Devaraj Urs firmly believed that development would never be possible unless the doors of power, wealth and opportunity were open to everyone. That was why he hand picked the leaders belonging to backward, dalit and minority communities and nurtured them politically. He achieved equitable distribution of wealth through land reforms. He encouraged the deprived classes providing more opportunities through reservation in education and jobs.

Karnataka has a long history of social justice. From Basavanna to Nalwadi Krishnaraja Wodeyar and Devaraj Urs, several great souls have pulled this cart of justice this far. The onus of taking this further lies on my government and myself as Chief Minister. Social Justice as a principle is very close to my heart.

Being committed to social change, I am myself experiencing how difficult it is to carry on in politics. Whenever I feel dejected, I recall the hitches and snags encountered by Urs and steel myself to move ahead.

Devaraj Urs has been a role model to anyone interested in building the state, beyond party or caste. The entire state is celebrating his birth centenary as a mark of respect to the departed soul.

Chief Minister

A.N. Yellappa Reddy

D. Devaraja Urs Birth Centenary Committee
Department of Backward Classes, Devaraja Urs Bhavan
III Floor, Millers Tank Bed Area, Vasantanagar
Bengaluru- 560 052
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Dr. A.N. Yellappareddy, IFS (Retd.)

D. Devaraja Urs

Harbinger of Environmental Philosophy

Copy Edit:
Smt. Padma Ramachandra Sharma

D. DEVARAJA URS JANMASHATAMANOTSAVA SAMITHI,
Department of Backward Classes Welfare,
Devaraja Urs Bhavan, III Floor,
Millers Tank Bed Area, Vasanthanagar, Bengaluru- 560 052.
"This book is dedicated to Eco system, people of Karnataka for their love, support and wisdom"
Preface

The main intention of the government is to introduce the life of the achiever who strived for the upliftment of the down-trodden, former Chief Minister of Karnataka D. Devaraja Urs, to the new generation by celebrating his birth centenary.

The Devaraj Urs Birth Centenary Committee has planned to organise seminars about the thinking and achievement of Urs, publishing of books, training of the youth leaders, drama-dance dramas and many other programmes for one whole year.

Devaraj Urs was a mass leader, who grew among the people. Though he did not directly experience the poverty, untouchability, inequality, he was a great soul determined to uproot these anti-humanity system and was instrumental in achieving it.

Devaraja Urs firmly believed that development would never been possible unless the doors of power, wealth and opportunity were open to everyone. That was why he hand picked the leaders belonging to backward, dalit and minority communities and nurtured them politically. He achieved equitable distribution of wealth through land reforms. He encouraged the deprived classes providing more opportunities through reservation in education and jobs.

Thinking of many great souls have been motivating me and have led me in the right path in my political life. Among them, D. Devaraj Urs has a special place. I am proud to say that I too the son of this soil like him.
Karnataka has a long history of social justice. From Basavanna to Nalwadi Krishnaraja Wodeyar and Devaraj Urs, several great souls have pulled this cart of justice this far. The onus of taking this further lies on my government and my self as Chief Minister. Social Justice as a principle is very close to my heart.

Being comitted to social change, I am my self experiencing how difficult it is to carry on in politics. Whenever I feel dejected, I recall the hitches and snags encountered by Urs and steel myself to move ahead.

Devaraj Urs has been a role model to anyone interested in building the State beyond the party or caste. The entire state is celebrating his Birth Centenary as a mark of respect to the departed soul.

(Siddaramaiah)
Among the great Chief Ministers Karnataka has witnessed, D. Devaraj Urs has occupied a superior position. Devaraj Urs is known to be the pioneer of Social Justice who has brought voiceless communities to the limelight.

He was a leader with a unique view of creating awareness in public life of the state through Havanur Report. Late Prime Minister Mrs. Indira Gandhi had taken initiative to uplift the oppressed, downtrodden and backward community through 20 point programme that could strengthen them economically. Devaraj Urs was instrumental in making her dream come true. Karnataka is one among those states which adopted the 20 point programme meaningfully.

Land Reforms Act that says Cultivator is the Owner, ban of inhuman practice of carrying human excreta on one’s head, eradication of serfdom, slavery and other revolutionary acts were designed, initiated and got rid of the blackmark to the society. Devaraj Urs, through his programmes and social dedication dreamt of new dawn and drew the nation’s attention. It is my privilege of being the Minister of Social Welfare and Backward Classes Welfare Department during the birth centenary celebration of such a great leader.
On this occasion, in order to introduce the state especially the next generation, the different milestones/aspects of Devaraj Urs' life, these books are being published. I am thankful to all the intellectual writers, thinkers and the officers and the staff of the department who lent their hands in this regard.

(H. Anjaneya)
Message

D. Devaraj Urs was one of the eminent politicians that Karnataka has seen. He was not only a politician, Devaraj Urs was a wonder, promise and a hope. As Chief Minister, he led our state Karnataka from 1972 to 1980, wholly uniting Karnataka emotionally/sentimentally which was split. Devaraj Urs believed that people had given him the power in order to reform their lives and he viewed the public life as a trustee and lived so. He has occupied a perennial position by initiating projects to provide equal life for everyone as per democracy. The rule of Devaraj Urs was a golden era for the oppressed in Karnataka.

The concept of Social Justice followed by Devaraj Urs was unique in whole nation. Identifying the communities which have been exploited for decades together and giving them preferences and opportunities to participate in administration, made Devaraj Urs a visionary statesman. His remembrance is refreshing to those who dream of a society with equality.

It is worthwhile that the Government of Karnataka has decided to celebrate various programmes in the name of Devaraj Urs’ birth centenary. The birth centenary celebration of Devaraj Urs that began on August 20, 2015 has been carried out year long. The Government has taken up the initiative to introduce his memories to the present generation through various programmes. Out of numerous transformation programmes implemented by him such as prohibition of carrying human excreta on one’s head, Land Reforms Act - providing ownership of the land to the cultivator, reservation for the backward communities in employment and education, Debt Relief Act, stipendary programme to the unemployed youth, providing oldage pension were memorable
and unique programmes in the nation. Various programmed have been conducted state-wide in the pretext of the birth centenary celebration, to make his reforms alive.

On the occasion of birth centenary celebration of Devaraj Urs various books are being published, such as *Arasu Yuga*, *Vidhanamandaladalli Arasu*, *Arasu Navayuga Nayaka*, *Arasu Angana*, *Arasu Munnota*, *Arasu Chitrakathakosha* etc. I extend my gratitude to the elite of the literary world engaged in taking up the initiative of the birth centenary programmes on behalf of the Executive Committee formed by the government.

Adaguru H. Vishwanath  
Chairman  
D. Devaraj Urs Centenary Executive Committee  

Bengaluru  
20.8.2016
The decade of 1970s is significant in the history of independent India. It was the time when Indira Gandhi as the Prime Minister, ushered in several popular and socialist measures. Her 20 point programme included the abolition of privy purses, nationalization of banking and insurance, land reforms, abolition of bonded labor and several other progressive legislations. This infused new strength to contemporary politics of that time. Four decades later, when we look at the Indira era in retrospect, one has to agree that it was a time of change and reformation. If not for her hasty decision to impose the emergency, her memory would be even brighter in the nation’s history.

For Karnataka, Indira Gandhi’s greatest contribution was her decision to make Devaraj Urs, the state’s Chief Minister. After assuming office in 1971, Devaraj Urs was at the helm for the next 8 years. He was to be a beacon of change in the state’s political culture and a harbinger of social transformation. His administration’s emphasis on social justice, gave new confidence to underprivileged communities. Free from any caste bias, Devaraj Urs’ inner circle comprised people from all strata of life. He sought to create hope and opportunity for the poor and downtrodden from all communities. But since India’s social reality is such that a majority of the poor are dalits, minorities and backward communities, it was no coincidence that they were the main beneficiaries of Urs’ social reforms. Likewise, while a majority of land holders were from the upper castes, those who
worked the land were from backward communities. The land reforms that Devaraj Urs enacted saw tillers become owners of the land they worked on. Among the beneficiaries many were also people from the upper castes.

Apart from land reforms, Devaraj Urs introduced several landmark legislations in Karnataka for the first time. These included abolishment of bonded labor, fixing minimum wages for laborers, waiving loans to free the poor from debt, abolishing the repulsive practice of carrying night soil (excreta) by lower caste people, pension for senior citizens, monthly support wages for people with disabilities and stipends for the unemployed. These were complemented by several development initiatives.

Another achievement of Devaraj Urs was constituting the Havanuru Commission. This helped to study the social composition of the state in a scientific manner and create proportional representation to backward communities through reservations in government jobs. Devaraj Urs broke the established stranglehold of dominant communities in the politics of that time. One of his most significant achievements was in identifying talented youngsters from underprivileged communities and encouraging them to take political leadership. This political foresight of Urs changed the very canvas of Karnataka’s politics. Today, the young leaders that he brought to light are at the forefront of the state’s political mainstream.

In the field of Culture, Devaraj Urs was known for several novel measures including officially renaming the state from Mysore Presidency to Karnataka, making Kannada the
official language, introducing stipends to artists and writers and formation of state academies.

The period under Devaraj Urs was one where independent Karnataka took giant steps in creating an equitable society. It is appropriate that the state government has decided to mark this great leader’s centenary year in a memorable way. As part of the centenary celebrations, a variety of events including seminars, theater and music performances, film and video festivals will be held throughout the year. One of the significant programs as part of these celebrations, is the publication of books on Devaraj Urs. There is already some published work on the life and work of Urs. There is also a collection of his speeches. As part of the centenary year, it has been decided to reprint some of them. We have also decided to commission and publish new writing on Devaraj Urs by prominent writers, which will comprehensively and insightfully document the many dimensions of his personality. It is an ambitious project that includes interviewing his colleagues, relatives and renowned people from various fields who worked closely with Devaraj Urs. These will be published as a book. We will publish a collection of his speeches in the legislative assembly, documented chronologically along with notes. A pictorial biography of his life, separate booklets on his unique progressive measures, a comprehensive biography, and the translation of these to various Indian languages – are also part of our endeavor. In terms of information and analysis, each of these works is unique. These can be a crucial resource for future historians.
Several writers of books, editors who compiled essays, people who contributed individual pieces for books, research scholars who collected material and interviews, those who contributed pictures, book-cover designers and the efforts of several others has gone into making this project worthwhile. I’m immensely grateful to all of them. On behalf of all writers, I thank the government of Karnataka for giving us the opportunity to humbly contribute towards celebrating the centenary year of such a visionary leader as Devaraj Urs.

Professor K. Marulasiddappa,
Chairman
Publications Committee
My Words

Sri Devaraj Urs’s approach to community was atypical, because of his intimate knowledge of the rural economic and social matrix. He has become a great sympathiser and tried to force and fix the developments into socio-ideological agenda on the advice of a great social scientist, Prof. M.N. Srinivasan. Prof. Srinivasan was rational and had perfect understanding of the Indian socio-economic arithmetic and had intimate knowledge of the intricacies of village politics and social fabric, because of his long stay in Ramanathpura during his Ph.D. thesis studies.

Prof. Srinivasan’s advice was to bring people together in the rural segments to bridge the gap between the privileged and excluded sections of the society. Sri Devaraj Urs was able to understand this void and promote cultural bindings to eliminate the territorial and narrow cultural ideas, not only in Karnataka but in the nation as a whole. He brought in silent revolution, realizing the urgent need, to identify the economic matrix and to formulate means to achieve the egalitarian goals. He concentrated on reforming institutions, administration and bureaucracy, to understand and prepare a holistic plan for the improvement of socio-economic fabric. He pioneered initiatives to eradicate caste oppression, freedom from hunger and social anathema.

