases in which spirit of these two articles have been invoked e.g. stopping operation of Lime Stone Quarries in Mussoorie Hills.

However, there are some very good examples of management of our natural resources from across the country, we are facing serious problem in many areas. Depletion of natural capital base means unsustainable economic growth. Unless our growth story is scripted with natural capital and ecosystem services mainstreamed into our investment decisions, we will continue to lag behind the western world in our quest for Sustainable Development. Businesses across the world are increasingly incorporating natural capital in their core businesses. They are taking measures to ensure that their ecological footprint is reduced and impact of their operations result into Net Positive Impact on Biodiversity. But in India, natural resources are not seen as a capital input in production systems but as a hindrance to economic growth. Conservation of our natural resources is seen as responsibility of Ministry of Environment, Forests & Climate Change only rather than a shared responsibility. This mindset has to change. Unless conservation is mainstreamed across sectors in various ministries, we will continue to have a situation where environmental governance laws would be seen more as impediment to economic growth rather than tools for sustainable development.

The question is how to turn the present paradigm of "Development versus Conservation" to "Conservation is Development". Unless we embark upon a trajectory of Growth which mainstreams imperatives of Conservation into Development, we will lose competitive advantage in the Global Market.

### Here are my thoughts on changing the present paradigm:

1. Biodiversity and natural resources are distributed all over our land and seascape. Our Environmental, Forests & Wild Life Acts provide framework for its conservation and sustainable use. Huge volumes of literature are available in the form of Scientific Publications, e-literature etc. on representative areas which should be conserved for its uniqueness, ecological value and the ecosystem services it provide to our people. These representative areas should be set aside for ecosystem services viz., clean air, water, pollution abatement, etc. To give a broad idea, if we conserve about 10 percent of our terrestrial and aquatic ecosystem comprising of notified National Parks, Sanctuaries, Tiger Reserves, Wetlands (Ramsar sites and sites of National importance), Important Bird Areas (IBA), Natural heritage sites and Unique irreplaceable forest types; we would ensure conservation of such areas in the country. Similarly, if we conserve about 800km of our coastline out of the total coastline of 7500+ km, we would be able to conserve our representative coastal and marine resources. But, instead of taking a hierarchical

approach in our planning process, we are trying to do everything everywhere thereby fuelling debate on conservation versus development.

2. Our network of river and its tributaries /distributaries are life giving entities. However, due to lack of foresight, we continue to pollute these lifelines and unsustainably use its water thereby pushing the water flow to levels where many of our perennial streams and rivers have become seasonal. Due to our inefficient ways of treating waste and dumping it into rivers, most of our rivers are ecologically dead. All this has adversely affected livelihood opportunities of people living in and around these areas. We continue to divert flood plains and drainage areas for other uses thereby exacerbating floods (example-recent J&K floods). We should therefore undertake economic development, including city planning, taking into account topography of the landscape and the drainage lines. It will entail savings in terms of less damage due to heavy rains and enhanced availability of clean water for our people.

3. To undertake the aforesaid model of growth and to ensure sustainable development, we should develop spatial database in user friendly format for screening of projects. We should have a hierarchical approach in decision making for diversion of areas for various projects. Areas viz National Parks and Sanctuaries, Tiger reserves, and other critical and core habitats and ecologically sensitive connectivity/corridors should not be diverted for ecologically disruptive projects. To achieve this objective, National institutions like Wildlife Institute of India, Forest Survey of India. Indian Institute of Remote Sensing, Wadia Institute of Himalayan Geology, Indian Institute of Science and above all, the Survey of India should work together to develop a spatial database showing National Parks, Sanctuaries, Heritage sights, Sacred Groves, Corridors, Wetlands, Mud flats and Flood plains. Spatial data is available on such areas with these institutions but due to lack of direction, coordination and procedural (Mapping Policy of Government of India) issues, we have not been able to convert these spatial data bases into a Decision Support System. Once developed, this system should be used to screen out projects of disruptive nature at the initial stage itself. Such a tool has been developed by IUCN, International Union for Conservation of Nature, which is known as Integrated Biodiversity Assessment Tool (IBAT). This tool is increasingly being subscribed by leading multinational Companies and financial institutions like the World Bank and the IFC for screening projects and for assessing Risks in undertaking a particular project in a specific landscape. IUCN -India would be pleased to facilitate preparation of Indian Integrated Biodiversity Assessment Tool on similar lines.

4. For evaluating impacts of projects proposed to be undertaken in areas other than those mentioned above, we may use tools like Cumulative Environmental Impact Assessment (CEIA). This tool helps us in screening and selecting appropriate sites for locating projects (Power Plants, Dams, Mining etc.) at Landscape level. In India, a few examples of application of Cumulative Assessment are available. This include cumulative environmental impact assessment of 70 dams on Bhagirathi and Mandakini, assessment of various projects on Chambal River and assessment of Sand Mining on six streams in Uttarakhand; all undertaken by Wildlife Institute of India, Dehradun. These documents are excellent examples of one stop decision on projects at planning

stage itself. The advantage of such cumulative assessment is that it obviates need for EIA for all proposed projects by screening out ecologically and environmentally non viable projects. Once this screening is done, EIA for each project can be undertaken to take care of micro level issues under our existing Environmental Acts.

5. Another tool which is increasingly being used across the globe is called Strategic Environmental Assessment (SEA). This tool is applied for planning roadmap for a sector or across a landscape to optimize resource use and harmonize economic development with conservation of Natural capital. SEA allows for a systematic and effective consideration of environmental impacts and alternatives at higher tiers of decision making- at Policy, Plan and Programme level. This tool thus reduces number of EIA which we may need to undertake at project level. Such an approach is justified keeping in view the fact that quality and efficacy of EIAs in India continue to be poor due to various factors including paucity of trained manpower. The above approach would put in place a transparent, predictable and technically sound mechanism which will be in line with the objectives of the five acts and the Directive Principles of State Policy and shall also stand judicial scrutiny.

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"Sustainable development means the type or extent of development that can take place and which can be sustained by nature/ecology with or without mitigation. In these matters, the required standard now is that the risk of harm to the environment or to human health is to be decided in public interest, according to a "reasonable person's " test."

..... Narmada Bachao Andolan v. Union of India & Ors. [(2000) 10 SCC 664]

# India's Environment and Development Challenges

Ms. S. Narain

India's environmental movement is at crossroads. On the one hand, there is a greater acceptance of our concerns, but on the other hand there is growing resistance against required action and, more importantly, every indicator shows that things on the ground are getting worse. Our rivers are more polluted; much more garbage is piling up in our cities; air is increasingly getting toxic; and hazardous waste is dumped, and not managed. Worse, people who should have been at the frontline of protection are turning against the environment. They see it as a constraint to their local development and even as they may protest against the pollution of neighbourhood mines or factories, they have no reason to believe that their livelihood from natural resources is secured. They are caught between the mining companies and the foresters. Either way, they lose.

So, I believe, it is time we took stock of developments and future directions.

In the past four decades—the beginnings of India's environmental movement can be traced to the early 1970s, when the country saw its first environmental movement (Chipko), the launch of Project Tiger and enactment of the water pollution law—much has changed. And yet, not changed.

The worst indictment is that over 700 million people in India still use dirty, polluting biomass for cooking food and that an equal number defecate in the open. They do not have access to

the basics—clean water, hygienic toilets that does not end up polluting rivers and groundwater, and energy for lighting or cooking. Clearly, somewhere we are going wrong, very wrong.

We must also realise that even as the problems have grown, the institutions for their oversight and management have shrunk. Many actions have been taken but, equally, many more actions that have been taken have come to naught. Most importantly, while the environmental constituency has grown—many more people are interested in environmental issues—principles of environmentalism have got lost. In this way, the underlying politics have been neutered.

It is important we point to the fundamental weaknesses and contradictions. It is only then that we can deliberate on the directions for future growth of the environmental movement.

In my view there are distinct trends that need elaboration:

1. We have lost the development agenda in environmental management. Instead of working to regenerate the natural capital for inclusive growth, we have increasingly framed action as 'development versus environment'.
2. As a result, even though environmental imperative is now better understood, the constituency which is asking for protection has changed or will change. The management of natural resources—swinging between extraction and conservation—is leaving out millions who live on the resources. These people cannot afford either degradation of the resources or pure conservation. They need to utilise the natural resources for their livelihood and economic growth. In this way, the environmental movement is in danger of making enemies of the very people whose interest it is working to protect.
3. The debate on environmental issues is increasingly polarised and seen as obstructionist. In this way, the positive agenda gets negated and lost.
4. Environmental struggles are increasingly about not-in-my-backyard (NIMBY). This is understandable as people are the best protectors of the environment and are saying that pollution must not happen in their backyard. But the problem in a highly iniquitous country is that this can simply mean that we do not want something in our backyard, but it can move to some place where the less powerful live.
5. But we must realise that even as middle-class environmentalism will grow, which is important, it will not be enough to bring improvement or change. The reason is that solutions for environmental management require inclusive growth. Otherwise, at best, we will have more "gated" and "green" colonies, but not green neighbourhoods, rivers, cities or country.
6. It is important also then to look for solutions, not just pose problems that do not go away. But this search for technologies and approaches to environmental management will have to recognise the need to do things differently so that sustainable growth is affordable to all. It also recognises that new-age institutional strengthening is vital—we cannot improve performance without investment in boots on the ground.
7. This demands a new way of environmentalism—one that can move beyond the problems of today and yesterday—to embrace ideas without dogma, and with idealism

and purpose. But for this to happen, it is time we imbibed politics that will make this environmentalism happen.

The environmental movement is based on the idea that people do not want something bad in their vicinity: not-in my-backyard or NIMBY. This concept has driven change across the world and continues to be the reason why projects, from shale gas exploration in the US to wind power in UK, face protests. Ordinary people, but with power because they are part of the voting middle-class, take up these issues because they affect their lives. The fight is personal. It is another matter that their fight leads to national policy ramifications—most often for the better. But there is also a downside to NIMBY—if it is not in my backyard, then in whose backyard should it be allowed? This is not an issue that is asked, or answered. But it must be.

For instance, in my city of Delhi, in the early 1990s, stone quarries and crushers operating at the edges of the city were stopped for environmental reasons. These simply moved to the neighbouring state of Haryana.

Then as real estate grew in this city, NIMBY demanded that these be stopped as well. So now stones—used in road and house construction in Delhi and in boom towns of Haryana—come from mines in poorer, powerless parts of Rajasthan. Here, illegal activity flourishes and it is said that the same mine owners—who first ran Delhi and then Haryana—have made it their base. Mafia rule is perpetuated, environmental destruction continues. We have not regulated mining or made it better; we simply banished it to where we cannot see it or where it does not destroy our real estate value.

It is the same in Goa, where the richer, more articulate middle-class people live. Its iron ore mining was stopped but that does not mean that Goa stopped its use of modern equipment that uses iron ore. Iron ore is now mined more feverishly and is causing much greater destruction in poorer Chhattisgarh and Jharkhand. This NIMBY syndrome will not work in the divided and intensely poor India.

But the NIMBY is different when it is expressed by the poor and less powerful. Why? Take Vilappilsala village in Kerala, which is today saying it does not want garbage dumped there. The residents say Thiruvananthapuram—the state capital—has for long polluted their land and water. They even defied the Supreme Court, which allowed garbage dumping in their backyard. In Pune, the village of Urali-Devachi has repeatedly said that it has had enough of the city's garbage.

In Thiruvanthapuram, too, there is protest against a compost plant, which, middle-class says, "smells" and "pollutes". In Delhi's middle-class colony, Sarita Vihar, residents are up in arms against an incinerator plant, which is designed to convert waste into energy. They say it will pollute and add to their health risks.

The question is will these protests have different outcomes? Where the protest is from the middle-class, it invariably pushes the problem to somebody else's backyard. But where the protest is coming from the backyard, the issue becomes more difficult—where is the backyard in this case? Or if there is no backyard and waste has to be managed in the "frontyard", then its management will have to change. We cannot hide it away. In the case of Vilappilsala or Urali-Devachi, Thiruvanthapuram and Pune will have to seriously rethink waste management.

So, there is this one crucial make or break difference. When urban and middle-class India (as across the world) faces environmental threat it does not stop to ask: in whose backyard then? The fact is garbage is produced because of our consumption. The fact is that the richer we get, the more we need to throw and waste—and pollute. This consumption is necessary as it is linked to economic growth models that we have decided to adopt as our own. But we forget that the more we consume, the higher the cost of collection and disposal, which we cannot afford. So, we look for band-aid solutions. In middle-class environmentalism there is no appetite for changing lifestyles that will minimise waste and pollution. At least, not as yet.

The environmentalism of the poor, on the other hand, will force us to demand that development be reinvented, so that it can do much more with less. It is simple. If we cannot mine under all forests; or build dams on all rivers as we please; or build polluting thermal power stations in homes of people; then there are limits to growth as we know it. We can grow, but only if we do it differently. Not business as usual, but business unusual. It will demand we reduce our need and increase our efficiency for every inch of land we take, every tonne of mineral we dig and every drop of water we use. It will demand new arrangements to share benefits with local communities so that they are persuaded to part with their resources for a common development. It will also demand looking for economic growth in natural resource sectors, like agriculture, fisheries and forestry, in a way that provides employment and livelihood options for millions of people—not build economies, which are jobless but growing.

In the environmental movement of the very poor there are no quick-fix techno solutions in which the real problems can be fobbed off for later consideration.

The history of Western environmental movement is different from ours. It began after these societies had acquired wealth. They had the money to invest in cleaning and they did. But because they never looked for big solutions, they always stayed behind the problem—local air pollution is still a problem in most Western cities, even if the air is not as black as ours. Climate change is showing its deadly face.

Therefore, the slogan for the next generation environmentalism must be different. Not-in-my-backyard should give way to "in-my-backyard" because only then we plan for development, which is sustainable, because we know we have to live with it. The planet then becomes our backyard.

This has to be the next 40-year slogan for India's environmental movement. It is time to make real change happen. Now, and forever.

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"The State is the legal owner of the natural resources as a trustee of the people and although it is empowered to distribute the same, the process of distribution must be guided by the constitutional principles including the doctrine of equality and larger public good."

Sachidanand Pandey & Anr. Vs.
State of West Bengal & Ors (1987) 2 SCC 295

# Environmental Bureaucracy in India: An Insider view So what is it that has brought us to this crossroads?

Madan Prasad Singh[1]

In the name of environmental bureaucracy, appointment of Sir Dietrich Brandish as the 1st Inspector General of Indian Forests on 01 April 1864 marked the foundation of organised forestry administration in the country and the country is celebrating 150th anniversary of organised forestry. Forestry governance is in the direct control of government with federal cadre of All India Service officers. With initial decline in forest cover due to diversion of forestlands to cultivation, forests in India has shown transition with increase in forest cover in recent past in spite of increasing anthropogenic pressure on forests (Singh et al,2014, see figure 1). Bureaucracy in the field of environmental started with the enactment of the Water (prevention 7 control of Pollution) act 1974 and establishment of autonomous Pollution Control Boards in the Centre and at the State levels. A sane look at environmental issues in the country will reveal that it is plagued by the usual suspects - lack of a comprehensive environmental management strategy, absence of institutional mechanisms, poor environmental awareness, functional fragmentation of the public administrative system, and the effects of increasing population density, industrialization and urbanization.

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If all this is known, it begets the question, what has been our response to this? In September 2009, the Ministry of Environment and Forests came out with a proposal for a National Environment Protection Authority for effective environmental governance. The proposal lacked direction and strategy for environmental management. Then in November 2010, Ministry of Environment and Forests (MoEF) mooted the idea of establishing a National Environment Assessment and Monitoring Authority (NEAMA) to cope with the rising environmental challenges in the era of rapid industrialization and infrastructure development on the basis of an study "Evaluation of Central pollution control Board". It recognized that the chasm between the environmental statutes and their compliance is becoming wider and that the traditional system of command and control for environmental regulation had been stretched to their limits. The proposal identified the following four critical areas where gaps needed to be plugged:

1. Present appraisal process is not a continuous process. The present EAC (Expert Appraisal Committees) approach with multiple part-time experts has limitations in terms of efficiency, institutional memory, consistency and accountability.
2. There is a need of refinement in terms of development of standardized databases which shall be used exclusively for the purpose of clearance. These databases have to be maintained and authenticated by designated public sector agencies. A scientific application of this data along with environmental costs evaluation would be practically feasible only in a multidisciplinary institution like NEAMA.
3. Also, the dual role of the Government in both appraisal as well as approval results in a perception of conflict of interest, which is avoidable.
4. And that the Regional Offices of MoEF are presently engaged in the monitoring of environmental clearances. These regional offices have capacity constraints in terms of manpower and infrastructure. Moreover, such a regulatory function which involves site inspections, issue of directions and also legal processes related to prosecution, cannot be discharged at the level of Government and there is a need to have a professional body to take care of such functional demands.

But will this be enough to stem the degradation of our natural environment? It is true that like in any developing nation, environmental problems in India are highly complex, and management practices and procedures have to be developed accordingly. NEAMA does not seem to address the critical aspects mentioned earlier – lack of a comprehensive environmental management strategy, absence of an institutional mechanism, the functional fragmentation of the public administrative system. The present attempt to reform environmental governance with the establishment of NEAMA may serve limited purpose in the short term. It only seems to facilitate environmental clearances without any substantial gain in institutional building.

To achieve coordination between various functional departments, suitable organic linkage needs to be established in the management practices with lowest administrative unit at district level. The role of district unit will enhance public participation and environmental awareness. My experience during my tenure at Bokaro (an industrial district in the state/province of Jharkhand in India) as Member-Secretary of District Environment Committee brings me to

such a conclusion. The District Environment Committee used to meet regularly to take stock of environmental issues of the district under the chairmanship of District Collector. It used to discuss and direct concerned authorities/entities to improve upon the performance for better environmental management. In the process, we realized the need to establish a vertical linkage of the District level committee with a state level agency committed to comprehensive environmental management.

The State Pollution Control Boards constituted under section 4 of the Water (Prevention and Control of Pollution) Act 1974 or under section 5 of the Air (Prevention and Control of Pollution) Act, 1981, is a regulatory body to enforce the standards for emissions or discharge of environmental pollutants. However, the State Pollution Control Boards are not able to address the larger aspects of environmental management, include all stakeholders and mitigate the environmental problems prevalent in the state. There are issues of public awareness, capacity building and technological facilitation, functional integration of public/ administration departments and mechanisms to deliver effectively, which need direct and willing intervention both in technological and financial facilitation. The district environment committees cannot function in isolation. They need technological and government support at the State level. Keeping this in mind, a proposal to establish the State Environmental Development/ Management Agency was put to the state government in Jharkhand. This agency would have the following mandate to fill the gaps existing in the present setup of environmental management;

a) To develop policies and administrative measures for prompt and effective consultation on matters relating to environment conservation and management.

b) To ensure maximum cooperation and coordination among related enforcing agencies and other public departments dealing with environmental issues.

c) To promote coordination by government agencies with non-governmental organizations and the private sector;

d) To enable the government to take decisions on advice rendered by State Pollution Control Board or such other environmental groups for control of environmental degradation with the help of technical inputs.

e) To enable the government with technical support/ data to give directions to the regulatory bodies as provided under different environmental laws- with regard to different environmental issues.

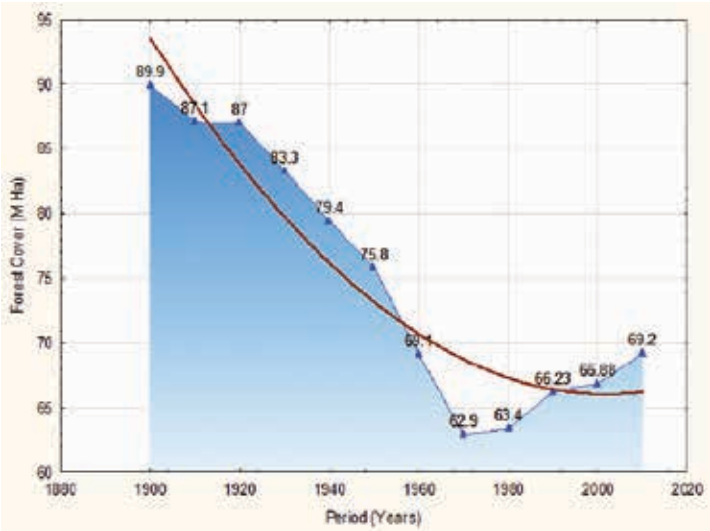


Figure 1: Forest Transition Curve for India

f) To collect and disseminate information on environment related issues in the state

g) To ensure that information is shared by all stakeholders in order to develop a better understanding of environmental issues and of problems relating to enforcement of environmental laws.

h) To coordinate, implement and monitor the activities relating to the environment education, awareness and information, etc, through appropriate agencies in the state.

i) To examine and recommend any proposal on the mentioned subject matter in the state for funding by the State, GoI and other agencies.

j) To provide training, technical support, capacity building and extend advocacy in the area of environment management to all stakeholders.

k) To promote, undertake and implement field study and research oriented projects on environment related issues in the state through appropriate agency.

l) To guide and coordinate the functioning of District Environment Committee at the district level.

m) To compile and process the reports of District Environment Committee wise at the State level.

n) To provide funds to District Environment Committee at the district level for environment related activities.

o) To prepare State of Environment Report for the state.

It is in this backdrop emphasized, that such critical gaps exist in environment management at the national level too. Larger issues of environmental management in the country still remain unattended. Institutional framework is needed to tackle the issue holistically which takes care of technical support, administrative fragmentation, poor implementation, authentic monitoring and reporting, public awareness and participation and scientific research and database. However the caveat is that this framework should not be empowered to take decisions on environmental issues. The role and responsibility of the government cannot be wished away in a democratic India in environmental management. Institutional support needs to be established for effective environmental management at the government level. The present regulatory body at the centre, Central Pollution Control Board may be recast as an agency registered as Society and named as National Environment Management Agency. It will only be an agency which makes recommendations, is capable of appraising any Environment Impact Assessment report, monitoring and reporting compliance to the conditions imposed while granting the environment clearances and advising the Central government in all areas of environment management. It should coordinate and facilitate the functioning of the State level Environment Management Agency. The dual control over environmental pollution issues with the functioning of control boards in the centre and at the state levels is doing more harm than good to the cause of environmental issues.

Lack of institutional support to implement the policies of government for environmental management at the state and national level is by far biggest handicap in India. The existing concept of having Expert Appraisal Committees and State Environment Impact Assessment

Authorities for environmental clearance has done enough harm to the cause of environment management in India. Major projects get public hearings done without the involvement of district level organisations leading to feeling of alienation among the people. This can only be addressed through an organically linked institutional framework at the district, state and national level to manage the environmental issues.

❑❑❑

"In the absence of any legislation, the executive acting under the doctrine of public trust cannot abdicate the natural resources and convert them into private ownership or for commercial use. The esthetic use and the prestime glory of the natural resources, the environment and the eco-systems of our country cannot be permitted to be eroded for private, commercial or any other use unless the courts find it necessary, in good faith, for the public goods and in public interest to encroach upon the said resources."

M.C. Mehta vs Kamal Nath & Ors

# A Review of the Evolution of Project Environmental Clearance Process across Major Industries

Jayanta Bhattacharya[1]

## Introduction

Environmental clearance of projects is growing into a subject and a field, combining science, technology and management- at a pace not experienced before .Increasing awareness as well as confusion in the people rich and poor, complexity and requirement of specificity, spread of problems across boundaries and many other issues have been bringing together science, technology and management at an ever-enlarging scale. There are different forces in action. Politicians and planners want local development as a tool to appease their constituency. Academic and scientific community, participating in the process of clearance, does not want to be caught in the future for being wrong on yet unforeseen problems and issues that can implicate them. Developers look for new business opportunities. Common people look for jobs in the development. Every party wants to justify their raison de tare. Not to mention the push and pool, the developer plays in the process. Compounded with the issues raised there is another problem, largely not comprehended: the uncertain and imperfect knowledge on the matters related to environment. The current environmental science and technology is a nascent field, merely about fifty years old - with many layers of known and unknown

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parameters, and so are inter-related that it is more often than not known clearly whether the many of the solutions of today are going to be actually problems of tomorrow.

Working for a clearance towards offering a permission to carry out industrial work is a challenge for the examining officials, that can at best be approximated by bringing out new and newer issues, details and complexities to prove at least a point that the clearance process involved the near total gamut of problems of development at hand, often not knowing actually what they are.

## Evolutionary Processes of Environmental Clearance

The Department of Environment under the Central Ministry was established in India in 1980 to ensure a healthy social and natural environment for the country. This later became the Ministry of Environment and Forests in 1985. The Environment Protection Act (EPA), 1986 came into force soon after the Bhopal Gas Tragedy and is considered an umbrella legislation as it fills many gaps in the existing laws. Requirements and procedure for seeking environmental clearance of projects Environment Impact Assessment Notification S.O. 60(E), dated 27/01/1994 was brought out in 1994. Subsequent amendments were made in 1994, 1997,2000,2001 and 2002.(Incorporating amendments vide S.O. 356(E) dated 4/5/1994, S.O. 318(E) dated 10/4/1997 , S.O. 319 dated 10/4/1997, S.O. 73(E) dated 27/1/2000, S.O. 1119(E) dated 13/12/2000, S.O. 737(E) dated 1/8/2001, S.O. 1148(E) dated 21/11/2001, S.O. 632(E) dated 13/06/2002.

