

The changes relating to destruction of habitat are the most serious factors leading to the depletion of wildlife. Apart from major changes in the extent of forest, territories inside Reserved Forests and even close to sanctuaries have been allowed to be used for industrial, mining and other developmental uses in all major hydel power project (tillaiya, Konar, Maithan Pancham, Kutku) Thermal power stations (Bokaro, Patratu, Chandrapura) mines (Jadugora uranium mines, Kiriburu etc.) are all located where dense forest once stood and where tigers roared and elephants trumpeted not too long ago. The pressure for additional land around these projects has also led to fragmentation of compact forest blocks and honey combing of forests. The future of animals such as elephants, tigers and others trapped in such isolated pockets of forests, can well be imagined. With change in physical condition and intrusion of human beings into hitherto wild areas, the animals are forced to disperse outside their natural habitat into human habitat. They are thus killed on the pretext of being dangerous to human lives. In 1992 alone, six leopards were killed at Ormanjhi (Ranchi).

In the newly created Jharkhand in 2000, the geographical area was 79714 km² out of which forest area was 23605.47 km², which is 29.61% of the state area. The tribal population is 26% of the total state population of 232.97 million. The tribal customs in Eastern India including Jharkhand organize "Desua Sanghar" meaning "Community Hunts" once in a year and this too has been responsible for large scale killing of wildlife in many areas. Thousands of tribals, local as well as from far off villages in Mayur Bhanj and Keonjhar in Orissa and Ayodhya Pahar Jhargram, Gidni etc. in West Bengal gather at Dalma near Jamshedpur for this festival on Baishakhi Purnima. It is an irony that non-tribals indulge in wanton killing on the occasion. It has been possible to minimize the menace by launching awareness programs among the tribals. However, it has not been possible to eliminate it altogether.

The Wildlife Protection Act was enforced in the state in 1972 and chief wildlife warden in the rank of PCCF has been appointed for its implementation. The Central Government directive that for proper conservation, protection and propagation of wildlife, 15% forest area of every state should be declared as sanctuary, the state of Jharkhand has declared 18% of forest area as National Parks and Sanctuary.

Sanctuaries and National Parks of Jharkhand

Among the measures adopted for Protection of Wildlife Sanctuaries and National are most effective. In these places, wild animals are free from any threat of destruction or obstruction by man. Here they find conditions conducive for multiplication. National Parks and Sanctuaries help to rehabilitate even those animals and birds which are threatened with extinction. National Parks are given a higher level of Protection and no rights are admitted. Sanctuaries are accorded less level of protection and certain activities might be permitted. Though protection is given to all kinds of wildlife in the sanctuaries, each sanctuary has been created for rehabilitation of a particular species.

Palamau Tiger Reserve

Alarmed at the drastic decline of tiger population from an estimated 4000 at the beginning of the century to only 1872 in 1972 the Government of India decided to take special measures to rehabilitate its population. To start with, a 5 year moratorium was imposed on tiger hunting in 1970. In 1973 one of the largest and most ambitious single

species conservation projects known as “Project Tiger” was launched with the support of the World Wildlife Fund.

Palamau Tiger Reserve was taken up as one of the first nine Tiger Reserves in the country as part of this programme. With the rigid protection provided and habitat improvement, the tiger population in its area rose from 22 in 1974 to 60 in 1984. The 1993 census has indicated the presence of 44 tigers in the tiger reserve. The world first ever tiger census was conducted by Nicholson also in Palamau in 1932 with resultant figures of 32 over 299 km² or on average of one tiger per 9 sqkm. In the intervening 60 years this figure has declined to 44 over 1020 km² – on an average 1 tiger per 24sqkm. At present the tiger population in Betla has gone down to 5 an alarming situation. Last month Dec 2019 one tiger was seen in Betla and adjoining area. This generated some hope for survival of the tiger population in coming years. For survival of tigers poachers residing in accessible areas have to be completely eliminated.

Dalma Wildlife Sanctuary

Protection is provided to the elephant in Dalma Sanctuary near Jamshedpur. Dozens of the elephants can be seen in various water holes enjoying aquatic sports. About 40-45 elephants are resident at the sanctuary and the number increases to 80-85 during summer. One or two herds of Dalma elephants move during September to Midnapur and Belpahari areas of West Bengal.

Project Elephant

It has been launched in Saranda, Kolhan and Porahat Divisions of West Singhbhum district, with the assistance of Government of India since 1991-92. This is basically to restrict their migration by improving the habitat so that they don't move out to the inhabited area and cause damages to crops, cattle and humans. The heavy mining operations carried out by various agencies in the Singhbhum District and multipurpose Subarnrekha hydel project have disturbed the normal living condition. This has forced the elephant to move into new areas even outside the Jharkhand state. Frequent movements of the elephant to Midnapur and Purulia of West Bengal and to Surjuga of Madhya Pradesh have been a matter of great concern for the authorities dealing with the problem. Till 1992, 169 persons were killed by elephants in Ranchi, Hazaribagh and Palamu and Singhbhumi. With a view to arrest the sharp decline in elephant population and also to minimize the migration and resulting damage to crop and life it was decided to restore and re-establish large viable habitat for the elephant of project basis which envisages in improvement in basic requirement like fodder water and shelter and minimum disturbance by felling and extraction of commercial timber. As per present census in 1993, the elephant population in Jharkhand is 678-37 confined in Hazaribagh, 494 in Singhbhum and 119 in Palamu. Total population of elephants in India is around 13000.

Mahuadand Wolf Sanctuary

It has been created to provide protection especially to the wolves which are now endangered species in the country. This is the only wolf sanctuary in the country. In other parts of the country, the population of wolves has been dwindling fast but in Jharkhand, we still have a viable population of wolves mostly confined to Hazaribah and Palamu district. The total population as per the 1993 census is 282.

Due to depletion of their natural habitat and non availability of natural food the wolves tend to enter inhabited areas causing loss to human life especially the children. A pair of wolves in Hazaribagh turned out to be child lifters causing the death of 104 and injuring 96 children during 1980 to 1987. Stray cases of child lifting by wolves has been reported again in 1993 according to which 10 children were killed in Sainagar and Barkatha blocks of Hazaribagh district between April to August. Efforts were made to identify and kill the child lifter. As of now there are no reports of child lifting and the menace has been controlled. Besides Betla, the sanctuary of Hazaribagh, Lawalong and Koderma are equally important.

Bhagwan Birsa Munda Biological Park

Located in Ormanjhi on Ranchi-Hazaribagh National Highway is one of the most beautiful zoos in the country. The zoo, spread over an area of 104 hectares has undulating topography surrounded by natural dry deciduous forest consisting of sal, bijasal, bahera, palash, asaan etc. with water bodies in and around making it a natural habitat for the



wildlife. Major attractions include hippopotamus, pelican, Pheusmacaqua, porcupine, white black buck, leopards, Indian bison, majestic tigers among many wild animals e.g. Himalayan black buck, Himalayan bear, sloth bear and white peacock, emu, etc. The biggest freshwater aquarium recently constructed in the botanical area is of great attraction. The park has become very popular and no one coming to Rajchi will afford to miss a visit. The park is visited by young school going children as well as old people. The zoo is in direct control of the Chief Conservator of Forest and directly assisted by ACF, Range officers, Veterinary doctor, forest guard and experienced animal keepers.