Prof. Srinivasan was keen to promote the idea of a country that is united in its diversities and fearlessly envisage the state that is secular and politically unison in a constitutional republic to strengthen nationalism. He was also keen on sowing the seed for inclusive and progressive society, adhering to the lynchpin of India’s nationalist struggle. He was able to diagnose and recognize the immediate need to eliminate the disparity and casteism which estranged and
persisted in the country. He motivated Sri Devaraj Urs to understand his laudable findings to evolve an administrative mechanism to set right the social maladies.

He also emphasised the unity in diversity which is meant to accommodate the differences rather than express elimination of disparity, which is needed where casteism is alienating and legitimate differences persist, the harmony of the local bodies will be strained to accomplish the development.

Sri Devaraj Urs was a voracious reader and thinker. He was able to feel the pulse to enforce the need of patriotism, nationalism and education which were defined very narrowly by the colonial rulers without any consideration to accommodate the diversity of thought even on environment and ecological issues which were linked to terrorism to prevent development.

Even after independence the basic amenities like air and water quality, welfare and wellbeing were sidetracked. But Sri Devaraj Urs realised the need for promoting and preserving the ecosystems and ecological integrity for economic prosperity. He was fully conscious that the country solely depends on biomass production for its development, employment and eradication of poverty. In this book, I have highlighted some of his accomplishments in restoring the communal harmony by providing a space for oppressed classes and reforming several acts and making provisions for reservations at different levels to uplift the minority and the oppressed.

A.N. Yellappa Reddy

Bangalore
Context

• From Stiffness to Smile
• Role of bees – beetles in maintaining the health of the sanctuary
• Secret world of Fungus and Rhizobium in the forest ecosystem
• Launching of Project Tiger at Bandipur
• Past history of Coorg and Mysore forests.
• New thought in the farm
• Tree Protection Act
• Stopping the Forest Robbery
• The Innocent killers?
• Oriental Aromatic and Tibetan rehabilitation at Doodaharvai reserve forest
• Hassan experiences
• URS’s 60th Birthday- Event at Nagarhole National Park
• Rosewood - Trade
• Role of wetlands in Nagarhole National Park
• Ramsar Convention
• What are Wetlands?
• Water is a wonder molecule
• How Government systems function
• Chaanda- deep born- ecologist
• Kariya – a seasoned mahout acquired deep knowledge about elephants and their habitats
• Urs – A person with compassion and comprehension
• Bangalore was the first city to notify green belt
• Tamarind Patenting
• Origin of Green–Belt
• The accomplishments of Urs’s Achievements in safe guarding public trust
• Human Relationship with – Nature
From Stiffness to Smile

I met Sri Devaraj Urs for the first time at Hassan. It was 1971 Loksabha election time. Our state was under President’s Rule. Mr. Dharma Veera was the Governor. At the national level, Congress was divided into two parties, syndicate & indicate parties, they were ready to fight in the election to decide their future. I was not interested in politics at all. My favourite areas were Agriculture and Forestry. Beyond that I was not that much keen on knowing what was going on in the outside world. But I was aware of the happenings around the state through news media but I was more engrossed in my work.

But as I gain some experience in administration, I have realised, that only when Legislative body, Judiciary and executive work together in one direction, development of society is possible.

In 1970, I was Deputy Conservator of Forest, Hassan District. Geographically Hassan is a unique place because its varied ecosystems within the district. In my opinion this district had unique well defined ecosystems due to varied rainfall and geo-morphological features of mountains, hills, valleys, streams and river system flowing through this district to both Arabian Sea and Bay of Bengal. Therefore, this district forms a very important water supply catchment to peninsular India. Especially Karnataka gets the maximum benefit from several perennial rivers and seasonal rivers. I was able to recognize the importance of this water supply catchment to Karnataka and to peninsular India. I took up intensive re-forestation programme through mechanization to trap every drop of rain water in the critical water supply catchment areas of Hassan district.
This district had unique biological settings of Malnad, transition zone and semi arid and arid zone with distinct ecosystems. It also possessed rich agro ecosystems of Coffee, Cardamom, Coconut, and very rich dry land ecosystem to support a wide range of minor millets like Ragi and also rich biodiversity of domestic animals. The farming communities had also introduced commercial crops like potato, tobacco and plantation crops like Cardamom, Coffee and many other subsidiary horticulture crops. The survival of the rich ecosystem solely depends on the ecosystem services, offered by the forest ecosystems and unique biodiversity of plant and animals in and around the settings of plantation crops, agricultural crops and also the rain fed crops in semi-arid locations like Holenarasipur, Channarayanapatna, Aarsikere is to produce very rich highly nutritious crops like Ragi, Horse gram and several other pulses. The livestock biodiversity in this region is also of high value.

The cultural settings of Belur, Halebidu and many hundreds of temples with unique carvings in unique settings speak volumes about the cultural richness and the rich ecosystems were primarily responsible to lay foundation for rich cultural heritage in this district. Intensive study of each architecture reveals the role of biodiversity of plants and animals in incorporating the delicate, intricate structures of plants and animals in each carving, clearly spells out the richness of the biodiversity in this region and the way the community, especially the skill of artists who had imbibed the panoramic beauty by closely observing nature, landscape and its fauna and flora. The art and culture clearly reflects the prosperity and harmony and well-being of the communities in Hassan district.
The majestic monolithic statue of Gomateshwara was delineated from monolithic peaks, and its valleys, as well as settings with plant communities which were well adapted to the location. The statue of Gomateshwara will reveal the climbers, creepers and stranglers covering and adding natural beauty to the statue. This sculpture has reflected the beauty of the ecosystem which skilfully incorporates the elements of the ecosystem, to add natural beauty to the statue of Gomateshwara. I felt this statue is an index to restore and rejuvenate the ecosystems of this region. I had some sort of a vision to incorporate the eco elements to beautify the hill ranges of Shravanabelagola but I had been transferred to Hunsur within one year of my stay in Hassan District. So I could not fulfil my dream of enriching the hill region of Shravanabelagola. Even now in the name of development, a huge amount of money is being spent. If that money is diverted to restore and rejuvenate the ecosystems, the beauty of the region can be enhanced and water scarcity of the region can be mitigated to a great extent.

This insight I acquired because of my stay in Kodagu circle as a mobile squad officer which has helped me to understand the importance of the watershed and forest natural vegetation. During this period I have travelled the entire Western Ghats of Kodagu circle starting from south-Canara to Beligiri-Rangana-Betta including Bisile of Hassan district and other hill ranges touching Chickmagalur mountainous belt. These backgrounds helped me to visualize the scenarios of the Western Ghats of Kodagu circle, which included Mysore district, Kodagu and the then South Canara which includes present Udapi and Mangalore districts.
The year 1971 is an epoch year in the Indian history of politics where the Congress Government was vertically divided between Indira Gandhi and all other doyens of Congress. Sri Devaraj Urs had joined Indira Congress and took the lead in forming Indira Congress Party in Karnataka State.

In the same year Smt. Indira Gandhi and Regional Congress President Sri Devaraj Urs had come to Hassan for election campaign. The public election meeting was fixed at 9.30 pm. The responsibility of arranging the local hospitality was the responsibility of the district officers. Along with district commissioners, District police officers and other senior officers of other departments, I was also waiting at the guest house for their arrival. They arrived at 12 midnight after addressing several election campaigns. Several thousands of people were eagerly waiting to have the glimpse of Charismatic personality of Indira Gandhi and Devaraj Urs. They addressed the gathering for about 30 to 40 minutes. The crowd was listening with rapt attention. They returned to the guest house and had dinner. Surprisingly, both the leaders were ready to reach the next place at 5.30 a.m. All of us were astonished about their punctuality and the commitment of both the leaders.

In 1971, Devaraj Urs was not a popular recognised leader in Karnataka state, when Congress Party was divided at national level. In Karnataka Samstha, Congress was headed by popular national level leaders like Shree Nijalingaappa and others whereas Urs was the only leader heading Indira Gandhi Congress. There were no other recognised leaders. I congress accepted Urs as the only leader heading the I-congress. Indira Gandhi had appointed Devaraj Urs as the President of Regional Congress.
Nobody thought that Urs had the capacity to build a political party which Urs would be strong enough to fight with Samstha Congress though he was leading I Congress. Therefore, in those days; Urs was an unrecognised politician in front of leaders like Nijalingaappa, Veerendra Patil, and Ramakrishna Hegde who were seniors and glamorous leaders of Karnataka.

During Governor’s regime, I had been transferred to Hunasuru forest division as a Deputy Conservator of Forest which is supposed to be a very big division, Normally only senior most officers used to be posted to this division. It had jurisdiction of half of Coorg district and half of Mysore district.

However, for the first time when I saw both the leaders closely, in 1970, I never imagined they would capture power, both at centre & state. Indira Gandhi had thrown everybody, who opposed her from the party and she was controlling her party with an iron hand.

The result was shocking, throughout the country. Indira’s Congress party was victorious with sweeping majority. In Karnataka, Samstha Congress which was popular, suffered defeat. Before election, Sri Urs was visiting Hunsur as a Congress I leader during President’s Rule in Karnataka State.

I assumed charge as a Deputy Conservator forest Hunsuru division in 1971, in the month of June. As soon as I took charge, I had to conduct the Timber auction sales. While conducting auction sales at Kallahalli timber depot, I received a message to meet Sri Urs at P.W.D guest house. I informed the messenger that I would meet him during lunch hour as I was engaged in conducting the timber auction sales. The same could not be
stopped abruptly because at large number of bidders were participating from all over India, to buy timber. I requested the messengers to convey the message to Sri Urs.

I went to the T.B. during lunch time and paid my respects to Sri Urs. There was a big gathering of congress members and workers in the T.B. Looking at me and at his watch, he asked me “Are you a probationer?” I noticed his feelings of recognizing my sincerity and punctuality. He offered a chair and I sat down. It was not surprising that Sri Urs thought I was a probationer after noticing me.

Though it was not a very long period since I came to Hunsuru, I knew about Sri Urs’s background, his influence through local people. I had seen him at Hassan but there was no opportunity to speak to him. By looking at the crowd, I was thinking of the reason for my summoning, Sri Urs spoke to me with dignity and told me about a land dispute that was between the Congress President of Hunsuru Taluk and the Forest Department and instructed me to look into it. I replied that it had been not even one month since I took over. I would look into the details and try to solve the problem.

He graciously smiled and said, “O.K.”.

The Hunsuru division had major timber depots and rich forest and wildlife area comprising Nagarahole Sanctuary which is adjacent to famous Kakanakote forest and also Western Ghats, Parts of Wynad of Kerala state.

The management of four elephant camps near Kallahalli, Nagarahole, Hebballa & Mattigodu and saw mills of Murkal, was under my control.
I also had the big responsibility of maintaining the life of six thousand tribal people who were living in the middle of the forest. They were part of the forest eco system.

After going round my jurisdiction and assessing the nature of activities I could make out a well organised poaching and many other illegal activates were systematically occurring in every forest range of my division. I made my own assessment and discussed with staff members and also tried to gauge the magnitude of the problems.