Over the years the clearance process has been more and more industry specific. As the industries are going for both upstream and downstream integration, the environmental clearance process has been subjected to changes, to catch up with the demands for the industry.

The obvious changes can be summarized as below:

1. Globally, the industries are becoming diverse yet integrated, having plants and facilities at different geographical locations. In many cases the raw material import has increased leading to the problems of foreign origin.
2. The spent liquor, chemical and hazardous waste, used batteries and computers etc are being generated at a faster rate than before, bringing in new challenges of incineration, landfill and recycle.
3. The spread of pollutants is no longer limited to a geographical region. It is now more obvious, pointed and afflicting. Not only literate people but also the poor and illiterate people are becoming aware of the problem and can associate the problems with the projects. So what was once a local problem can today become a national problem forcing the government to take note.
4. Industrial projects are the lifeline for the country's growth. Every government to keep some social order needs projects to be cleared. On the other hand there are challenges of the environment. Only increased efficiency can reduce the resource use intensity upto a certain extent. And one way of increasing efficiency is to enhance the bench marks.

5. Even today ,many projects are cleared on the basis of gross pollutant criteria like Total Dissolved Solids, Oil/grease ,pH and Dissolved Oxygen that are put in the Environmental Impact Assessment (EIA).It has already began to change. The recent change in the National Ambient Quality Standards (NAAQS) is a pointer to that direction where from mere suspended particulate matter (SPM) the emphasis has shifted to respirable particulate matter (RPM), and more particularly to PM10 and PM2.5. The problems of burnt or volatile organic matter have been also taken note of. So one can say that project clearance has been moving from the general statement based structure of "what to be done" to more specific commitment based structure of "what, how and when to be done".
6. The requirement of specific environmental knowledge in the areas like heavy metals in water, organics in water and air, slope stability, eco toxicity, project biotic sensitivity and conservation engineering is only increasing.
7. One area that is getting increased attention is the hearing of public grievance, expectations and fears out of the project, known as "Public Hearing". This is becoming mandatory to the new and expansion project proposal.
8. There are many areas that were not initially included in the term "environment" are now included in the ambit of "environment". Occupational health and safety, public health, hazardous material management ,disaster management and corporate social responsibility are now included in the charters of environmental clearance.

   To say in nutshell about the above, it can be said that the evolution of the process of environmental clearance has been rapid, now touching several new and extended disciplines of engineering and management in the same project and to encompass the criticality in all forms that can be ascribed to a project.

## Sensitiveness of Environmental Clearance

Matters related to the environment are finding space in the local and global politics, from primary to tertiary education, public health and safety, natural and manmade disasters, products and process lifecycles, etc to name a few. That the planet can not be used as an infinite sink for all human pollutions and that we have nearly reached the limit, is now understood and appreciated.

Day by day the sensitiveness of environmental clearance is increasing due to the perceptible problems of general nature and they are:

1. Rising uncertainty in food supply and public health due to environmental problems.
2. Depleting Fresh Water Resources.
3. Stagnant Agricultural Land and Production.
4. Vanishing Forest and Wildlife.
5. Bio-diversity Loss.
6. Increasing pollution level.
7. Increasing media glare.

8. International Pressure.
9. Public Awareness
10. International Standards Compliance

## Organizational Requirement:

Environmentalism has been ushering in some welcome changes in the organisational structures. In the first phase of environmental management it was all about the "nuisance" value, considered more as a plank of the regulators to whip the corporations. But gradually, it turned out to be a slow acceptance of a certain social responsibility. In the days of tomorrow, it would be continuation of the responsibility, with concerns of cost, but at the same time it will be considered a challenge and an opportunity. If speed is a measure of differentiation among the organisations today, it is quite possible that conservation and less energy intensive production and growth will be a method of differentiation tomorrow. Further, increasing cost of energy, water, and raw material would mean that the organisation having the capability to distribute the cost across the value chain would survive the race. Given below in the table-1 are the some of the indicators as to how an organisation will change.

Table- 1 .Some of the indicators as to how an organisation will change to be more environmentally competitive.

| | |
|---|---|
| 1. | No longer will patch work / jobs/services work. So the organization has to build permanent competence. |
| 2. | To be more pro-active rather than reactive and compliance centered. |
| 3. | Treating environmental issues in terms competitiveness and example/ stewardship setting terms. |
| 4. | Treating environmental Issues in terms of differentiation and as core competence. |
| 5. | To participate in core research: develop environmental products. |
| 6. | To move from saving cost to distribute upfront and materialization cost. Larger an organization becomes more environmentally compliant it is likely to become. |

## Changing Roles of Environmental Cadre Officials

As the complexities of the environment pollution have been increasing, the expertise of yesteryears has been slowly becoming irrelevant .For example what once used to suffice as "Total Dissolved Substances (TDS)" is no longer as appropriate, as today's requirement is "the concentration of major cations" like Ca, Mg, Zn, Ni, Cu, Co, Al, Pb, As, and also perhaps, some metallo-organics as available. Further the uncertainties are increasing. For example, the transport of cations and anions in the ground water regime can only be estimated and predicted ,but mostly can not be determined. The estimation and prediction procedure requires knowledge of mathematical modelling and capability to run new software. So almost all government and semi-governmental personnel in the business of environmental clearance need to be trained and educated to face the challenges of specificity, compared to general requirements of the past. Instrumentation, operation, calibration and repeatability will pose challenges when some thing is always on display, whether or not that they were actually asked.

In addition, a substantial change in the ways the officials take their work will be required. The prospects of a proper environmental job will be much defeated if one take the job as one of as –usual, as against a continuous concern and as having scopes to learn new things. Table.2 shows the changes in the ways the environmental job requirements will be in the future.

Table.2: The changing role of environmental officials in the organization.

| | |
|---|---|
| 1. | Think environmental work as a mission and a philosophy ,not merely a job |
| 2. | Do not let organizations to think that environment control is only cost to the company. Show how in the long and short term such benefits can actually provide actual and calculable financial returns. |
| 3. | Incorporate employee health aspects with the environmental expenditure. Cite reduction in energy and health related cost to the environmental benefits. |
| 4. | Be the champions of the energy saving initiatives. Bring out new schemes on how A/C cost, employee transportation cost, lighting cost can be reduced. Work relentlessly to bring such costs down by raising issues, low cost campaigning, and green celebrations in all functions. |
| 5. | Develop Core Competence that can not be easily copied or dispensed .Bring in the systems concept in the environmental management. |
| 6. | Bring out issues like how fresh air, daylight use and greens in the premises can be helpful to health, work balance, etc. |
| 7. | Reduce discrimination, increase circle of influence from top to the bottom of the organizations. A person working for the environment can not but be secular, believer of equal rights, a non-believer of race, supremacy, caste and community biases. |
| 8. | He has to be a believer of efficiency. He has to think of the poor and underprivileged and their inclusion in the scheme of things. |
| 9. | An environmental official must practice what he /she preaches. He can not be a believer of NIMBY (Not –In-My –Back-Yard) whereby he /she keeps own area clean but sends the dirt or the pollution to other's premise. |

A chapter written on lean and green corporation by Bhattacharya (2004) speaks in detail about how at the organisation level conservation, reuse. recycle practices can be implemented.

## Environment in the Corporate Culture

One expects that the paths leading to environmental clearance for new and expansion projects will be only more difficult than before. In effect, in the future a new corporate culture has to be evolved which will help conserve, find less polluting and inexpensive substitutes as well as extend the use cycles . In the future, all industrial energy, water and material use chains will come under scrutiny .This will span from reducing the footprint of an individual to that of each section of a plant. These will be the areas of excellence that can only be maintained by an organisation that will thrive on the globally adopted corporate culture.

1. Reduce material and energy cost in all decisions. For example, Smaller notices, general but not individual copies.
2. Use day lighting.

3. Energy saving after office hours. Encourage use of energy saving culture and use of appliances.
4. Restrict use of pesticides, cleaning agents and hydrocarbon based smell agents. Encourage personal cleaning; request employees not to keep dirt for others to clean.
5. Encourage recycle and reuse in all sphere of activities.
6. Restrict uses of material that can pollute air, soil, surface water and the ground water.
7. Encourage judicious use of air conditioners.
8. Keep the walls, floor and roof dry by natural circulation and using water channels.

## Environmental Efficiency in the Projects

Even some ten years ago, the expenditure on the environment, in the perspective of the industry, used to be an "a nuisance and cost ".Though, slowly, the preservatives are changing. Today the expenditure is not only a cost but an "investment and means for cost reduction". There is motive- conservation for the future. Let me bring out an example: in 1996-97, the specific energy consumption per ton of cast steel used to be 8.717Gcal /t. In 2009-10 it has come down to 6.228Gcal/t- more than 20% reduction. Specific water consumption decreased from 8.98 to 4.31 $m^3$/ton of steel- more than 50% reduction! Going by the paradigm that money saved is money earned, the resources saved can more than account for the expenditure. It increases the corporate competence to a new high. And this also goes well with corporate social responsibility. In the following is a draw down on how projects can improve their environmental efficiency (table.3).

Table.3: How the environmental efficiency in project can be improved.

| | |
|---|---|
| 1. | Measurement of specific heat consumption on a regular basis with a view to rationalise it from time to time |
| 2. | Restrict indiscriminate felling of trees for clearing land. The usual approach is to clear the land before the project and then replant the tree once the project is completed. This has to be reversed by not cutting the trees as much as possible in the first place itself. |
| 3. | Create project plan with environmental sensitiveness at all stages and units of work. |
| 4. | Restrict road spaces to the minimum in the project. |
| 5. | Conserve and minimize use of material, energy, and water and soil disturbance. |
| 6. | Wherever toxic substances are used, use a liner not to allow the spills to enter subsurface. |
| 7. | Harness sunlight and bioremediation to improve upon |
| 8. | Start rainwater harvesting. |
| 9. | Build an oxidation pond or aerobic wetland in all the projects. |
| 10. | Make zero discharge of water combined with less discharge, recovery of useful substances and reuse in a cyclical manner. |
| 11. | Bring down, capture and reuse solid and gaseous particulates in the final product. |
| 12. | Increase solid waste utilization. |

## Strategic Objectives

It is becoming important to internalize the cost of environmental cost in the project cost with the investment to bring in profits at some point of time in the project. An organization will certainly look into the business prospects of any expertise obtained in the process of environmental clearance. For example, Tata Iron and Steel Company's ( TISCO), effort to develop the private equivalent of municipal services as a profit center in the name of Jamshedpur Utilities & Services Company Limited, JUSCO is a strategic move built on the community service experience that Tata has nurtured.

## Current Environmental Clearance Procedure

It is almost difficult to bring out the point-by-point contexts of environmental clearance as the process is mediated by a great number of persons who provide inputs as parts of the clearance procedure.

In the below are presented the three. Case studies of large projects and the observations of the committee before they are presented to the Ministry (MOEF) for clearance. A reading of the three projects will clarify the demands of the environmental clearance for current project managers.

## Case study 1: JSW Steel Plant (Terms of Reference for Environmental Clearance)

Expansion of the Integrated Steel Plant (10.0 MTPA to 16.0 MTPA) along with Captive Power Plant (600 MW) near Village Tarnagulla, District Bellara, Karnataka by M/s JSW Steel Ltd.

## Project Details

M/s JSW Steel Ltd. has proposed for the expansion of the Integrated Steel Plant (10.0 MTPA to 16.0 MTPA) alongwith Captive Power Plant (600 MW) near Village Tornagallu, District Bellary, Karnataka. Proposed expansion will be carried out within the existing campus. Site is 29 km. from Bellary and 33 km. from Hospet. Total project area available is 8,000 acres and proposed expansion will be carried out in 700 acres. No forest land is involved. Augmentation of port, road and rail facilities will be carried out for receipt of raw materials and dispatch of products. Total cost of the project is revised during presentation from Rs. 15,000.00 Crores to Rs. 15,130.00 Crores. Expansion from 7.0 to 10 MTPA Steel Plant is under construction and is likely to be commissioned in 2011. Following are the facilities planned at 7.0 & 10.0 MTPA phases (table 4):

Table.3. Facilities planned at 7.0 & 10.0 MTPA phases.

| Facilities | 7 MTPA (Ph-1 of 10 MTPA) | MTPA (Ph-2 of 10 MTPA) |
|---|---|---|
| Main facilities | | |
| Blast furnace | BF-3( 3 MTPA)+BF-1 upgrade | BF-4(3 MTPA) |
| BOF | 2 x 175 t | 2 x 175 t |
| Casting facilities | | - |

| | | |
|---|---|---|
| Slab & bloom casters | 1 x 8 strand Billet caster 1 slab caster | 2 slab casters |
| Pig casting machine | 1 x 3600 t/d | 1 x3600 t/d |
| Support facilities | | |
| By Product recovery type coke ovens. | 4 Coke oven Batteries | 4 Coke oven batteries |
| Sintering plant | SP-2(1 Unit) | SP-3(1 unit) |
| Pelllet plant | - | 1 of 5 MTPA |
| Lime Plant | 4x 300 t/d | 4 x 600 t/d |
| Finishing Mills | 7 MTPA | 10 MTPA |
| Hot Strip Mill | HSM-1 upgrade | HSM-2 of 5.0 Mtpa |
| Cold Rolling Mill | CRM-1 | CRM-2 |
| Wire rod mill | WRM | - |
| Pipe Mill | Pipe Plant (O/S) | - |
| Rebar mill | RBM | - |
| Auxiliaries | | |
| Coal driers(100tph) | 3 nos | - |
| Oxygen plant for BF | 1 unit (O/S) | 2 units of 1800+900 t/d |
| Slag cement plant | 1 unit (O/S) | 1 unit of 2.0 MTPA |
| Power plant & boilers | 300MW+ 2 nos | 300MW+ 2 nos |
| Ore beneficiation | 1+1 units | 1 unit of 5.0 MTPA |
| Township | SG Colony | 2 nos |
| Incinerator | 250 kg/h | 1 no |

PAs informed to the committee that following are the details of existing (4 Mtpa), commissioned in 2008-09 (7 Mtpa), yet to be commissioned (10.0 Mtpa) and proposed facilities (6 Mtpa) along with their capacities ( Table.4) :

Table.4.Capacities of different project facilities.

| S.N. | Name of the Units | Facilities installed (4 Mtpa) | Facilities installed (7 Mtpa) | Facilities proposedto be installed (10 Mtpa) | New facilities now proposed (10 to 16 Mtpa) |
|---|---|---|---|---|---|
| 1 | Ore beneficiation Plant, product | 1x4.5 Mtpa | 1x2.5 Mtpa & 1x 5.0 Mtpa | 1x 7.5 Mtpa | Nil |
| | Cumulative | 4.5 Mtpa | 12.0 Mtpa | 19.5 Mtpa | |
| 2 | Pellet Plant | 1 unit | nil | 1x 5 Mtpa | Nil |
| | Cumulative | 5.0 Mtpa | 5.0 Mtpa | 10 Mtpa | 10 Mtpa |

| | | | | | |
|---|---|---|---|---|---|
| 3 | Sinter Plant | 1X204 m2 | 1X204 m2 | 1 X496 m2 | 8.05 Mtpa |
| | Cumulative | 2.3 Mtpa | 4.6 Mtpa | 10.35 Mtpa | 18.40 Mtpa |
| 4 | Coke Oven - NR | Two batteries of 0.64 Mtpa each | No addition | No addition | No addition |
| | Cumulative | 1.24 Mtpa | 1.24 Mtpa | 1.24 Mtpa | 1.24 Mtpa |
| 5 | Coke Oven Recovery type | Nil | 4X56, 4.5 m tall coke oven batteries of 1.5 Mtpa coke | 4X72, 4.5 m tall coke oven batteries of 2.0 Mtpa coke | 4X65, 7.6 m tall coke oven batteries of 3.65 Mtpa coke |
| | Cumulative | - | 1.5 Mtpa | 3.5 Mtpa | 7.15 Mtpa |
| 6 | Hot metal-Corex | 2x 0.8 Mtpa | - | - | - |
| | Cumulative | 1.6 Mtpa | 1.6 Mtpa | 1.6 Mtpa | 1.6 Mtpa |
| 7 | Hot metal-Blast Furnace | 1x1250 $m^3$ BF (0.9 Mtpa), 1x1650$m^3$ BF (2.17 Mtpa) | 1x4019 $m^3$ (3 Mtpa), Upgrade of BF-1 to 1650 $m^3$ not yet carried out | 1x4019 $m^3$ (3Mtpa) capacity of hot metal | 2x4019 $m^3$ (3 Mtpa) |
| | Cumulative | 3.07 Mtpa | 6.07 Mtpa | 9.07 Mtpa | 15.07 Mtpa |
| 8 | Pig Casting Machines | 1X1200 tpd | 1X3600 tpd | 1X3600 tpd | 1X3600 tpd |
| | Cumulative | 1200 tpd | 4800 tpd | 8400 tpd | 12000 tpd |
| 9 | Crude steel- BOF & auxiliaries | 3X130 t converter | 2X175 t converter | 2X175 t converter | 4X180 t converter |
| | Cumulative | 3.8 Mtpa | 6.8 Mtpa | 9.8 Mtpa | 15.8 Mtpa |
| 10 | Lime Kilns | 4X300 tpd | 4X300 tpd | 4X600 tpd | 8X300 tpd |
| | Cumulative | 1200 tpd | 2400 tpd | 4800 tpd | 7200 tpd |
| 11 | Slab Caster | 2X1250 mm slab casters 1X1600 mm slab casters | 1X2200 mm slab caster of 1.6 Mtpa | 2X2200 mm slab caster of 3.2 Mtpa | Nil |
| | Cumulative | 3.2 Mtpa | .8 Mtpa | 8.0 Mtpa | 8.0 Mtpa |

| | | | | | |
|---|---|---|---|---|---|
| 12 | Billet caster | Nil | 1X8 strand | Nil | Billet caster (2 nos of 1.0+0.9 Mtpa). 2.2 Mtpa bloom & 2.2 Mtpa blank casters |
| | Cumulative | - | 1.5 Mtpa | 1.5 Mtpa | 7.8 Mtpa |
| 13 | HSM | 1 unit of HSM of 2.8 Mtpa capacity | Upgrade HSM-1 to 3.2 Mtpa | 1x2000 mm wide 5.0 Mtpa HSM | Nil |
| | Cumulative | 2.8 Mtpa | 3.2 Mtpa | 8.2 Mtpa | 8.2 Mtpa |
| 14 | Plate mill | Nil | Nil | Nil | Nil |
| | | - | - | - | - |
| 15 | Pipe mill | Nil | 1 unit, (out sourced ) | Nil | Nil |
| | Cumulative | - | 0.4 Mtpa | - | - |
| 16 | Wire rod mill | Nil | 1 unit | Nil | 2 units of 0.5 Mtpa |
| | Cumulative | - | 0.6 Mtpa | - | - 1.6 Mtpa |
| 17 | Rebar & section mills | Nil | 1x1.0 Mtpa | Nil | 1 SBQ mill (0.8 Mtpa), 1 section mill (2.1 Mtpa) & 1 beam mill (2.1 Mtpa) |
| | Cumulative | - | 1.0 Mtpa | 1.0 Mtpa | 6.0 Mtpa |
| 18 | Cold Rolling Mill Complex | Nil | One unit of 1.0 Mtpa | One unit of 2.0 Mtpa | Nil |
| | Cumulative | - | 1.0 Mtpa | 3.0 Mtpa | 3.0 Mtpa |
| 19 | Galvanizing Lines | Nil | Nil | 4x0.25 Mtpa | Nil |
| | Cumulative | - | - | 1.0 Mtpa | 1.0 Mtpa |
| 20 | Color Coating Line | Nil | Nil | 1 unit | Nil |
| | Cumulative | - | - | 0.5 Mtpa | 0.5 Mtpa |

| | | | | | |
|---|---|---|---|---|---|
| 21 | Power Plant and process steam boilers | Gas based CPP-1x100 MW CPP-2x130 MW | Coal based 1x300 MW (yed to commi-ssioned) | Coal based 1x300 MW | Coal based 2x300 MW |
| | Cumulative | 230 MW | 530 MW | 830 MW | 1,430 MW |
| 22 | Incinerator | 0 | I unit | I unit | I unit |
| | Cumulative | - | 250 kg/h | 750 kg/h | 1,000 kg/h |
| 23 | Slag Grinding & mixing unit (Out sourced) | | Mtpa is not executed. | | |
| | Cumulative | 0.2 Mtpa | 2.2 Mtpa | 4.2 Mtpa | 6.2 Mtpa |
| 24 | Oxygen Plant (Out sourced) | 2x2500 tpd | 1x1800 tpd (out sourced) | 1x1800 tpd, 1x 900 tpd | 1x1800 tpd |
| | Cumulative | 2500 tpd | 4300 tpd | 7000 tpd | 8800 tpd |
| 25 | Township | 2 nos | 1 unit at SG Colony | 1 unit | 1 unit |
| | Cumulative | 2 nos | 3 nos | 4 nos | 5 units |

Following will be the product mix at 6.0 MTPA expansion:

| S.N. | Item | Product size (mm) | Production capacity (TPA) |
|---|---|---|---|
| 1. | Heavy Sections<br>Beams<br>Channels | 200-1000<br>200-400 | 2,100,000 |
| 2. | Medium Sections Beams<br>Angles<br>Channels | 100 – 500<br>100 – 220<br>100 – 400 | 2,100,000 |
| 3. | Wire Rods | Ø 5.5 – Ø 22 | 1,000,000 |
| 4. | Special Quality Bars | Ø 80 – Ø 250 | 800,000 |

Iron ore fines, iron ore, dolomite (BF and SMS grade), limestone (BF and SMS grade), non-coking coal, imported coking coal, quartzite, manganese ore, thermal coal for CPP will be used as raw materials.

Recovery type of coke oven will be installed. BF coke will be used in the blast furnace and coke fines/coke breeze will be used in sinter plant. Sinter will be manufactured in sinter plant. Hot metal will be provided in blast furnace and transported to the SMS using hot metal ladles. Basic oxygen furnace technology will be used for the production of liquid steel. Crude steel will be produced in converter to manufacture beams blanks, blooms and billets. Steel will be converted into billets in continuous casting machine (CCM). Wire rods, special bars,

medium section and heavy sections like beams, chemicals, angles etc. will be produced. CPP (1x300 MW) will be based on coal and another CPP (1x300 MW) on mixed surplus gas (BF, BOF, Coke oven gas, propane, LPG etc.)

Washed coal will be used. Coke oven gases after by-product recovery will be used as supplementary fuel. Top gases from the blast furnace will be cleaned by gas cleaning devices. Dust extraction/fume extraction system with ESPs and stack will be provided to stock house and cast house. The LD gas from SMS shop will be subjected to wet cleaning before using as supplementary fuel. Secondary fumes will be captured by fume extraction system generated during hot metal and liquid steel transfer points. Dust emissions from calcining plant will be controlled by bag filters. $SO^2$, NOx and CO from re-heating furnace will be controlled. The steam generators will be provided with low NOx burners to reduce NOx emissions. Dust suppression / dust extraction system will be provided to control fugitive emissions. It is proposed to achieve TSP <50 mg/$Nm^3$ and work zone dust levels <50 mg/$Nm^3$.

Total water requirement for the expansion project from Almatty and Tungbhadra Dam will be 2,500 $m^3$/hr. Water requirement will be within the 72 MGD allotted by Govt. of Karnataka. The wastewater generated from the indirect cooling circuit will be routed through the cooling tower. Coke from the coke oven will be cooled in dry cooling plant to element use of quenching water. The wastewater of gas cleaning plant (GCP) of blast furnace and steel melt shop containing suspended solids will be clarified in the waste water treatment plant and recycled to the waste gas cleaning units. Wastewater from continuous casting machine (CCM) will be treated to remove scale and oil and treated water will be recycled after cooking. The plant sanitary wastewater will be treated in sewage treatment plant (STP) and used for dust suppression and green belt development.

Iron ore fines, coal and other fines will be recycled to sinter plant. Blast furnace slag will be granulated and sent to JSW's cement manufacturing units. The SMS slag will be recovered in waste recycling plant (WRP) for separation of magnetic. The rejects will be dumped in a designated area. Oil and grease will be sold to recyclers / re-processors.

Adequate green belt will be developed. Total power requirement will be 500 MW and CPP of 600 MW (3x300 MW) is proposed and will be based on coal based power plant. Blast furnace (BF) gas will also be used in Turbine Generators.