The Park has the recognition of Central Zoo Authority. Jharkhand Zoo Authority is headed by Principal Secretary (Forest Department) and P.C.C.F. Jharkhand. The park is visited by lakhs of tourists annually and is playing the greatest role of generating awareness among all classes of people towards protection of wildlife and birds and creating a sense of love and compassion for the innocent creatures.

Bird Sanctuary in Jharkhand

Jharkhand has earned the reputation of having rich forest, wildlife, waterfalls but very few know that it is equally rich in bird life also. As against 1313 species of birds in India 174 species of birds are found in Jharkhand. With a view to protect the avifauna in Jharkhand, two of the bird sanctuaries viz Topchanchi in Dhanbad and Udhawa in Sahebganj have been notified long back where besides local birds, migratory birds can also be seen in abundance. The absence of wetlands of Bihar, especially Kavar, is compensated by at least 15 water reservoirs. Tilaiya, Patratu, Topchanchi, Tenughat, Kanke, Getalsud, Hatia, Maithan, Masanjore where migratory birds come in abundance in winter and return to their breeding place in Siberia, Central Tibet transversing thousand kilometers across Himalaya seeking warmth, food and comforts in the reservoirs and return in April. There is a treaty between India and USSR under which these countries are committed to provide protection to these migratory birds. The periodic departure of birds with unfailing regularity every year is one of the most fascinating phenomena in nature which has always interested bird lovers. As per our estimates 59 migratory birds and 106 resident birds have been identified. As per survey reports of Bombay Natural History Society. Nearly 5 lakh migratory birds come here from Siberian deserts and Caspian sea in October every year. It is a mystery how these birds follow the same route and how they store the energy to cover such long distances.

Various measures adopted to Protect the wildlife will become ineffective if public cooperation for this great cause is not available. After we stop the habit of killing animals, only then we can lift our eyes without shame and say that this land of Buddha has lived up to its heritage of 'where there is no pity there is no spirituality'.

Counsels the deer:

"Cast not your look of greed upon my flesh, but read the poetry in my eyes. The women who have turned history have borrowed their charms from me."

I only feel angry when I see waste, when I see people throwing away things we could use.

Mother Teresa

Reminiscence and anecdotes of forest training

Prem Sharan, I.F.S. (Retd) 1959-61batch

I was selected for Bihar Superior Forest Service in 1959. Indian Forest Service was non-existent by then. At that time, I was a Lecturer in Botany in Science College of Patna University, I had done my graduation and masters from there only. Immediately after the result in 1957, I got the appointment letter. As such, I had put in two years of service, when I was selected for training. In those days, we were sent to the Indian Forest College on a stipend of Rs.150/- p.m., apart from the grants given directly to the College for our dresses, books, tuition etc. We were appointed after our successful completion of training after two years. The seniority was also decided on the basis of the result.

Although the Forest Service was a State Government job in Senior Class –II rank, the academic qualifications prescribed were much stricter than even for the Class-I jobs of Govt. of India. Only Science Graduates, having at least Second Class degree, could appear. Patna Science College and Patna University being the premium institutions of learning in Bihar those days, many brilliant products from there got attracted and, since the minimum age was only 19 years, they found it very handy and joined this service. The minimum age for Indian Police Service was 20 and for other services of Central Government, including Indian Administrative and Indian Foreign Service was 21. Since only limited category of candidates were eligible, and there was a very tough physical endurance test of walking 16 miles in four hours, there were not many applicants and the competition was also not very tough.

In our time, the training course at Dehradun started from 1st October but the Bihar State Govt. was, as usual, very late in starting the process of recruitment and we were sent only when the deadline of 1st Nov. 1959, with the ultimatum that candidates would be sent back if they came later. I had put in two years of service in Patna University in an almost equivalent scale of pay which I would be getting after two years of training. It was a very difficult decision, which I took considering that I will be nearer to Delhi and Mussourie and will find it more helpful in preparation for taking tests for the Central Services. All my dreams and hopes were shattered when I reached Dehradun on the 5th Nov. and discovered that the curriculum of the training was so tight and tiring that one even did not get time to write letters to family and friends, what to speak of preparing for other competitions. I still expected a higher level of education in forestry but I was shocked in the very first lecture in Forest Utilisation, being taken by Mr. Ramesh Chandra (1947-49 batch), which I attended that day in the afternoon. We were being taught as to how to bring logs downhill and pull the same with the help of rope. The technique was nothing more than commonsense, normally applied by forest labourers. I had no choice but to adjust to the situation, but unwittingly I became a part of the disgruntled group, taking least interest in the subjects.

P.T. & Sports

I looked for some interesting incidents to keep me entertained. One of our batch-mate from Andhra Pradesh had also joined late, just one day before us. I was very much impressed by the oratory and content of his speech and I felt that here was a person, who will give befitting replies to any one, without fear. On the following morning during the fall-in for the P.T., Mr. O. E. Peters, the Physical Instructor, called out "A.H. Moosvi from Andhra

Pradesh to fall out of the line". He shouted at him and said that he was a cheat, a liar, a fraud, a rogue and what not. Moosvi simply kept on listening, unruffled without uttering a single word of dissent. I was shocked to find that it was the same person whom I had thought to be the torch bearer for the protests of any kind of injustice, only the previous evening. After the P.T., I met Moosvi and enquired about the incidence. I was highly amused when I learnt the circumstances behind this.

Along with other testimonials and certificates Moosvi had enclosed a certificate from the Cricket Captain of Osmania University, who happened to be his good friend, that he played for the team. This certificate reached the Indian Forest College and was passed on to Mr. Peters by the College authorities. He was over joyed to have found a player of that stature, as Osmania University was champion in cricket then. In the previous evening (when I was not there), after the fall-in for the games, Mr. Peters told our senior, Mr. U. Bannerji (1958-60 batch), Cricket Captain of Indian Forest College, about the Osmania University chap, and asked him to try him at the nets. Mr. Peters allotted different games to the newly arrived trainees as per their skill, aptitude and physique. Some were taken for the football, some for hockey and a few selected ones for the Tennis, while the rest were sent for Volley Ball. Places were earmarked for every game in the field near the New Hostel of the Indian Forest College and every person had to play one game or the other. On way to the Cricket corner, when Mr. Bannerji asked Moosvi whether he was bowler or batsman, he said that he was an all-rounder. Moosvi meekly followed Bannerji to the cricket corner. Other players of cricket, present there, were dismayed to see him putting on the pads upside down. Moosvi had thought that the smaller part of it is for covering the feet and the concave cut on the other side was for the knees. He also put on the gloves the other way, thinking the rubber part to be kept inside for a better grip. Since he was from a champion team, no one accosted him. Moosvi was asked to take his stand at the crease. Bannerji asked our batch mate, S.K. Prasad a pace bowler, for delivering him a ball. Simply at the sight of the fast ball coming straight towards him, Moosvi left the crease quickly and took refuge at some distance. Banerji then simply asked him whether he had ever played cricket, to which he said that he had not even touched the bat or ball, what to speak of playing. Banerji asked him to move out to some other game. He moved on to the Volley Ball ground and joined others in the game. Meanwhile, when Mr. Peters went to the Cricket corner for watching the game himself of a player from Osmania University, he was simply shocked to discover that he had never played cricket. With full of anger, he tried to catch him in the Volley Ball ground. Moosvi was having his sight on Mr. Peters. Noticing his coming that side he left the field and joined the football team. Moosvi went on changing games and Mr. Peters could not catch hold of him throughout the games time that evening. It was thus in the following morning, at the P.T., that he could catch him and he spilled out the entire anger and grief in scolding him in front of every one. Moosvi admitted to us that he had never thought that a testimonial regarding a game of play will ever be taken so seriously, when on earlier occasions such certificates were hardly noticed what to speak of taking these seriously. He therefore explained to me as to how could he protest when every word uttered by the Physical Instructor was correct. Later we found that Alamdar Hussain Moosvi was a genius. He was an accomplished photographer, writer, orator and administrator and became one of my closest friend and he was the most sincere and dear batch mate for almost all of us. He passed away last year at Hyderabad, after having retired from the post of P.C.C.F. of Andhra, leaving behind a great legacy.