I also observed that illicit distillation and some retailed ration shops were flourishing in the middle of the forest with the blessing of a local political leader and the department officials ignoring these activities. I was curious to know the reason for tolerating these evil practices in the middle of the game sanctuary. The tribals were also beneficiaries in this process of accommodating this kind of illegal practices. The tribals were supplying all kinds of non-timber products like honey, horns, and other forest products to the ration shop holders and liquor supplier. Strangely, our officials were issuing chits to the ration shop owners to supply ration to the tribals instead of paying wages. On enquiry, I came to know they paid cash as part wages and part ration from the retail shop owned by Kerala merchants. There were some understanding between official and the Kerala merchants who were exploiting the tribals.

After assessing the situation I instructed all my officials to evict all such retail shops and remove illicit distillation centres on priority. I also suggested to use our departmental lorry to supply their ration by procuring from govt. retail stores. This intervention had helped to improve the living conditions of the tribals. No doubt
I had to face multi-level resistance within and outside. I handled it very diplomatically and weeded out all officials who had joined hands with all kinds nefarious activities.

After successful eviction of retail shop keepers in the middle of the sanctuary, I gained confidence that I could tackle all the problems which were tampering the eco systems within and in the periphery of the sanctuary. I intensively walked in the forest to access the ecological features and compared them with Hassan district ecological features. Hunasuru division is KR nagar, adjacent to KR pet and Halli Mysore of Hassan, Mysore & Mandya.

Hassan district. I started comparing geo-ecological features of the diversity of Sahayadri hills Maidan.

While inspecting Besalighats, Kagenari and Kempaholley I have seen unique eco system of vegetation in the forest as well as in the coffee zone of Hassan. Compared to Hassan and Coorg Coffee Zone, a distinct Natural tree composition was serving as shade for coffee and cardamom. In Hassan the coffee planters preferred, Cedrellatoona and Acrocarpus fraxinifolious (locally called Havalige and Gandhagarge). The Gandhagarge was a huge tree with unique sexual behaviour. The flowers of this tree were yielding a yellow dye for silk dyeing and this dyeing was supposed to remain permanent. The panicles of this tree are white and normally blossoms in April & May. The dye stuff is produced by small glandular hypogenous discs at the base of stamens,

Some flowers are Prostesteamonous that is to develop stamens first and other are posteemonous that is to develop pistil first. The flowers are honey scented but insects are attracted by colour, not by scent. That is very unique sexual behaviour. In
addition to the above the monsoon forest of Bislae was supporting endemic vegetation of Ebony and its associates. In the same way, Halli Mysore, 50 km away receives 200 to 300 MM and Bislae 3000 to 3200 MM rainfall. This contrasting climate factors greatly influence the vegetation.

While observing the forest eco system of Coorg district and coffee tree crops, a distinct composition of tree crops around Pollibetta which supposed to be the best coffee zone.

I used to spend a few hours with Sri Urs at his residence in Kallhalla almost once in a month. This accessibility was cemented my confidence to tackle the problems and also I decided to perform my professional duties. I determined to maintain integrity in my administration. I found in Urs, a born leader and leaders cannot be manufactured in workshops. He had tremendous inner strength to encounter challenges and he used to remain unscathed for political comments in the Assembly and also from media. I acquired some of his characters without my knowledge, by looking at his inner moral strength.

**Role of bees –beetles in maintaining the health of the sanctuary**

Science till today has not tapped the power aerobic bees and power of beetles to enrich the landscape with humus. I observed that the services provided by bees and beetles will maintain the eco system is productivity and health. It may not be an exaggeration that our country can become self-sufficient in oil seeds and pulses if eco components are incorporated in rain-fed agriculture systems by enriching with oilseeds & to provide forage & breeding habitat.
The other crops that could benefit from onions, beans, coffee, oranges and many other crops will not only enhance production but also quality enriched eco-systems contribute to increase fertility & health.

Bees help to improve production in self-sterile plants that depend on outside agents such as wind, water insects and birds to disperse pollen. Even edible oil production and agriculture biodiversity would have taken care of the country’s needs. For e.g. US earn about 8 to 10 million dollars annually due to bee pollination alone, China, Mexico, Argentina are far ahead of our country in producing quality apiary products.

Indiscriminate use of chemicals has killed the pollinator, includes bees which affected our agriculture production. One thousand bees are adequate to pollinate one hectare of crops fields. They can travel more than 35 km from their hive. The Municipal waste containing Pepsi, and other beverages and aluminium cans have become traps to kill bees, ants, and other animals which contribute to maintain the eco system. Even in wild life sanctuaries these types of waste are taking heavy toll of beneficial animals. I instructed our staff to prohibit discarding of all plastic and other waste in the forest.

Like bees and beetles in the forest eco system plays immeasurable role in enriching the soil by converting the dropping of elephants and other herbivores. They roll the dung almost 8 to 10 times heavier than their body and embed under the soil so that the humus will perform a great role in enhancing the hydrological function of infiltration to maintain the steam flow as well as to increase the forage production for herbivores population. The population dynamics solely depends on water and forage
production on the forest floor. Maintenance of ground level bio
diversity is vital for both Carnivores and Herbivores. Therefore,
scientific forest husbandry is a critical components. Forest fire
destroys the above eco elements, but occassional control ground
fire scar helps to some extent for germination.

Realising this, colonial administrators a formed an excellent
network of fire lines. I took special interest in maintaining the fire
lines and I greatly and extensively succeeded in protecting the
game sanctuary which includes Veeranhosalhalli, Kachavanahalli
and Anaechowkur, of Mysore district, which forms the buffer to
Nagarhole national park.

**Secret world of Fungus and Rhizobium in the forest eco
system**

The elephant dung and urine as well as herbivores dropping,
forms an excellent habitat for mushroom’s growth which is a mystic
creature. They live in dark underground world anonymously. They
work underground all-round the year and rain brings mushrooms
to the surface in all their colourful panoply. Here the inter connection
of beetle embedment of dung below the ground to facilitate the
mushroom growth. The mushroom growth helps in root growth of
trees. For each tree species a specific fungus inter connection is
critical for their survival and to maintain the membrane connection
to pump water from xylem bundles to the tip of a tree to the height
of 60 to 100 ft.

On the forest floor we see rich varieties of fungus fruiting
bodies which are closely related to flowering plants. The anatomical
details of fruiting bodies are simple but they have distinct species,
specific shapes and sizes to serve tree crops to pump water from
ground level to 100ft and above without any HP power.
Large number of scientists are engaged in studying the evolutionary, underlying genes. The mystery of inter connections of fungus, trees, beetle, earthworms, ants, up to elephants are intimately connected.

Besides the above, the nitrogen fixing plants, including small tiny herbs and climbers play a major role in enriching soil. Trees play an immeasurable role in synthesising protein molecules. The Rhizobium are the machines that can absorb atmospheric nitrogen and convert it into soluble nitrogen. The nitrogen for all living creatures are body building blocks and also they alone can align muscle together and move in tandem, expanding and contracting like a spring in the muscle fibres, especially tiger, panther, and other fast running animals.

Realising the importance of the legumes, I took up controlling the alien species like Parthenium, Eupatorium, and lantana, which are invading the forest floor. The invasion of weeds has reduced the forage biomass which forced the wild animals to stray in search of food. My efforts to control the weeds has payed good dividend to confine and to increase the population dynamics of the bio diversity in the sanctuary.

The strange phenomenon is who takes care of the welfare of the plant community in the forest eco system. According to scientists, it is fungi in soil which plays critical role in energising root cells. It is known that a protein in the fungus contains a molecule called proton pump at the interface of fungus and root cells, energizes cell membranes, cementing pathway into the plant cell for nutrients like phosphorus and other molecules.

On the forest floor there are a number of flowering plants and most of the flowering plants starting from trees, climbers,
orchids, shrubs, herbs, decorate and celebrate & maintain the health of the mother earth. The flowers are crucial to life on earth, add colours and fragrance to lure pollinators, so that the blossoms can transform into fruits and seeds.

The cause and effect in the eco system is a seed sown is the cause, but sowing of the seed at a right time, at a right place, at a right season is the effect. The plant is the promoter, controller and regulator, of life in the forest eco system, that is the eternal reality. This eternal law is always progressive, continual in the life scale which can penetrate the panorama of life under the ground through the root system. Therefore, the root system forms the soul, heart, brain of the plant kingdom. The root system performs all its functions, without the help of sun god, but relentlessly interact with its micorrhiza and rhizobium bacteria which connect to sun, nitrogen cycle, carbon cycle, water cycle. The root regime is surround by billions of living creatures. These creatures provide all the ingredients to transform, insentient into sentient.

The root system, and root cap think operate and transform all the ingredients required for all living creatures, They also share their sentiments by understanding the emotion, which need to be expressed through essential parts like flower, fruits, seeds, fragrances, colour, beauty, and what not, from visibles above the ground, though the root stays below the ground to the depth of three MM to 30Mt deep and 50mts latterly by connecting to the universal mother that is Aranya.

This explains how the panorama of life above the ground influences the emotional feelings and develops strong specific relationship with the living world of insect, bird, tiger, animal, and human being. The only species which fail to understand this
relationship of sentimentalism which is key to life bondage “is man”, who failed in caring of the mother earth. We need to develop an inner vision to attain unity from mother earth to the divine world of beauty. For e.g. a sand particle which contains quartz chip will help us to see the world through a mobile phone is no doubt a technology invented by man. That is a sand particle a quartz, is helping us see the world but we fail to see the divine world through flower, fruits, seed, life beauty with purity, unity, and dignity in the creation of life.

**Launching of Project Tiger at Bandipur**

In the year 1975, Govt of India launched a project called Project Tiger to give exclusive protection to the tiger which was under the threat of extinction. The reason for launching this project is due to increasing battle for space between tiger and man, coupled with huge demand from one billion customers in China for tiger parts. This led to the situation to give all round attention to protect the magnificiant creation of god. This wonder of creation turned prey to the greed of man.

The male tiger moves around a home range of 100 sqkm but it has been shrunk drastically due to various developmental activities like construction of dams, release of forest for rehabilitations, road formation etc. In and around Nagarahole itself, Kabini project, Nugu, Sarathi, Tharaka, have devoured vast area of the elephant and tiger habitats.

The courageous steps taken by Urs by banning entry of carts and other steps to preserve forest helped immensely in providing protection to Tiger Project scheme.

Bison (Indian gaur) is the most harmless, massive, magnificent animal. The social bondage among them is very
interesting. The entire herd will try to protect the bull when a poacher approaches to shoot the bull. They display social unity to protect the bull. They can easily smell that there is something wrong while walking and they communicate through a loud snort. The wetlands were their favourite feeding grounds for both bison & elephants. Therefore, greater attention was given to preserve the wetlands,

**Past history of Coorg and Mysore forest**

I took more than eight months to procure documents like working plans, administrative documents. After going through the documents, the Coorg administrators, adhered to the colonials’ management of converting natural forest into a manmade forest to increase revenue. They transformed very rich monsoon forest into coffee, cardamom, rubber, pepper, teak plantation and they gave a different classification of the rich forest as redeemed-unredeemed etc., & handed over to Revenue Department.

Mysore administration had comparatively given higher attention to wild life conservation and protected natural forest eco systems. While going through some records I observed abandoned villages where the communities planted sacred trees which survive tyranny of time and war. Many trees situated at abandoned habitats are really magical though they are gnarled and isolated but surviving.

The history of forest protection and managements reveals abundant information that the tribals were the custodians who preserved the ecological integrity. Colonial management introduced the clear felling forest for converting into monoculture plantation. They also started exploiting the forest to generate revenue especially during First and Second World War to supply
timber for ship building and other purposes, which virtually creamed our forest and genetically superior elites were extracted. With the result the forest growing stock started depleting the quality and quantity. Realising the potential and importance of natural forest I took a decision to stop clear felling and also initiated enrichment planting of native species in compartments where growing stocks were depleted.