## Delineating Terms of Reference ( TOR ) before project clearance

After deliberating on the facts presented before the Expert Appraisal Committee (Industry), the committee recommended the proposal for the preparation of EIA/EMP as per the following TORs:

1. A site location map on Indian map of 1:10, 00,000 scale followed by 1:50,000/1:25,000 scale on an A3/A2 sheet with at least next 10 Kms of terrains i.e. circle of 10 kms and further 10 kms on A3/A2 sheets with proper longitude/latitude/heights with min. 100/200 m. contours should be included. 3-D view i.e. DEM (Digital Elevation Model) for the area in 10 km radius from the proposal site.

2. Present land use should be prepared based on satellite imagery. High-resolution satellite image data having 1m-5m spatial resolution like quickbird, Ikonos, IRS P-6 pan

sharpened etc. for the 10Km radius area from proposed site. The same should be used for land used/land-cover mapping of the area.

3. Topography of the area should be given clearly indicating whether the site requires any filling. If so, details of filling, quantity of fill material required, its source, transportation etc. should be given.
4. Location of national parks / wildlife sanctuary / reserve forests within 10 km. radius should specifically be mentioned. A map showing landuse/landcover, reserved forests, wildlife sanctuaries, national parks, tiger reserve etc in 10 km of the project site.
5. Project site layout plan showing raw materials, fly ash and other storage plans, bore well or water storage, aquifers (within 1 km.) dumping, waste disposal, green areas, water bodies, rivers/drainage passing through the project site should be included.
6. Coordinates of the plant site as well as ash pond with topo sheet co-ordinates of the plant site as well as ash pond with topo sheet should also be included.
7. Details and classification of total land (identified and acquired) should be included.
8. Proposal should be submitted to the Ministry for environment clearance only after acquiring total land. Necessary documents indicating acquisition of land should be included.
9. Rehabilitation & Resettlement (R & R) should be as per policy of the State Govt. and a detailed action plan should be included.
10. Permission and approval for the use of forest land and recommendations of the State Forest Department regarding impact of proposed expansion on the surrounding reserve forests, if applicable, should be included, if applicable.
11. A list of industries containing name and type in 25 km radius should be incorporated.
12. Residential colony should be located in upwind direction.
13. List of raw material required and source alongwith mode of transportation should be included. All the trucks for raw material and finished product transportation must be "Environmentally Compliant".
14. Quantity of coking coal to be imported from each port, method of movement of raw material including coke and product.
15. Commitment and permission from the Port Authorities for handling raw materials and products.
16. A chapter on coking coal availability, source, blending, utilization.
17. Undertaking and commitment from Authorities in Australia for supplying coking coal alongwith fall back plan.
18. Analysis of coal for Arsenic content is necessary and should be included.
19. Petrological and Chemical analysis and other chemical properties of raw materials used (with GPS location of source of raw material) i.e. ores, minerals, rock, soil, coal, iron, dolomite quartz etc. using high definition and precision instruments mentioning their

detection range and methodology such Digital Analyzers, AAS with Graphite furnace, ICPMS, MICRO-WDXRF, EPMA, XRD, Nano studies or at least as per I30-10500 and WHO norms. These analysis should include trace element and metal studies like Cr (vi) Ni, Fe, As, Pb, Zn, Hg, Se, S etc. Presence of radioactive elements (U, Th etc.).

20. Petrography, grain size analysis and Major element analysis of raw material and soil from project site and raw material should be done on the same parameters along with analysis for $SiO_2$, $Al_2O_3$, MgO, MnO, $K_2O$, CaO, FeO, $Fe_2O_3$, $P_2O_5$, $H_2O$, $CO_2$.

21. If the rocks, ores, raw material has trace elements their petrography, ore microscopy, XRD, elemental mapping EPMA, XRF is required to quantify the amount present in it and hence future risk involved while using it and management plan.

22. Studies for fly ash, muck disposal, slurry, sludge material and other solid waste generated should also be included, if the raw materials used has trace elements and a management plan.

23. Manufacturing process details for all the plants including slag-grinding unit should be included. A commitment that emission level from all the stacks should not be less than 50 $mg/Nm^3$.

24. A complete table indicating existing, yet to be commissioned, proposed and cumulative facilities and capacities. Phasing of all the plants should be included.

25. A chapter on type and full details of coke oven plant including pollution control methods and justification for installing recovery type of coke oven, dry quenching should be included.

26. Mass balance for the raw material and products should be included.

27. Energy balance data for all the components of steel plant including proposed power plant should be incorporated.

28. A plan for the utilization of waste/fuel gases from all the sources including BF, coke oven in generating power have to be set out.

29. Site-specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall should be collected.

30. One season site-specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall and AAQ data (except monsoon) should be collected. The monitoring stations should take into account the pre-dominant wind direction, population zone and sensitive receptors including reserved forests.

31. Data generated in the last three years i.e. air, water, raw material properties and analysis (major, trace and heavy metals), ground water table, seismic history, flood hazard history etc.

32. Data on existing ambient air, stack emission, fugitive emissions data; water requirement and water balance cycle; generation, re-utilization and disposal of solid/ hazardous waste for the existing plant and predicted increase in pollution load (GLCs) due to proposed expansion should be incorporated.

33. All the environment clearances accorded by the Ministry, Consent to Establish and Operate and point-wise compliance to the specific and general conditions stipulated in the environmental clearance and Consent to Establish and Operate for all the existing plants.

34. Ambient air quality at 8 locations within the study area of 10 km., aerial coverage from project site with one AAQMS in downwind direction should be carried out.

35. The suspended particulate matter present in the ambient air must be analyzed for the presence of poly-aromatic hydrocarbons (PAH), i.e. Benzene soluble fraction. Chemical characterization of RSPM and incorporating of RSPM data.

36. Determination of atmospheric inversion level at the project site and assessment of ground level concentration of pollutants from the stack emission based on site-specific meteorological features.

37. Air quality modelling for steel plant for specific pollutants needs to be done. Air pollution control devices installed and proposed for the control of emissions from all the sources should also be included.

38. Ambient air quality monitoring modelling alongwith cumulative impact should be included for the day (24 hrs) for maximum GLC alongwith following :

    i) Emissions (g/second) with and without the air pollution control measures

    ii) Meteorological inputs (wind speed, m/s), wind direction, ambient air temperature, cloud cover, relative humidity & mixing height) on hourly basis

    iii) Model input options for terrain, plume rise, deposition etc.

    iv) Print-out of model input and output on hourly and daily average basis

    v) A graph of daily averaged concentration (MGLC scenario) with downwind distance at every 500 m interval covering the exact location of GLC.

    vi) Details of air pollution control methods used with percentage efficiency that are used for emission rate estimation with respect to each pollutant

    vii) Applicable air quality standards as per LULC covered in the study area and % contribution of the proposed plant to the applicable Air quality standard. In case of expansion project, the contribution should be inclusive of both existing and expanded capacity.

    viii) No. I-VII are to be repeated for fugitive emissions and any other source type relevant and used for industry

    ix) Graphs of monthly average daily concentration with down-wind distance

    x) Specify when and where the ambient air quality standards are exceeded either due to the proposed plant alone or when the plant contribution is added to the background air quality.

    xi) Fugitive dust protection or dust reduction technology for workers within 30 m of the plant active areas.

39. Impact of the transport of the raw materials and end products on the surrounding environment should be assessed and provided. The alternate method of raw material and end product transportation should also be studied and details included.

40. One season data for gaseous emissions other than monsoon season in 10 km radius is necessary.

41. An action plan to control and monitor secondary fugitive emissions from all the sources as per the latest permissible limits issued by the Ministry vide G.S.R. 414(E) dated 30th May, 2008.

42. Information regarding surface hydrology and water regime should be included.

43. Presence of an aquifer/aquifers within 1 km of the project boundaries and management plan for recharging the aquifer should be included.

44. Source of surface/ground water level, site (GPS), cation, anion (Ion Chromatograph), metal trace element (as above) chemical analysis for water to be used. If surface water is used from river, rainfall, discharge rate, quantity, drainage and distance from project site should also be included.

45. Ground water analysis with bore well data, litho-logs, drawdown and recovery tests to quantify the area and volume of aquifer and its management.

46. Ground water modelling showing the pathways of the pollutants should be included

47. Column leachate study for all types of stockpiles or waste disposal sites at 20oC-50oC should be conducted and included.

48. Permission for the drawl of water from the concerned authority for the existing as well as proposed plant from the Almatty dam and Tungbhadra dam and water balance data including quantity of effluent generated, recycled and reused and discharged is to be provided. Methods adopted/to be adopted for the water conservation should be included.

49. A note on the impact of drawl of water on the nearby River during lean season.

50. Surface water quality of nearby River (60 m upstream and downstream) and other surface drains at eight locations must be ascertained.

51. If the site is within 10 km radius of any major river, Flood Hazard Zonation Mapping is required at 1:5000 to 1;10,000 scale indicating the peak and lean river discharge as well as flood occurrence frequency.

52. A note on treatment of wastewater from different plants, recycle and reuse for different purposes should be included.

53. Provision of traps and treatment plants are to be made, if water is getting mixed with oil, grease and cleaning agents.

54. If the water is mixed with solid particulates, proposal for sediment pond before further transport should be included. The sediment pond capacity should be 100 times the transport capacity.

55. Wastewater characteristics (heavy metals, anions and cations, trace metals, PAH) from washed / beneficiated plants / washery.

56. The pathways for pollution via seepages, evaporation, residual remains are to be studied for surface water (drainage, rivers, ponds, lakes), sub-surface and ground water with a monitoring and management plans.

57. Ground water monitoring minimum at 8 locations and near solid waste dump zone, Geological features and Geo-hydrological status of the study area are essential as also. Ecological status (Terrestrial and Aquatic) is vital.

58. Geotechnical data by a bore hole of upto 40 mts. in every One sq. km area such as ground water level, SPTN values, soil fineness, geology, shear wave velocity etc. for liquefaction studies and to assess future Seismic Hazard and Earthquake Risk Management in the area.

59. Action plan for solid/hazardous waste generation, storage, utilization and disposal particularly slag from all the sources, char and fly ash. Copies of MOU regarding utilization of ash and slag should also be included.

60. Details of evacuation of ash, details regarding ash pond impermeability and whether it would be lined, if so details of the lining etc. needs to be addressed.

61. Green belt development plan in 33 % area. Details of greenbelt i.e. land with not less than 1,500 trees per ha. giving details of species, width of plantation, planning schedule etc. Cement manufacturers for utilizing granulated BF slag and fly ash should be included.

62. A note on the treatment, storage and disposal of all type of slag should be included.

63. Identification and details of land to be used for SMS slag disposal should be included.

64. End use of solid waste and its composition should be covered. Toxic metal content in the waste material and its composition should also be incorporated particularly of slag.

65. All stock piles will have to be on top of a stable liner to avoid leaching of materials to ground water.

66. Acton plan for the green belt development plan in 33 % area should be included. The green belt should be around the project boundary and a scheme for greening of the traveling roads should also be incorporated. All rooftops/terraces should have some green cover.

67. Details regarding infrastructure facilities such as sanitation, fuel, restroom etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase.

68. A scheme for rainwater harvesting have to be put in place. Incorporation of water harvesting plan for the project is necessary, if source of water is bore well.

69. Detailed description of the flora and fauna (terrestrial and aquatic) should be given with special reference to rare, endemic and endangered species.

70. Socio-economic development activities need to be elaborated upon. Measures of socio economic influence to the local community proposed to be provided by project proponent. As far as possible, quantitative dimension should be given. Provision of schools, college, technical institutes, training centres, recreation parks, water supply to nearby villages etc should be incorporated.

71. Impact of the project on local infrastructure of the area such as road network and whether any additional infrastructure would need to be constructed and the agency responsible for the same with time frame.

72. A detailed disaster management plant including risk assessment and damage control needs to be addressed.

73. Occupational health of the workers needs elaboration. Health effects of other metals used and health hazard plans based on monthly correlation of these metal related diseases and people affected and mitigation plans. Arsenicosis Management Plan if Arsenic is present in ore, rock, coal, fly ash, water. Action Plan for protecting the workers against hazardous chemicals such as Sulphuric acid, pesticides, solvents etc.

74. Occupational health of the workers needs elaboration including evaluation of noise, heat, illumination, dust, any other chemicals, metals being suspected in environment and going into body of workers either through inhalation, ingestion or through skin absorption and steps taken to avoid musculo-skeletal disorders (MSD), backache, pain in minor and major joints, fatigue etc. Occupational hazards specific pre-placement and periodical monitoring and periodical monitoring should be carried out. The detailed plan to carry out above mentioned activity should be mentioned.

75. EMP to mitigate the adverse impacts due to the project along with item-wise cost of its implementation.

76. Plan for the implementation of the recommendations made for the steel plants in the CREP guidelines must be prepared.

77. A note on identification and implementation of Carbon Credit project should be included.

78. Total capital cost and recurring cost/annum for environmental pollution control measures.

79. Public hearing issues raised and commitments made by the project proponent on the same should be included separately in EIA/EMP Report in the form of tabular chart.

80. Any litigation pending against the project and / or any direction / order passed by any Court of Law against the project, if so, details thereof.

In addition to the above, information on the following may also be incorporated in the EIA report.

1. Is the project intended to have Clean Development Mechanism (CDM)-intent?

   (i) If not, then why?

(ii) If yes, then

(a) Has PIN (Project Idea Note) {or PCN (Project Concept Note)} submitted to the National CDM Authority in the MoEF?

(b) If not, then by when is that expected?

(c) Has Project Design Document been prepared?

(d) What is the Carbon intensity from your electricity generation projected (i.e. CO2 Tons/MWH or Kg/KWH)

(e) Amount of CO2 in Tons/year expected to be reduced from the baseline data available on the CEA's web-site (www.cea.nic.in)

The Expert Appraisal Committee (Industry-1) decided that PAs may be communicated the above 'TORs' for the preparation of EIA/EMP. As soon as the draft EIA/EMP report is prepared as per the 'General Structure of EIA' given in Appendix III and IIIA in the EIA Notification, 2006, the same may be submitted by the PAs to the Karnataka State Pollution Control Board (SPCB) for conducting public hearing as per EIA Notification, 2006. On finalization of EIA/EMP prepared as per TORs addressing all concerns raised during public hearing/consultation in EIA/EMP should be submitted to the MOEF for prior to environmental clearance.

## Case Study- II. Clearance of a Zinc Smelter Project after a site visit

### Project Details

Zinc Smelter (5,00,000 TPA), Lead Smelter (1,25,000 TPA), Captive Power Plant (255 MW) and expansion of Lead-Zinc Ore Rajpura Dariba Mine (6,31,000 to 9,00,000 TPA) and Beneficiation Plant (9,00,000 to 12,00,000 TPA) at Village Dariba, Tehsil Relmagra, District Rajsamand, Rajasthan M/s Hindustan Zinc Limited

As per the recommendation of the 95th Expert Appraisal Committee (Industry-I) held during 15th–17th June, 2009, a sub-committee comprising of Vice Chairman, Member, Expert Committee (Industry), a Director, Regional Office, MOEF, Lucknow, two AEE, CPCB and a Director, MoEF visited the existing project site of Zinc smelter (5,00,000 TPA), Lead smelter (1,25,000 TPA), Captive power plant (255 MW) at Chanderiya, Putholi, Chittorgarh and existing Rajpura Dariba Mine (6,31,000 to 9,00,000 TPA) alongwith Beneficiation Plant (9,00,000 to 12,00,000 TPA) at Village Dariba, Tehsil Relmagra, District Rajsamand, Rajasthan by M/s Hindustan Zinc Limited to assess the existing environmental scenario at Chanderia Lead –Zinc Smelter at Chittorgarh and existing mine site at Rajasmand, Rajasthan and proposed additional environmental protection measures to be undertaken

Project Authorities (PAs) informed to the Committee that following will be the products and by-products from the proposed smelter complex :

Table.5. Products and by-products from the proposed smelter complex

| S. N. | Products | Proposed Production Capacity (TPA) |
|---|---|---|
| Zn Smelter : | | |
| | Zinc (SHG) | 5,00,000 (2 x 2,50,000) |
| | Continuous Galvizing Grade (CGG) Zinc | 80,000 |
| Lead Smelter : | | |
| | Lead | 1,25,000 (1x1,25,000) |
| | Lead Alloy (Pb-Sb & Pb-Ca) (Out of 1,25,000 TPA Lead) | 50,000 |
| Captive Power Plant : | | |
| | Power | 255 MW (3x85 MW) |
| Mines & Beneficiation Enhancement : | | |
| | Pb-Zn Ore Production | 6,31,000 to 9,00,000 |
| | Pb-Zn Ore Beneficiation | 9,00,000 to 12,00,000 |
| By-Products : | | |
| 1 | Sulphuric acid | 7,44,000 |
| 2 | Lead-Silver compound | 80,000 |
| 3 | Zinc Oxide compound | 20,000 |
| 4 | Lead concentrate (Oxide) | 5,000 |
| 5 | Anode slime | 4,000 |
| 6 | Copper as copper cement/sulphate/matte/concentrate (equivalent metal) | 1,900 |
| 7 | Cadmium metal / Sponge (equivalent metal) | 1,600 |
| 8 | Antimony as Antimony compounds (equivalent metal) | 850 |
| 9 | Silver | 400 |
| 10 | Calomel | 44 |
| 11 | Bismuth as Bismuth compounds | 16 |

Main raw materials required are Zinc concentrate, Calcine (ZnO), Aluminium metal for Zinc smelters; Lead concentrate, Lead silver compound, Coal, Coke for Lead smelters, Lead secondaries viz. used lead batteries for Lead smelters. Coal for power plant besides Flocculants, Sodium Sulphate, Lime, SiO2, MnO2, Silico Fluoric acid, LSHS, Cement, Ammonium Chloride, Sulphuric acid and Caustic soda solution as other consumables required in the plant.

PAs also informed to the Committee that Zinc will be produced from the Zinc concentrate received from RD mines through hydro-metallurgical smelting process comprising of roast-leach-electro winning operations. Similarly, Lead will be produced by using SKS technology procured from China. SO2 generated during Zn and Pb smelting process will be converted into H2SO4 by DCDA process. Slag from the furnace will be treated to recover lead in BF.

Lead bullion produced will be sent to refinery for further processing. Slag will be further processed in EAF followed by slag fuming furnace to recover Zinc and lead in the fumes. Copper dross produced at the lead refinery shall be treated for converting the same to the saleable copper compounds. Slime from the refinery will be further processed to recover Silver, Antimony and Bismuth. Captive power plant (Coal based steam turbine) of capacity 255 MW (3 units of 85 MW each) will also be installed.

Underground mining will be carried out in existing mine using Vertical Retreat Mining (VRM) and Blast Hot Stoping (BHS) with back filling. Blast vibration will be assessed. Ground subsidence and mine stability will also be monitored on regular basis. For concentration and separation of Lead and Zinc minerals, the ore will be treated in the beneficiation plant. Life of the mine will be 18 years. Mining Lease of Rajpura Dariba Lead Zinc deposit, ML-2/89, is extending over an area of 1142.2 ha in Rajsamand District of Rajasthan. Govt. of Rajasthan granted mining lease of Rajpura Dariba Lead Zinc deposit to HZL vide letter no. F-3(2)/ Khanij/68 dated 30th May, 1970 for a period of 20 years. 1st renewal was granted vide order no. P/2/36/khan/Gr-2/90 dated 17th September, 1992. Validity of mining lease is upto 29th May, 2010 and the lease is due for renewal thereafter.

PAs also described about the various pollution control measures to be installed including ESPs, bag filters, fume extraction and dust suppression systems to be installed to various plants. $SO_2$ emissions from the stack attached to Sulphuric acid plants will be restricted to 1.5 kg/ton of acid. Off gas from the Sulphuric acid plant, blast and fuming furnace plant, Copper recovery plant will be treated in the scrubbing plant. Zinc sulphate solution from the scrubbing process will be treated in the leaching section of the Zinc smelter. Acid mist emission from the stack will be within 50 $mg/Nm^3$. NOx emissions will be restricted to 750 mg/Nm3 by using low NOx burners. Adequate stack height will be provided for proper dispersion of pollutants like SO2, NOx etc. On-line stack monitoring for SPM, NOx and SOx will be carried out. Sulphur content in coal will be restricted to 2% to contain SO2 emissions. In the mine area, water sprays will be used on ore stock piles for reducing the dust generated during fall of ore from conveyors. Water will be sprayed on ore during crushing and loading during mining operations.

Total water requirement from the 3 sources, existing water supply to HZL's own dam in the area (Matrikundia dam), Gosunda dam and Mansiwakal dam will be 42,050 m3/day and agreements have been signed between the Govt. of Rajasthan and HZL for the supply of water Water requirement per ton of Sulphuric acid produced will be 184 litre. Effluents generated from gas cleaning plant, Sulphuric acid plant, anode and cathode washing, Lead smelter, DM plant, cooling towers and power plant will be neutralized and metallic elements present will be precipitated and removed. Effluents generated from the proposed smelters, acid plant and other associated services will be treated in ETP and recycled in the processes, i.e., gas cleaning plant, preparation of lime milk and also for de-dusting and greenbelt. 'Zero' discharge will be maintained within the plant. Effluents generated from Sulphuric acid plant, scrubber, general floor washings of electro-refinery plant will be sent to ETP for further treatment followed by two-stage RO Plant. Sewage will be treated in septic tank followed by soak pit. The quality of mine seepage will be good enough for use in plantation and existing mining activity. Mine seepage generation will be used/recycled in mining & beneficiation

process. Decanted water from the tailings dam will be recycled in the beneficiation plant thereby ensuring zero discharge. Tailings from beneficiation plant after recovery of Lead and Zinc concentrates will be sent to tailing thickener for dewatering.

ETP cake from ETP will be disposed in the captive SLF. Jarosite will be treated by mixing lime and cement to produce Jarofix, a stable product. After stabilization, Jarofix will be disposed in dedicated disposal yard. Cooler cake and part of lead silver residue will be crushed, decontaminated and neutralized before disposal in SLF. Anode mud, cobalt cake and purification cake will be recycled back in the process and, if surplus, will be sold to authorized recyclers or disposed in SLF after neutralization. Spent catalyst will be disposed in SLF after neutralization. Lead smelter slag after fuming will be stored in designated area and alternatives will be explored for usage in road construction and cement manufacturing. Waste oil and used oil will be sold to authorized recyclers. The fly ash will be sold to cement manufacturers. Bottom ash will be disposed in the existing tailing dam of HZL's own mines.

Mine waste will be dumped at the surface as well as in mine voids. Overburden will be dumped at a designated place. Waste rocks generated due to mining activity will be utilized in construction and enhancement of tailing dam. In beneficiation plant, existing tailing dam will be used for disposal of tailings (1300 TPD after expansion).

Out of 554.19 ha, green belt is already developed in 158 ha (28.5 %) in mine area and will achieve 33 % in next 5 years. 50% of the area is covered with Prosopis shrubs. 10% of the area is under scattered green belt, developed by HZL using native species. Till date, more than 80,000 saplings have been planted on 158 ha (28.5%) of plant area. It is proposed to plant 1000 saplings/annum in the industrial, residential area and in the vicinity of tailing dam.

### Observations of the committee:

The sub-committee visited the existing Zinc smelter, Lead Smelter and Captive Power Plant at Chanderiya, Putholi, Chittorgarh and mine operations at Rajpura-Dariba, Tehsil Relmagra, District Rajasmand (80 km. from Debari) on 12th and 13th September, 2009. Proposed Zinc Smelter (2x2,50,000 TPA), Lead Smelter (1x1,25,000 TPA) Captive Power Plant (3x85 TPA) will be green field projects whereas expansion Beneficiation Plant (9,00,000 TPA to 12,00,000 TPA) mine 6,31,000 TPA to 9,00,000 TPA) is a brown field project. Existing mining activities at Dariba started in 1983 and no environment clearance was obtained due to non-existent of E(P) Act. Mining lease (1142.20 ha.) was granted by the State Government on 30th May, 1970 and is valid upto 20th May, 2010. Actual total mine (surface) area acquired is 554.10 ha. involving no forest land (Govt. land 301.10 ha.) and Private land 253.09 ha.). Out of 554.19 ha. mine lease area, 162 ha. will be used for the proposed smelters and CPP.

In existing Zn Smelter Plant, it was observed that adequate pollution control measures are provided but fumes from venting in roaster area were observed during the site visit. On-line monitoring facilities for SO2 are provided. Reverse Osmosis Plant is installed. Process effluent is treated in effluent treatment plant (ETP). 'Zero' discharge is adopted. All the process residues, spent catalysts, cobalt coke, anode mud, cooper coke is disposed off in secured landfill fugitive. Fugitive emissions are controlled by water sprinkling. Construction of cemented road is partially done and is also in progress to control dust emissions at site.

In existing Lead Smelter Plant, on-line SO2 emissions are monitored and data submitted indicated SO2 emissions ranging between 1.2 to 1.5 kg/tone of H2So4. Acid mist is ranging between 25-30 mg/Nm3. On-line continuous analyzer is installed to monitor SO2 emissions. Total gas treatment plant in lead smelter plant is produced to reduce SO2 emissions but was under shut down during the site visit.