One of my batch-mate from Orissa was S. K. Prasad. He was a very tall, hefty and having the physique of a perfect sports person. He represented his state in Cricket, Football and Hockey, a rare feat for any one. A giant literally, as well as, figuratively. Naturally he became the most loved person not only to his class mates and to all the sports loving men but to everyone in the Institute at large. Mr. O.E. Peters was the happiest. He would ignore his slow pace of running and other short comings in the drills during the morning P.T. The in-charge of our F.R.I. Dispensary, Dr. Gideon, an ex army personnel, was also a great fan of S. K. Prasad. Apart from being a cricket lover, he also wanted to play cricket. Later in the second year, when S. K. Prasad became the Captain of Cricket team, he would oblige Dr. Gideon by taking him in the team. In return Prasad could get medical certificate for his absence from class any time he wanted to. This fact became known to the authorities also but considering his child like behavior and extraordinary caliber in games, everyone ignored it. He was always a back bencher and never attentive in class, but the most loved person amongst the batch mates and the faculty members.

Silviculture Class

Silviculture was a very important subject and Mr. K. K. Nair, taught the subject very seriously for two periods every day in the first and second periods. Noticing un-attentiveness of S. K. Prasad, Mr. Nair asked Prasad to sit in the front row. He obliged him but after only two days he went back. When Mr. Nair did not find him in the front row and saw him sitting in the last row, he asked the reason for going back. Prasad very innocently said that it was very difficult to keep on looking at him and listening for such a long time without uttering a word in between. Everyone laughed and Mr. Nair also forgave him for his innocent reply and never again asked him to sit in the front. However, his love and affection for Prasad remained as before.

Botany Class

In the first year of training Mr. C. S. Kirpaker (1950-52 batch), one of our instructor, taught us Botany. Although he was not a Biology student in his college days but he would teach us by his learning it in his forest training and later in service. He knew that I was earlier a teacher in Botany and, at times, he will come to me in the practical classes, and enquire about his ability in imparting the knowledge. He taught us well the basics of Botany. When we came in the second year we learnt that Botany will be taught by a faculty of F.R.I., as was in the case in some other subjects, Prasad came running to me and said that he has seen the routine of second year classes and has discovered that a lady teacher will take our Botany class. He decided to sit in the front row and also took me by his side. I could see the eagerness and sparkle in his eyes. The usual front benchers were also surprised to find Prasad sitting in the front row and that too voluntarily, when he loathed to sit earlier. To his great surprise, an old haggard gentleman came that day and taught us Botany. Prasad felt that there must have been some last- minute absence due to which the lady, whose name he had read in the time table, could not come on the first day. Immediately after he left the class, Prasad got out and asked the peon of the class as to how this gentleman came in place of the one assigned to. The peon not understanding the reason behind his question said in very plain words that there was no change. Mr. Hingorani was to come and he only was there. Prasad was simply shocked. He could not believe that a name ending with Rani, could be a male person. He was very much disgusted and felt cheated and lamented that

he unnecessarily had wasted his time sitting quiet in the front row. Later we learnt that he was a Sindhi gentleman and by then we knew very many surnames ending with Rani. This incidence became known to everyone and people used to cut jokes with Prasad. Once, in one of the Guest Nights, when we were free to tell any interesting incidents and stories, I described this incident to Mr. Hingorani. He took it very sportingly and said that on many occasions he had faced embarrassment. At times he found his train berth in the lady's compartment and on another when he was allotted ladies seat in some social / official gatherings. Later on S. K. Prasad became very close to Mr. Hingorani.

Zoology Class

In our time, the Indian Forest College was located in the first floor of the western wing of the F.R.I. There were a couple of rooms for the theory classes. We all had a single table and a chair for every trainee. These were not fixed to the ground, as such could be moved about a bit. The Zoology class was taken in the period just after lunch by one Dr. Chatterji, of F.R.I. He was an authority in Plant Protection but teaching the basics of Zoology was different. Almost every day he would start from Phylum Protozoa and come up to Mammalia via Arthropoda and other Phyla. He preferred to teach us with the help of slides by making the room dark. We took rain coats in the class on the plea that the weather was unpredictable in Dehradun, but actual purpose was more than that. Most of us felt sleepy after the sumptuous lunch and the dark room was most congenial for having an afternoon nap. The rain coat served as mat and the tables were adjusted to facilitate one to lie down on the ground quietly. When Dr. Chatterji, in the midst of his lecture, put the lights on, he found very few people on the chairs and even these too were found sleeping, keeping their heads on the table. He felt that others have gone out of the class through the window but could not imagine that they were on the floor. He would feel bad and when he found this to be a regular feature, he decided to take roll call. While he was trying to read the names from the register, we would wake up the persons sleeping on the floor to get up and by the end of roll call, everyone in the class was present. He thought the people are making entry from windows. On the following day, he ensured that the windows and doors are secured properly before the start of class. But in the midst of his lecture when lights were put on, he still could find only a few of us in the class. When again he started taking roll call, almost everyone was there. He got disgusted and complained to the Dean that students went out of the room in his class. The Dean kept a vigil and he learnt that no one comes out of the class. It was a myth. One day when Dr. Chatterji faced a peculiar situation. He closed the door from outside and went and told the Dean to come and check the class. By the time the Dean came, everyone was back on the chair and the attendance was found to be full. Dr. Chatterji could not solve the mystery and later he begged to be excused from taking the Zoology class of our batch.

Training after joining Service

From the year 1956 the training in the Indian Forest College was made a three-year curriculum. After two years of regular training, the trainees were appointed by the respective State Governments and the training continued for another year. Everyone was given a topic on some Forestry subject for preparing a thesis and was to undergo a detailed exercise on Working Plans. Apart from these, the officers were to have training for Motor Driving, Horse Riding, Field Engineering, with Army establishments at Roorkee. Six months

were spent in the State and six months in the College. Although it was a training, but since we become an officer after the appointment, as such, there was no P.T. or compulsory games and no restrictions in going to town. It was a very enjoyable period. After three batches, the State Govts. / G.O.I. felt that the one-year extra training was not very much needed and as such was decided to be stopped. Our batch, (1959-61), became transitory and our course was reduced to two and half years. In the third year, we were to spend two months in the State and rest four months in the College. As such I joined the Bihar Govt. on the 2nd Oct. 1961 after getting a Preliminary Diploma from the Indian Forest College. Since my subject was Nursery Practices, I was asked to join the Hazaribagh Afforestation Dn., where Mr. L. K. Pandey (1950-52 batch) was the D.F.O.