The working plan prescription has lost its meaning because of past mistakes. I adopted extraction of only dead and fallen trees instead of cutting, clear felling of forest. I deliberately did not report to the govt about my decisions of banning clear felling and adhering to the working plan prescriptions. This helped enormously to improve the game population. I also took up deepening water holes and widening the wetlands.

**New thought in the farm**

Within short period I met him and spoke for the first time with Sri Urs, during the legislative assembly election. Congress - I party got majority of seats and Sri Urs become Chief Minister and took charge.

Hunasuru Division was not a new place for me, when I was working with Forest squad in Mysore Division. I am familiar with the forest of Hunasuru. I was aware of the fact that this was a good opportunity to work.

Occasionally, he was calling me to his residence at Kallahalli. I was surprised to see his simple life style. He grew up in the same environment, worked as a farmer, drawing water from the well, rearing cattle etc. like an ordinary peasant. I could make out that the comfort he was getting in that old house was not there in the luxury of Balabrui bungalow at Bangalore.
There were two very old chairs and one cot was found in his bedroom. One leg of that cot was not alright. Sri Urs who was very muscular, was sitting on that cot reading a newspaper. One day I hesitantly asked him about the cot. He was not at all concerned. He said “Oh, leave it; I don’t know how old this is. As long it is there, it is O.K.”.

I went to Kallahalli once, early in the morning. Sri Urs was sitting on the same cot reading a newspaper. After having coffee he lighted the pipe. He called me and started walking towards his farm. I followed him.

On the way, he was talking about his administration, political news etc. “See... Reddy, my childhood was spent in the village, when I was a little boy; this village is very close to my heart. When I was away as a student, I was thinking about this village all the time. The village has that kind of attraction. After finishing graduation, I was attracted to freedom fight & Gandhiji. I joined Congress. In 1942 I had an opportunity to become an army officer. Gandhiji was against war, Rajaji was supporting the war. I also supported the war and was ready to fight. But my family did not agree. I was not destined to become an army officer. I settled down in the village. From 1942, for twenty years, I worked in the village. That life has given me an attitude to mingle with everybody and observe their life from close quarters. I felt they need dam for irrigation, factories for employment. He was explaining every small thing with all details. As I was younger than him, I was just listening to him. Still he was encouraging me to tell my opinion. With my limited knowledge, I was telling whatever I thought was right. He was listening to me seriously. He never showed an attitude that he was a CM. Whenever he liked my opinion, he was generous
enough to agree with me and say “right... what you are saying is right”. Sometimes he was patting my shoulder.

When we were walking around in his farm land, he stopped talking about politics and administration. In a depressed mood, he started “See, Reddy, Periapatna, Hunasuru all these were Malnad forests. Now they have become Maidan. This change has happened in front of me. I don’t know what could be the reason”. He sighed deeply. He had gone back in time & started explaining the glory of the forest in and around Hunsuru and Piripattana which he had witnessed in his younger days. He started telling me about the lifestyle of people when he was young. He was explaining how the principle of co-existence was hidden in the culture of those people. He showed me a field which was far from his land and said that he had sighted tiger close to his land and also he mentioned a group of elephants which would raid their crops frequently. He narrated about his hunting experiences but he was very disappointed to see the barren landscape which used to be thick forest two decades ago.

From that meeting I came to know about the true personality of Sri Urs. It was very clear that Sri Urs was conscious about the destruction of forest.

**Tree Protection Act**

I loved forest and trees from my childhood. After joining the forest department, I have developed a great respect for the trees, because, I have realized very clearly their importance. Trees are the invisible part of any healthy environment. The part played by these trees in the life cycle of natural world is astonishing. Each grown up tree will work like one individual eco system by supporting
lot of living creatures. Many species of animals, insects, birds and small worms use trees for their shelter, support and for their reproduction. Roots of the grown up trees prevent soil erosion. The trees which grow very tall will purify the atmosphere by absorbing carbon dioxide and releasing oxygen to the atmosphere. They arrest dust particles in the air and work as barrier to the wind. During summer they keep us cool and absorb very intense sound waves. Roots of these trees penetrate in to the deep soil and absorb all the nutrients from the earth and convert it in to flowers, fruits, leaves which are the source of food to all living creature. So Aranya has been rightly defined as Universal mother. Our ancestors have worshiped the tree and the forest alike.

One fine day Urs asked me to come in the early morning. I reached Kallahalli at 7.30 AM. By nature, Urs was always cool and peaceful. He did not worry too much about anything. When I went inside he was sitting with the pipe. I greeted him and he asked me to come inside.

He got himself ready for shaving. Looking at the mirror he said “See…… I want to ask you a question. You should answer”

“O.K. Sir”

“You are spending so much money in the forest department. How much work are you doing…? But are you planting the same number of trees that you are cutting?

Are they surviving?”

I was a little shocked, because, this was an unexpected question. I could not take it easy. I could not get way with a vague answer. To answer appropriately, I should have had the clear idea
of what was going on in the entire state. I did not have any idea about what is going on at the state level to give an appropriate reply. But still, on the basis of my short experience and thinking. I replied by mustering some courage.

“Sir, I can tell you only one thing. Forest department is not that bad, we plant more trees than we cut. But it is very difficult to protect them.”

“Why is it difficult?”

“Sir, we are facing many challenges to protect the young plantation from grazing and fire, we also suffer due to lack of adequate funds to provide watch and ward till they attain safe age”.

“The sapling we plant in the rainy season will grow well in the initial first year, because of rigid protection from fire and grazing. But then during the summer, long dry spell, the grass grows tall and the local people inadvertently set fire which causes lot of damages to saplings”.

I continued. “Sir, there is one more dimension to this. Only 18 % of the total land in our state comes under Forest Department. In that only 7-8 % of the land is the natural forest. The remaining land, that is 80 percent of the land is owned and managed by private people. But there is no way to protect the trees that are in private land. For example, in 3 Talukas of Hunasuru sub division the farmers are growing Tobacco. You are also aware of the impact this has caused on trees and forest.

To process the tobacco leaves, they need fuel wood, for curing tobacco, they cut the trees in their land and also they are cutting forest trees. WHO has recognised the ill effects on human
health by the consumption of tobacco product, including smoking. But till today, smoking habit is picked up by human beings through surrogate advice to get rid of peer pressure. Cultural signals are associated with smoking, hipness attitude, stress busting, and so on. Industries offer free alternatives and promote their own lobbies for profit by selling toxics, chemicals and carcinogens. It is the biggest health hazard in the world today. The deadllest thing contaminating soil and water is being ignored.

Similarly in the coffee estates at Hassan, Coorg and Chikkamagaluru, a lot of people are seeking permission to cut the trees in their estate. We cannot refuse, because it is their right to cut trees in their private holding to get ready cash. But people have totally forgotten to re-plant and protect the trees as green assets for the future generation. They also did not take cognizance of ecological services for their crops and plantation. I explained that at this rate the country would face environmental crisis”.

He posed a next question.

“What should we do to set this right?”

“I also don’t know what to do…

“But I can suggest one thing, to enact a rule called ‘Tree Protection Act’. As far as my knowledge goes there is no such act prevailing in the country as well as in the world”.

“What does it mean?”

I started explaining to him the meaning of Tree Protection Act, and its contents and also briefed him about ecological benefits to the farmers and planters. I emphasised that our ancestors were
wise enough to preserve the ecological balance, and they were aware of the value of the trees and not greedy to make instant cash. He was able to understand the implication of cutting the trees.

I explained to him how people’s attitude and value of life had changed over the years. If the Tree Protection Act got implemented, people could not cut them without genuine need, and at the same time they had to plant 8 to 10 trees and nurture them till they attained maturity.

By that time, he had finished shaving, and he directed me to accompany him to Mysore. I was surprised that he invited the press to inform about the intention of Govt to promulgate Tree Act which was appreciated by many but local politicians were up against this act. According to them, it was a draconian law encroaching the fundamental rights of individuals. He and forest Minister Sri KH Patil successfully managed and educated the legislatures, and got the bill passed in 1976. This bill was the first of its kind in the country, enacted to preserve and protect trees.

Unfortunately in 2015, the Govt of Karnataka has diluted the TREE ACT which resulted in several thousands of mango and keystone species trees getting butchered. I pleaded with Govt. officials and politicians but the lobby for dilution was more powerful than our cry. Bangalore Environment Trust is still fighting to impress the Govt. not to liberalize the act. Instead, it required a much more scientific approach to conserve the forest and trees. Bangalore is an outstanding example of losing its greenery within a span of two decades and people are subjected to misery in spite of so called development.
Stopping the Forest Robbery

As I have mentioned, Sri Urs was very influential and a well-known personality in Hunasuru area. Before he became CM, he was working as a local leader and well-wisher of the community, and he used to settle local disputes. After he became a CM he used to perform that role also with equal zeal, all kinds of disputes, local conflicts, even family disputes including husband and wife quarrels, with the same spirit and enthusiasm. Local people did not relieve him from that local responsibility.

I enquired his private secretary about his programme in Hunasuru, and got confirmation, that he would be spending 1 or 2 days at Kallahalli, during the next visit. I took advantage of his stay and met him early in the morning and requested a favour from him. He immediately obliged. I requested him to spare 90 minutes to visit Veeranahosalli Forest and travel with me in my jeep. I took him to Veeranahosalli state forest where 100-150 bullocks were moving in the forest with around 300 people ravaging the natural forest. The local communities were engaged in cutting green saplings to convert them into dry wood, so that they could transport the dead wood for their tobacco barns on their next visit to the forest, collect and to grab dead wood. Some mischievous fellows were cutting valuable timber species like teak, honne, mathi to sell it to saw mills. He had personally witnessed the destruction. I explained that one beat guard had to control this practice of extracting the dead wood from the natural forest.

On our return journey I explained the mode of destruction of the forest and how the natural forest was shrinking rapidly, at this rate the natural eco system and wild life habitat would vanish, and
Nagarahole sanctuary and the humans practice of setting wild pires world would also diminish and wild life habitat would lose its character and this heinous practice wild fires would engulf the wild life habitat also. This was increasing man and animal conflict due to rapid diminishing of forage in the forest and water scarcity which was affecting the watershed area due to compaction of the forest floor.

He was able to witness the destruction of wild life habitat, he narrated his experience as a hunter, as he was a regular wildlife hunter and narrated a few of his personal episodes and also explained the location of the tiger blocks which were close to Hunasuru Town where His Highness the Maharaja of Mysore used to hunt tigers.

Because of his personal visit, a positive development for protection and conservation was started. I also explained that it was not an easy task for the farmers to procure fire wood from the forest. To bring one cart load fuel, they had to travel in the carts for about 20-30 kms to reach the forest. They had to stay 2 to 3 days in the forest looking for dry wood. But fuel wood was not inexhaustible. So, they were cutting the green pole crops of valuable timber spices which would have become medium size valuable trees. Added to that, grown up trees were also being cut as timber which they would hide at the bottom, to sell as timber to the sawmills, to earn substantial money by disposing of it to the sawmills. Besides cutting pole crop for fulewood, they used to cut seed bearing trees, there by natural regeneration was also being affected. Hence this practice virtually destroyed the composition of the growing stocks of natural forest. Veeranahosalli, a buffer zone to Nagarahole National Park has become the biggest victim.
I briefed him that about 300 to 400 carts would enter the forest from KR Nagar taluka, Periapatna taluka, and Hunasuru taluka every day. He was surprised to know the number of carts that were heading towards the forest. There used to be, a procession of these carts and especially in summer, around 500 carts entering the forest. The forest was getting crowded and forest vandalism was going on in an unchecked manner. They were collecting dry leaves and twigs and using that as fuel to cook their food, thereby the forest floor were depleting further and affecting the growth of the forest eco system, as if they were destroying their own property without realizing that it was suicidal.