The slag generated is granulated and kept in slag yard. PAs informed that discussion regarding use of slag in road construction is in progress. Fly ash generated is used in cement manufacturers. 'Memorandum of Understanding' is signed with M/s Shree Cement, Aditya Cement, Visaka Cement & Birla Cement located within 5-100 km. Adequate green belt is provided in residential colony.

In existing Captive Power Plant, on-line monitor for SPM, SO2, NOx are installed, NOx burners are also provided to control NOx emissions. No FGD plant is provided to control SO2 emissions since 'S' content in coal is controlled less than 2%. Fly ash from Captive Power Plant is also provided to cement manufacturers. 'Memorandum of Understanding' is signed with M/s Shree Cement, Aditya Cement, Visaka Cement & Birla Cement located within 5-100 km. Adequate green belt is provided in residential colony.

In Rajpura-Dariba existing mine, no environment clearance is accorded due to old mine started as early as in 1983 prior to E(P) Act, 1986. All the mining operations are carried out underground.

After visiting above mentioned existing units of another Chanderia lead zinc unit and existing mining operations at the proposed site, the sub-committee recommended the following specific conditions for the proposed Zinc Smelter (5,00,000 TPA), Lead Smelter (1,25,000 TPA), Captive Power Plant (255 MW) and expansion of Lead-Zinc Ore Rajpura Dariba Mine (6,31,000 to 9,00,000 TPA) and Beneficiation Plant (9,00,000 to 12,00,000 TPA) at Village Dariba, Tehsil Relmagra, District Rajsamand, Rajasthan M/s Hindustan Zinc Limited while according environment clearance :

i) No construction work related to expansion at the proposed project site should be started without obtaining prior clearances / approvals for the linked mining component from the Indian Bureau of Mines (IBM) and State Govt. of Rajasthan. A copy of the mining lease approval from the Indian Bureau of Mines (IBM) and State Govt. of Rajasthan should be submitted to the Ministry and its Regional Office at Lucknow before initiating any construction work at site related to mining.

ii) The project proponent should obtain 'Consent to Establish' and 'Consent to Operate' from the Rajasthan State Pollution Control Board (RSPCB) and effectively implement all the conditions stipulated therein.

iii) The environmental clearance is subject to approval of the State Landuse Department, Government of Rajasthan for diversion of agricultural land for non-agricultural use.

iv) The project proponent should develop fodder plots in the non-mineralized area in lieu of use of grazing land. Monitoring of land use pattern should be carried out once in three years by digital processing of the area using multi-data computer compatible tape.

v) High efficiency electrostatic precipitators (ESPs) of not less than 99.87 % efficiency should be provided to captive power plant to limit particulate matter within 100 mg/Nm3. The height of the stacks should be as per the standards prescribed under the Environment (Protection) Act, 1986. Low NOx burners should be provided to control NOx emissions. NOx emissions should be restricted to 750 mg/Nm3 by using low NOx burners. The company shall install fume extractors and bag filters to control the emissions from all melting and casting units. Adequate stack height should be provided for proper dispersion of pollutants like SO2, NOx etc. On-line stack emission monitoring equipments for continuous monitoring of SO2, NOX, SPM and O2 should be provided to all the stacks and all the pollution control measures shall be inter-locked. Off gas from the sulphuric acid plant, blast and fuming furnace plant, copper recovery plant should be treated in the calcine based scrubbing plant where the SO2 should be removed before letting out to the atmosphere.

vi) As reflected in the EIA/EMP, Double Contact Double Adsorption (DCDA) plant for sulphuric acid recovery from SO2 should be provided. The company should ensure that SO2 emissions from the Zn and lead smelter plant are taken to existing sulphuric acid plant properly and converted to sulphuric acid. The stack from the sulphuric acid plant should be provided with on-line stack emission monitoring equipment for continuous monitoring of SO2 and acid mist.

vii) SO2 emissions should be controlled less than 1.5 kg/ton of Sulphuric acid (H2SO4) produced. Acid mist emissions from the stack should conform to the statutory limit of 50 mg/Nm3 by providing candle filter system and reports submitted to the Ministry including its Regional Office at Lucknow, CPCB and RSPCB.

viii) The critical parameters such as SPM, RSPM, NOX in the ambient air within the impact zone, peak particle velocity at 300 m distance or within the nearest habitation, whichever is closer should be monitored periodically. Further, quality of discharged water should also be monitored [(TDS, DO, pH and Total Suspended Solids (TSS)]. The monitored data should be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain.

ix) Ash content in the coal should not exceed 12 %. Sulphur content in coal should be restricted to 2% to contain SO2 emissions.

x) Fugitive emissions, acid mist vapours, fumes and SO2 should be controlled and work environment monitored for prevailing contaminants regularly. Bag filters should be provided to calcine handling plant, Zinc dust plant, melting plant, dross milling plant, each coal transfer point, crushers and fly ash silos to control dust emissions. SPM emissions from crusher house in beneficiation plant should be controlled. Covered coal conveyors with water sprinkling system using wastewater to avoid dust emissions. Coal storage area should be provided with water sprinkling stem to arrest dust. Dust extraction system should be provided to mineral handling area, loading and unloading areas including all the transfer points. Black top paves roads should be made within the mine boundary. The trucks carrying concentrate should be fully

covered. Asphalting/concreting of roads and water spray all around the critical areas prone to air pollution and having high levels of SPM and RPM should be ensured.

xi) The project proponent should carry out conditioning of the ore with water to mitigate fugitive dust emission, without affecting flow of ore in the ore processing and handling areas.

xii) Secondary fugitive emissions (particularly below 5 micron) from all the sources including Roaster plant shall be controlled, regularly monitored alongwith ambient dust in dry day and still air condition on 24 hour basis and data submitted to the Regional Office of the Ministry at Lucknow, UPPCB and CPCB. It should be ensured that the ambient air quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.

xiii) Vehicular emissions should be kept under control and regularly monitored. Measures should be taken for maintenance of vehicles used in mining operation and in transportation of mineral. The vehicles carrying the mineral should be covered with a tarpaulin and should not be overloaded.

xiv) Total water requirement for the proposed smelter complex including the mining and beneficiation plants from HZL's own dam in the area (Matrikundia dam), Gosunda dam and Mansiwakal dam shall not exceed 42,050 m3/day as per the agreement signed with Govt. of Rajasthan. Water requirement should not exceed 184 litre/ton of Sulphuric acid produced. No ground water shall be used. Closed circuit cooling system with cooling towers should be provided to captive power plant. All the effluent generated from gas cleaning plant, Sulphuric acid plant, anode and cathode washing, lead smelter, DM plant, cooling towers and power plant should be neutralized and metallic elements present should be precipitated and removed. Effluents generated from the proposed smelters, acid plant and other associated services should be treated in effluent treatment plant (ETP). Zinc sulphate solution from the scrubbing process should be treated in the leaching section of the Zinc smelter. Cooling tower blow down and boiler blow down from CPP should be neutralized and reused in dust suppression, greenbelt development etc. The treated effluent shall conform to the prescribed standards and recycled in the process i.e. in gas cleaning plant, preparation of lime milk,dust suppression and green belt development. Effluents generated from Sulphuric acid plant, scrubber, general floor washings of electro-refinery plant should also be sent to ETP for further treatment followed by two-stage Reverse Osmosis (RO) Plant. Sewage shall be treated in septic tank followed by soak pit. The rejects from the RO plant should be evaporated in a solar evaporation pond to be constructed within smelter premises.

xv) The mine seepage water should be collected in underground sumps and pumped to surface storage tanks and reused/recycled in mining and beneficiation process to minimize the fresh water consumption. Decanted water from the tailings dam should be recycled in the beneficiation plant to ensure 'zero' discharge. Tailings from beneficiation plant after recovery of Lead and Zinc concentrates should be sent to tailing thickener for dewatering. Water recovered from tailing thickener should be recycled to beneficiation plant for use in the process. Tailing thickener underflow

should be partly used as backfill for mines and remaining part should be disposed to tailing dam. Water in the tailing dam should be allowed to settle out and pumped to the water reservoir for reuse in the process.

xvi) Acid mine water, if any, has to be treated and use in plantation and existing mining activity after conforming to the standard prescribed by the competent authority.

xvii) Sewage treatment plant should be installed for the colony. ETP should also be provided for the workshop and the wastewater generated during mining operation.

xviii) The effluent from the ore beneficiation plant should be treated to conform to the prescribed standards and the tailings slurry should be transported through a closed pipeline to the tailing dam.

xix) The decanted water from the tailing dam should be re-circulated and there should be zero discharge from the tailing dam. Acid mine water, if any, should be neutralized and reused within the plant.

xx) Detailed hydrological study should be carried out and implementation of recommendations of the detailed hydrological study should be ensured.

xxi) The project proponent should ensure that no natural watercourse and/or water resources should be obstructed due to any mining operations.

xxii) The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.

xxiii) Regular monitoring of ground water level and quality should be carried out in and around the project area(mine lease, beneficiation plant and tailing dam) by establishing a network of existing wells and installing new piezometers during the operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] should be carried out in consultation with the State Ground Water Board/ Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Lucknow, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective measures should be carried out.

xxiv) Groundwater and surface water in and around the mine should be regularly monitored at strategic locations for heavy metals such as Ni, Co, Cu, Pb, Zn and Cd. Data shld be reviewed and analyzed time to time to detect changes in the quality of ground water and surface water, if any. The monitoring stations should be established in consultation with the Regional Director, Central Ground Water Board and the Rajasthan Pollution Control Board.

xxv) The project proponent should obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water, required for the project.

xxvi) Suitable rainwater harvesting measures on long term basis should be planned and implemented in consultation with the Regional Director, Central Ground Water Board.

xxvii) Catch drains and siltation ponds of appropriate size should be constructed around the mineral and over burden dumps to prevent run off of water and flow of sediments directly into the Banas River and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after the monsoon and maintained properly.

xxviii) Garland drains, settling tanks and check dams of appropriate size, gradient and length should be constructed around the mineral and over burden dumps to prevent run off of water and flow of sediments directly into the Banas River and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.

xxix) Underground mining should be carried out using Vertical Retreat Mining (VRM) and Blast Hot Stoping (BHS) with back filling. Concentration and separation of Lead and Zinc minerals should be carried out in the beneficiation plant.

xxx) Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.

xxxi) Wet drilling blasting method and provision for the control air emissions during blasting using dust collectors etc. should be used.

xxxii) Blast vibration should be assessed from proposed operation. Ground subsidence and mine stability should also be monitored on regular basis.

xxxiii) Regular monitoring of subsidence movement on the surface over working area and impact on water bodies/vegetation/ structures/ surrounding should be continued till movement ceases completely. In case of observation of any high rate of subsidence movement, appropriate measures should be taken to avoid loss of life and material. Cracks should be effectively plugged with ballast and clayey soil/suitable material.

xxxiv) All the mine entries should be above the highest flood level to avoid any anticipated flooding of mine from the surface water during the rainy season.

xxxv) In areas where subsidence is anticipated in shallow mineral occurrence, such areas be identified and provided with garland drains to ensure draining of water and avoid ingress of the same in to the underground mine.

xxxvi) The project authorities should check the possibility of existence of fault(s) before deciding about the thickness of safe barrier required to be maintained between the working face and the water bodies, if any, in consultation with the Director General

Mines & Safety (DGMS). De-pillaring should also be carried out after taking prior approval of the DGMS.

xxxvii) All the fly ash should be utilized as per Fly Ash Notification, 1999 subsequently amended in 2003. Fly ash should be provided to cement / brick manufacturing units for further use in making Pozollona Portland Cement (PPC).

xxxviii) Mine waste should be dumped in mine voids. Overburden due to mine expansion should be dumped at a designated place. Waste rocks generated due to mining activity should be utilized in construction and enhancement of tailing dam. In beneficiation plant, existing tailing dam should be used for disposal of tailings.

xxxix) The solid waste generated in the form Jarosite shall be stabilized as Jarofix and disposed off in Jarofix disposal yard inside the plant premises. Cobalt cake, cooler cake, anode mud, enrichment cake, ETP sludge and spent catalyst etc. shall be disposed off in secured landfill (SLF). Waste/used oil shall be sold to registered recyclers.

xl) ETP Sludge in the form of cake shall be disposed to the captive SLF. Jarosite should be treated by mixing lime and cement to produce Jarofix, a stable product. After stabilization, Jarofix should be disposed in dedicated disposal yard. Cooler cake and part of lead silver residue should be crushed, decontaminated and neutralized before disposal in SLF. Anode mud, cobalt cake and purification cake should be recycled back in the process and, if surplus, should be sold to authorized recyclers or disposed in SLF after neutralization. Spent catalyst should be disposed in SLF after neutralization. Lead smelter slag after fuming should be stored in designated area and alternatives should be explored for usage in road construction and cement manufacturing.

xli) Column Leachate Studies of the stock piles of Run-of the-mine (ROM) ore, crushed ore, tailings, Zarofix should be carried out to ascertain the pollution potential as per details given below :

- Temperature fluctuation and sunlight exposure under confined and unconfined conditions.
- Buried conditions
- Air circulation.
- Dry – wet conditions in both confined and unconfined situations.
- Temperature episodes and leachate release conditions.
- Leachate environmental residence study.

The leachate should be measured for heavy metals for cations viz. As, St, Ni, Cu, Sb, Cr, Hg, Fe, Al, Pb, Zn, Au and Ag and anions viz. Sulfate, Chloride, Fluorine, Carbonate, Bicarbonate, Phosphate. The primary and secondary organics (Poly Aromatic Hydrocarbons) should also be monitored in Zarofix and fresh tailings. Reports prepared should be submitted to the Ministry within 6 months of operation of the plant.

xlv) The tailing dam should be provided with HDPE lining. Tailing dam stability, risk assessment and disaster risk mitigation & planning studies should be conducted in the likely affected zone.

xlvi) A complete hazards and risk assessment, and mitigation studies of the areas where hazardous substances are stored should be carried out by approved agencies having qualified personnel. All plants identifiable hazardous areas like Sulfuric acid plants should be color coded in "Red" and should be made safe from any eventual spill or leakage. Regular inspection of the site should be carried out.

xlvii) In the mine sites, proper delineation of the confined and unconfined aquifers, permanent surface water bodies (having more than 1 ft standing water for at least 240 days in a year) within the lease hold area and within 3 kms radius of any potential mine site have to be shown in a map. Action plan should be prepared for the protection of aquifers in the mine area during process of mining and submitted to the Ministry and its Regional Office at Lucknow.

xlviii) The top soil, if any, should temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil should be used for land reclamation and plantation.

xlix) The over burden generated during the mining operation should be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time and its phase-wise stabilization should be carried out. There should be one external over burden dump. Proper terracing of the OB dump should be carried out so that the overall slope of the dump should be maintained to 28°. The over burden dump should be scientifically vegetated with suitable native species to prevent erosion and surface run off. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional Office located at Lucknow on six monthly basis.

l) Pre-placement medical examination and periodical medical examination of the workers engaged in the project should be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.

li) As proposed, plantation should be raised in an area of 33 % ha. including a 7.5 m wide green belt in the safety zone around the mining lease, over burden dump, around beneficiation plant, around tailing dam, roads etc. as per Central Pollution Control Board guidelines by planting the native species around the periphery of plant and township, canopy based green belt should be developed in consultation with the local DFO/Agriculture Department. The density of the trees should be around 1,500 plants per ha.

Action plan for the mining, management of over burden (removal, storage, disposal etc.), reclamation of the mined out area etc. should be submitted to the Ministry and its Regional Office at Lucknow. A final mine closure plan alongwith details of

Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.

lii) Conservation Plan for Schedule-I animals as per Wildlife Protection Act, 1972, if found in the study area should be prepared and implemented on priority before commission the project for the conservation of wild fauna in consultation with the State Forest & Wildlife Department.

liii) Regular medical examination and health monitoring of all the employees for Lead (Pb) and Cadmium (Cd) shall be carried out and if cases of presence of Lead (Pb) and Cadmium (Cd) are detected, necessary compensation shall be arranged under the existing laws. A competent occupational health physician shall be appointed to carry out medical surveillance. Occupational health of all the workers shall be monitored for relevant parameters and records maintained for at least 40 years from the beginning of the employment or 15 years after the retirement or cessation of employment whichever is later.

liv) All the recommendations made in Charter for Corporate Responsibility for Environment Protection (CREP) for Zinc smelters shall be implemented.

lv) Overall proper house keeping should be ensured in all the plant areas viz. Zinc and Lead smelter, Beneficiation plant, Captive power plant and other processing plant areas. The Company should improve overall house keeping by asphalting the internal roads and to reduce the generation of fugitive dust from vehicle movements.

lvi) Adequate funds should be earmarked towards capital cost and recurring expenditure per annum and a break up should be submitted to the Ministry covering all aspects of the environment pollution control measures including extensive tree plantation on the mine and plant sites with an objective to achieve 33 % green cover within 3 years of project completion and recurring expenditure/annum for adequate pollution control measures with on-line motoring systems, ETPs, SWTPs, sound and vibration control, social forestry, rain water harvesting, occupational health, employment of environmental cadre personnel for continuous improvement etc.

lvii) Rehabilitation and Resettlement Plan for the project affected population including tribals as per the policy of the State Govt. in consultation with the State Govt. of Rajsthan should be implemented. Compensation paid in any case shall not be less than the norms prescribed under the National Resettlement and Rehabilitation Policy, 2007.

lviii) All the safety norms stipulated by the Director General, Mine & Safety (DGMS) should be implemented.

lix) All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Smelters, thermal power plants and mining should be implemented.

lx) The company shall comply with the commitments made during public hearing / consultation meeting held.

lxi) No change in mining technology and scope of working should be carried out without prior approval of the Ministry.

The committee accepted recommendations of the sub-committe completely and recommended for consideration for the grant of environment clearance.

## Case Study-III .Terms fo Refeenrece (TOR) before project clearance of an Expansion Project

### Project Details:

Expansion of Cement Plant (Cement Plant, 3.3 to 6.5 MTPA, Clinker, 2.1 to 5.0 MTPA) alongwith Captive Power Plant (30 to 80 MW) at Village Rawan, Tehsil, Simga, District Raipur, Chhattisgarh by M/s Grasim Industries Ltd.

The project authorities and their consultant gave a detailed presentation on the salient features of the project and proposed environmental protection measures to be undertaken alongwith the draft Term of References for the preparation of EIA/EMP. All the cement plants have been kept at S.N. 3(b) under category 'A' or 'B' depending upon the > or < 1.0 MTPA cement production capacity. Proposed project involves expansion of Cement Plant (Cement Plant, 3.3 to 6.5 MTPA, Clinker, 2.1 to 5.0 MTPA) and is appraised at the Central level.

The proposal for the expansion of Integrated Cement Plant (Cement Plant, 3.3 to 6.5 MTPA), Clinker, 2.1 to 5.0 MTPA), Captive lime stone mine (2.8 to 7.5 MTPA, 722.834) Captive Power Plant (30 to 80 MW) at Village Rawan, Tehsil, Simga, District Raipur, Chhattisgarh by M/s Grasim Industries Ltd. Was considered in the 95th EAC (I) Meeting held during 15th-17th June, 2009. During the deliberations, it came to the knowledge of the Committee that PAs have submitted a proposal to the Mining Division of the Ministry and also have been awarded 'TORs'. PAs informed that they have already withdrawn the application for the mining project (No documentary proof provided) and requested the Committee to consider the proposal as an integrated proposal. Since the same mining proposal (with different capacities) is submitted to the Mining as well as Industry Division of the Ministry, the proposal was rejected by the EAC (Industry-1).

Now, the proposal submtted is for the expansion of Cement Plant (Cement Plant, 3.3 to 6.5 MTPA, Clinker, 2.1 to 5.0 MTPA) alongwith Captive Power Plant (30 to 80 MW) at Village Rawan, Tehsil, Simga, District Raipur, Chhattisgarh by M/s Grasim Industries Ltd.

The project authorities and their consultant gave a detailed presentation on the salient features of the project and proposed environmental protection measures to be undertaken alongwith the draft Term of References for the preparation of EIA/EMP. All the cement plant (<1.0 MTPA) and CPP are listed at S.N. 1 (a), 3(b) and 1(d) under Category 'A' and appraised at the Central level. Due to capacity of the cement plant (<1.0 MTPA) and CPP (80 MW) after expansion, proposal is kept under Category 'A' and appraised at the Central Level.

M/s Grasim Cement Ltd. have proposed for the expansion of Cement Plant(Cement Plant (3.3 to 6.5 MTPA), Clinker (2.1 to 5.0 MTPA) and Captive Power Plant (30 to 80 MW) at Village Rawan, Tehsil, Simga, District Raipur, Chhattisgarh. Total project area is 388.37 ha. for the cement plant and colony and land is already acquired. Expansion will be carried out in the existing premises of cement plant and no additional land will be acquired. No national

parks, wild life sanctuaries, reserve forests are located within 15 km. radius for the project site. The clinker with gypsum and fly ash will be used to manufacture PPC. Slag will be used to manufacture Portland Slag Cement (PSC).

Limestone, iron ore coal, clinker, gypsum will be used as raw material. Low-grade lime is also used for cement manufacturing.

High efficiency ESPs, bag houses and proper stack height will be provided to control SPM, SO2, NOx emissions. Dust suppression / dust extraction system with bag filters alongwith water sprinklers will be provided to prevent fugitive emissions. In mine area, dust will be generated during drilling, blasting, excavation and loading. Total water requirement from captive mine pits and bore wells for the existing plant and mine in 1,660 and 170 m3/day respectively. No ETP will be installed since no effluent will be generated from the cement plant. All the effluent will be treated and used ash handling, dust suppression and green belt development. Existing sewage treatment plant (STP) will be used for the treatment of domestic sewage treated domestic effluent will be used for green belt development. No effluent will be discharged and 'zero' discharge will be adopted. Solid waste generated will be recycled and reused in the process. Used oil and grease will be sold to authorized recyclers/ reprocessors. Green belt in development in 33 % area

The Expert Appraisal Committee (Industry) after detailed deliberations finalized the following TORs for the Cement Plant:

1. A site location map on Indian map of 1:10, 00,000 scale followed by 1:50,000/1:25,000 scale on an A3/A2 sheet with at least next 10 Kms of terrains i.e. circle of 10 kms and further 10 kms on A3/A2 sheets with proper longitude/latitude/heights with min. 100/200 m. contours should be included. 3-D view i.e. DEM (Digital Elevation Model) for the area in 10 km radius from the proposal site.
2. Present land use should be prepared based on satellite imagery. High-resolution satellite image data having 1m-5m spatial resolution like quickbird, Ikonos, IRS P-6 pan sharpened etc. for the 10Km radius area from proposed site. The same should be used for land used/land-cover mapping of the area.
3. Location of national parks / wildlife sanctuary / reserve forests within 10 km. radius should specifically be mentioned. A map showing landuse / landcover, reserved forests, wildlife sanctuaries, national parks, tiger reserve etc in 10 km of the project site.
4. Project site layout plan showing raw materials, fly ash and other storage plans, bore well or water storage, aquifers (within 1 km.) dumping, waste disposal, green areas, water bodies, rivers/drainage passing through the project site should be included.
5. Details and classification of total land (identified and acquired) should be included.
6. Proposal should be submitted to the Ministry for environment clearance only after acquiring total land. Necessary documents indicating acquisition of land should be included.
7. Rehabilitation & Resettlement (R & R) should be as per policy of the State Govt. and a detailed action plan should be included.

8. Permission and approval for the use of forest land and recommendations of the State Forest Department regarding impact of proposed expansion on the surrounding reserve forests, if applicable, should be included.
9. A list of industries containing name and type in 25 km radius should be incorporated.
10. Residential colony should be located in upwind direction.
11. List of raw material required and source alongwith mode of transportation should be included. All the trucks for raw material and finished product transportation must be "Environmentally Compliant".
12. Petrological and Chemical analysis and other chemical properties of raw materials used (with GPS location of source of raw material) i.e. ores, minerals, rock, soil, coal, iron, dolomite quartz etc. using high definition and precision instruments mentioning their detection range and methodology such Digital Analyzers, AAS with Graphite furnace, ICPMS, MICRO-WDXRF, EPMA, XRD, Nano studies or at least as per I30-10500 and WHO norms. These analysis should include trace element and metal studies like Cr (vi) Ni, Fe, As, Pb, Zn, Hg, Se, S etc. Presence of radioactive elements (U, Th etc.).
13. Petrography, grain size analysis and Major element analysis of raw material and soil from project site and raw material should be done on the same parameters along with analysis for SiO2, Al2O3, MgO, MnO, K2O, CaO, FeO, Fe2O3, P2O5, H2O, CO2.
14. If the rocks, ores, raw material has trace elements their petrography, ore microscopy, XRD, elemental mapping EPMA, XRF is required to quantify the amount present in it and hence future risk involved while using it and management plan.
15. Studies for fly ash, muck disposal, slurry, sludge material and solid waste generated should also be included, if the raw materials used has trace elements and a management plan.
16. Manufacturing process details for all the cement plant and captive power plant should be included.
17. Mass balance for the raw material and products should be included.
18. Energy balance data for all the components including proposed power plant should be incorporated.
19. Site-specific micro-meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall should be collected.
20. Data on existing ambient air, stack emission, fugitive emissions data; water requirement and water balance cycle; generation, re-utilization and disposal of solid/ hazardous waste for the existing plant and predicted increase in pollution load (GLCs) due to proposed expansion should be incorporated.
21. Point-wise compliance to the specific and general conditions stipulated in the environmental clearance for the existing plant should be included.
22. Sources of secondary emissions, its control and monitoring as per the CPCB guidelines should be included.