वन रक्षाबंधन

Photo by Mahendra Prasad, I.F.S. (Retd)

Kargali must survive in degraded land

B. D. Bhagat, I.F.S. (Retd)

(Former Principal Chief Conservator of Forests, Bihar United)

A Valuable Community Resource

The author of this article, just after joining the forestry profession in 1964, had occasion to interact with an **octogenarian** citizen. He had proudly shown me **roofing** material of his kutch house having earthen tile roof, constructed before first world war. The wooden roofing materials were intact and unaffected by termites or borers. It was revealed that majority of the rural people of the locality were in habit of mixing the twigs and slender branches of Kargali along with the bamboo split over perlin and rafter to protect the same from attack of white ants and insects. Villagers also knew by experience about the mild toxicity in Kargali plant, which makes it immune to grazing by goats and cattle. This property of the tree encouraged the people to use pole and branches of this tree as fencing of farm crops and stacking materials for climbers like beans, cucumbers and gourds of kitchen gardens.

Earlier "**Kargali**" has been known to us as a **famous Coal field** of Jharkhand, and significant source of fossil energy i.e. coal. This coal field not only caters to the need of various industries, thermal plants and domestic fuel of country, but also generates number of direct and indirect employment of people.

To a Forester Kargali (Coal block) was identified as an important consumer of small woods and mining materials.

Description of Kargali tree (*Cleistanthus collinus*) in Flora

In quest of obtaining more details about this tree sps. various books and records were consulted. The eminent **Forester H. H. Hains**, the author of **Botany Of Bihar and Orissa (1925)** has described about this tree in following words :-

A small rarely moderate sized tree, very common on hills, but local. A large form occurs along nallas. Flowering in April-May, occasionally in Sept. Deciduous in March

*Twigs are slender. The wood is durable and is prized for house posts, fence etc. as it is not attacked by white ants. The roots and flowers are **poisonous** and used to **poison fish**.*

***Campell** quoted that bark is applied in cutaneous diseases.*

Tree coppices freely and is not eaten by goats. It sometimes forms the only vegetation on rocky hills exposed to browsing and is of greatest assistance in re-afforestation".

***Makins** states that 5-year old coppice in Singhbhum show a height of 10ft. and girth 5".*

Important role of Kargali in Rural Economy

Forest is, in fact, is a **Basic industry** to the "**Ecosystem people**", who are living close to earth, in their traditional habitat and are meeting most of their requirement by collecting natural resources or producing them through subsistence agriculture or animal husbandry

from forests. **Kargali** provides both termite proof house building material as well as durable fencing posts and stacking props for agriculture farm to these people. Kargali is also known as Podasi and Chirchiri in Ranchi district.

To fulfill their periodic requirement, people living in the vicinity of forests, indulged in uncontrolled illicit felling. Failure of protection mechanism and uncontrolled felling has resulted in degradation of forests and depletion of ground cover. At many places good forest land has turned into almost barren land.

The stumps of felled trees left in the forest land are called “**rooted waste**’. Nature has provided one good property to regenerate many species of trees. The cut stump, if trimmed properly near ground level it induces beautiful young shoots, called **coppice growth**

Facing challenges of Maltreatment- by Coppice growth/ Natural regeneration

Good number of tree sps. Has property to induce **coppice growth**. Kargali is very good coppicer and for this reason it has wonderful power to withstand **maltreatment** of periodic illicit felling. Without any special protection this regenerates and starts growing again as young tree. Nature is kind to Kargali by making it excellent coppicer and thus helping it to survive in spite of regular maltreatment.



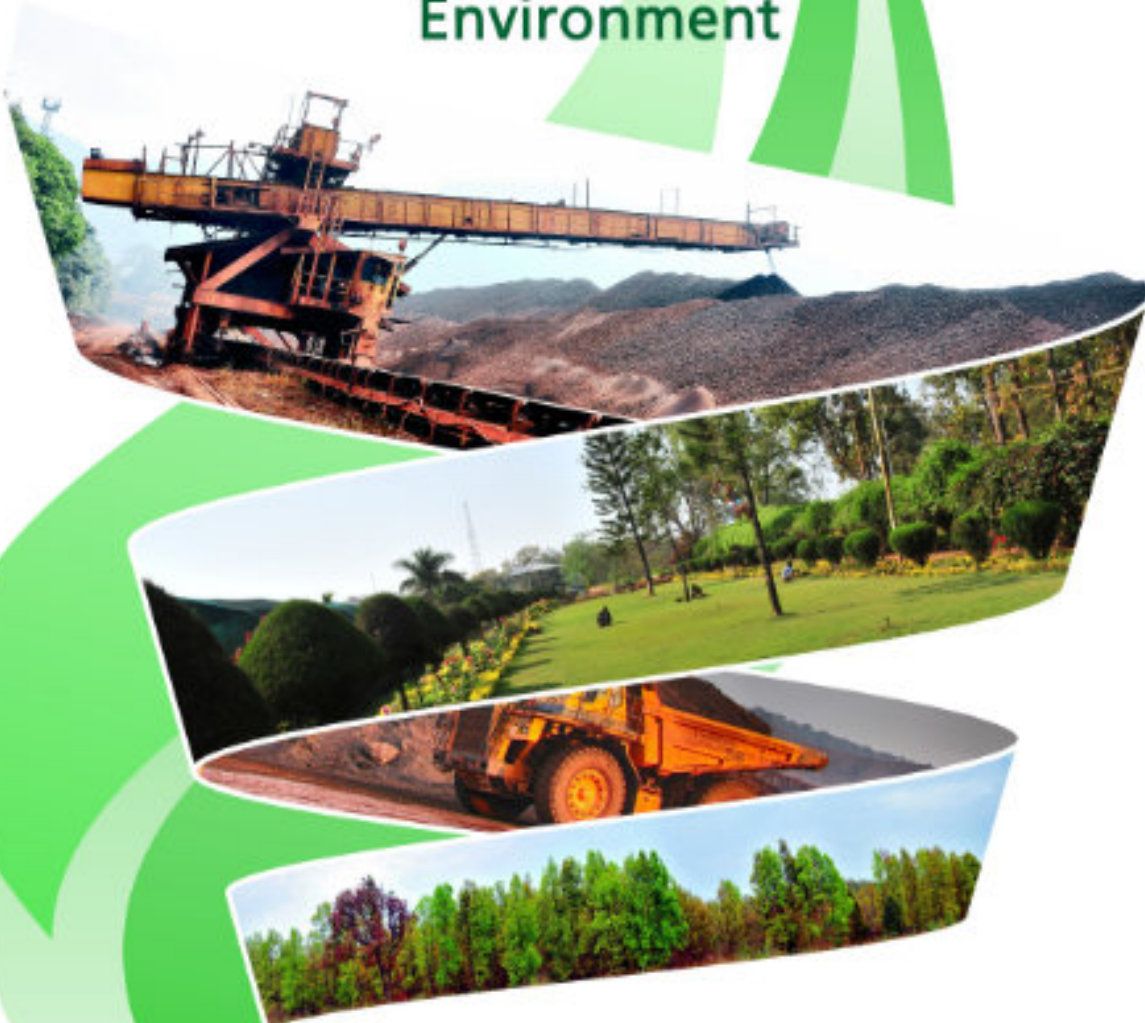
Kargali fruit

Raising the successful plantation of Kargali by seed has also been tried in recent years. The presence of toxicity in plant, protects it from damage by goats, cattle grazing and termite attacks.

Although Kargali is of great economic value to **ecosystem people** and rural masses, but in timber market, **traders relatively put a low premium** to Kargali in valuation. As such “Biosphere people” of urban area, who have access over market commodities, are hardly concerned about its overall protection and growth.