He questioned me, “Is it possible to stop this? If people don’t get fire wood, how do they cook their food?” Sri Urs was always thinking about the basic needs of common people. I was expecting this question and I had my own plans to convince the Chief Minister “There is one way, Sir. We can supply firewood at a reasonable rate to the communities, in an organized way, at a subsidized rate. If we calculate the amount of effort and time they dedicate to procure fuel wood and the nature of destruction and ecological loss, the Government can subsidize and the forest can rejuvenate itself in many folds without much investment. Above all, the man and animal conflicts will end and wild life habitat will enrich itself which is much more valuable in terms of conservation and enrichment of forest wealth”. He was able to grasp the suggestion and hesitantly gave a green signal.

Without losing time I prepared a report about the consent given by the Hon’ble Chief Minister and initiated the steps to open depots and supply fuel wood at a reasonable rate.
I submitted the proposals, I made sincere efforts to calculate the man-days of the farmers and the time they spent in the forest, also calculated if the same time was dedicated to improve the agriculture productivity the farmers would get much higher return etc. Somehow the government did not appreciate, my suo-moto action, and raised a series of objections in typical impractical observations, which are no way helpful to promote forest production and conservation. Fortunately the department took the positive steps and issued necessary directions to open depots by banning issue of prepaid licences. This single step has made tremendous impact in restoring the eco system of Project Tiger areas. The forest growing stocks have responded. The wild life dynamics of herbivores and carnivores had gradually improved. Within a decade, the Tiger project area of Bandipur and Nagarhole and other wild life habitat responded magnificently Government of India also appreciated the steps taken by forest department. The tiger and Asian elephant population has gradually increased, The Tourism Department have taken advantage and opened a separate department called Jungle Lodges which has become world famous today. But at the same time govt policies to liberalise to promote eco-tourism has allowed private resorts which is causing a negative impact on conservation and management wildlife sanctuary. But due to various reasons, the weeds were invaded and fires have taken heavy toll of the ecosystems with the result man and animal conflict and degradation is being felt besides negative eco-tourism paradigms promoted by Govt.

In many countries the tiger population is vanishing including the famous Ranathombore Project Tiger at Rajasthan. Tiger population has vanished, Recently all the countries have assembled to discuss, to develop tiger habitat. According to the
statistics furnished by the World Wildlife Fund and the Global Tiger Forum, over 600 tigers have been added to the global number. On these conservation efforts, Karnataka stood outstanding in its efforts in increasing the tiger population. To achieve this, the steps taken by visionaries like Sri Devaraj Urs and K.H. Patil should be written in golden words. However, the degradation of tiger habitat and man and animal conflict is increasing in Karnataka State since two decades due to various man made blunders, especially quarrying encroachments, lack of commitment on the part of the Govt machinery.

Large number of so called experts initiated various scientific measures in counting of tigers across the country, in which they found that tigers were wiped out of Sariska and various techniques including photographic capture and recapture has given fairly good assessments in 2014. As per the assessment, wild life experts at global level, think that the wild tigers will survive if countries can maintain inviolate core habitat for breeding population, ensuring habitat connectivity for genetic exchange. They also suggested crack down on poaching of both tigers and prey. It also requires greater political will to save tiger habitats. But State Government of Karnataka, Kerala and Tamil Nadu, the largest holders of tiger and Asian Elephant, are reluctant to give a status of global heritage due to pressure from the vested interests of timber and mining mafias supported by a few selfish politicians.

Taking an example of Karnataka, I as a member of regional empowered committee, raised series of objections when State Government gave approval for Upper Bhadra Project which is in the heart of Bhadra tiger project, Anshi National Highway Project, and Yethinahole Drinking Water Projects, renewal mining leases
for 30 years to the same lease holder who violated all the laws by levying huge fine of Rs 14000 Cr to promote steel industries at the cost of reckless mining in Bellary Dist.

I, as a responsible member explained the destructive impacts on Tiger Project habitat in Karnataka in 2015. But the authorities gave their own immature and unconcerned commitments for conservation of project tiger habitats, which forms hardly 6-7 % of the wilderness area of the state. Even these pristine areas were also exposed for irreversible changes in the habitat. I was also a member in Yethinahole Project and Bhadra Project committee and had given benign, eco-friendly alternatives but the authorities intentionally sidetracked, and ignored the recommendation of our committee.

Regarding Anshi National Park, when I was a conservator in that forest in the year 1981 to 1987, I have witnessed the nature of fragmentation of Sahyadri hills which were subjected to mining, submersion, rehabilitation. Kaiga Nuclear Plant, Naval Project at Karvar also contributed in fragmenting the most sensitive habitat of Dandeli Tiger Project area, after analysing the critical situation, the Anshi project which forms the most valuable Monsoon semi - evergreen, and evergreen habitat, supporting very rich bird and plant diversity.

This National Park is supporting wide range of endemic species. Similarly Yethinahole and Bhadra also support many endemic plants and animals. For the reasons best known to it, the government is totally ignoring the most productive rich endemic sensitive biodiversity which also forms the most critical water shed areas. But the tragedy is Karnataka State Government and Central Government are ignoring and encouraging most destructive activities which will devastate the fragile eco systems.
In 2016 MOEF declared Neelgai and wild boars as vermins because they cause damage to crops. Govt’s objective is man-centric, not eco-centric despite the fact of climate change, loss of Biodiversity etc.

Since one year, in Anshi habitat and also in other tiger habitats, quite a numbers of tiger and other wildlife deaths have taken place. But both the governments seem to be insensitive for all these reckless and mindless destruction.

If we compare 2016 and 1976, the attitude of the professionals, policy makers, and politicians then are undoubtedly they were much more concerned than present day’s Govt systems. For e.g. - Sri Mavina Kurrve the C.C.F. in 1976, was an honest and efficient officer. I respected him. He was treating his juniors with affection. He called me when I imposed the mechanism to cater fuel wood to the farmers by banning entry of carts into the forest which the Govt had objected to.

He asked me “Reddy, what is this? Why did you start all this without taking written approval from CM? You are over enthusiastic”. He was obviously upset when he received directions from the Government to take disciplinary action against me. He was feeling bad about direction issued by the govt to take action against me. He said that, I should have taken written instructions from the CM to implement the banning of issue of license for fetching fuel wood from the forest. I replied, “Sir it is a rare and rarest opportunity for me to save my forest from the onslaught due to heinous privilege enjoyed by the community and the quantum of destruction is enormous. I request you to support this and implement this in the entire State”. He admired my concern
and took the responsibility to convince the Government. I clearly explained that we were fortunate that our CM agreed to ban. Any other CM would not have agreed. How could I ask CM to give his approval in writing? When he had given us a chance, we had to make use of it promptly even though he was facing his voters in his constituency,

I don’t know what happened, the cloud got cleared.

But after abolishing this system, the manner in which Sri Urs and Patil behaved was really amazing. They proved that politicians also are concerned about ecology, environment, wildlife, and well-being of the community and the state.

Because of this single action, the forest of Karnataka and wildlife habitat have recovered like magic. We cannot estimate the benefit that accrued from this action. Sri Urs and Patil deserve admiration for their spirit of governance.

I was transferred in 1977 to Bhadravathi Division. As soon as I took charge, I initiated measures to stop prepaid licenses in Bhadravathi Division. In 1978, the world famous Chickmagalur Loksabha re-election was announced and Mrs. Indira Gandhi contested from Chikkamagaluru Constituency.

During election campaign the general public demanded CM to review a system of issue of prepaid licenses systems, He quietly consented and sent word to me to meet him at Koppa Circuit house, immediately, I proceeded to Koppa and met him. I could see his regal look and the grace of approaching the problem without an iota of ego. He enquired about my welfare and indicated to accommodate the provision of giving prepaid licenses till election, and to re-introduce the prohibition of banning entry of bullock cart to the reserve forest.
The Innocent killers? That Sri Urs liked!

Sri Devaraj Urs promptly started social transformation. He used to get advice from Srinivasan, an eminent, internationally recognized Social Scientist. Occasionally he used to share his agony and pain to enforce the social transformation which is highly complex due to political caste systems, which is deep rooted in the social fabric in the state.

With the Major community dominating, the minorities and downtrodden had no voice. Realizing the need, he was determined to provide adequate space to the minorities and encouraged the minority leaders to take leadership to uplift the voiceless people, which he achieved very successfully during his regime, which no other state in the country was able to do till date.

He also implemented many social reforms, especially land reforms, bonded labour etc,

He had gone through the book “Innocent Killer” and grasped the philosophy of nature’s law. This inspired him to provide adequate legal and financial support to uplift the community of all sections who suffered since centuries. In the law of nature the tenet is, “Nature will not allow any one species or community to dominate “.

Oriental Aromatic and Tibetan rehabilitation at Doddaharve reserve forest

Doddaharve reserve forest forms the important water shed to Cauvery River near Kushalnagar. The Cauvery river water takes a number of turns and passes which form the boundary of Coorg and Mysore District. Very close to Cauvery river, Doddaharve forest
is right on the bank of river Cauvery. In 1960 the Government of Karnataka had given a lease of 3000 acres to an individual called Bhudani who established a factory for essential oil extraction and to grow essential oil plants to export. I was observing the developments in this landscape right from 1962 onwards, and looking at the Board Oriental Aromatics. I had an occasion to visit this place on an allegation that they were destroying, the virgin, moist deciduous forest, which is a very important water shed to Cauvery and also a wildlife habitat.

In the same period, the Government of India directed the State Government to release about 1000 acres to rehabilitate Tibetans. An NGO called Myrada had been entrusted to rehabilitate Tibetans who also destroyed the entire Cauvery and wildlife habitat.

I thought this was an inexcusable crime to destroy the forest situated on the bank of Cauvery River but I was helpless in 1962 and remained a silent spectator, though I went to spot to seize the timber, which was felled unauthorizedly.

I took charge of Hunsuru Division in 1971 and this entire area was under jurisdiction of Hunsuru Division. I was planning to take serious action against the defaulters especially the Oriental Aromatics who was a major culprit. I issued a notice to the General Manager of the Company to furnish the agreement copies and the lease conditions regarding leasing of reserve forest, terms and conditions. They failed to furnish in spite of issuing several notices and they ignored to respond.

After a lapse of two years, I directed my range forest officer to visit the area and inform all concerned that I was visiting the spot to see the activities and also to look into the documents such
as lease agreement, lease amount paid etc. I went round the area. Out of 3000 acres, only sixty acres were cultivated, after one decade of entering the area and not paying a single Rupee of the lease, the amount of damage to the forest and wildlife was enormous. They did not furnish any of the documents for having signed the lease and amount paid etc. I planned to occupy the undeveloped area and to reconvert the original forest ecosystem. As soon as I took step to restore the area, the occupant Sri Bhudani complained to the Government and all his well-wishers including politicians, urged Chief Minister to take action against me and facilitate the violator, in spite of his utter disregard to sign the agreement and failing to pay the lease amount.