23. A full chapter on fugitive emissions and control technologies should be provided.

24. A write up on use of high calorific hazardous wastes from all the sources in kiln and commitment regarding use of hazardous waste should be included.

25. Ambient air quality at 8 locations within the study area of 10 km., aerial coverage from project site with one AAQMS in downwind direction should be carried out.

26. The suspended particulate matter present in the ambient air must be analyzed for the presence of poly-aromatic hydrocarbons (PAH), i.e. Benzene soluble fraction. Chemical characterization of RSPM and incorporating of RSPM data.

27. Determination of atmospheric inversion level at the project site and assessment of ground level concentration of pollutants from the stack emission based on site-specific meteorological features.

28. Air quality modeling for all the plants proposed including mine for specific pollutants needs to be done. APCS for the control of emissions within 50 mg/Nm3 [or at the most 75 mg/Nm3 due to expansion of the existing plant] should be included.

29. Ambient air quality monitoring modeling alongwith cumulative impact should be included for the day (24 hrs) for maximum GLC alongwith following :

    i) Emissions (g/second) with and without the air pollution control measures

    ii) Meteorological inputs (wind speed, m/s), wind direction, ambient air temperature, cloud cover, relative humidity & mixing height) on hourly basis

    iii) Model input options for terrain, plume rise, deposition etc.

    iv) Print-out of model input and output on hourly and daily average basis

    v) A graph of daily averaged concentration (MGLC scenario) with downwind distance at every 500 m interval covering the exact location of GLC.

    vi) Details of air pollution control methods used with percentage efficiency that are used for emission rate estimation with respect to each pollutant

    vii) Applicable air quality standards as per LULC covered in the study area and % contribution of the proposed plant to the applicable Air quality standard. In case of expansion project, the contribution should be inclusive of both existing and expanded capacity.

    viii) No. I-VII are to be repeated for fugitive emissions and any other source type relevant and used for industry

    ix) Graphs of monthly average daily concentration with down-wind distance

    x) Specify when and where the ambient air quality standards are exceeded either due to the proposed plant alone or when the plant contribution is added to the background air quality.

    xi) Fugitive dust protection or dust reduction technology for workers within 30 m of the plant active areas.

30. Impact of the transport of the raw materials and end products on the surrounding environment should be assessed and provided.
31. One season data for gaseous emissions other than monsoon season is necessary.
32. An action plan to control and monitor secondary fugitive emissions from all the sources as per the latest permissible limits issued by the Ministry vide G.S.R. 414(E) dated 30th May, 2008.
33. Presence of aquifer(s) within 1 km of the project boundaries and management plan for recharging the aquifer should be included.
34. Source of surface/ground water level, site (GPS), cation, anion (Ion Chromatograph), metal trace element (as above) chemical analysis for water to be used. If surface water is used from river, rainfall, discharge rate, quantity, drainage and distance from project site should also be included.
35. Ground water analysis with bore well data, litho-logs, drawdown and recovery tests to quantify the area and volume of aquifer and its management.
36. Ground water modeling showing the pathways of the pollutants should be included
37. Column leachate study for all types of stockpiles or waste disposal sites, at 20oC-50oC should be conducted and included.
38. Permission for the drawl of water from the concerned authority and water balance data including quantity of effluent generated, recycled and reused and discharged is to be provided. Methods adopted/to be adopted for the water conservation should be included.
39. A note on the impact of drawl of water on the nearby River during lean season.
40. Surface water quality of nearby River (60 m upstream and downstream) and other surface drains at eight locations must be ascertained.
41. If the site is within 10 km radius of any major river, Flood Hazard Zonation Mapping is required at 1:5000 to 1;10,000 scale indicating the peak and lean river discharge as well as flood occurrence frequency.
42. A note on treatment of wastewater from different plants, recycle and reuse for different purposes should be included.
43. Provision of traps and treatment plants are to be made, if water is getting mixed with oil, grease and cleaning agents.
44. If the water is mixed with solid particulates, proposal for sediment pond before further transport should be included. The sediment pond capacity should be 100 times the transport capacity.
45. Wastewater characteristics (heavy metals, anions and cations, trace metals, PAH) from washed / beneficiated plants / washery.

46. The pathways for pollution via seepages, evaporation, residual remains are to be studied for surface water (drainage, rivers, ponds, lakes), sub-surface and ground water with a monitoring and management plans.

47. Ground water monitoring minimum at 8 locations and near solid waste dump zone, Geological features and Geo-hydrological status of the study area are essential as also. Ecological status (Terrestrial and Aquatic) is vital.

48. Geo-technical data by a bore hole of upto 40 mts. in every one sq. km area such as ground water level, SPTN values, soil fineness, geology, shear wave velocity etc. for liquefaction studies and to assess future Seismic Hazard and Earthquake Risk Management in the area.

49. Action plan for solid/hazardous waste generation, storage, utilization and disposal.

50. A note on the treatment, storage and disposal of all type of solid waste should be included.

51. End use of solid waste and its composition should be covered.

52. All stock piles will have to be on top of a stable liner to avoid leaching of materials to ground water.

53. Acton plan for the green belt development plan in 33 % area should be included. The green belt should be around the project boundary and a scheme for greening of the traveling roads should also be incorporated. All rooftops/terraces should have some green cover.

54. A scheme for rainwater harvesting have to be put in place. Incorporation of water harvesting plan for the project is necessary, if source of water is bore well.

55. Detailed description of the flora and fauna (terrestrial and aquatic) should be given with special reference to rare, endemic and endangered species.

56. Socio-economic development activities need to be elaborated upon.

57. Disaster Management Plant including risk assessment and damage control needs to be addressed and included.

58. Occupational health of the workers needs elaboration. Health effects of other metals used and health hazard plans based on monthly correlation of these metal related diseases and people affected and mitigation plans. Arsenicosis Management Planif Arsenic is present in ore, rock, coal, fly ash, water. Action Plan for protecting the workers against hazardous chemicals such as Sulphuric acid, pesticides, solvents etc.

59. Occupational health of the workers needs elaboration including evaluation of noise, heat, illumination, dust, any other chemicals, metals being suspected in environment and going into body of workers either through inhalation, ingestion or through skin absorption and steps taken to avoid musculo-skeletal disorders (MSD), backache, pain in minor and major joints, fatigue etc. Occupational hazards specific pre-placement and periodical monitoring and periodical monitoring should be carried out. The detailed plan to carry out above mentioned activity should be mentioned.

60. Plan for the implementation of the recommendations made for the steel plants in the CREP guidelines must be prepared.

61. A note on identification and implementation of Carbon Credit project should be included.

62. Total capital cost and recurring cost/annum for environmental pollution control measures.

63. Public hearing issues raised and commitments made by the project proponent on the same should be included separately in EIA/EMP Report in the form of tabular chart.

64. Any litigation pending against the project and / or any direction / order passed by any Court of Law against the project, if so, details thereof.

The Expert Committee (Industry) decided that PAs may be communicated the above 'TORs' for the preparation of EIA/EMP. As soon as the draft EIA/EMP report is prepared, the same may be submitted by the PAs to the Chhattisgarh Environment Conservation Board (CECB) for conducting public hearing/public consultation as per EIA Notification, 2006. On finalization of EIA/EMP prepared as per TORs and addressing and incorporating all concerns raised during public hearing / public consultation, the same should be submitted to the MOEF for prior environmental clearance.

## Conclusions

The above describes the evolutionary process of project environmental clearance in India. Natural resource scarcity, public protests, media glare and Rights to Information Act are acting as the catalysts for change. This field will show a great requirement of specific and critical knowledge, an aspect that is clearly wanting globally and more particularly in India.

## Acknowledgements

A large part of the writings is from the author's own experience in the process of project environmental clearance. However, he has also drawn the case studies largely from the joint report submitted by MOEF ( MOEF Environmental Clearance Committee, Industry –I) to which the ,among others, the author has contributed.

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"When the last tree is cut and the last fish killed, the last river poisoned, then you will see that you can't eat money."

.....John May, The Green Peace Story

# Conservation of Iron Ore and Saranda Eco-system through Benefication & Pelletisation route

By
Kumari Anjali[1] Arun Kumar[2]

## ABSTRACT

Jharkhand is endowed with large reserve of iron ore. The total resources of Haematite in India is about 12 billion tonnes out of which the proved reserve amounts to be 6.63 billion tonnes while rest are under probable and possible categories. The state has maximum share (2.5 billion tonnes) of proved reserve. Though, Jharkhand's iron ore is rich in iron content, it generally contains high alumina and has adverse of $Al_2O_3/SiO_2$ ratio which has always been a problem in improving the blast furnace productivity. Stringent specification on quality of Iron ore concentrates necessitates very close control of common impurities such as alumina, silica, alkali and phosphate. Beneficiation of iron ore has thus become mandatory for removal of above undesirable mineral constituents. A large portion of high grade iron ore reserve has been exploited and major portion of Saranda forest has been broken for Iron ore mining. The present preferential practice of mining of high grade (60% Fe) iron ore and adopting the simplistic practice of washing and crushing adopted for beneficiation is no longer helpful in sustainable development of iron ore resources of the state as well as conservation of Saranda forest and their bio-diversity and the genepool. So in order

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to achieve sustainable utilization of iron ore resources and to optimize the down stream value chain, proper beneficiation techniques must be adopted which should be cost-effective, environment-friendly and energy - efficient. This paper examines the iron ore resources, mining and future demand scenario vis-à-vis urgency of adoption of proper beneficiation and pelletisation techniques for conservation of iron ore resources as well as Saranda Eco-System.

Key words: - Anticliniorium, Beneficiation, Bio-diversity, Conservation, Haemetite, Genepool, Horse-Shoe Syncliniorium, Pelletisation, Sustainable Development, Singhbhum Shear Zone, Utilization.

## 1. Introduction

The geological set-up of the Western Singhbhum area of Jharkhand has blessed it with massive deposit of iron ore in the form Haematite in this region. Iron ore are found in association with Banded Haematite Quartzite and Jasper which occurs as capping on the hills in south western part of the Singhbhum.

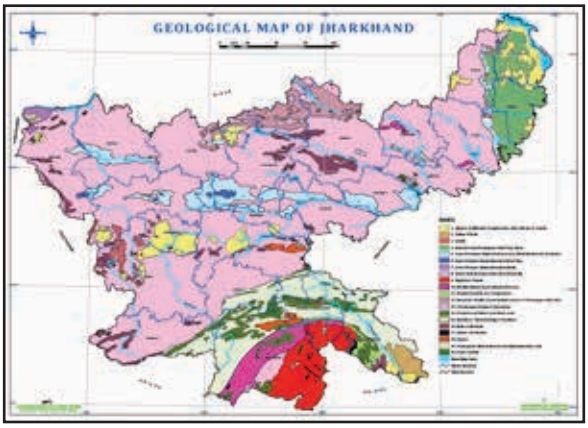
The iron ore bearing area is confined within the longitude 85°00' to 85°35'E and latitude 22°00' to 22°45' N. This region has ancient records of mining of iron ore. The oldest steel plant of the country at Jamshedpur was basically set up on the iron ore resources of these area. In last 100 years, the haematite reserve of the region has been exploited in a very selective manner by preferential utilization of only high lumpy grade of minerals. The fines generated in course of mining has always remained unutilized.

On one hand the new areas are being broken for production of high grade lumpy ore where as on the other side huge quantity of fines containing even more than 54% of iron ore are being dumped.

The iron ore mines of West Singhbhum region are located in the core areas of Saranda forest. Breaking of new areas for Iron ore mining means further destruction of Saranda forest and habitats of various animals and putting already stressed bio diversity of the region at the verge of extinction. Hence Iron ore exploration, mining & production urgently requires judicious introspection in light of technological advancement made in the field of ore processing technology and metallurgy.

## 2. Geological Set-Up

Geologically the area is part of Precambrian meta-sediumemtry formation of Chhotanagpur cratonic block and is being controlled structurally by Singhbhum Keonjhar-Bonai Horse-shoe synclinorium and Gangpur anticlinorium. The area falls under major domain of world famous Singhbhum Shear Zone. Meta sedimentary rocks in this region are folded in course of basal structural



deformation which have given rise to a series of ridges, the top of which are capped with deposit of iron ore. Gangpur Series, Iron ore series and Kolhan series are three major formations present in the area.

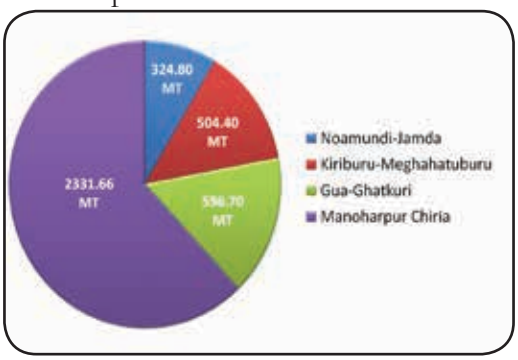
## 3. Iron Ore Scenario

### 3.1. Deposits

Jharkhand ranks second in terms of reserve of iron ore. The total iron ore resource of the state has been estimated as 4596 million tonnes. The Chirya Iron ore deposit with 2000 million tonnes of iron ore in the single largest deposit of Asia. Sector wise reserve of iron ore are as follows :-

Sector Wise Reserve of Iron Ore

In addition to known deposits of iron new areas of iron ore have been explored in




recent by various geological agencies. Important new localities are Ghatkuri, Roam, Jeraldaburu, Lutubur, Rajabera, Pensarburu, Chhatuburu, Diriburu, Gumphuburu, Jantaiburu, Rorangburu, Matkamburu Ledaburu, Babariya etc. But in these localities reserve of iron ore has not been proved yet by exploratory drilling hence depth control of mineralization is not known.

### 3.2. Iron Ore Quality

The sector wise grade of iron ore are as follows:-

| Sector | Fe% | Si02% | Al203% | P% |
|---|---|---|---|---|
| Noamundi-Jamda | 58-69 | 0.2-4.5 | 0.2-9.0 | 0.04-0.19 |
| Kiriburu-Megahataburu | 58-66 | 0.7-2.0 | 1.0-3.0 | 0.05-0.10 |
| Gua-Ghatkuri | 58-64 | 1-5 | 1-5 | 0.05-0.10 |
| Manoharpur-Chiria | 58.67 | 1-6 | 2-5 | 0.05-0.08 |

The common impurities such as alumina, silica, alkali and phosphate need close control. These impurities have to be removed for quality inputs in the blast furnace.

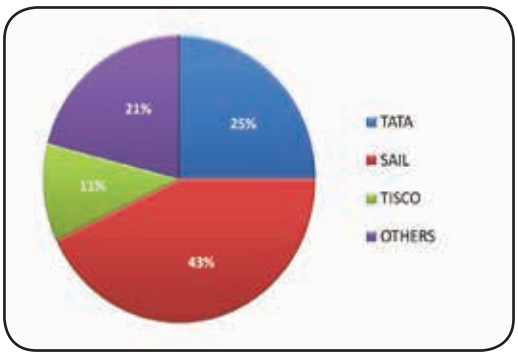
### 3.3. Mining

Since last one decade Iron ore mining in the state & the country has increased many folds. This area has 42 leases of iron ore covering a total area of 11239 hectare. Out of these only 50% leases are productive, rest are non-working due one reason or another. This part of the country is producing about 100.00 lakh tonne of fines

annually which is 12% of the national production. An analysis of production-dispatch, figure reveals that still 68% of the production dispatch is being done by SAIL -TATA combined and only 32% by others. The iron ore production-dispatch pattern in last ten years from this region is as follows :-

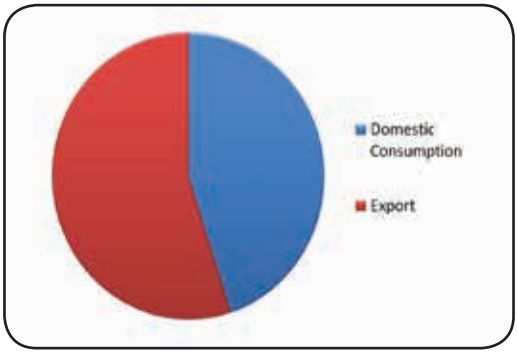
Iron Ore Despatch by Different Sectors

## 3.4. Export




The adoption of Free Export Policy by Government of India has promoted the export of iron ore from this region tremendously. The impact of liberalization of Indian economy-and. free export regime can also be realized apparently in this part. Fleet of trucks loaded with iron ore plying for Haldia and Paradeep port has completely changed the ecology and habitation of this region. The pattern of domestic consumption can be understood from the following graphics.

Domestic Consumption and Export of Iron ore Fines



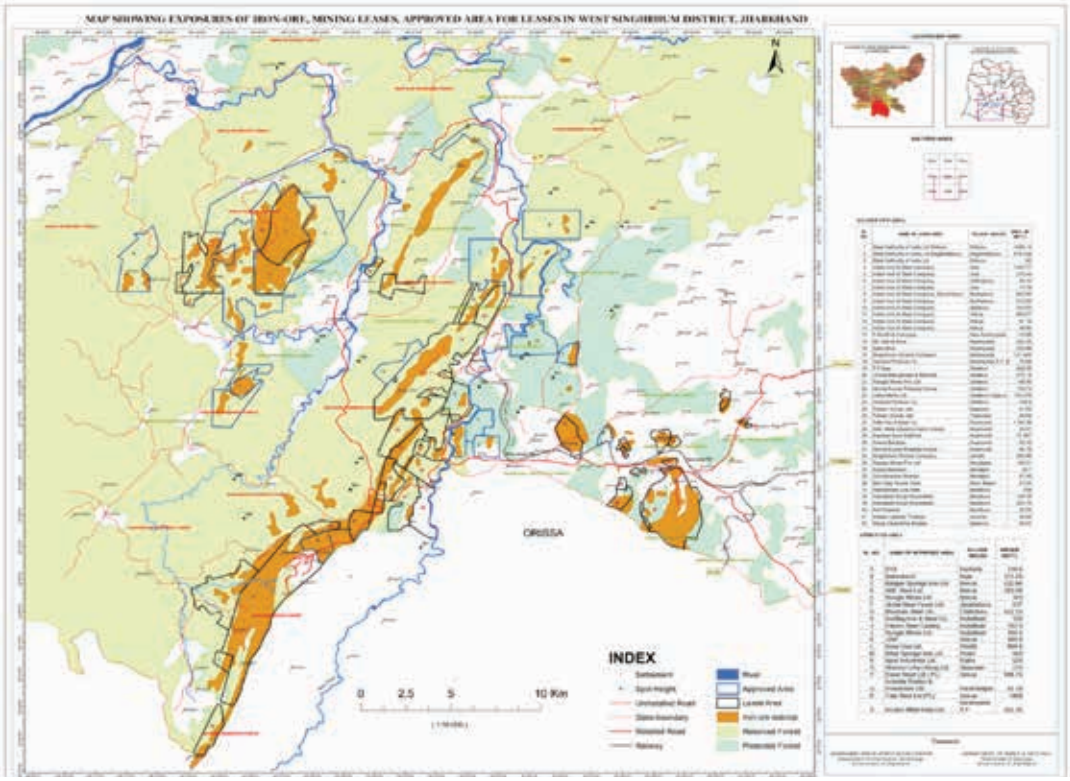

## 3.5. Future Demand

In last one decade iron ore production-dispatch has increased by 100%. This region was producing 11.00 million tonnes of iron ore in 1999-2000 which has increased up to level of 21.00 million in 209-10. Keeping in the view of national steel production target, industrial growth rate and demand from countries like China, Japan, South Korea etc., iron ore exploration are likely to increase with annual growth rate of 9-10%.

## 4. Sustainable Utilization of Iron Ore

Present concepts of resource management have not been implemented in this region. Still only high, grade hard and compact lumpy varieties iron ore are utilized, leaving fine at pit head. These fines have more than 50% of Fe content. This luxury cannot be afforded any longer. New technology for renewal of impurities as well as agglomeration of iron ore is available easily. A number of new flotation agents have been developed. Quality of iron ore can be enhanced by application of beneficiation technology.

At present this region has only 4.5 billion tonnes of iron ore reserve. In view of upcoming demand of iron ore at State, National and International level and present utilization practices of only high grade these resources are not going to last for longer period. Therefore adoption of beneficiation and pelletisation technology is the only solution for sustainable utilization of iron ore resources.




## 5. Conservation of Saranda Eco-System

Most of the iron ore bearing areas of West Singhbhum district lie in Saranda Forest. Saranda is known for Sal forest in the world. This forest falls under corridor of elephant. Besides this it is also habitat of thousand species of plants and animal. The entire ecological system of the Saranda forest is under severe threat due to ongoing iron mining in the region.

This situation is going to worsen further if proposal submitted for mining lease on these areas are granted. Critical analysis of these applications of iron ore reveal that total areas of all application are 83,000 hectare whereas Saranda forest is by and large spread over

an area of 8,600 hectare. Therefore the entire geographical area of the Saranda forest will be covered under mining lease if granted. In this situation the entire bio-diversity, gene-pool of the area will be finished. Therefore for larger interest of the mankind in general and Saranda eco-system in particular, iron ore mineral concession grant should be done judiciously in this region.

## 6. Solution of Conflicts

This fact cannot be denied that at present per capita consumption of the steel in the country is very poor. National steel policy has set 8% annual growth rate steel production so that present per capita consumption of 35 kg. steel can be increased up to 100 kg. by 2020. Consumption of steel is an index of growth. But on other hand, ecological balance of Saranda should also not been compromised, which has already reached at the verge of collapse. Therefore situation is like that the economics and industrial advancement should be foregone for harmony with nature. Therefore application of beneficiation technology for low grade iron ore should be made compulsory to increase the base of existing iron ore resources.

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"Our legal system based on English Common Law includes the public trust doctrine as part of its jurisprudence. The State is the trustee of all natural resources which are by nature meant for public use and enjoyment. Public at large is the beneficiary- of the sea-shore, running waters, airs, forests and ecologically fragile lands. The State as a trustee is under a legal duty to protect the natural resources. These resources meant for public use cannot be converted into private ownership. "

M.C. Mehta v. KamalNath and Ors. (1997 (1) SCC 388)

# Essential S & T Inputs for Environmental Governance of Ecosystems in India

Dr. Shyam R. Asolekar[1]


## Extended Abstract:

Over the years, my teaching in IITB and the services given by me to the Hon'ble SC of India and Hon'ble Bombay High Court have been noted in various quarters. As a result, I have been called upon by the Rashtrapati Bhawan, PMO, Planning Commission of India (eight years of association), Ministry of Environment, Forests & Climate Change (MoEF&CC) and Parliamentary Commission for advising on environmental policy and law. Some of the significant engagements in the recent past have been:

a) I have been serving the Hon'ble SC of India (past 17 years) in the capacity of "Expert Member" in the quasi-judicial SC Authority for protection, conservation and sustainable development of the eco-fragile region of Dahanu Taluka in Thane District.

b) A core-team member in a project funded by the MoEF&CC, Govt. of India, New Delhi – which was implemented by the consortium of seven IITs (2011 - 2014) entrusted with the responsibility of preparing Ganga River Basin Management Plan (GRBMP).

c) The Hon'ble Planning Commission of India had recruited me in the Steering Committee to draft the section on Environment, Forests & Wildlife for the "12th Five Year Plan


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Document (Plan Period: 2012-2017)". I had also served in the Working Group on Rivers, Lakes and Aquifers for drafting the "11th Five Year Plan Document (Plan Period: 2007-2012)" as well as in the Core Group for mid-term assessment of the 11th Plan.

d) Member of the core drafting team of the "Task Force" constituted at the behest of Prime Minister's Office (PMO) under the Chairmanship of Dr. K. Kasturiranagan, Member of the Honorable Planning Commission of India, to identify technically feasible, financially affordable and environmentally sound processing and disposal technologies for Municipal Solid Wastes (MSW) and assess, evaluate and recommend systems, processes, technological options, financial mechanisms and institutional arrangements to enhance resource recovery and promote Waste to Energy (W to E) technologies while ensuring integrated management of MSW in India. (October 2013 to April 2014)

The above experience has helped and guided my students and I in making contribution to the four themes cutting across biodiversity and conservation issues and minimization of the impacts:

1. Sand Dredging-related Study:

My study report on sand dredging was requested by the Hon'ble Bombay High Court (a copy is attached) to dispose cases related to illegal sand dredging and resulting ecological and environmental damage. My report was used by the court and the Govt. of Maharashtra, Department of Environment, Maharashtra Pollution Control Board, DG Shipping, Maharashtra Maritime Board, PWD, and Department of Urban Development were ordered to formulate a policy. Accordingly, the Chief Secretary of the Govt. of Maharashtra scheduled my presentation to all the secretaries and the Govt. of Maharashtra brought the "Policy to Prohibit and Control Sand Dredging" in Rivers and Marine Coast in Maharashtra.