We
carefully
juxtapose
Mining
with
Environment



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RAW MATERIALS DIVISION

There's a little bit of SAIL in everybody's life

My Notes on Protection of Tiger Reserves

P. K. Sen, I.F.S. (Retd)

(Ex-Director, Project Tiger, Govt. of India)

1. **Forest fire in Tiger Reserves:** - This year a major fire has broken in famous Tiger Reserve like Bandipur in Karnataka. Sporadic fire inside tropical forest is quite common and the forest staff with their agility and the support from the Govt. can control it even if it is not a tiger reserve. Different methodologies are applied like :
 - a) clearing of fire line to stop spread of forest fire
 - b) extinguishing fire spreading over the line
 - c) continuous patrolling in the reserve
 - d) watching from high altitude or forest fire watch towers.

In many cases it has been seen that the fund released for fire line clearance etc. are not released in time causing fire in the forests. Deputation of staff and supporting labourers including maintenance of fire line is hindered due to non-availability of resources. Normally, massive fire is not experienced in tropical forests. On the other hand, in mountainous regions the coniferous forests having gums, latex and oil catch either crown fire or surface fire through the needles spread over the surface. The loss due to forest fire is incalculable and includes losses due to burning of biodiversity, regeneration and loss of life of parching animals. In western countries fire is taken seriously because they spread very fast and therefore use of planes and helicopters are very common. I hope, Govt. of India and State Govt. will be careful to protect whatever forests are available from destruction by forest fire.

2. Generally, I have shown appreciation for those Govts. Be it federal or state who are concerned about forests, wildlife and environment. I am anguished by the activities of development without considering the value of forests, wildlife and environment by the central government followed by state governments, which are causing irreparable damage to the habitat, its occupants resulting in degradation of soil, erosion and loss of water due to excessive surface drainage. Why we are not agreeing to give some space for the survival of wildlife and adequate habitat? Today total protected area is under 6% of the total landmass, that too is being bifurcated by roads and railway lines. It is documented that 400 link roads will pass through the tiger habitats. The railways, powerlines and other activities like hydroelectric projects are yet to evaluate adverse impact on wildlife habitat.

The latest proposal is to triple the railway line passing through Palamu Tiger Reserve. Once upon a time this reserve (one of the first nine tiger reserves) was considered to be having finest habitats. Already it has faced serious losses due to presence of anti-socials, extremists and other development works. Even then, the habitat is intact and is source to two major rivers North Koel and Auranga.

Missing Tiger

Report of tiger numbers estimated in 2018, released by Hon'ble Prime Minister on International Tiger Day, was acknowledged by many as great. I am not a scientist but have

worked intensively in the field as Manager. If I am correct, the old conventional pugmark method was criticized globally and therefore, a meeting was held in the office of Director, Project Tiger, to discuss new techniques, where prominent biologists like Dr Karanth, Dr Johnsingh, Mr Vinod Rishi and many other field managers including statistician were present during April 1997. In this meeting, it was decided gradually to switch over to new method of capture recapture technique by using camera traps supported by other evidences of presence of tiger. Perhaps, it was the first step taken by MOEF towards shifting of the technology. Under the guidelines of Project Tiger all the tiger bearing states had to participate in estimation once in four years. Tiger project was brought under NTCA in 2005. The first estimation with new technology estimated in 2006 was around 1500 in 2010, it increased to over 1700 and in 2014 it was over 2200. In 2018, the number has gone up to over 2900 which is more than double in a period of 12 years only. Earlier, nobody raised eyebrows at the numbers but some questions have been raised when MOEF & CC on the occasion of release of the estimated tiger number stated "we have achieved doubling in tiger numbers within 14 years while it was targeted to be achieved in 20 years. Wildlife Institute of India, a Govt. of India organisation is assigned mainly with the job of training to field staff and analysis of images.

Mr Javdekar also announced that camera trap images of nearly 2400 tigers are available in the archive.

Number of people from different walks of life have questioned the authenticity of tiger numbers announced, however, I am not dealing here with that controversy.

I started my career in Daltonganj South Forest Division in 1967 in Bihar, which was not only very rich in wildlife with a sizable number of big cats particularly tiger. It was a sanctuary then. After six years of joining service i.e. in the 1973, all the three ranges of the division and one more range from the adjoining Garhwa South Forest Division was selected as one of the first nine tiger reserves in the country and brought under the fold of Project Tiger for intensive management.

Palamu is a draught prone area. Within five years of its notification as a tiger reserve, dry rivers and streams started flowing and the entire area was recharged with higher water table after following the guidelines by Govt. of India. The main regulations were supervision, protection and stoppage of exploitation of bamboo and trees which was practised earlier under commercial forestry. This phenomena of flowing of streams and rivers perennially was noted by biologists, managers and administrators from all over India.

The population of tiger and its co-predators together with prey-base increased manifold. As a junior officer I had the privilege of walking across length and breadth of the sanctuary prior to its notification as tiger reserve. I could see that illegal felling of trees and bamboo was unheard of. Though the area was commercially exploited even then wildlife population was clearly noticeable. From the adjoining Garhwa South Division whose one range Kutku was added to the Tiger Reserve, I could see drastic improvement in canopy density of Sal, quality of bamboo and other miscellaneous species.

As In charge of Palamu Tiger Reserve for a reasonably long period of over four years I couldn't observe material deterioration either in the population of tiger and its co-predator nor in the habitat. Bamboo was worked for commercial purposes but with efforts it could be stopped in 1993. I could claim that Palamu Tiger Reserve was as good as Corbett or Kanha.

Unfortunately, presence of extremists inside tiger reserve created some problem particularly in the mind of field staff but it was nothing cognizable as I found. Many of my friends, colleagues and visitors who have seen Palamu Tiger Reserve from close corner are shocked to see zero figure of tigers in 2018 estimation and clubbed together with Buxa and Dampha.

I have written a letter to National Tiger Conservation Authority of Govt. of India MOEF &CC, which has been financially and technically supporting Palamu Tiger Reserve to find out the reasons of zero tiger in Palamu so that a course correction may be introduced to bring it back to its past glory. The habitat is almost intact. The authorities of Jharkhand Forest Department must come forward and do everything needed.



Photo by Ajinkya Banker, I.F.S.

Afforestation Strategy for Green Ranchi

Dr S. N. Trivedi, I.F.S (Retd)

(Former PCCF, Wildlife and Chief Wildlife Warden, Jharkhand)

The concentration of habitation in and around Ranchi city is increasing at a very fast pace, especially after the creation of Jharkhand state. People move in and around the city in search of jobs, livelihoods and also for schooling of their children. As the income level of the household increases, people find the city more attractive and comfortable to live in. The increase in the number of inhabitants, however, is accompanied by the increase in the gravity of the problems the city faces. The haphazard growth of settlements without proper civic amenities, traffic jam on roads due to growing number of vehicles, noise and air pollution tend to defeat the very purpose for which people move into the city.

One of the ways to check the adverse effects of urbanisation is to maintain the existing green spaces, create more green spaces and to launch a well-thought programme of urban afforestation.