To my surprise I came to know about the spot inspection by three ministers, that is, Industries Minister, Revenue Minister and The Chief Minister and the entire Government local machinery, including Divisional Commissioner, and all other Officers had assembled for the spot inspection. I requested the Government Officials not to accept the grand lunch arrangements made by the company. After lunch, all of us went together accompanied for spot inspection. As usual, the company experts were gloriously explaining the benefits the state was going to get from this activity. All of us were silently listening. The Hon’ble Chief Minister was coolly listening without asking a single clarification from us, and returned to Kallahalli. I went to Kallahalli thinking that he may ask questions about the action I took to recover the forest land. But surprisingly he had given green signal, to go-ahead with restoration of forest land, though he had not given any oral directions or written directions to stop, or to continue the work. But his silence had indicated his acceptance. This is the quality of a statesman to safe guard the government property and to encourage the steps
taken to develop the government property and protecting the most fragile Cauvery river bank.

**Hassan experiences**

In 1970, I took charge as DCF, Hassan. At that time Hemavathy Irrigation Project was in full swing at Gorur, near Arakalagud Taluk. I had been included as a member of rehabilitation committee. The chairman of the committee was Divisional Commissioner of Mysore region. Sri Devagowda, a MLA of Holenarasipur constituency, was also a member of the committee. The executive engineer in-charge of Hemavathy project was a dynamic active person who was insisting on releasing Bhaba Forest located in Hassan-Sakaleshpura Road. This state forest was a highly sensitive fragile ecosystem, supporting wide range of socio-eco logical services, including providing pasture for local people and number of NTF (Non timber forest products) especially (Butea) Muthga, called flame of the forest, in Sanskrit it is called Brahma vruksha. The local landless people used to collect the leaves and prepare dinner plates. In Arakalagud Taluk. More than of 500 lorry loads of dinner plates were supplied to Bangalore-Mysore and other cities. This species is an excellent coppier, the local people developed the skill of collecting seasoning and stitching. On an average, every individual, including old ladies used to earn Rs 3000 to 4000 during the season in addition to various other products like gums, fruits, etc. they used to collect as non-timber forest product. This forest was natural pasture land for sheep and cattle grazing, which was a major livelihood source for landless communities.

At the same time, a large extent of rich forest of Arakalagud, adjacent to Coorg forest was cleared recklessly without
understanding the implications of the water shed and water spread area. The outer fringes of water spread areas held water for a short period but the vegetation would have played a role to trap silt and the forest would have maintained its structure. This vegetation would have provided good habitat for the elephants. To establish this fact, I went round the water spread area. With the help of my staff, I walked through the submersion area and also canal areas demarcated for permission to form canals in the forest area of Hassan District.

After my visit, I made an assessment about the common lands and the forest land to be diverted, for project activates. I pleaded before the committee to take adequate steps to preserve vegetation where ever possible, and also explained that the Bhapa forest for rehabilitation was fit for agriculture but it was serving many other meaningful livelihoods and also served as excellent water shed to Hemavathy project. But my pleading did not work and Mr. Subbaiah, executive engineer, approached the Government and got all clearances to clear the forest and hand over on priority. But even today, 70% of Bhapa forest is found to be unproductive, for any meaningful agriculture. But the area is a very vital watershed for the project.

The Government of Karnataka in the year 2001, appointed a committee to look into all the irrigation dams of Karnataka and to submit a report about the status of the land acquired by the irrigation department and to convert the land into a productive asset under my chairmanship.

A multi-disciplinary team was constituted to look into the various aspects of utilizing the productive landmass lying fallow under the control of Irrigation Department.
The committee looked into the philosophy of the Government to cater enough good quality water, at the right time and right place to meet the needs of the communities. Though the Government has invested substantial amount to this sector the water crisis is still persisting. But the degradation of water supply catchment is rapidly increasing; the committee has looked into various aspect of utilizing these lands efficiently and productively. The committee submitted a report indicating the various benefits to the community and other implication. The Irrigation Dept. after acquisition, has failed to recognize the importance of productive lands acquired and to convert the lands including the canal areas, catchment areas, debris banks, soil mined area, and the need of enrichment of catchment areas.

The salient recommendation of the report is to create green eco strips along the canal banks which runs 1000s of kilometres between canals and agricultural fields. The committee also recommended the potential of aquaculture farming, creation of herbal gardens involving self-help groups to cater to the needs of Ayurveda colleges.

As soon as I joined as a DCF Hunsuru I had an opportunity to become a member of rehabilitation committee for Tibetans at Bayalakuppe at Kushalnagar. The same divisional commissioner, Mysore was a chairman of Myrada an NGO committee. Myrada NGO have been entrusted the work of rehabilitation of Tibetans. The massive destruction of virgin forest of Doddharve for Tibetans settlers and Oriental Aromatic was almost completed by the time I took charge. This entire area was a highly productive eco system. Especially, it was an important watershed for both Cauvery and Lakshmanthirtha rivers. Because of loss of water shed both the
river systems are dwindling and today both have become seasonal rivers. Over 100 to 150 days in year, they remain dry. Lakshman Thirtha has become a cess pool loaded with sewage and garbage.

If we look at the water crisis the state is facing today, it speaks volumes of utter disregard given to protect the water supply catchment areas. Dr. Stebbing, an eminent forester, has written a series of articles in Indian Forester in 1950 itself explaining the consequences of degradation of forests and its implications on river water flow.

In 2014 Michael Domenic of US convinced the US Government that water is more important than other developments, protecting hydrological systems is more vital. He emphasized that “the product from forest eco system is not timber, and other non timber products, medicinal plants, fuel wood, but It is water”. This has been proved at a global level.

The foundation for Ecological Security (FES) is an NGO working in seven states in the country, where I am a founder member of the Board of Governors. This organization, strives for a future that is based on a holistic understanding of the principles that govern the inter-relationship of various life forms and natural systems. By working on systemic issues that can bring about a multiplier change, we look forward to a future, where the local communities determine and move towards desirable land use practices based on principles of conservation and social justice.

This organization has developed lakhs of community lands and rejuvenated the commons and river systems. In Rajasthan, Karnataka, Andhra Pradesh, Gujarat, Orissa, Madhya Pradesh, and North East. For example the physical illustration of three states
Rajasthan, Andhra Pradesh, Karnataka will reveal the potential of rejuvenating the degraded land for fodder, water, agriculture production etc. for details the readers can see the website: www.fes.org.in

Unfortunately, the Government of India and State Government are planning to divert degraded lands to industries for raising monoculture plantation to an extent of millions of acres of forest and degraded lands, which will be a disastrous policy and the common people will lose their only source of livelihood, especially tribal communities. Strangely M.S. Swaminathan committee also recommended leasing the forest which has a less density canopy without understanding the social, ecological, and rural economic implications. The forest catchment and common land, forms the major source of water supply, to the ponds, tanks, and which forms the major source of recharge the underground water for the communities. Therefore the Government should desist from the step of increasing the income of capitalist and corporate bodies by diverting the only source of livelihood of the community.

In the year 2012 Tibetan Guru came to me to rejuvenate about 50 acres of degraded land which was in their custody. I visited the area, and created a spiritual garden, that is Sathyam, Shivam, and Sundaram in the Doodaharve forest of Cauvery catchment, and a water pond for elephants which is just 2 KM from Cauvery River. This Spiritual Garden has become a beautiful forest on the bank of Cauvery River.

The Monastery at Bailukuppe in Mysore district of Karnataka is situated on a hilltop with a sprawling landscape sloping down to a perennial stream in front. It is an emerging spiritual Centre of
Buddhist philosophy “SATYAM-SHIVAM-SUNDARAM” conveying the message of peace and tranquillity to the world in tune with the law of nature based on harmonious coexistence with absolute truth, selfless service, peace and tranquillity to achieve happiness with useful and purposeful living.

Satyam denotes absolute truth and purity of nature in visible and invisible form, manifested in the world with a role of its own; whereas, Shivam is a selfless service of nature with abundance, diversity, enrichment, generosity, benevolence and eco balancing utilizing the natural resources in a sustainable & balanced manner; and Sundaram is the manifestation of nature’s marvel, beauty with perfection that attracts, fulfils, perpetuates, leading to a harmonious coexistence, happiness and tranquillity in its purest form.

In this theme park we have varieties of flowering plants that add aesthetic beauty to the landscape and creates a pleasant environment. As one enters the Monastery area through the main gate with absolute silence, he will be passing through the serene and sacred atmosphere of Sathyam-Shivam -Sundaram sections of the Park and then enter the Monastery, the sanctum sanctorum, experiencing the nature’s marvel and philosophy of “Live, Let Live”. Such a silent walk through the green settings of the Eco Park with one’s eyes, ears and mind open, appreciating the mystic beauty of the plants and flowers would be soothing to the eyes; the sound of the humming bees, butterflies, birds with fluttering of the leaves due to the breeze would be music to the ears; inhaling the enriched fresh & pure air with aroma, would refresh the mind and the nerve centre of the brain, making the visitor humble and enabling him to take up spiritual pursuit in the monastery. The entire landscape
will have plants/trees that purify the air, add pleasant odour, offer nectar, medicine and food to various organisms – animals, bees, birds and even human beings. The plants will have placards displayed depicting the spiritual definition assigned to each. Urge of the plants towards the light of the sun with great aspirations from seedling stage to the grown up herbs, shrubs and trees in different ways and means, and finally beaming with blooms with fulfilment and love in communion with nature is a message to us to lead a harmonious life with nature. Flowers and fruits are the selfless offerings and service of the plants towards the Divine.

By combining the proven techniques with innovative concepts, varieties of medicinal/aromatic and ornamental plants will also be planted which will not only protect us from worst health threat but are also aesthetically pleasing.

Accordingly, it has been planned to plant selected species belonging to about 200 selected species/varieties of trees/shrubs and herbs of flowering and foliage plants that create a pleasant environment in the Eco Theme Park. Benefits of this Park are:

- Creates a peaceful and healthy environment for spiritual pursuit
- Add beauty to the landscape
- Reduces the carbon footprint, waste and pollution
- Herbal and aromatic plants minimize disease problems
- Ornamental plants enhance the beauty of the place
- Helps in regional resource conservation
· Preserves biodiversity; conserves water
· Reduces impact of heavy rain and soil erosion
· Adds valuable organic matter to the soil.

During 1960, PM of India and Sir Lanka signed an agreement to accommodate Sri Lankan repatriates and to provide livelihood by raising rubber plantations in Sulya, Taluk of Mangalore District by sacrificing the rich Moist and Semi evergreen forest. To raise rubber plantation, this entire catchment was a very important water supply catchment area, to many small streams and tributaries and rivers. If we look back to the entire state 1960 to 2016, thousands of acres of Natural forest were replaced for various causes, so called development projects like, cacao, cashew and rehabilitation for farmers who lost their productive agriculture land, and to fulfil the international agreements, several Tibetan colonies formed in Kollegal, Mundugod of North Canara District had opened up the forest especially the river catchment. Integrity was affected. The Natural Forest had lost its Hydrological function of conserving and discharging water for stream flow was virtually destroyed.

In 1982 I took charge as a conservator of forest, Canara Circle; I went round all the divisions and studied the ecological status. This forest was the most valuable forest of the country. I also studied the past working plans. In all the divisions and also in the entire state, the forests were virtually creamed during 1st and 2nd World War and the best of the trees extracted without leaving even the mother trees to supply quality seeds for natural regeneration and to enhance genetic composition of the growing stock. I also observed the above situation in Coorg and Shivamoga district. In Hunsur Division I undertook enrichment planting
operation and to some extent continued in Madikeri circle also. In Canara Circle, I initiated massive enrichment planting programme and prepared the site specific treatment plans to plant the depleted, most valuable growing stock. The natural regeneration was almost nil and only alien species like Lantana and Eupatorium invaded the forest and inhibited the natural regeneration. I took up every massive enrichment planting programme in all five divisions of Canara Circle.