This policy statement was studied by many States in India. Some invited me to make presentations to the respective Chief Secretaries. This policy statement was welcome and studied by certain studious NGOs and research institutions; for example, Awaz Foundation and BHHS, respectively.

2. Idol Immersion Study:

Similarly, the MCGM Commissioner, Dr Jairaj Phatak, requested me in the summer of 2007 to study the issue of Ganapati idol immersion in Maharashtra and take a knowledge-based stand and suggest solutions that are implementable. He had approached at the behest of then Mayor of Mumbai, Dr Shubha Raul, a medical practitioner in Malad. She had noticed my studies, opinion and my recommendations in media since 2002. I took the challenge and studied the sensitive topic with responsibility and care, conducted experiments in CESE and formed my opinion.

The resulting report was accepted by the MCGM in their General Body. Shiv Sena leaders reportedly spoke about my report and IIT Bombay with great honour and asked their party-men to implement it! I had not seen the Mayor or MCGM Commissioner

even once. 1000 copies were distributed by Shiv Sena ward representatives allover in Mumbai in Sep 2007!

Over the past five years, several other municipal councils and corporations in Maharashtra and hundreds of Ganesh Mandals took my report and implemented in whatever way. Around 100 copies of my report are picked in person by municipal officials and Ganesh Mandal representatives every year. Several dozen approach every year for a soft copy via e-mail.

Subsequently, in the year 2011, my study report was also requested by the Hon'ble Bombay High Court to dispose a PIL related to idol immersion and the resulting ecological and environmental damage in front of their Aurangabad Bench. My report was used by the court and the Govt. of Maharashtra, Department of Environment, and Maharashtra Pollution Control Board were ordered to formulate a guideline for eco-friendly practices.

Accordingly, the Chief Secretary of the Govt. of Maharashtra requested submission of the updated report and brought the "Guidelines for Immersion" in Rivers and Marine Coast in Maharashtra. My report was also was requested by the Central Pollution Control Board in Delhi as well as the Chairman, West Bengal Pollution Control Board in Kolkata, I was requested for making presentations to them and both the agencies formulated "Guidelines" for idol immersion.

### 3. On-going Study on e-flow in Ganga River:

Many of the technology related issues in the context of rejuvenation and upgradation of ecology in the GRB-EMP project are pertaining to biodiversity and conservation. Four industrial sectors have been studied and reviewed that are important in the Ganga River Basin, namely: Tanneries, Fertilizers, Petrochemicals, as well as Sugar and Breweries. Effort has been made to highlight the present-day state-of-the-art in those sectors and what could be the potential alternatives to enhance water recycling in those sectors.

### 4. On-going Research on Achieving near-Zero Discharge of Effluents:

Several pioneering studies have provided the technological confidence for the safe reuse of reclaimed wastewaters for beneficial uses. Two decades ago the emphasis was mainly on reuse for agricultural and non-potable reuses. The recent trends, however, prove that there are direct reuse opportunities to applications closer to the point of generation. There are also many projects that have proved to be successful for indirect or direct potable reuse. We have studied nearly each and every wastewater treatment plant using the so-called natural treatment technology in India and performed performance assessment of certain selected ones. The selected case studies of wastewater reuse as a viable alternative source of water have adequately demonstrated the opportunities for reuse.

Many of the technology related issues in the context of rejuvenation and up-gradation of ecology of the receiving bodies, once again, are pertaining to biodiversity and conservation.

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# Urban Solid and Liquid Wastes – Causes, Effects & Control Measures

Dr. Rajesh B. Biniwale[1]

## Content of the Session

- Types of Wastes: Municipal Solid Waste, Hazardous Waste, Biomedical waste, e-waste, sewage (liquid waste), construction debris etc.
- Solid Waste Management: Reuse & Recycling Techniques, Landfills, Incinerators etc.
- Treatment of the Liquid Waste from Municipal Area
- Integrated Waste Management : Adequacy of Legislation and Environmentally acceptable CleanTechnologies
- Impact of Urbanization on Environment Quality

## Introduction:

Rapid Urbanization poses a great pressure on the civic bodies to provide basis amenities namely clean water, waste management, transport infrastructure etc. This in turn results in the environmental degradation and threat to public health. During the development of the cities, the aspect of planning for meeting the prevailing standards and norms being neglected largely. The integrated town planning or city planning is relatively not been followed in general. In particular development of unregulated urban settlement has made the issue more

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complicated. The issues like sewage treatment and solid waste management are now acquired a very threatening situation. This article discusses the various waste management issues in urban sector.

## Wastes Generation in Urban settlement:

The waste generation in the urban settlement is related to its developmental stage and the resources being utilized. The basic resources such as food, water and energy leads to formation of wastes. Further, if the resources are not being used in conservative manner then the waste formation increases. Various types of wastes being generated in the Urban areas are as following;

- Municipal solid waste
- Hazardous waste
- Construction debris
- Electronic waste
- Bio-medical wastes
- Sewage or domestic wastewater
- Storm water (increase run-off)

We will discuss the above types of wastes, its generation and treatment options in following paragraphs.

## Municipal Solid Waste:

All solid wastes generated from the domestic sector can be called as municipal solid waste (MSW) in general. The MSW can be further classified into biodegradable and non biodegradable. The non-biodegradable portion of the total wastes could be about 40% by weight. It contains a large portion which can be recycled and therefore removed by scavengers for economic benefits. In most of the cases an organized recycle mechanism exists for steel, glass, plastic and paper. Whereas, the biodegradable wastes which is about 60% of the total MSW consists of organic matter (cooked/uncooked food, garden wastes etc.) and moisture. The disposal issues are related to non-recycled portion of non-biodegradable waste and entire biodegradable wastes.

First challenge in the management of MSW in Indian context is no segregation at the source. Other than recyclable portion entire waste is mixed and collected by primary and secondary collection systems. Segregation at the treatment site cannot be efficiently carried out and therefore treatment process becomes difficult. The primary responsibility of the management of MSW is that of local urban bodies and it need to be done according to MSW (Management and handling) Rules 2000.

Overall management system need to include; segregation at source, collection system equipped to collect wet & dry MSW separately, treatment of biodegradable portion, treatment of portion of the non-biodegradable waste and finally land filling of inert.

The two options for treatment of biodegradable waste could be composting or generating biogas through anaerobic digestion. Both these options provide safer disposal and value added products concomitantly. Portion of non-biodegradable wastes can be converted into refuge derived fuel. Planning of landfill, its operation and management is required to be carried out again under MSW (M&H) Rules 2000.

### Hazardous Waste:

As defined in the Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008, "hazardous waste" means any waste which by reason of any of its physical, chemical, reactive, toxic, flammable, explosive or corrosive characteristics causes danger or is likely to cause danger to health or environment, whether alone or when in contact with other wastes or substances. There are various possibilities of generation of hazardous waste in the urban sector other than industrial wastes. These are simple as used paint containers, broken asbestos sheets, CFL bulbs etc. Here again the management of these types of waste is difficult as its not available in segregated manner. Hazardous waste treatment needs special expertise and individual detail treatment based on the contaminants.

### Construction debris:

Although not specifically defined under the present acts construction debris is major waste generated in view of the large infrastructural development projects. These are large in quantity and inert. Due to its inert nature it cannot be used for generation of any value added products except it can be used for filling of earth. There is an urgent need to specify the rules/norms for disposal of construction debris.

### Electronic waste:

With serge in use of information technology and electronic devices the magnitude of electronic waste has increased considerably. Recently, Electronic Waste (Management and Handling) Rule has come to existence in 2011. E-waste includes wastes generated from used electronic devices and house hold appliances using electrical operations and are required to be disposed off. Electrical and electronic devices such as computers, hand held cellular phones, personal stereos, including large household appliances such as refrigerators, air conditioners etc. are considered as E-waste. E-wastes contain over 1000 different substances many of which are toxic and potentially hazardous to environment and human health.E-waste are known to contain certain toxic constituents in their components such as lead, cadmium, mercury, polychlorinated bi-phenyls (PCBs), etched chemicals, brominated flame retardants etc., which are required to be handled safely.

A major challenge in the E-waste is short lifespan of the devices and increasing rates of users. This waste is growing rapidly and there are no adequate facilities for processing/ treatment. Treatment may include recycle of the waste and proper scientific disposal.

### Bio-medical wastes:

"Bio-medical waste" means any waste, which is generated during the diagnosis, treatment or immunisation of human beings or animals or in research activities pertaining thereto or in the production or testing of biological. A special care need to be taken for storing, transportation and disposal of bio-medical waste. The pathogenic bacteria and other issues related to these

wastes poses a problem of unhygienic conditions and infections if not handled properly. Many time a pretreatment is required at the generation site to store the waste and hand it over to transporation. According Bio-Medical Waste (Management and Handling) Rules, 1998 it should be disposed off within 48 hrs. The methods used for disposal of biomedical waste includes autoclaving, deep burial, incineration, microwaving and chemical treatments. Special agencies authorized by pollution control boards need to carryout the collection, transporation and disposal of biomedical wastes.

### Sewage:

A major liquid waste generated from domestic areas and being disposed into the environment without any treatment is sewage. The components of the sewage are grey and black wastewater. The pollutants included in the sewage are TSS, BOD, TOC, Nitrate, Phosphates and fecal coliform. A elaborate list of all parameters need to meet the disposal standards for treated sewage is defined in Environment Protection (Rules) 1986. These disposal standards are according to the intended disposal method.

The challenge in the treatment of sewage is inadequate capacities for treatment plants. Further, the reuse of wastewater through treatment is not very common in India. Recycle and reuse is required to be promoted. Better sanitation practices are part of the sewage treatment.

### Storm water run-off:

Storm water run-off as such may not be considered as waste generated. However, due to increased pesticides, fertilizers in landscaping in the urban areas, even storm water may be contaminated when run over the landscape. Further, contaminated road dust may also be carried away by storm water thereby adding the contaminations. Currently no treatments are being considered for storm waters.

### Environmental Challenges due to urbanization:

The environmental challenge due to ever increasing solid and liquid waste as a result of rapid urbanization is evident. Further, the inadequate monitoring mechanisms, lack of planning, not having sufficient treatment capacities and need of environmentally benign technologies are reasons for the damage caused to environment and human being due to wastes. The prevailing legal framework may be adequate except there is need for two considerations namely dynamic revision of standards and strict implementation. Some recent mechanisms such as establishment of National Green Tribunals may expedite the procedures for legal actions for environmental protection besides the technological developments.

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"life, public health and ecology has priority over unemployment and loss of revenue"

... M.C. Mehta v. Union of India [(1987) 4 SCC 463].

# Climate Change Vis-À-Viscoal Mining In India & Jharkhand

Dr.Sreenivasa Murthy.M.R[1]. & Dr.K.Syamala[2]

## 1. Introduction

> 'The Earth, the Air, the Land and the Water are not am inheritance from our fore fathers but a loan from our children. So we have to handover to them at least as it was handed over to us'
>
> - Mahatma Gandhi

'Life on earth' demands a conducive environment, viable for its existence. Human activities in the process of industrial revolution polluted the environment by bringing drastic climate changes, unfavorable for living beings on earth. Before the man could realize the disaster created by him by damaging the ecological system of the earth, the frequent disasters stood as the answer for environmental imbalance. The increasing global warming and sea levels wiped out a large number of species from the surface of the earth. The issues such as availability of fresh water and air, food security, biodiversity protection, human health protection came to lime light. As a result, the entire human race marched towards sustainable development in the process of disaster management.

Recognizing the need of the collective effort, the world countries moved towards sustainable development through various international treaties. United Nations Conference on

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Environment and Development (Earth Summit) was held in 1992, to lay down a roadmap of future development. The term 'sustainable development' was coined in Brundtland Commission Report. Many countries adopted Kyoto Protocol, 1997 and adopted necessary mechanisms to cut their emissions. The mechanisms such as Clean Development Mechanism (CDM), Joint Implementation (JI) and Carbon Market were designed to provide economic incentive to the countries working towards lowering of their emissions effectively.

Being one of the largest countries in terms of territory and population, 7500 km long, densely populated and low-lying coastline, largest extent of GDP based on natural resource base, India became part of climate change. India witnessed rise in the mean temperature by about 0.2 per decade for the period 1971-2007, sea level rise of approximately one cm per decade has been recorded along the Indian coast resulting from global warming. The recent floods and earthquakes along with other natural disasters such as tsunamis are the evidence. As agricultural income occupies the major portion of India's GDP, the imbalanced monsoon rainfall already showing its effect on India. As per the World Bank Report, India's per capita emission is estimated to be 1.7 metric Tonnes in 2011, where as the United States of America's per capita emission is 17.0 metric Tonnes. India has also maintained that its per capita GHG emissions in 2031 will be well below global average in 2005.

Jharkhand state is one of the richest zones of minerals in the world and its immense potential for industrialization with its large deposits of minerals. The chief mineral resources of the state include iron ore, coal, mica, limestone, manganese, mica, and copper ore among others. Jharkhand's high dependency on heavy industries and mining makes it a big emitter of GHGs and the emission for year 2012 is 76.85 $MtCO_2eq$.

As signatory to Kyoto protocol, India made commitments to reduce the GHG emissions from economic activities. India launched National Action Plan on Climate Change (NAPCC) in 2008 and eight National Missions were established focusing on enhancing energy efficiency, solar mission, development of sustainable habitats, water mission, sustainable agriculture, green mission, mission on Himalayan ecosystem and development of strategic knowledge base etc., India adopted decentralized approach by pursuing the principle of 'common but differentiated responsibilities to set up institutional framework in each state owing to the unique features each state possess. 31 State Action Plans on Climate Change (SAPCC) have been prepared and estimated budget for its implementation was calculated around 11,33,692 crores. India decided to spend the budgeted amount strategically through five-year plans (till date the allocation of funds has been done through 10th, 11th and 12th five year plans).

The latest development dealing with climate change in India is the introduction of carbon taxes. India introduced a clean energy cess on coal in 2010 to feed the National Clean Energy Fund (NCEF) has been increased from 50 to 100 per tonnes in Budget 2014-15 leading to a total collection of 17,084.45 crores till 2014-15. India is scheduled to participate in the U.N. Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP21) to create a new international climate agreement in December 2015. India prepared its Intended Nationally Determined Contributions (INDCs) intended to travel towards low-carbon, climate silent future.

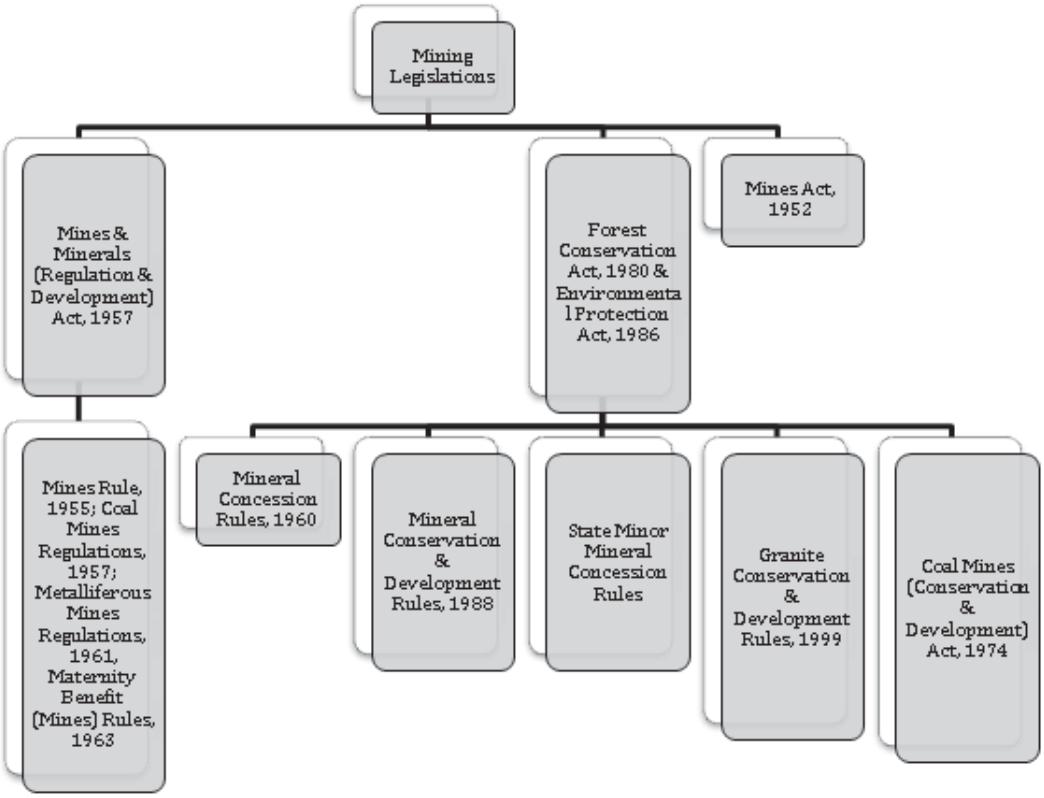
## 2. Development of Coal Mining Industry in India & Jharkhand

India has a long history of commercial coal mining covering nearly 220 years starting from 1774 by East India Company in the Raniganj Coalfield along with Western bank of river Damodar. Introduction of steam locomotives in 1853 gave boom to the coal mining and production rose to an annual average of 1 million tonne (mt) and India could produce 6.12 mts per year by 1900 and 18 mts per year by 1920. The production reached a level of 29 mts by 1942 and 30 mts by 1946. At the beginning of the 1st five-year plan, annual production went upto 33 mts. National Coal Development Corporation (NCDC) as well as Singareni Collieries Company Ltd (SCCL) was established in 1956 for the planned development of Coal Industry. The nationalization of coal mining industry was done in two phrases, the first with the coking coal mines in 1971-72 and then with the non-coking coal mines in 1973. The Coking Coal Mines (Emergency Provisions) Act, 1971, Coking Coal Mines (Nationalization) Act, 1972 and Coal Mines (Taking Over of Management) Act, 1973 was enacted for taking over in public interest of the management of coking coal mines and coke oven plants pending nationalization. Jharkhand is rich in minerals and holds 40% of country's mineral wealth and consists of 27.6% (approx.) of total estimated reserves of coal of India. Jharkhand exports its mineral products to various countries i.e., Saudi Arabia, Bangladesh, South Africa and Nepal and expected to contribute 14% (approx.) to the State's economy and 2.4 lakh job opportunities by 2025.

State of Jharkhand is endowed with both conventional and non-conventional sources of energy. Early industrialization in the State of Jharkhand started with Tata's investment into the iron industry during the first decade of 20th century. Availability of raw material and cheap labor attracted more numbers of heavy industries to the State. There are a large number of small and medium scale units in the State manufacturing a variety of products. Bokaro Steel plant, Steel Authority of India, Hindustan Zinc Limited, National Mineral Development Corporation, Indian Aluminium Company are some of the big giants in mining industry. Industrial development in the state of Jharkhand is governed by, Adityapur Industrial Area Development Authority (AIADA), Adityapur, Bokaro Industrial Area Development Authority (BIADA), Bokaro and Ranchi Industrial Area Development Authority (RIADA), Ranchi.

Close to half of the State GSDP (Gross State Domestic Product) comes from industry with mining, quarrying and registered manufacturing contributing nearly 78% of the State's industrial output, with mining and quarrying accounting for 14.3 and manufacturing contributing 27%. Industry contribution to Jharkhand's GSDP (Gross State Domestic Product) in 2009-10 stood at 35.28%. Since the beginning of Industrial Policy, 2001, almost 26 mega industries, 106 large and medium industries and 18,109 micro and small industries have been setup. Industry contribution to Jharkhand's GSDP (Gross State Domestic Product) in 2009-10 stood at 35.82%.

Mining Legislations in India




## 3. Climate Change: India & Jharkhand

Global warming is the observed continuous increase in the average temperature of the air near earth's surface and oceans due to the building of greenhouse gases in the atmosphere. Global mean temperature is has increased by 0.74oC from 1906 to 2005 and the global sea level rise is at the average rate of 1.8mm/yr during 1961-2003. The impact of global warming on India can be observed from the frequencies of large-scale droughts or floods and cyclonic storms in the summer monsoon season. The reduction of glaciers in Himalayas at rapid pace is also because of the global warming.

According to the Fourth Assessment Report of 2007 of the Working Group III of the Intergovernmental Panel on Climate Change (IPCC), GHG emissions have grown since pre-industrial times, with an increase of 70% between 1970-2004. The largest growth in global emission is from the energy sector. According to Human Development Report (HDR) 2007/008, 'Mahatma Gandhi once reflected on how many planets might be needed if India were to follow Britain's pattern of industrialization.' The emission of green house gases by the developing and under developing countries once reached to the same level as emitted by the developed countries, we may need nine planets to deal with the problem. According to the IPCC report the global warming will have a direct impact on human health leading to the eradication of life on earth.

Climate change became a subject of global importance due to the increasing global warming. IPCC defines climate change as 'a change in the state of the climate that can be identified

by changes in the mean and/or variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity'. According to the definition provided by UNFCCC, 'a change that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods.

In India, while the monsoon rainfall at all India level does not show any trend, surface air temperature for the period `901-2000 indicates a significant warming of 0.4oC for 100 years. While no significant long-term trend has been observed in the frequencies of large-scale droughts or floods in the summer monsoon season and the total frequency of cyclonic storms that form over Bay of Bengal has remained almost constant over the period 1887-1997, glaciers in Himalayas are receding at a rapid pace. At the same time, it may also be admitted that as per the Geological Survey of India, glaciers worldwide are passing through a phase of recession as a natural cyclic process. There is a projected increase in rainfall by 15-40 % by the end of the 21st century with high regional variability besides increase in mean annual temperature by 3oC to 6oC by the end of the 21st century. The effect of warming is projected to be more over land areas, with the maximum increase over northern India. The warming is also relatively greater in winter and post-monsoon seasons.

Jharkhand's high dependency on heavy industries and mining lead it to a big emitter of GHGs. The industrial emissions are considered as a proxy to environmental footprint of the sector. The total emissions for the state of Jharkhand as calculated in Emission Inventory in India stood at 51.8 MtCO2eq in 1990 and rose to 56.11 MtCO2eq in next five years. Jharkhand being the biggest reserve of mines in the country, especially the coal reserves of Jharkhand are key to India's energy security and economic development. Jharkhand Action Plan on Climate Change envisioned achieving economic growth and poverty alleviation objectives and enhancing livelihood opportunities while ensuring ecological sustainability. The strategic approach is extensive and accelerated identification and use of appropriate technologies for adaptation and mitigation and effective implementation through the support of civil society. Accordingly, Jharkhand established Jharkhand State Pollution Board, Jharkhand Energy Policy, 2012, Jharkhand Water Policy, 2011, Jharkhand State Disaster Management Authority, 2011; clean energy projects such as waste-to-energy. Under the guidance and support of NAPCC, Seraikela-Kharswan has been selected for the Green India Mission to improve the quality of over 5000 hectares of land through social and farm forestry, and through participation of gram sabhas.

## 4. Impact of Coal Mining on Climate Change: India & Jharkhand

Coal mining and power plants impacts the environment and ecology to an unacceptable degree unless carefully planned and controlled. The percentage of the environmental impacts vary with the method of mining, sale and concentration of mining activities, geological and geomorphological setting of the area, nature of deposits, land use pattern before the commencement of mining operations, natural resources etc., The major environmental problems at the mining stage are:

- Destruction of forest & biodiversity: Over 60% of coal resources in India are located in forest areas. Most coal blocks allocated in the last few years have been in or adjoining

forest areas. The increase in demand of coal is causing increase in mining activity leading to the loss of forest. MoC (2005) estimated that the demand for forestland for mining would increase from about 22,000 ha in 2005 to about 75,000 ha by 2025. Loss of forest not only cover the issues such as loss of biodiversity and natural eco system, but also the problem of climate change, as there are fewer sinks available for carbon-di-oxide and consequently reduced carbon sequestration. The dependence of tribal and other communities on forest for their livelihood will also get affected due to the damage to the forest area.