Trees provide aesthetic, physiological, sociological and economic benefits to the society. Ranchi city has some beautiful parks, gardens and natural landscapes whose non-market or intangible benefits would justify the decision to create or maintain them. Bhagwan Birsa Biological Park at Ormanjhi, Bio-diversity Park at Lalkhatanga, SiddhuKanhu Park on college road, Nakshatra Van in front of Raj Bhawan, Oxygen Park in Morabadi are recent additions to the city life of Ranchi. Rock garden in Kanke, Tagore Hill, Ranchi Pahari Mandir, Jagannath Mandir are other attractions with vegetative cover. Trees exist in the campuses of institutional buildings and even in the compound of private houses. There is a need to evaluate the economic value of the annual output of the natural eco-system consisting of trees, groves, parks, gardens and natural landscapes in Ranchi city.

Study of economic output of forest eco-system in cities

Several studies on the economic value of the output of forest eco-system within the city have been undertaken. One such study for Beijing was published in the *Unasylva* in 2010 in which authors Wu S., Hou Y. And Wuan G. evaluated the economic value of the annual output from the forest eco-system goods and services for Beijing as US \$ 6.3 billion. This study also found that the value of intangible forest environmental services was six times that of the material goods. In another study the total economic value of environmental benefits of the urban forests of Beijing was estimated as 19339 million Yuan (1 Yuan = 0.14 US \$). Out of this fruit, timber and fuelwood accounted for only 15.66% and the rest were non-marketable services like carbon dioxide sequestration, oxygen emission, rainfall interception, dust retention, bio-diversity conservation etc.

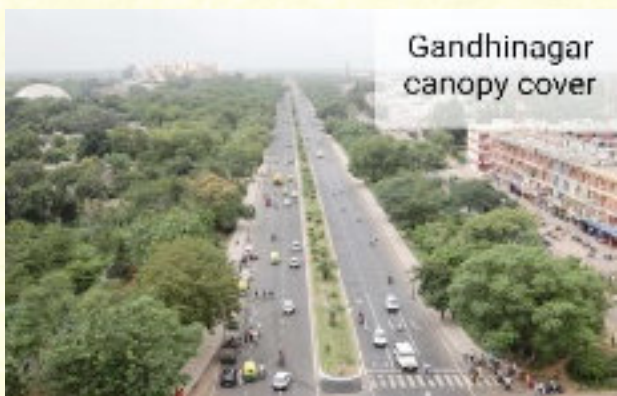
Urban green model of Singapore is also worth emulating. There are good initiatives like rooftop gardens, reserved wilderness areas and natural areas acting as catchments for the city's main freshwater reservoir. In the USA there is a system of declaring a city as Tree City USA and over three thousand cities, towns and communities have been awarded this recognition.

Urban greening efforts in Indian cities

New Delhi, with about 20% of the geographical area under green cover, has grown to be one of the greenest capitals in the world. Despite the acute biotic pressure, the green

cover in Delhi has increased from 30 sq km to 300 sq km. Department of forests and environment of the National Capital Territory Delhi, Municipal Corporation of Delhi, New Delhi Municipal Council and Delhi Development Authority are all working for Green Capital Mission. Recently the Parks and Garden Society has been set up for co-ordination.

Gandhinagar and Chandigarh are the cities established after the independence of India. The Master Plan of these cities have urban greening component. Chandigarh today has more than 35% of its geographical area under tree and forest cover. Apart from the Department of Environment and Forests and the Municipal Corporation, the Horticulture Division and C.P.W.D are also involved in tree plantation and parks and gardens. Rose garden, Bougainvillea garden, Hibiscus garden, Garden of fragrance, Botanical garden, Leisure valley and Shanti kunj are notable attractions.



Gandhinagar canopy cover



Roadside Avenue Plantation, Chandigarh

Greening efforts in Bengaluru, Jaipur and Kolkata are also commendable.

Roadside Plantation in a city like Ranchi

The Urban Greening Guidelines of the Ministry of Urban Development, Government of India suggests avoiding brittle trees like Eucalyptus, Cassia siamea, Albizzia lebbeck because they have weak wood and they can break easily during wind storms resulting in traffic jams and even injuries. It also suggests avoiding thorny species like Babul (*Acacia nilotica*) and Ber (*Zizyphus*). Suitable trees with foliage for town roads are Kadamba, Neem, Imli, *Alstonia scholaris*, *Anthocephalus*, *Eugenia operculata* etc. For inner avenues flowering trees like Gulmohar, Amaltas, *Jacaranda*, *Bauhinia purpurea*, *Peltophorum* are suitable.

Trees in smaller groups of 4 or 5 in a row belonging to a single species or a mixture of species can be planted if sufficient length is not available. Even a solitary tree is of immense use, especially to protect vehicles parked under scorching rays of the sun.



Divider, M.G. Road Ranchi



Solitary Gulmohar tree, Haj house Ranchi

Kaner, *Plumeria*, Chandni, *Oleander*, Madar and Monokamini are flowering shrubs that are not eaten by cattle. These can be planted on dividers on wide roads.

Planting in real estate projects, offices, institutes, schools

Real estates, office premises, government establishments, schools, colleges, hospitals, religious establishments have relatively large open spaces, some of which may be easily utilised for tree plantations. There is a need to identify and maintain a list of such places. A long-term afforestation plan for such places should be prepared, executed and monitored. Long-term plans ensure continuity and enable carrying out post-planting operations like hoeing, weeding, manuring, casualty replacement. Timber trees like Teak, Gamhar, Shisham will be of utility to such establishments. Fruit trees and flowering trees should also be planted.

West Bengal Housing Infra-structure Development Corporation (HIDCO) had decided to create in collaboration with private organisation the country's first urban forests in Kolkata. Spread over four acres of land it will come up in Rajarhat. At least 8500 trees will be planted in this man-made forest which is estimated to produce 954500 kg of oxygen and will absorb 527000 kg carbon dioxide. People can pay for a tree and get their names written.

Air-purifying plants

Air pollution is connected to a greater risk of respiratory diseases, strokes and heart attacks. The new findings show a significant link between air pollution and miscarriage.

Inhabitants of a city like Ranchi should have in their premises plants which have special air purifying properties. City dwellers, ironically, are unaware of these properties which well known plants like snake plant, spider plant, dragon plants etc. possess.

Snake plant (*Sansevieria trifasciata*), also known as mother-in-law's tongue or devil's tongue or viper's bowstring hemp is an excellent air purifier. It absorbs Carbon dioxide even during night, and therefore can be kept in the bedroom. Spider plant (*Chlorophytum comosum*) produces oxygen in the room by absorbing carbon monoxide, formaldehyde and xylene. Dragon plant (*Draecena marginata*) purifies air of carcinogen and benzene found in off-gasing of synthetic materials, cigarette smoke and other household chemicals. It also removes formaldehyde, xylene found in varnishes, paints and paint thinners and trichloroethane found in solvents.



Aloe vera, Devil's Ivy, Peace Lily, Sword fern, Bamboo Palm, Chrysanthemum, Ficus elastica are other plants which can help clean the air.

Regarding tree species a team of researchers from Delhi University have zeroed in on five trees, namely, Peepal (Ficus religiosa), Saptaparni, Jamun, Devdara and Champa, which can help clean Delhi's air by trapping many pollutants and dust including PM2.5 & PM10, although parameters like tree height, canopy size, size, shape, orientation and texture of leaves have significant influence.

For coal belt I.I.T. Dhanbad (Indian Institute of Mines) has recommended Banyan or Bargad tree (Ficus benghalensis), Blackboard tree (Alstonia scholaris), Ashoka tree (Polyalthia longifolia) and Mango (Mangifera indica).