Many of my colleagues were passing all kinds of caustic remarks about the programme which I initiated in 1982. On 18th of April 2016, Additional principle Chief Conservator of Forest, Sri Vidhyasagar met me while walking. He casually mentioned that the enrichment programme which I initiated, had established and formed a beautiful second story of Natural Forest in many locations wherever due care was given to protect from fire and grazing. He was also gracious enough to confess that he also used to pass sarcastic remarks about my efforts of enrichment planting programme. Today I feel there are few people who are honest enough to understand the ground realities and confess, their own short sight while commenting without knowing the ground realities.

Arasu’s 60th Birthday- Event at Nagarhole National Park

The local Assistant Engineer came to me and informed that the next day, Mr. Sri Urs’s 60th Birthday would be celebrated in Bangalore-Mysore etc. He wanted to spend the evening with his family quietly in Nagarhole, and next day he wanted to proceed to participate in the programmes at Mysore and Bangalore. I requested the assistant Engineer not to inform the Police, and politicians, and other officials to avoid unwanted gathering at Nagarhole National Park. I suggested to the personal secretary
that Chief Minister and his family could reach Nagarhole by lunch time. CM and his family arrived and they had a quiet lunch without any disturbance from the people. I had the unique occasion to spend time with him and his family. I sat for lunch by his side and then served him personally and enjoyed the way he relished the food with great reverence. After lunch, I suggested that we could go round the National Park at 4.30 p.m. after tea. He looked at the small library and requested me to suggest some interesting book.

I selected the book titled “Innocent killers”, written by a foreign author about wild dogs feeding and sexual behaviour. The same wild dogs are found in Nagarhole National Park to maintain the population of dynamic of herbivores and carnivores. After two decades two committed youths Krupakar and Senani, dedicated their life to produce a film on their feeding and breeding behaviour and the same has been internationally recognised and they have received awards.

Sri Urs was a voracious reader and he had not slept until he had finished that book. When we met to have tea, he appreciated the narration about the social and sexual behaviour of wild dogs. I shared my experience about unity, purity, dignity and fidelity among the wild dogs, Indian gaur, Asian elephants, which he admired and shared his experience as a young hunter.

I accompanied them, along with my staff to take them round the National Park and explained the richness of the eco systems and their functions. I took the liberty to explain the steps taken by me and my staff to control poaching, and eviction of encroachment and dealing with Kerala sandal smugglers etc. I also reminded
him about how we punished one of the senior minister’s brothers who indulged in poaching in the Nagarahole National Park. And how we quietly dealt with the situation diplomatically without even informing him. He immediately recollected the unwarranted allegations against me by the same minister. I also recollected the episode of Mysore SP wanting to arrest me and my staff on criminal charge of attempt to murder when we attacked the Kerala sandal smugglers. Mr Urs gave a dignified smile without expressing that he had warned the SP not to take action against the officers who had risked their life for protecting the wealth of the country.

In the night we had informal discussions on various social issues. I explained the splendorous or beautiful landscape which is dynamic, rich, and delicate. I explained about the ecological status of Veerana Hosahalli, Sollepura and Kachavanahalli, adjacent reserve forest of Coorg, and I requested him to permit to include this buffer area where he had sighted tigers, panthers, elephants. He immediately agreed, I took steps to notify this buffer area into Nagarahole National Park. He was able to appreciate the characteristic and specialized speciation formation in the entire Coorg and adjacent Mysore District, that is famous Kakana Kote. I emphasized the need that the government should recognize the spectacular fragile ecosystems to be converted as restricted zone to set aside for the study eco-tourism and promotion eco-tourism.

After going through the book he was able to appreciate the role of the balanced eco system, existing in nature since billions of years.

Next morning, I was the first citizen to wish him well on his 60th birthday with a garland. The whole family felt very happy and
Smt. Devaraj Urs rewarded tribals and my staff by offering cash to every member who was present there. Sri Urs and I were travelling in one car and family members were travelling in another car. We continued our discussions about subtlety of truth. I was aware that he was a voracious reader but I was surprised about his depth of spiritual knowledge. He was able to visualize the insight into the underlying principle behind the phenomenon evident to sensory and intellectual experience. According to him, intellectual experience had to be beyond the body, mind, which lay in one’s self. Intellectual humility was the key for success of a leader, which he practised.

We reached his village and he went to perform Pooja to his family deity. Next day I read in papers about the grand celebrations organized at Mysore and Bangalore and I felt I was the privileged one to have wished him well, first on his 60th birthday.

**Rosewood - Trade**

Occasionally we used to discuss the State’s economic development and welfare and wellbeing of communities. I used to take a little liberty to deviate from the routine topic of economic development to the need of eco development and eco system health and its impacts on economic development and welfare of the community, and other issues regarding the life, life forms and the role of the tribals in maintaining the ecological integrity of the forest eco systems.

On one occasion, I explained about the forest wealth in Karnataka state. The forest composition right from Tamil Nadu Kerala border upto Goa, Maharashtra border that is upto Belgaum District. If we compare the economic and ecological wealth of this
segment of Karnataka from BRT bordering in Tamil Nadu to Maharashtra segment of Sahyadri Mountain Range which is unique in many respects, the vegetation composition varies from Kilometre to Kilometre and also varies from highest altitude of 6000ft above sea level. The soil type, rainfall pattern drastically vary. All these factors together form a unique ecotone with slight genetic distinction of adaptability to monsoon ecosystem. This type of ecosystem may not be found anywhere in the world including the Amazon valley.

This distinct geomorphological, geo-biological and hydro regime greatly influences the vegetation composition. Added to this, edaphic (soil variation) and rainfall variation contributes immensely for biodiversity of the vegetation which in turn forms a bio rhythm to support wide range of fauna, micro fauna, avian fauna, aquatic fauna, especially the insect fauna as well as the plant parasites, orchids, soil fauna in the ecosystem which attained climax composition, supporting the unique engine of life.

This engine of life in the Sahyadri Hills protected the stuff of life (water), after the advent of space science and space imageries brought out the serial of photographs about the real view of the earth from outer space. These images demonstrated the limitations of our planet. Especially oceans – to white clouds, water dominates the planet earth. We need clean fresh water every day to stay healthy and the fauna and flora greatly influences to maintain the stream flow. We perish without the hydrological systems to supply clean water to the life forms. Today the world is devoting time and money for shortage of energy and at the same time we should not ignore maintaining the hydrological system because water is much more important than energy.
The well-being and survival of every one of us and our future generation depend on water. Water supply solely depends on healthy forest ecosystem. The vegetation and plant litter on the soil surfaces keep water on the land longer, allowing more time for aquifer recharge versus surface runoff. As water percolates through soil, it is naturally filtered. The peak flow period in the Western Ghat confines to 30 to 40 days of the monsoon period and the higher flow leads to more erosion and higher sediment loads in streams. I explained the importance of protecting the water supply catchment quoting the Hemavathy project catchment which starts from Chickmagalur Sahyadri Hill Region and the need of protecting the green mantle of giant vegetation consisting of three tyre canopy ecosystems. Below the ground, tuber crops grow up to a depth of 8 to 10 metres which forms a unique hydro matrix to trap torrential rains in the month of July, August and up to September.

The forest floor will have more than 100-120 different species of white ants, bored animals, rodents, earthworms, moles, seasonal hibernators which are the builders of top soil to hold the peak and higher flow of torrential rains in Sahyadri Hills forming a water bank like ice caps and trapping the nutrients and preventing erosion.

As an ecologist, I was concerned about the disaster impact of clearing forests of Bhaba forest of Hassan District which forms the most important catchment to Hemavathy. I suggested policies had to be shaped for forest health and watershed functions, failing which the life span of the dams would be drastically reduced. The country needs a forest policy considering long term water quantity and quality supply should be the top priority in the spirit of the “the greatest good”.
After Stockholm conference we are aware that manipulating nature for narrowly focused outcomes and large number of unintended consequences are playing havoc in the name of high social, economic developmental costs. But the state struggles and builds dams, canals, which may become liabilities due to vanishing adequate sustained stream flows. There is a need for forest planning for long term supply of water from the Geo-bio-hydro-systems.

I mentioned and emphasised the need to stop felling of green trees in the Western Ghats, because of reckless exploitation of selected commercially valuable trees in the entire length and breadth of Western Ghats right from the first and Second World War onwards. The trend of exploitation, to support industries continues even after independence. A sort of a creaming of the best genetically superior elites were exploited all over the Western Ghats of Karnataka segment. In Agumbe, Balgi poles were exploited to supply telegraphic and transmission poles and the forest were opened up in many places. WIMCO a multi-national company exploited the entire Western Ghats, the best of the trees of Salmalia, Mango and many other soft woods for their match wood industry. Similarly semi hardwoods and hardwood like Mesua (Naga Kesari) were exploited for sleeper supplies and ship building, white cedar, red cedar, and many other species were recklessly felled and the forest creamed was resulted in a sort of a genetic depletion all over Sahyadri Hills.

Similarly most valuable trees like rose wood, teak wood and wood for making gun butts and other defence requirements were exploited on top priority, ignoring all norms of scientific management of forest.
I also mentioned about the need of rosewood monopoly in Karnataka State. The state gets substantial income from rosewood and we are competing with Palasha wood, grown in Brazil called Brazil rosewood, which is slightly superior to our rosewood, our rosewood is being used as a veneer wood for decorating posh buildings, posh furnitures and musical instruments. Japan and many other European countries were the biggest consumers of high quality rosewood. In Coorg district, there were different tenures such as redeemed and unredeemed, meaning for redeemed tenure the land owner had paid the value of the timber trees and obtained rights over tree crops. Similarly for unredeemed tenure they did not have any rights over the tree crops and they would remain with the Government as Govt property but the individual had the right to cultivate the crops without damaging the trees. In the Coorg forest manual, there was a provision to permit and sell rosewood trees in unredeemed lands by paying just a seniuorages (nominal value). But forest officers fought and insisted on paying 50% of the Market value before granting felling permission and the other 50% would go to the individual who nurtured the tree crops. There was a sudden spurt of rosewood demand all over European countries and number of rosewood merchants multiplied and they started buying rosewood from Government Timber Depot and also from the Private Coffee plantations including private unredeemed holdings. They were playing all kinds of mischief with the revenue, forest and police departments. In spite of our best efforts rosewood smuggling was going on, because of exorbitant prices and once it went out of Karnataka boundary the exporters lobby used to prepare documents to export the rosewood. Most of the timber went to Kerala and from Kerala they used to export to other countries at exorbitant rates.
I briefed him about the need of trade monopoly which would help the land holder also greatly. The timber merchants used to buy standing trees for a nominal price and they used to smuggle much more than what they purchased by illicitly cutting rosewood trees in the Government land and also private land. I suggested preventing all this malpractices and clandestine activities through trade monopoly, which would help in a big way, and state would get maximum benefit by selling in the Government Depots with Proper documents and land owners would get maximum benefit from this policy. Sri Urs was able to appreciate it and enacted the law, which to a great extent, mitigated the destruction trends of the ecosystems especially in the water supply catchment areas.

During 1975 itself, the world started experiencing lack of access to adequate supplies of clean water and breathable air. The quality of life and well-being was threatened at local and global level.