- Air pollution: The stage of mining activities like drilling, blasting, excavation, construction of haul roads, movement of heavy earth moving machinery etc., result in fugitive emissions of particulate matter and dust. These emissions cause significant human and social impacts by causing air pollution and ecological disturbances. According to MOEF 2009, most coal mining districts including Dhanbad, Korba, Angul, Talcher, Jharsuguda and Singrauli are critically polluted. The release of GHG emissions contributes to the problem of climate change. An estimated 650 Gg of methane was released from coal mining in 1994. The problem of air pollution and GHG emissions is compounded by the presence of mine fires, which can be commonly seen in Raniganj and other coal mining regions.
- Land degradation: Degradation of land is perhaps the most serious impact of coal mining operations. Open cast mining causes a much greater degradation to land than underground mining. With prominent emphasis on large scale mechanized opencast mining in India, large tracts of land are left degraded as a result of activities like excavation, stacking of waste dumps, discharge from workshops, construction of tailing ponds etc., Underground mining operations also lead to problem of subsidence of land and result in changes in topography and drainage pattern. In Jharia, total of 75.77 square km area of land has been affected due to fire, subsistence, excavation and dumps. Illegal operations and the practice of rat-hole mining have also compounded the problem of land subsidence and devastation, particularly in Raniganj, Jharkhand and Meghalaya. Especially the waste generation during the mining will have a problem of storage. For instance, for every 1 million tonnes of coal production, 15 million tonnes of waste is generated and the unavailability of land is going to pose a serious question about the storage of the waste. Lack of proper land reclamation and mine closure of abandoned mines further compounds the problem of degradation.
- Stress on water resources: Coal mining activities adversely affect the environment especially water. It degrades the quality of water by not only lowering the pH of the surrounding water resources but also by increasing the level of suspended particulate solid, total dissolved solids and some heavy metals. Further, the overburden generated also contaminates the surrounding water bodies and increases especially Fe, Cu, Mn and Ni, whichreduce the utility of water for domestic purposes. The Damodar River, which flows through 6 coalfields, has been classified as heavily polluted.

## 5. Coal Miining Vis-À-Vis Climate Change: Legislative Frame Work in India

The current policy framework for environmental management in India flows from the Indian Constitution. The Supreme Court of India in plethora of cases held that Art 21 (Right to

life and liberty) includes right to clean environment. Art 48A of the Constitution of India provides that 'the State shall endeavor to protect and improve the environment and safeguard the forests and wild life of the country'. Art 51 A (g) makes it obligatory for every citizen of India, 'to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures'.

### a. Mines and Minerals (Regulation and Development) Act, 1957

The Mines and Minerals (Regulation and Development) Act, 1957 deals with reconnaissance, prospecting and development of mines. In 1986, the Act was amended to introduce provisions in order to provide for greater sensitivity to environmental concerns in mining operations. The amendment enables the government to take punitive measures against the violators of environmental integrity. According to sec 18 of the Act which empowers the central government to take necessary steps for the conservation and systematic development of minerals and for the protection of environment by preventing and controlling any pollution which may be caused by prospecting or mining operations, The Mineral Conservation and Development Rules (MCDR), 1988 has been framed. It covers the areas such as scheme of reconnaissance operations, scheme of prospecting indicating the methods proposed for prospecting operations and outlining the steps for protection of environment, mining plan and five-year scheme of mining providing for practices and procedures to ensure safe and scientific mining, conservation of minerals and protection of environment, mine closure plans etc., The Indian Bureau of Mines have been given the responsibility of the proper enforcement of the rules.

### b. Environment Protection Act, 1986

To implement the recommendations of the UN Conference on 'Human Environment' 1972 held in Stockholm, India enacted Environmental Protection Act, 1986. The Act empowers the Central Government to take all measures as deemed necessary for protecting environment, and preventing, controlling and abating pollution. The Act lays down standards for discharge of effluents; national ambient air quality standards and the requirements of Environmental Impact Assessment (EIA) based environmental clearance. In 1994, Central Government of India issued a notification making EIA mandatory for all mining projects with mining lease greater than 5 hectares having two stages of clearance, first stage – site clearance and second stage – environmental clearance. Public hearing has been made mandatory at both the stages of clearance. The mining plan, which is required to be submitted by the company as a necessary requirement for obtaining mining leases under Mineral Concession Rule, 1960 also incorporates environmental management including details of water resources, an assessment of impact on forest and environment including air and water pollution, details on pollution control devices etc., Since 2003, restoration schemes and land reclamation have become important components of mine planning. Mining industries are currently bound to follow effective land reclamation practices including the practice of preservation of top soil for the subsequent use in reclamation. Mining activity in the area above 50 hectares require prior environmental clearance from the Central Government on the recommendations of an Expert Appraisal Committee (EAC) and

smaller mining projects covering an area of 5- 50 hectares require prior environmental clearance from the EIA authority.

### c. Forest Conservation Act, 1980

With respect to forest conservation, Forest Conservation Act (FCA) has been enacted in 1980, which restricts the powers of the state governments in respect of de-reservation of forests and use of forestland for non-forest purposes without prior approval of the Central Government. According to FCA, the mining companies are bound to pay for purchase of an area of non-forest land in case of any damage to any area of forestland. The purchased land will be transferred to state forest department and is declared as protected forest. The mining industries are also needed to contribute funds for compensatory afforestation (CA) on these lands, along with payments equivalent to the estimated net present value (NPV) of diverted forestland. Both CA and NPV will be deposited to Compensatory Afforestation Fund Management and Planning Authority (CAMPA) under the state forest department, which is then realized for implementation under forest management plan. The Advisory Committee headed by the Inspector General of Forests in the Ministry of Environment and Forest is responsible for implementation of FCA.

### d. Water (Prevention and Control of Pollution) Act, 1974

Water (Prevention and Control of Pollution) Act, 1974 deals with the matters relating to prevention and control of water pollution and for the maintenance or restoration of the wholesomeness of water. Central Pollution Control Board (CPCB) and State Pollution Control Board (SPCB) are constituted to oversee the implementation of the Act. These institutions are empowered to establish and enforce effluent standards in mines and processing plants. In case of non-compliance, the defaulting units can be asked to shut down.

### e. Water (Prevention and Control of Pollution) Cess Act, 1977

Water (Prevention and Control of Pollution) Cess Act, 1977 provides for the levy and collection of a cess on water consumed both by persons carrying on certain industries and by local authorities to augment resources for the Pollution Control Boards. Mining is one of the industries included within the ambit of the Act and accordingly a cess is charged per kiloliter water used for activities such as industrial cooling, spraying in mining pits etc., Industries and operations which have installed mechanisms to keep water pollution under control are given a rebate in the cess charged.

### f. Air (Prevention and Control of Pollution) Act, 1981

Air (Prevention and Control of Pollution) Act, 1981 provides for prevention, control and abetment of air pollution. It lays down air pollution standards and is administered by CPCB and SPCB. In case of any violation of the law, the authorities are having power to close down the unit or industry as a whole.

### g. Public Liability Insurance Act (PLIA), 1991

According to Public Liability Insurance Act, 1991, every owner is required to take out insurance policies, in order to secure himself against any liability to give relief to the

persons affected by accidents occurring while handling any hazardous substance. The Central and State Governments, corporations owned or constituted by them and local authorities are exempted from this requirement.

### h. Draft Mines and Minerals (Development and Regulations) (MMDR) Bill, 2011

The MMDR Bill, 2011 once approved by Parliament, will replace MMDR Act, 1957 by addressing the problem of illegal mining. The proposed legislation seeks to create a National Mining Regulatory Authority and State Mining Regulatory Authority with powers to investigate and prosecute large scale, organized and inter-state illegal mining. The proposed legislation also contains the provisions for the establishment of Statutory Coordination-cum-Empowered Committees at Central and State levels to prevent illegal mining and Special Courts to expedite prosecution of illegal mining. The Bill, 2011 also aims to bring about a regulatory environment that will be conducive to private investment including foreign direct investment (FDI) in the Indian Mineral sector. It also contains the provisions for the establishment of District Mineral Fund in case of coal and lignite and all the cess and taxes, which are local in nature, will be deposited to the fund. The Draft Bill also provides for the formulation of National and State level Sustainable Development Frameworks for the mineral sector aiming at scientific and sustainable mining, minimizing impact of mining operations on environment, biodiversity, air, water, ambient noise, land and quality of life of local communities, creating opportunities for socio-economic development of sustainable livelihood, conservation of mineral resources, minimization of waste generation, promoting restoration and reclamation of mined out land, transparency and public disclosure of mining operations etc., The Bill also provides for compulsory submission of CSR plan by a mining lessee on socio-economic development in mining area. Mandatory consultation with local government institutions before notifying an area for mining-related activities and for post-closure land use is also added as part of sustainable mining. The bill also contains the provisions concerning benefit sharing with local population through the District Mineral Fund.

## 6. Coal Mining Vis-À-Vis Climate Change : Legislative & Policy Framework in Jharkhand

### a. Jharkhand State Pollution Control Board

Jharkhand State Pollution Control Board (JSPCB) has launched Vision 2012-17 and Strategic Planning Report, whichalign its role with sustainable use of resources. JSPCB encourages industries to adopt green technologies and also aims at reduction of water consumption by industries, rainwater harvesting, reduced use of coal for industrial purposes etc.,

### b. Jharkhand Energy Policy, 2012

In order to reduce GHG emissions, Jharkhand adopted Energy Policy, 2012 which specifies electricity generation through non-conventional energy sources. It gives a waiver of 50% of electricity duty for a period of 10 years for entities generating electricity from renewable sources and further concessional access to Transmission and Distribution network. To promote renewable energy in the State, Jharkhand Renewable Energy Development Agency (JREDA) was set up in 2001, which is a nodal agency for

implementation of programmes of Ministry of New and Renewable Energy (MNRE) and Indian Renewable Energy Development Agency (IREDA).

### c. Jharkhand State Water Policy, 2011

Jharkhand has launched its State Water Policy in 2011. It lays down approaches for 'better and more equitable and productive water resources management in an environmentally sustainable manner for promoting growth reduction in poverty and minimizing regional imbalance'. It also aims to create incentives for water users' organizations and enables creation of new institutional mechanisms to decentralize water resource planning. The approach of water policy also includes promotion of technologies to improve efficiency in water usage and formulating appropriate legislations to support other approaches.

### d. Jharkhand State Pollution Control Board

Jharkhand State Pollution Control Board (JSPCB) has launched Vision 2012-2017 and Strategic Planning report which aligns its role with sustainable use of resources JSPCB, being a regulatory body, encourages industries to switch to newer and advanced technology that are (JSPCB, 2000)environment friendly. The regulatory body has adopted standards that motivate sustainable use of resources with objectives of reduction in water consumption, rain water harvesting, reduced use of wood/coal for industrial purpose by switching over to efficient and cleaner fuel options.

### e. State's forestry sector initiatives

Forest in Jharkhand has long been under tremendous pressure due to mining and meeting the demands for fuel. Initiatives have been taken by the State government to increase its forest cover in response to climate change under the Green India Mission to enhance and improve the status of forest in the state. Forest Resource Surveys are also being conducted at district level for better resource management and planning which also includes utilize the existing scope of social forestry and afforestation, for the wasteland development on activities.

Mining is an important economic activity in Jharkhand and mining activities have high ecological and social impact. To minimize the impacts of mining, the State Government also proposes to bring some legislation in mining in line with Andhra Pradesh model so that resources generated from mining sectors can be used to replenish the development funds available with the local bodies. It also has plans to create a separate directorate of environment.

### f. JAPCC Vision

"The underlying principle of Jharkhand's State Action Plan on Climate Change (SAPCC) is achieving economic growth and poverty alleviation objectives & enhancing livelihood opportunities while ensuring ecological sustainability.Thestrategicapproachisextensiveandaccelerateddidentification andusoofappropriatetechnologiesforadaptation&mitigationandeffective implementation through the support of civil society."

Keeping in view the SAPCC principles and state specific requirements, the JAPCC focused on experience of sector experts, utilized primary and secondary information available and aligning the plan with state adaptive capabilities to strengthen the adaptation and also support the mitigation.

The objective of the plan is to:

- Identify the climate change risks to various sectors in the state.
- Develop a comprehensive state level vulnerability mapping and risks associated to climate change
- Determine the sectoral resilience to manage the climate linked risks and prescribe measures that help fill the policy and planning gaps
- Identify, assess and recommend specific adaptation and mitigation measures that help define the policy and action framework in the climate change regime. The recommendations have to be tested against the underlying principles of as defined by JAPCC of finding a balance between development and conservation.
- Considering the fact that coal and mineral based industries are going to be the economic drivers of the state for considerable long period, hence mitigation strategies are given emphasis while developing JAPCC
- Identification of appropriate and competent implementing agencies for better coordination and integration to enhance the efficiency of prescribed approaches and actions.
- Assess and recommend specific measures for climate change mitigation and adaptation co-benefits which represent the stakeholders views and concerns and conform with the regional perspective
- The culmination of the efforts will be in finalization of the Jharkhand Climate Change Mitigation Plan that will be acceptable to all the departments and will be able to lead Jharkhand to a green and equity centric development path.

## 7. Coal Mining Vis-À-Vis Climate Change : Judicial Response

### a. Rural Litigation and Entitlement Kendra v. State of U.P. & Ors – 1985 SCR (3) 169

This case is first of its kind, bringing forth the environmental issues concerning the mining. The mining activities of lime stone quarries in Dehradun mining area according to the petitioners are violating Art.21, right to clean environment. The petitions argued that the environmental pollution created via mining activity is causing damage to the environment and life of the people residing in surroundings. During the pendency of the petition, the Apex court appointed a Committee known as Bhargav Committee for the purpose of inspecting the lime stone quarries, which are in dispute. The working group appointed by the Government of India to study the Mining of Lime Stone Quarries in Dehradun Mussoorie area in 1983 to review the lime stone quarry leases for continuance or discontinuance of mining operations. Relying upon the Bhargav Committee report, the Supreme Court of India passed directions for the closure of the identified mining activities.

b. Orissa Mining Corporation Ltd v. Ministry of Environment & Forest & others [2013 ] 6 SCC 476

M/s. Sterlite (Parent company of Vedanta) filed an application before MoEF for environment clearance for the purpose of starting an Alumina Refinery Project stating that no forest land was involved within the area of 10 kms surroundings. Vendanta also filed an application before the Supreme Court of India seeking clearance for the proposal for use of 723.343 ha of land for setting up the same Alumina Refinery as mentioned above. The issue raised in this case is, whether Vedanta should be allowed to set up its refinery project, which involved the proposal for diversion of 58.943 ha. of forest land. Central Empowering Committee objected to the grant of clearance sought by Vedanta on the ground that the Refinery would be totally dependent on mining of bauxite from Niyamgiri Hills, Lanjigarh, which was the only vital wildlife habitat, part of which constituted elephant corridor and also on the ground that the said project would obstruct the proposed wildlife sanctuary and the residence of tribes like Dongaria Kondha. The Hon'ble Supreme Court of India also directed MoEF to submit a report after consultation with the experts/organizations. By considering the expert's reports and the facts presented by State of Orissa about the poor living conditions of the local tribes in the said disputed area, Supreme Court of India suggested 'Rehabilitation package' and directed MoEF for its implementation in two phases.

Finally, the Supreme Court gave directions to the State of Orissa to place the issues before the Gram Sabha with notice to the Ministry of Tribal Affairs, Government of India and the Gram Sabha would take a decision on them within three months and communicate the same to the MoEF, through the State Government. The Hon'ble court also directed that the MoEF after conclusion of proceedings before Gram Sabha shall take the final decision on the grant of Stage II clearance within two months thereafter. The Hon'ble court advised Vedanta to take steps to correct and rectify the alleged violations required for environmental clearance granted in its favour by the MoEF.

The Hon'ble court also held that the proceedings of the Gram Sabha shall be attended as an observer by a judicial officer of the rank of the District Judge, nominated by the Chief Justice of the High Court of Orissa who shall sign the minutes of the proceedings, certifying that the proceedings of the Gram Sabha took place independently and completely uninfluenced either by the Project proponents or the Central Government or the State Government.

## 8. CONCLUSION

Despite of the fact that India's contribution to GHGs is very small, the Government of India has taken many measures to improve the situation. India adopted the National Environment Policy, 2006 and has also taken many other measures and policy initiatives.

India established National Clean Development Mechanism Authority to deal with the climate change and sustainable development. According to India, GHG emissions is the lowest in per capita i.e., around 4% of the world's emission and believed upon the 'equal per capita principle'. India is also a partner to the new Asia Pacific Partnership on

Clean Development and Climate, which focuses on development, diffusion and transfer of clean and more efficient technologies. India is struggling hard to develop clean energy technologies to tackle climate change.

The problems relating to the pollution control in the coal mining in India is not due to absence of regulations, but due to the poor enforcement. With regard to mine closure and restoration, for instance, the companies have been found to not adhering to practices as mandated by the policies, and there have been no stringent actions taken in this regard. No mine closure plans are prepared and implemented in at all. The policy for preserving and re-using topsoil for reclamation was not followed in practice. The restoration and reclamation methods did not confirm to national standards. The process of EIA comprising mandatory screening, scoping and public consultations is also fraught with certain inherent challenges. The Draft Mines and Minerals (Development and Regulations) (MMDR) Bill, 2011 once approved will provide a major solution to various challenged posed by the mining sector in India.

The following measures may improve the sustainable mining in State of Jharkhand:

- Adoption of standard mining operation procedures conducive to environment including improved facilities management and climate change concerns in the annual plan of individual companies
- Formulation of a localized climate model and conducting a vulnerability mapping of current and future mining operations towards natural hazards.
- Regular auditing of water consumption and energy requirements for all operations associated with mining
- Developing access to new water resources and initiating water conservation strategies, reducing water evaporation in the mining townships and facilities and improved water efficiency
- Public-private partnership to develop legislation and policies promoting adaptation
- Compulsory undertaking of social & environmental measures consisting of land rationing & rehabilitation measures, health, education and sanitation facilities for local people
- Regulation of illegal mining by providing employment and rehabilitation facilities for the persons dependent on it
- Regular inspection of mines by IBM and mines department
- Fair and transparent procedures in renewal process of mines
- The mining industries should adopt the surrounding villages as part of Corporate Social Responsibility
- Compulsory statutory inspection of mines by the Director General of Mines
- Harmony between Department of Mines and Jharkhand State Pollution Control Board
- Effective action against encroachment

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# Legal and Institutional Framework for Rejuvenation of River Ganga

Vinod Tare[1]

## 1. Roadmap for Reviving National River Ganga

River Ganga is India's principal river. Widely revered as "Ma Ganga", her basin houses 43% of India's population. Over many millennia she has untiringly provided material, cultural and spiritual resources to sustain Indian civilization. It is a pity, therefore, that over the last century River Ganga has continually degraded into a pitiable state due to short-sighted anthropogenic activities. Her present state is typified by highly polluted and depleted flows and vanishing river fauna (like fishes, dolphins and turtles) that has affected the health, prosperity and happiness of crores of people living in her basin. The much-trumpeted Ganga Action Plan started in the 1980s abjectly failed to meet its prime goal of containing Ganga pollution. And, though declared as our National River in 2008, there has been no palpable improvement in her condition in recent years. It is against this background that the Ganga River Basin Management Plan (GRBMP–2015) prepared by a Consortium of 7 IITs becomes significant as a targeted action plan to revive Ganga.

GRBMP envisioned River Ganga's "wholesomeness" in terms of four key features: Aviral Dhara ("Continuous Flow"), Nirmal Dhara ("Unpolluted Flow"), Ecological Entity, and Geologic Entity. The eventual Plan to restore Ganga's wholesomeness focused on comprehensive natural resource management encompassing the entire basin and identified

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the need for wide-ranging interventions that pertain to multiple cross-sectoral agencies. Moreover, restoring her wholesomeness will be a long-term process involving stakeholder participation through much better knowledge-building and dissemination than has been possible under bureaucratic administrations. Thus a fundamentally new mechanism for sustained revival of the river is needed. GRBMP proposed the establishment of an independent knowledge-based body, tentatively termed the National River Ganga Basin Management Commission (NRGBMC), that is adequately empowered to take restorative action as well as a regulatory role.

## 2. Need for New Legislation

Investigation of the legislative framework applicable to the Ganga River Basin for managing and harvesting of river resources, protection and conservation of river water quality, utilising the water courses for gainful applications, etc. established their focus on unsustainable exploitation of resources over many decades without adequate consideration of their protection and conservation. Given the long stretch of River Ganga transcending several provincial jurisdictions, existence of a large number of legislations relating to different subject matters, and the corresponding authorities, the investigations underlined the need for a comprehensive legislation specific to the National River Ganga and her basin. Since the disjointed myriad legislations have not – and in fact can not – check the river's degradation holistically, therefore a specific and comprehensive law to address issues of regulation, conservation and development of the National River Ganga Basin is the pressing need to restore her health.

## 3. The NRGBM Act and Parliament's Competence to Enact It

Given the above backdrop, a National River Ganga Basin Management (NRGBM) Bill, 2015 to provide regulation, conservation and development of the National River Ganga Basin, and for establishment of the necessary institutional framework for effective and expeditious disposal of matters affecting the basin has been proposed for legislation. In case of environmental disputes on River Ganga, the Bill provides for necessary remedial action for the river herself and not for individuals. Under the legislation, creation of NRGBMC and a commensurate National River Ganga Basin Management Fund has been proposed to meet the long-term tasks and partial costs towards restoration of the river.

The Constitution of India provides for realization of fundamental rights and fulfillment of welfare goals of Indian citizens. Now, while water is a state subject, it is noteworthy that the Constitution also empowers the Central Government to regulate inter-state rivers in public interest. Parliament can thus make a law taking over the regulation, development and management of an inter-state river for the common benefit of the riparian states and in overall national interest. The prevailing condition of the National River Ganga warrants such immediate action on the part of the law-makers of the country.

To enact the proposed law, it is important to identify subject matters in List-II which may be seen as being in conflict with entry 56 of List-I. While Clause 2 of Article 246 grants exclusivity to states to enact laws on subject matters specified in List-II, Article 246 (1) confers exclusive jurisdiction on the central government to enact laws on all subject matters specified in the Union list i.e., List-I. Therefore, the regulation and development of inter-

state rivers may not be in conflict with the legislative power of the states if the law refrains from impinging on matters within the domain of state legislatures.

## 4. Key Features of NRGBMC

Since the rejuvenation measures required for River Ganga cover a wide variety of activities involving continuous monitoring and feedback from diverse sources, institutions and individuals, the NRGBM Bill proposes the setting up of a nodal agency, NRGBMC, with adequate resources and authority to ensure the health of NRGB. NRGBMC is intended to serve as a custodian of National River Ganga on the premise that health of River Ganga is both dependent on and a key indicator of the health of the basin as a whole. NRGBMC is envisaged to perform a wide range of functions covering environmental monitoring and impact assessment, investigations, research and development, policy and governance, and advocacy. In addition it is also proposed to take the role of a regulatory agency with powers to penalize violators. Thus it is proposed to comprise legal luminaries, technical experts, government functionaries and civil society members.

In the proposed Act the Commission has been vested with exclusive powers to determine legal rights of various stakeholders relating to the subject matter of the law. It is therefore imperative that a separate appellate body, i.e., a tribunal be established to entertain appeals against the orders of the Commission. The NRGBM Tribunal proposed in the Act has been empowered to entertain appeals from aggrieved parties, to take suo moto action on matters relating to River Ganga in the interests of justice and the power to punish for contempt in case of non-compliance with its orders. The NRGBM Tribunal does not, in any way, overlap or dispute other appellate bodies (such as the National Green Tribunal) since the jurisdiction of the NRGBM Tribunal covers only the interest of Ganga River Basin and not those of any individual.

## 5. Epilogue

River Ganga, having been declared as our National River deserves prompt and effective measures to arrest and reverse her degradation. The proposed legislation is one such bold attempt towards a comprehensive and self-contained Act to provide for her regulation, conservation and development. It is unique in that it lays emphasis on knowledge-building, research and development, continuous impact assessment, and advocacy and sensitization as well as punitive action in case of violations. Thus it fulfills a long-standing void in the current legislative framework for all-round protection of the river and her basin. Furthermore, its successful implementation may help usher in similar interventions for other major rivers of India which are also severely affected.


High Court of Jharkhand

# Contributions of the Hon'ble High Court of Jharkhand, Ranchi in the matters of Environment Protection

The gifts bestowed by nature upon the State of Jharkhand could very well be cherished in the words of former President and eminent scientist from his renowned book naming Ignited Minds in its chapter titled "Building a new State" that :

> "… when I was travelling from Ranchi to here, I admired God's great gift to the state. Under the ground and above it, you have minerals in abundance. The rich soil of the Jharkhand plains can give bountiful crops. When I was flying over the lovely forests and the valley and the hills, the thought of the wealth they hold in terms of forest and herbal products was very reassuring…"
>
> ... Dr. A.P.J. Abdul Kalam

W.P. (PIL) No. 2470/2015m W.P. (PIL) No. 3503/2014

You can't change the past
but you can certainly change the
future, It's Upon you what you Want !

The Hon'ble High Court of Jharkhand by order dated 09/06/2015 on its own motion took cognizance of the fact that numerous trees were being cut down on both sides of the road from Doranda to Birsa Munda Airport, Ranchi for construction and widening of the same.

The Court directed the respondents to inform it regarding total number of trees which have been cut so far and number of trees which will be cut for the said purpose. The court inquired about any action plan for compensatory afforestation and issued direction not to cut any tree till further order.