Strategy and logistics

Don't simply announce an ambitious tree planting goal. A long-term staffing and funding plan for planting, maintenance and monitoring must be put in place first. A committed team of willing personnel drawn from forest department, municipal body, civil society, NGOs etc. should undertake this task. Focus should be on developing a specialised nursery for raising seedlings of desired species, with advanced growth wherever necessary. Planting on public sites can be successful only when neighbourhoods see the benefits and take lead. System of rewards and incentives will have to be developed.

Mahatma Gandhi, writing for Young India in 1925, had said, **"I attach the highest importance to quality, irrespective almost of quantity. I plead for quality and quality alone"**. Taking a cue from this maxim of Mahatma Gandhi the ideal strategy would be to choose quality over quantity.

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The planting of a tree is a modest form of immortality and one of the few truly long-term expressions of hope to mortal human beings.

Voltaire

BLESSINGS OF VASUNDHARA

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The task of reengineering earth environment to enable 'NATURE's creation to resuscitate is a huge challenge. Managing lives in harmony with nature is slipping out of hand in spite of the eagerness of new generation to achieve an ideal environment. Both electronic and print media are replete with environment awareness and campaign calls; social media is bustling with surfeit and buzz on environmental concerns. It appears like building a fire under but ,alas, it lacks the desired trigger. Mitigative interventions are ruefully far too small . To walk the talk and join the array of initiatives exhibited by the international communities and the national government is call of the time . The task to clean earth environment is too large to be left to the governments alone; each one of us, therefore, have to play our part as an important stakeholder to environment – lest it's too late.

Its A CALL TO EVERY CITIZEN TO RISE to THE OCCASSION AND JOIN HANDS FOR THE CAUSE OF RESTORATION OF NATURE's balance. Let's take the pledge.

सवास्मै सर्वं प्रकृत्यै सर्वस्वं - Everything of mine is dedicated to Nature.

Atharva Veda says – माता भूमि : पुत्रोहम पृथ्वियाः - Earth is my mother I am her son.

It's now son's turn to follow "putradharma".

Physical disturbances have precipitated an early crisis, the “**Distressed Environment**”. The latest International panel of climate change (IPCC) report states that the global warming is currently increasing at 0.2°C per decade due to past and ongoing emissions. The Earth's average temperature data showed a warming of 0.85°C over the period 1880 to 2012. It was 0.87°C for the decade 2006-2015. Most of the warming occurred in the past 35 years. The planet's average temperature has risen about 1.1°C since the late 19th century(NASA); this is serious, an eerie and portentous stillness is hung over mankind .

Mankind is causing irreversible damages to mother earth. Overexploitation of natural resources including deforestation, excessive erosion of soils, deceleration in ground water recharge, air and water pollution and the likes have set a vicious cascading chain of disturbances in rainfall pattern altering seasons and crop yield, frequent droughts and floods, unconventional heatwaves, warming of atmosphere, increased pollution and sea level rise; increased loss of biodiversity coupled with growing population and consequent increased demand for food, and ecosystem services as well as livelihoods are outpacing the capacity of the earth to sustain life; corrosion of the ecosystem continues incessantly, divesting the civilization of the blessings that nature has so generously bestowed.

Says Desmond Morris in THE NAKED APE -A ZOOLOGIST 's STUDY of the HUMAN KIND “that a time will come when the densities we are now experiencing in our major cities would exist in every corner of the globe. ---The effect it would have on our species is depressing. He further says... that..we.. collapse as a dominant species.” Hyper consumerism has narrowed our vision. “The earth stands violated.” laments an environmentalist; the living planet is dismembered as land becomes real estate , forests become lumber, ocean becomes fisheries and sinks”

Basic issue is of alternatives.-

There is no alternative. We have to ensure a good earth. Window of opportunities available to us is miniscule. This generation has the responsibility to act as a TRUSTEE of the rich natural wealth for the posterity. The issue is not merely about Climate Change, its about Climate Resilience, Climate adaptation, Climate Justice. Some of the actions suggested to retrieve earth from spoilage are - adoption of appropriate technology ,reverting to nature friendly farming ; cropping pattern corresponding to demands of ever changing climate appropriate to agro climatic Zones, rational land use, particularly Forest Ecosystem-along with soils, water - rivers; Forests are singular most significant C-sink,if handled properly can reduce much of ecological stress, the disaster we are heading for. We have to be Climate Smart.

Strategy

Our ecosystem is largely sun and rain dependent, vitiated by excess of anthropogenic maneuverings. The major landscapes of earth ecosystem that sustain us are put under two categories for management purposes, the rural and the urban. Strategies for treatment of Rural landscape and Urban landscape are disparate. Watershed Centric development model is ideal for the rural areas particularly for state like ours wherein planning for Soil, water, forest, agriculture, cattle, and population management along with livelihoods and all other factors impacting life and livelihood can be addressed on priority. Micro plan aided by improved technology led micro watershed management routes of area treatment can provide basic operational platform. Community action groups like Self Help Groups, Joint Forest Management Committees, Panchayat level committees, are the drivers who can give natural resources management a sustainable push; democratic values get a strong foothold in the process. Convergence of government run watershed mission, National Rural Livelihood Mission, MGNREGA and other similar land based programs offer tremendous mitigation opportunities in bringing about changes in earth's distressed face. Specific activities such as mining (causing disturbances on earth and oceans)compounded by deforestation create unique environmental challenges and need separate ameliorative interventions.

Following the principle of 'Detention and retention of every drop of water' by making water harvesting activity compulsory holds huge promise. Greening by way of plantation of open spaces, protecting the trees wherever they are, Regeneration in forests –natural or artificial -are thrust areas.

Raphael Zon meaningfully categorises in "FORESTS and HUMAN PROGRESS – civilization dominated by forests, civilization overcoming the forests and civilization dominating forests"; we have reached the third category. Forestry needs to be given the place of importance it deserves as savior of life and biodiversity. Reaffirmation of faith in the mantra

अरण्यः ते पृथ्वी स्वयंमस्तु - Forest is earths delight –is the key . Let's pray and pursue it.

Urban landscape, on the other hand, displays worrying symptoms. Air is polluted beyond critical level, Water is equally befouled, rivers are sick and so is the ground water. Excessive use of plastic leading to creation of solid wastes, sewage effluents fuelled by unmindful disposal creating dumps; irregular expansion of human habitations and network

of roads in disregard to natural drainage and landscape resulting in choking and blocking natural flow of streams and water channels leading to serious environmental implications. Government legislations including judicial pronouncements issued in pursuit of reducing pollution loads at different levels have met with little success.

We are at crossroads of development and depletion of nature, survival and perils of progress. This calls for serious discussion. Few suggestions to cogitate :

1. "A CADRE OF ASPIRING PERFORMING YOUTH is raised to act as CHANGE AGENTS trained to work for rehabilitation of degrading lands, forest, water, soil, and farm ecosystem by adopting new technologies for comprehensive village development taking the common mass on board. Community groups, in panchayat and other functionaries become automatic stakeholders in planning, execution, monitoring and evaluation with an eye on accountability. Employment generation gets a boost in the process.
2. Another suggestion is to develop PERFORMANCE RATING of individuals along environment parameters like—cleanliness, leadership in waste management, saving against wastage of water, Ground water recharge services, working for control of air and water pollution, volunteering for environment services as well as public-watch reporting violations of environment norms to authorities, environment litigation, and environment awareness at large, list is endless. Best ones be suitably compensated and incentivized whereas defaulters penalized. It would be an exercise similar to one in finance lending parlance the CIBIL SCORE has.

We need to encourage and incentivize efforts and call upon intelligentsia particularly the parents, the teachers, the opinion makers, academic and scientific institutions and the society at large to help build up a strong band of motivated youth by appropriate MENTORING who would deliver goods and services to ensure clean environment and similar community based activities on a sustained basis. Such band of Young environmentalists shall go a long way in making of earth a better place to live, their stakes being inclusive. **The country, in the process shall get the benefit of a cadre of value based ENVIRONMENT BRIGADE so raised shall be subsequently further skilled, trained and oriented suitably on the lines** of young professionals in rural development sector. A standard operating procedure (SOP) shall develop through continuous and purposeful brainstorming.

Swachhata, the Clean Environment is the new (revival of traditional values) normal in 21st century. Development of environment friendly protocols and use of media including social media to enhance its outreach systemically to stakeholders will be the order of the day. Communication is buzzword and two way exchange of communication between academicians, scientists, stakeholders and the public at large is strongly recommended.

Planet earth is home to Humans who share the planet with an estimated 8.7 million different forms of life. Our support for the collective survival of the biodiversity is vital and indispensable for security of the environment. New technologies based on Research and Development with ameliorative measures making the ecosystem more robust, and disseminations of environment friendly products and services are other dimensions where sincere follow up is called for.

EARTH DISTRESS and looming threats it's confronted with, need to be drilled deep in minds of one and all through value based education and extensive awareness. For a complete behavioral and life style changes the corona pandemic is showing the way. Should we wait for another holocaust for lifestyle shifts that could ensure a better survival ecosystem maneuverings? Hardly we can afford this.

परिवेश रोगग्रस्त है,
भू, नीर, चिर, समीर संग,
अचला की शक्ति ध्वस्त है।

पुरुषार्थ थोड़ा तुम करो,
प्रलय की धार मोड़ दो
विध्वंश को प्रतिरोध दो।

प्रबुद्ध हो किशोर तुम,
और भी प्रखर बनो
वसुंधरा-आशीष का स्तवन करो,
नमन करो नमन करो।

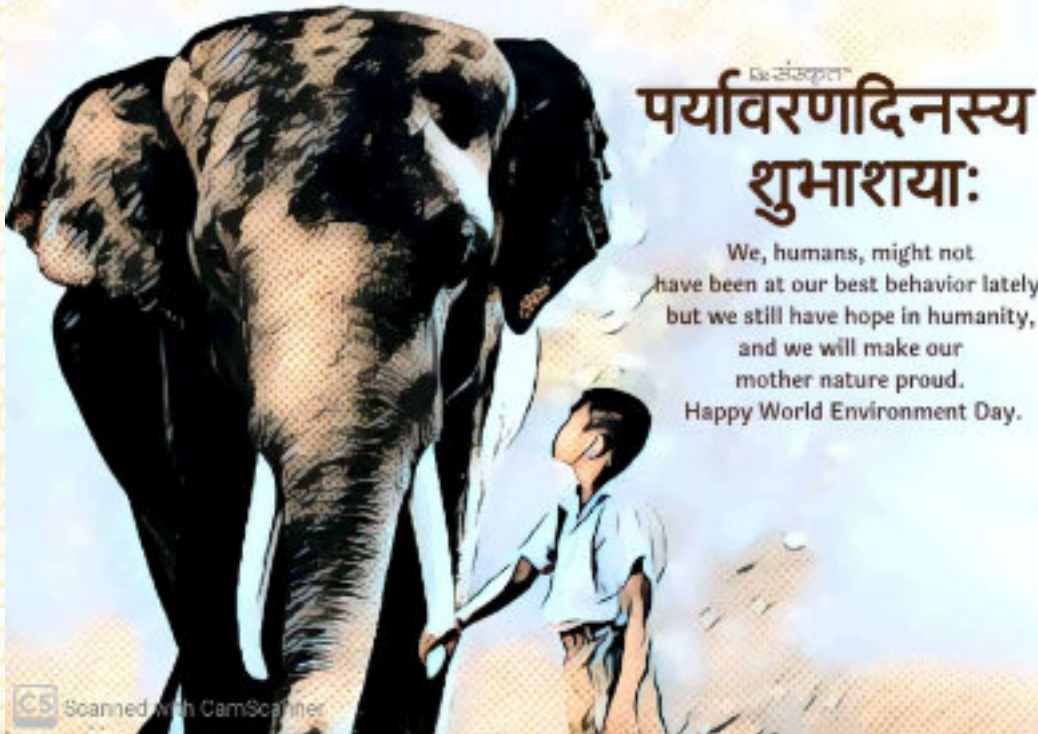
माता भूमिः पुत्रोऽहं पृथिव्याः ।

resanskrit.com

Earth is my mother and I am her child.

Atharvaveda 12.1.12

ये धरती हमारी माता है और हम इसके पुत्र है।



CS Scanned with CamScanner

India's Paris deal compliance is excellent but need to declare climate emergency hot spots

Dr V. K. Bahuguna, I.F.S. (Retd)

(Former Director-General, Indian Council of Forestry Research and Education and Chancellor FRI University, and Agriculture Production Commissioner Government of Tripura)

The climate change fall outs are not only banging at our doors but have entered our homes unsettling the normal life across the country particularly destroying the fiber of life sustaining resources. Many parts of the North and West in the country were reeling with intense heat wave during May and June when the temperature touched 50 degrees in Churu in Rajasthan on 12th June. It touched up to 50.8 °C near to all time high recorded in the country at 51.0 °C in 2016. Most of North and Western India has been reeling under severe heat waves causing drought and severe water scarcity. The Monsoon though had covered the entire country was 21 % deficient in the first week of July. The vagaries of Monsoon and weather truants in the entire country are being faced all round the year for quite some time now. The crucial July month is receiving less rain compared to September and late August and this is posing a challenge for the food basket of India. The draught due to delayed rains and floods due to excessive rains in short period have become very common causing unbearable hardship to the people and damages to life and property coupled with water wastage. Already till the beginning of July second week this year the sowing of Kharif crop has declined compared to last year. India is therefore, extremely vulnerable to climate change and the main culprits is melting of Himalayan glaciers and erratic Monsoon.

Many countries in the world especially in Europe have started taking adverse climatic changes seriously. French have recently declared climate emergency in Paris. The British parliament, Australia and Ireland have already declared climate emergency during May 2019 at several locations. The purpose of climate emergency is to take radical steps to obtain zero carbon emission by 2050 and take all possible short and long term steps and mobilization of resources to prevent deterioration of environmental ambience. So far world over climate emergency has been declared in 740 locations by the local or national governments.

The United Nations had warned that humans have just 11 years left to limit a climate change catastrophe. In view of lurking danger let us examine the theraat and seriousness of impacts of much needed development of the country and end poverty. As far as Indian commitment to Paris deal is concerned it is quite encouraging considering the international dimensions. The country has pledged a 33-35% reduction in the emissions intensity of its economy by 2030, as compared to 2005 levels in its Nationally Determined Contribution submitted after the Paris deal, generate 40% of its electricity through renewable or nuclear energy and increase tree cover to create an additional cumulative carbon sink of 2,500-3,000Mt CO₂e by 2030 it is roughly on a par with India's total emissions across one year. India however, asserted that its achievements will depend on international financial and technology transfer as well as capacity building support from developed countries. During the COP 24 in Katowice in Poland India asserted that it is well on course of achieving its Paris commitments.