The Apex court, while considering a similar question in the case of T.N.Godavaraman Thirumulkpad v. Union of India and others reported in (2013) 11 SCC 466 directed the National Highways Authority of India to plant twice number of trees for every tree cut by them and also directed to maintain those trees for five years or deposit amount for maintenance of those trees. The Hon'ble Court by order dated 14/07/14 (W.P. (PIL) No. 3503/2014) took suo moto cognizance on the basis of a news item published in the daily Hindi news paper "Prabhat Khabar", wherein it was reported that thousand of trees are being cut fearlessly for road construction and after cutting, saplings are not being planted. This action of respondents is in violation of and in disagreement with the decision of Hon'ble Apex Court given in the above case.

The Hon'ble Court emphasized upon the concept of GO GREEN and held that the same should be encouraged and implemented with great zeal.

The Court further observed that the State Government should take necessary steps to see that tree plantation programme is undertaken in an extensive manner and for that purpose; plantation should be made in the following manner:


i) Road-side plantation on all the national highways located/ situated in the state;

ii) Rroad-side plantation on all the state highways;

iii) Road-side plantation on city/town roads;

iv) Road-side plantation on village roads;

v) Tree plantation should be made in all government office premises;

vi) Tree plantation should be made in all school premises of the state;

vii) Tree plantation should be made in all public/ charitable institutions with logos:

viii) Tree plantation should be made in the campus of Non-Governmental Organizations;

ix) Tree plantation should be made in all the court complexes of the state;

x) Green belts are required to be developed in each and every town/city;

xi) Parks and gardens are also required to be developed in all the cities /towns of the state with the logos:

xii) Extensive tree plantation should be done at the site of new High Court Complex, site of new Vidhansabha and at the proposed site of new Sachivalaya Complex;

xiii) More number of trees should be planted in and around the complex of Government Hospitals, Primary Health Centers (PHCs) etc.;

xiv) Tree plantation should be made in the Recreation Centers in the City/town;


xv) Tree plantation should be made extensively in Army Cantonment area;

xvi) Tree plantation should also be made in and around village/gram panchayats as well as community centers (samudayik bhawan), Anganwadi, Pragya Kendra, etc.;

xvii) Tree plantation should be made in all government /semi government institutions at block level also;

xviii) Likewise tree plantation should also be made at the district headquarters;

xix) Extensive plantation should be made in mining areas;

xx) For the purpose of developing and maintaining saplings, the Nurseries be developed in all the districts of State of Jharkhand; and


xxi) Bio-diversity Park/ Botanical Park, as it has been developed at the ring road Ranchi, be also developed in the other parts of the State.

xxii) As a part of Awareness Campaign for saving and protecting the trees, the concerned department may also place some Hoardings containing SLOGANS with Pictures, some of which are as depicted in the order itself, at conspicuous places in the city of Ranchi and other towns of the State.

The Hon'ble Court directed State authorities to take necessary steps to avoid water logging and take proper measures for constructing footpaths in consonance with the specification of Indian road congress, wherever it is feasible.

The Hon'ble High Court by order dated 04/09/2015 also issued directions to take all required steps for cleaning, developing and maintaining all water bodies for the purpose of upcoming "Chatt Puja". The Urban Development Department and Water resource Department (Government of Jharkhand) shall co-operate with each other so that no time is wasted in this regard.

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## W.P. (PIL) No.- 3585 of 2002

This writ petition was filed in public interest by the petitioner, a resident of the town of Ranchi, praying for the issue of a writ of mandamus directing the Jharkhand State Housing Board, Ranchi, the Regional Development Authority, the Ranchi Municipal Corporation and the Jharkhand State Pollution Control Board to stop the discharge of sewage and other hazardous effluents into Harmu river. The petitioner intended to seek a direction, especially to the Housing Board to provide an effective sewage system, especially in Harmu Housing Colony in Ranchi and for installing a sewage treatment plant for purifying effluents before they get into Harmu river and its tributaries. There was also a prayer for issuance of a direction to the Housing Board and the Development Authority not to violate Section 78 of the Jharkhand State Housing Board Act, 2000 while exercising their respective statutory powers and while sanctioning or approving building plans or permitting other constructions in respect of Housing Schemes under Section 28 of the Housing Board Act. A further prayer had been made for issuance of a direction to the Housing Board, the Development Authority and the Municipal Corporation to provide all the amenities contemplated by Section 28(4) of the Housing Board Act and Regulation 44 of the Housing Board Regulations. The State Pollution Control Board had been impleaded with all the allegation that the same was not doing anything to enforce the Environmental Protection Act, the Air Prevention & Control of Pollution Act, 1981, the Water (Prevention & Control of Pollution) Act, 1974 and other laws relating to protection of environment.

The Hon'ble Court found that there was a serious contamination of the water flowing into Harmu river and its tributaries and it was the duty of the authorities concerned to prevent pollution in terms of the Water (Prevention & Control of Pollution) Act, 1974 (herein after the Water Act) and the other protection laws.

Section 24 of the Water Act prohibits use of a stream or well for disposal of polluting matter.

Section 25 provides restrictions on establishing any industry, operation or process, or any treatment and disposal system, or any extension or addition thereto which is likely to discharge sewage or trade effluent into a stream without the previous consent of the Jharkhand State Pollution Control Board.

Section 26 of the Act covers cases where effluents were being discharged even prior to the coming into force of the Act, and makes the position the same as the one obtaining after the coming into force of the Act.


Section 32 of the Act confers power on the State Board to take emergency measures in case of a stream or well.

Section 33 gives power to the Board to make an application to courts for restraining apprehended pollution of water in streams.

Under Section 33-A the Board has power to give directions notwithstanding anything contained in any other law.

Chapter VII of the Act provides for penalties and the procedure to be followed.

Section 44 provides penalty for contravention of Sections 25 and 26 of the said Act. Section 45 contemplates enhanced penalty after a previous conviction.

Section 45-A provides for penalty for contravention of certain provisions of the Act. Section 46 provides for publication of names of the offenders.

Section 49 and Section 50 of the Act provides for cognizance of offences, giving status of public servants to the members, officers and servants of the Board. Thus, there exists express provisions under the Act for prevention of pollution of water in a running stream of river like Harmu or Argora Nalla. It was found that the statutory authorities and the authorities who are expected to be concerned with public health have shown an attitude of indifference towards the performance of their duties. Respondent No. 4, the State Pollution Control Board, had demonstrated its total ineffectiveness in the context of the various environmental protection enactments and it had failed to discharge its duties in terms of the various enactments. The residents of the colonies and the public at large had also not woken up to their responsibilities to keep the streams and the town pollution free.

It had been admitted, that the river in question is polluted and the writ petition was disposed by directing the respondents and also the State of Jharkhand to take immediate steps under the relevant enactments to prevent effluents being let into Harmu river and its tributaries and directing the authorities to enforce the laws including the penal provisions against one and all, including the Housing Board, Regional Development Authorities and the Municipal Corporation. The Court in keeping with the interests of public health, issued a direction of an interim nature, so that the Court can further monitor the steps that are being taken to prevent pollution in Harmu river. The Court issued directions to the respondents for taking steps to prevent contamination or pollution of Harmu river and its tributaries and directed the Housing Board and the Regional Development Authorities not to permit any construction unless adequate arrangements are being made for protection of the environment and prevention of pollution of water and air. After all, right to clean living is the fundamental right of a citizen under Article 21 of the Constitution of India.

The Court issued the following directions by way of an interim measure in this case :--

(i) The State of Jharkhand represented by the Chief Secretary to the Government was directed to ensure that the Environmental Protection laws enacted in public interest are strictly enforced in the State with a view to protect the environment and public health.

(ii) The Jharkhand State Housing Board must ensure that no Housing Colony is planned or created by it without first ensuring that adequate provisions are being made for prevention of pollution in terms of the Environmental Protection Act; the Air Act and the Water Act and that in existing colonies, adequate and immediate steps are taken to prevent air, water and noise pollution.


(iii) The Ranchi Regional Development Authority and other Regional Development Authorities in the State were directed not to permit any construction or setting up of any industry, without first ensuring that adequate provisions are being made for protection of the environment and to

avert and avoid air and water pollution. The Regional Development Authorities will also ensure that the provisions of the Regional Development Authority Act and the Rules framed thereunder are effectively enforced and no construction in violation of the said Act or the Rules is permitted.


(iv) The Ranchi Municipal Corporation and other Municipal Corporations and Municipalities to take steps to ensure that within their respective areas of operation, all steps contemplated by the Environmental Protection Act, the Air Act and the Water Act are taken and that the duty of the Corporation under the Municipalities Act or Municipal Corporations Act are duly and properly performed so as to maintain health and prevent pollution.

(v) The Jharkhand State Pollution Control Board to take rigorous steps to enforce the provisions of the Environmental Protection Act, the Air Act and the Water Act and the Noise Pollution Control Rules in entire State and also to prosecute those persons, authority or statutory bodies who are found to be in violation of the various pollution control enactments or Rules. The Pollution Control Board was also directed to ensure that no industry is permitted to be established or set up within the State without ensuring that adequate pollution control measures as contemplated by the various Acts are adopted by the concerned industry.

The Court realised that it was necessary to monitor the working of the State authorities and the respondents in this writ petition in the light of the directions issued above, it directed the State and the respondents in this writ petition to file affidavits before this Court within five months from the day, setting out the steps they had already taken and the steps that they would take subsequent to this judgment for enforcing the various pollution control laws in the State of Jharkhand and within their areas of operation.

W.P. (PIL) No.- 6348 of 2003

The writ petitioners claimed to have filed this writ petition as a class action litigation by Rajmahal Pahar Bachao Andolan, Amla Pahad Block, Pakur District, Jharkhand and some Human Rights Organisations in the State of Jharkhand for enforcement and protection of the fundamental rights of the villagers of the said area as guaranteed under Articles 14 and 21 of the Constitution of India.

It was the petitioner's case that there had been a concerted attempt by the authorities to use the rich resources of the region for benefiting the State at the cost of the lives and the livelihood of the local population.

Further case of the petitioners was that in the year 1988, a system of exploration for coal was commenced in and around the villages of Pachwara region by the Geological Survey of India, which is reported to have 562 MT coal reserves in an area measuring approximately 1300 hectares and comprising nine revenue villages whose inhabitants were tribals. They further averred that land acquisition notices have been issued in respect of a total area of

1704.69 acres, which has been notified for acquisition for the coal development project of Panem Coal Mines Limited.

The writ petitioners questioned the proposal of the Central Government and the State Government to grant mining lease for excavation of coal to Panem Coal Mines Limited on various grounds. It was urged that the proposed acquisition was in contravention of the provisions of the Santhal Parganas Tenancy (Supplementary Provisions) Act, 1949 wherein in Section 20, it has been provided that no transfer by a raiyat of his right in his holding or any portion thereof, by sale, gift, mortgage, will, lease, or any other contract or agreement, express or implied, shall be valid, unless the right to transfer has been recorded in the record of rights, and then only to the extent to which such right is so recorded. Sub-section (2) of Section 20, provides specifically that notwithstanding anything to the contrary contained in the record of rights, no right of an aboriginal raiyat in his holding or any portion thereof which is transferable shall be transferred in any manner to anyone, but to a bona fide cultivating aboriginal raiyat of a pargana or Taluk or Tappa in which the holding is situated.

The Hon'ble Court held that the State Government in exercise of its right of eminent domain is entitled to acquire land falling within the ambit of the Santhal Parganas Tenancy (Supplementary Provisions) Act, 1949, and that such acquisition and allotment for captive mining purposes would not be hit by the provisions of Section 20 of the said Act. In asmuch as, none of the villages are Pahadi villages, the provisions of Section 41 would not have any application to the facts of the instant case.

W.P.(C) No.-2719/2005. W.P.(C) No.-4250/2005.

The Hon'ble Court entertained this writ petition which was regarding menace of flying-ash emanating from brick kilns which pose a great threat to life and personal hygiene of people residing in the vicinity. The brick kilns owners on the other hand raised their Fundamental Right to Trade and Profession under Article 19 (1) (g) of the Constitution of India. The Court took a balancing approach to the issue and harmonized the petitioner's right vis-a-vis the rights of society to clean and pollution free environment. The Court issued directions for proper containment of flying ashes and non-compliance of the said order would result in the closure of such brick kilns.

W.P.(PIL) No.-2663/2011.

The hazardous situation in Dhanbad has been raised in this PIL drawing attention of the Hon'ble Court appertaining to the functioning of the Bee-Hive Hard Coke Plant, Maithan Power Limited and M/S Bharat Coking Coal Limited.

Petitioner had put its grievance that the intervener in this writ i.e. Maithan Power Ltd. which is a power generating company is dangerously polluting Dhanbad and that fly ash discharged from the company has formed a blanket over Dhanbad and thereby adversely affecting air quality, water and agriculture in the adjoining areas.

The Petitioner had also submitted that dumping of fly ash by Maithan Power Ltd. in the abandoned mines had adversely affected underground water.

The Court observed that to preserve the quality of environment, development and adoption of green technology is the need of the hour. Several classes of industries have achieved

remarkable improvement in efficient management of waste generation even leading to zero discharge.

### W.P. (PIL) No.-4779/2011

The problem of illegal crusher operating in the entire State of Jharkhand was brought before the notice of the Court through this writ petition. As per the information furnished by the petitioner under the Right to Information Act, 2005, following facts were brought before the Court:-

(a) That there are only 112 stone crusher units/plants in Ranchi having valid No Objection Certificate and Consent to Operate from JSPCB.

(b) That another 105 stone crusher units in Ranchi, who have applied for grant of NOC from JSPCB and the same is pending but are running at present though not admitted in the information furnished by JSPCB.

It was also brought to the notice of the Court that there could be several hundreds of illegal stone crusher running without valid NOC in the entire State.

The Court issued direction to ensure that no illegal crusher shall run in any area and to ensure that units operating without valid permission from the concerned authorities. The Hon'ble Court also directed the State Government to ensure that no stone crusher unit shall operate without valid NOC.

### W.P. (PIL) No.-1385/2012

The Hon'ble High Court of Jharkhand in a Writ petition wherein the petitioner prayed for issuance of appropriate writ /rule/direction commanding upon respondents to take appropriate steps for implementation of the Bio–Medical Waste ( Management and Handling) Rules 1998 enacted under the provisions of Environment (Protection )Act 1986 for proper management and handling of bio medical waste being generated in the State of Jharkhand including the district of Singhbhum and to take appropriate steps against the erring Nursing Homes/ Hospitals.

In this writ petition the Hon'ble High Court has directed the respondents to identify land for management and handling of bio –medical waste material as per rule -14 of Bio–Medical Waste (Management and Handling) Rules 1998. In compliance of the said order some lands for establishment of common bio medical waste treatment facility have been identified such as Ranchi, Jamsedpur, Dhanbad.

Hon'ble High Court has also directed Member-Secretary JSPCB, Director-in-Chief Health services Government of Jharkhand and the Municipal Commissioner Ranchi to co-ordinate with each other and ensure that bio-medical waste material from each hospital, nursing home , blood bank etc. collected periodically for its proper disposal.

In connection to this writ petition a committee was constituted to give impetus for effective handling and disposal of bio-medical waste in the State of Jharkhand in its meeting dated 08.09.2015. It was informed that various steps has been taken in regard of substantial improvement in registration under the Bio-Medical Waste (Management & Handling ) Rules, 1998, inspection of hospitals, nursing homes, blood banks, etc and awareness through print and electronic media to made about the Act.

## W.P. (PIL) No. 3197 of 2012

This writ petition was filed in the form of Public Interest Litigation seeking direction to issue mandamus to the respondent to stop mining and related work within three Km. area of any village/cluster and direction to the respondents not to do deep hole blasting and general blasting within three Km. area of any village/cluster and further direction and order to the respondent to immediately remove the coal reservoir from the residential area of Kusumtola of Chatra District and to pay compensation to every victim of the Kusumtola of village Henjda to the tune of Rs. One lac. It had been stated in the writ petition that the respondents were doing open cast mining in Kusumtola of Tandwa Block at Chatra District and they were doing deep hole blasting in the area without following the stipulated norms. It was also stated that F.I.A.N. (Food First Information & Action Network) with Human Rights Against Hunger, Germany had done a fact finding on the above mentioned problem of the Kusumtola and submitted report to the Prime Minister of India and asked for immediate action. It was further stated that in furtherance of which the Hon'ble Prime Minister office had send a letter to the Chief Minister of Jharkhand which was forwarded to the Home Department, Government of Jharkhand and the same was forwarded to the Sub Divisional Magistrate, Chatra. In the light of the said letter, a proceeding was held under Section 133 Cr.P.C. and an absolute order was passed on 16th November, 2011. In the said proceeding, following findings had been recorded in the order dated 16th November, 2011:-

a. Life and property of villagers of about 2500 population living around 6 village/cluster are unsafe due to happening of mining/blasting so near of the township.

b. Due to deposition of thick layer of the dust on crops and decreasing of water level, the agriculture, condition of drinking water are adversely affected the interest of community. Due to the problem of the dust there are trouble in getting breath.

c. Due to self oxidization of the large coal reservoir the environment near the village has got polluted and still happening and the villagers have faced trouble in getting the breath.

d. Due to the mining of remaining surrounding area except six village/cluster of about 2500 population, the villagers have surrounded from all the sides and their problem has increased due to non happening of legal displacement and they become economically weak. Traditional agricultural work has destroyed.

e. Due to heavy machines used in mining and fly of dust due to serial deep hole blasting their quality of life has adversely affected.

The Court directed the respondents not to deposit the coal reject and to make any cause-way by the respondent including by the Central Coalfields Limited. The cause-way if is to be constructed, the same be constructed in accordance with law with proper permission. The Court further directed the Pollution Control Board of the State of Jharkhand to monitor properly for some limited period that no private company may deposit the coal reject or in any way damage the flow of the water of the river Damodar and directed them to clean the riverbed within two months by removing the coal particles and coal dust from the affected area of the river as per the report of the Deputy Commissioner, Chatra, i.e. from Purnadih

Open Cast Project to Ashoka Project. A Compliance report was submitted to the satisfaction of Hon'ble Court.

W.P. (PIL) No.-5871/2012

This PIL was filed for issuance of directions to the Government of Jharkhand to implement the proposal of Principal Chief Conservator of Forests, Jharkhand to phase out economic activities from dense, reserved and protected forests like Saranda and adjoining areas.

In this case it was held that Rule 24 A (6) of M.C. Act is confined only to first renewal of license for mining and not thereafter. Accordingly, the Hon'ble High Court directed all the lessees, public sector undertakings or other private lessees, who were doing the mining work by virtue of the deeming clause of Rule 24 A (6) of M.C. Act, to stop mining works.

The Hon'ble High Court of Jharkhand relied upon the judgment delivered by the Hon'ble Supreme Court in the case of Goa Foundation v. Union of India, (2014) 6 SCC, 590.

W.P. (PIL) No.-7592/2012.

The petitioner by this PIL had raised the issue that the State Government had allowed the respondent M/s Electro Steel Integrated Limited, Dhanbad for digging of only 8-10 tube wells for water supply but the respondent had bored 252 tube wells due to which the ground water level had shrunk from 80ft' to 200ft' and because of that emission of "Methane gas" had started thereby affecting the residents.

The Hon'ble High of Jharkhand passed an order on 22nd July 2013 and directed the State government to address the issue and also to make an effective plan to carve it out, further vide order dated 7th March 2014 the Court had directed the Principal Chief Conservator of Forests, Van Bhawan, Ranchi and the Director General of Mines Safety, Dhanbad to conduct a physical verification of the area concerned and to submit a report about the emission of the Methane gas.

W.P. (PIL) No.-290 /2013
W.P. (PIL) No.-1806/2015

The Hon'ble Court suo-moto took cognizance upon a news report published in daily news paper "Prabhat Khabar" dated 23/04/2015, wherein it was published that total 38 hills have disappeared from various districts of the State of Jharkhand namely Latehar, Gumla, Lohardaga, Koderma, Sahibganj, and Hazaribagh due to illegal stone mining.

The Hon'ble High Court in view of the judgment passed in Deepak Kumar etc. v. State of Haryana and others, (SLP (Civil) No. 19628-19629/2009) by the Hon'ble Supreme Court of India, stated that environmental clearance is required for minor minerals also having area less that 5 hectare at the time of grant of lease and renewal of mining lease.


The Hon'ble High Court of Jharkhand by the order dated 21/07/2015-

1. Directed the State authorities to produce a complete list of all the lease of minor minerals.

2. And also directed State authorities for closure of all mining operations being carried out without the lease/without valid consent to operate.

In compliance of the above mentioned order the District Administration under guidance of the District task force committee visited and sealed 321 illegal crushers and 47 illegal mines.

W.P. (PIL) No.-1615/2013.

This Writ Petition was filed before the Hon'ble High Court of Jharkhand in which it was brought to the notice of the Court that at the time of creation of the State of Jharkhand i.e. on 15/11/2000, notified and demarcated forest land area was 23,605.47 Sq. Kilometer and number of tigers were 34 as per the leaflet of Divisional Forest Officer Publicity and Extension, Ranchi, Department of Forest and Environment, Government of Jharkhand. The said forest land has now been reduced to 22,937.49 Sq. Kilometer in the plan of 2009-2010. Thus, a loss of 66,798 hectare of forest land was reported.

The Hon'ble Court by order dated 25/08/2015 directed the Principal Chief Conservator of Forests, State of Jharkhand to up-date information regarding Jharkhand forest at a glance and District wise forest coverage and latest report of the tiger review meeting held in February 2015.

In compliance of the above mentioned order, a counter affidavit was filed by the respondents showing district wise details of the land released for mining and industrial projects in favour of CCL, UCIL, RAILWAY, TRANSMISSION LINE, ROAD, NHAI, JHARKHAND STATE MINING DEVELOPMENT CORPORATION, JSEB, DRINKING WATER AND SANITATION DEPARTMENT, DVC, POWER GRID CORPORATION OF INDIA, NTPC, RGGVY as hereunder :

| S.No. | District | Released Land (in hectares) |
|---|---|---|
| 1. | BOKARO | 694.97 |
| 2. | DEOGHAR | 516.67 |
| 3. | DHANBAD | 42.243 |
| 4. | DUMKA | 130.596 |
| 5. | EAST SINGBHUM | 7.93 |
| 6. | HAZARIBAGH | 2351.63 |
| 7. | KODERMA | 325.29 |
| 8. | LATEHAR | 376.54 |
| 9. | RAMGARH | 306.9 |
| 10. | RANCHI | 142.814 |
| 11. | SARAIKELA | 3.70 |
| 12. | TOTAL | 4899.283 |

Due to allotment of lands to various entities engaged in activities like mining, industrial projects, etc there has been loss of forest land area coverage in the State.

W.P. (PIL) No.-2000/2013.

This Writ Petition was filed to quash the appointment of respondent no. 5 who was appointed as the Chairman of Jharkhand State Pollution Control Board, in contravention of Section 5 (2)(a) of the Air (Prevention and Control of Pollution) Act, 1981.

The Hon'ble Supreme Court by its order dated 14.10.2003 in W.P. (Civil) No. 657/1995 set up a monitoring Committee to ensure time bound implementation of statutory provisions of the Water Act, 1974 and Air Act, 1981.

The Court also directed for the appointment of Chairpersons (Chairman) as per Section 5 (2)(a) of the Air Act, 1981.

The SCMC (Supreme Court Monitoring Committee) / MGK Menon Committee found that in several cases the Chief Secretary, Environmental Secretary, Politicians MLAs, literary persons and other non-technical persons have been appointed as Chairpersons of State Pollution Control Boards.

The Hon'ble High Court of Jharkhand therefore issued orders, removing the first chairman of JSPCB (Jharkhand State Pollution Control Board) and also removed another chairman of the JSPCB, on the ground of incompetence.

### W.P. (PIL)(C) No.-1188/2014

The Hon'ble High Court of Jharkhand suo- moto took cognizance of the report published in the daily "Hindustan Times" dated 23/02/2014 (Ranchi Edition) regarding the devastating effects of radiation emanating from the mining of Uranium in village- Jadugora, East Singhbhum. Unprocessed and processed radioactive materials left in the pits around the plant area. This is in contravention of the standard measures of disposal of radioactive substances which poses grave threat to environment, safety of workers and life of common people of the neighboring areas. The Hon'ble Court directed the respondents to –

- File the safety measures and standards adopted in respect of the workman in mine and also the villager and common people living in the area.
- Measures to prevent the effects of nuclear radiation, transportation and disposal of radioactive waste.
- Inform the Court regarding the establishment of hospitals for providing health care in the said area.
- Inform the Court about the measures which have been taken to create awareness amongst the common people about the prevention and cure of ill effects of the radioactive radiations, Gama rays and other chemicals.

The respondent were also directed to examine the amount of radium related heavy metals and other chemicals discharged into the local environment like soil, water etc. around the place of mining and whether it has affected the environment and also the health of the residents in and around the area.

The Court directed all the respondents to ensure that safety measures as laid down by the Hon'ble Supreme court in (2013)1 SCC 620 are strictly followed.

सत्यमेव जयते

High Court of Jharkhand

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National Green Tribunal

झारखण्ड सरकार

Department of Forest,
Environment &
Climate Change,
Government of Jharkhand