Though Earth shows that, 70% of the earth surface is covered by water, out of that 97.5% is ocean and salty, remaining 2.5% is fresh water. 1.75% is frozen in the form of ice cap and glaciers, 0.77% is liquid fresh water present in the form of ground water, in rivers, lakes, water vapour in the atmosphere as clouds. Less than 8/10,000 of 1% is annually renewable and available for human uses. Fresh water is continuously cycled between earth’s atmosphere and surface. Precipitation, either evaporates, or runs off from surface quickly as surface water. The surface water is being taken up by forest canopy to facilitate for infiltration, with the result it slowly percolates into the forest floor to replenish base flow waters and recharging the underground aquifers so that the springs and stream flow to maintain the perennial flow of the river.
system. Natural fresh water supply is replenished continuously with the help of the tree canopy and the spongy humus floor. If this fresh water supply is impeded, the fresh water replenishment will vanish, which is the reality today for all water scarcity problems in the country. Fresh water shall have to be continuously replenished from the healthy forest ecosystem, which is the major forest product today more than the timber, fuel wood besides wide range of ecological and biological services. Due to various reasons, the rate of renewal is sharply reduced mainly due to mining, quarrying and many other activities such as rising of captive plantations for paper and pulp industries, especially introduction of alien species which destroyed the diversity with the result, hydrological regimes have been destroyed.

Water in rivers is renewed on an average once in 16 days, and water in the atmosphere is cycled about every 8 days.

When surface water supplies are contaminated the natural water cycles are disrupted. On account of this, our usable fresh water supply is severely diminishing.

Our surface water is clean enough to drink, provided the stream flow is maintained with its aquatic ecosystem which will supply dissolved oxygen and convert organic matter into products like fish, medicinal plants, and other valuable zoo mass and phyto-mass of high value.

Unfortunately most of the river system are contaminated and quality water supply has been diminished. Add to that, exploitation of ground water as aggravated with the result we need to re-evaluate our water needs, focusing on:-
1) How much?
2) When?
3) Where?
4) Of what quality?
5) For what purpose?
6) At what ecological, economic and social costs?

In the list of 122 nations rated on quality of potable water, India ranks as low as 120. India has 4% of the world’s water and average availability is shrinking very rapidly. Out of 1.42 million villages in India – 1, 95,813 are affected by chemical contamination,

Our dependence on ground water has brought in contaminants like fluorides – 0.92 million people in 21 states are at a risk of positive fluoride. The permissible limit of fluoride in water is 1 milligram per litre. Arsenic is an another big killer lurking ground water putting at risk nearly 10 million, dying slow death due to arsenic induced cancer.

High nitrate is another serious concern caused by fertilizer, septic tanks and sewage which are main culprits of nitrate contamination of both surface and underground water. At the same time eutrophication of surface water is rapidly inviting the alien species like water hyacinth and other unwanted weeds which destroy the native biodiversity, with the result the native fish and other aquatic animals are facing the threat of extinction. The food chain of water fowls of migratory birds is disrupted and they are losing their habitat. For e.g. - Bangalore urban lakes providing breeding habitat for lakhs of migratory birds, have totally
disappeared within a span of two decades. This tells the story of environments of degradation and decay in Bangalore city.

Today the expenditure on water-borne diseases exceeds Rs5,000 crores P.A and 40 million people are affected by water-borne diseases out of which, 75% are kids who are the soft target, especially those below 5 years, for no fault of theirs and they also inherit genetic deformation and other incurable diseases. The above statistics, depicts an urgent need to focus our attention on connecting forest, water shed, rivers and rigid surface water quality maintenance which is vital for the countrie’s progress.

Vested interest threaten more than 70% of India, because of massive degradation of landscape and massive human induced technical blunders.

In nature, especially forest eco system, there is nothing which can stand alone, it needs to interplay between the watershed and ecosystem health. The primary objective of the forest ecosystem is to keep water on the forest floor longer, so that it has time to percolate into the soil, where it is filtered as it moves down to replenish ground water tables and recharge aquifers. The tree canopy, herbs, shrubs, climbers and their root systems, leaf litter bind the top soil and reduces erosion. The layer of decaying vegetation litter, rich organic soil, acts as a porous sponge absorbing rainwater. This matrix of sponge structures reduces runoff, moderates the effects of extreme rainfall events. This century’s, science and technology have better scientific understanding of watershed performances than at any other time. Our land use policies are supposed to improve, but adequate safety nets and safety valves are yet to be evolved. Engineering technologies are yet to imbibe the functions of ecosystems and
there is an imminent need to adopt safety ecological, and technological solutions. No doubt, the engineers have built infrastructure to hurry runoff in the western ghat terrains instead of augmenting judicious water shed managements practices and re-forestation and protection of geo-physical and bio-structural systems.

What is mandatory in the Sahyadri terrain of Karnataka segment is sound watershed management practices and judicious monitoring of ecosystem health to maintain the ecological integrity and to provide habitat for Asian elephants and tigers. Of late, man and animal conflicts are increasing and wildlife habitat is vanishing very rapidly due to various reasons.

Forest has great ability to generate most of the water especially the Western Ghats. The hill ranges forms more than 35 to 40% of the watershed and precipitation and runoff comes from 70,000 to 80,000 square kilo meters of Sahyadri hills and contributes 70% of the water to Karnataka state, comprising of Cauvery, Tunga, Bhadra, Netravathi and large number of major and minor tributaries.

It has been proved beyond doubt that the complex array of trees, shrubs and ground cover and roots slows runoff from rain, and water is purified as it percolates through the living matrix of soil and massive tree root system. By slowing runoff, the vegetation intermixed with grass reduce floods and erosion and minimizes and prevents the sediments entering streams and streamlets, river systems as well as siltation of reservoirs.

Matured natural forests root stock does all the above functions most efficiently. Today more than 40% of the land mass
is subjected to very severe degradation and we are drawing tomorrow’s water to meet today’s needs. A huge water crisis is imminent Therefore, we need an immediate intervention to safeguard the future survival of life and life forms as predicted by Stephen Hawkins, failing which we are heading for 6th extinction.

**Role of wetlands in Nagarahole National Park**

As soon as I took charge in 1971, I intensively went round the entire landscape and its periphery of the game sanctuary. Nagarahole Game Sanctuary is surrounded by coffee plantations on one side and Kerala Forest and Kakanakote Forest on the other side. The landscape is fragmented into a distinct zone starting from Waynad with more moist composition and the same extends towards Kakanakote. After Kakanakote the other side of the Kabini River is dry deciduous forest touching Sollepura, Veeranahosalli and the same forest extends up to Kachavanahalli, Titimath and Coffee plantations. This composition of diversity of vegetation has supported the rich wildlife of the sanctuary. While walking, the landscape is interconnected with all kinds of streams and streamlets, draining towards the well-defined valleys covering a distance of about 60 to 70 kilometres connecting Tharaka, Sarathi which drain into Kabini. On the other side another 100 kilometres of deep and shallow valleys discharges to Lakshman Thirtha. The entire water shed of Nagarahole Sanctuary discharges the water to Lakshman Thirtha and Kabini. The streams and streamlets network was holding the water and gently discharges it in the form of streamlets, keeping the surroundings of each valley in green condition supplying quality drinking water to animals and quality water was discharging to Kabini and Lakshman Thirtha even during lean season.
But, I observed quite a number of settlements in the valleys, cultivating paddy and other crops, vegetables and they were rearing goats etc. On enquiry the inhabitants all came from the inter-lands and most of them were natives of Coorg District. Most of them were relatives of the forest staff, who accommodated them to settle down in the valleys, where there is an assured supply of water to cultivate paddy and other crops. Of course they used to harvest hardly 30 to 40% of the crops after rigid protection from elephants, wild boars and deer etc. Even then they found it is much more profitable because of the fertile soil and no cost for irrigation, with little efforts they used to harvest fairly good yield. In addition to the above they were indulging in various other activities like hunting and other nefarious activities like illicit distillation and cultivation of Opium (Poppy). Scientific name is *Papaversomniferum*. Opium is obsolete as a drug narcotic sedative. It contains morphine Theban. The seed of the Poppy is free from alkaloids and it contains thiamine, riboflavin, folic acid and niacin etc. Within one year of my stay, I gathered information from tribal people about nefarious and clandestine activities in the settlements. I gathered full information about the whereabouts of the non-tribals who were indulging in this business of accommodating urban elites to taste bush and wild boar meat, jungle fowl meat, illicit liquor and sedatives. Flesh trade was also flourishing in an organized way for the known circle of elites consisting of business people, lawyers, doctors etc. I collected the information and initiated steps to cull out families by providing some facilities to move out of the forest as the same is totally prohibited in the game sanctuary. I also explained about the hazards of man and animal conflicts and that the valleys were the life line for wild life as well as for stream flowing to the rivers system.
I succeeded to some extent but I summoned the guards and the forester who invited them and instructed them to convince the settlers, whom they invited and ask them to vacate, failing which they would lose their job if I took disciplinary action against them for having allowed encroachment in the heart of the game sanctuary. To a great extent, I succeeded in removing encroachment except hard-core settlers who had developed intimate connections with urban elites. They succeeded in raising a question in parliament, levelling all kinds of allegations against me. This clearly indicates how strongly the mafia systems operate for their pleasures using innocent people. The urban elites will go to any extent to protect them for their pleasures. I was aware of the consequences and prepared to face the allegation and fully equipped to counter the allegation.

However, I diplomatically handled to weed out these nefarious activities which are devouring the animals and encouraging clandestine activities in the interior forest.

I informed Chief Minister about the Mafias which he was able to appreciate and supported me. I came to know that he was fully aware of the mafia but he never thought that it was possible to weed out that easily, those settlers, because of human angle, livelihood angle. Poor and tribal pictures would be projected, hiding the ground realities. But I diplomatically handled the situation and evicted more than 3,000 settlers by providing a small place in the periphery of the sanctuary. My senior Sri Balaiah warned me, but I took courage and my successor Sri A.C. Lakshman continued this operation of eviction.
**Ramsar Convention:**

In the year 1975, a convention on wetlands was discussed, and global treaty was signed to deal with a particular type of ecosystem, that is wetland ecosystems. The mission is “the conservation and wise use of all wetlands through local, regional cooperation. Earlier to this, large extent of wetlands was reclaimed thinking, that the wetlands are the breeding grounds of mosquito and other disease bearing creatures. But they realised the importance of wetlands and this treaty was signed by 190 countries, which started protecting wetlands. They issued guidelines on how to achieve “wise use” or sustainable use of wet is lands realizing the ecosystem services offered by the wetlands to treat and purify the water etc..

The value of wetland ecosystems as sources of water, food and a source to recharge underground aquifers as well as the ability to purify the water is found to be amazing.

**What are Wetlands?**

Every wetland contains 4 to 5 basic elements, hydrology, soil, biodiversity. Both plants and animals play critical role in maintaining hydrological regimes as well as a main source of food to wild animals during pinch season.

They also serve as boundaries and help in protecting the in forest from fire. The aquatic vegetation had great ability to oxygenate and maintain Dissolved Oxygen level, an important parameter to access the quality of the water. Our tribal friends used to prefer this water for drinking and they never used bore-well water or open well water dug by Social Welfare Department in their colonies, under tribal development programmes. When I questioned, they said that after making a small hole in the wet
land, they scooped the water and used it for drinking which was very palatable and nutritious, rich in minerals according to them.

In scientific term the wetland is inundated or saturated by surface or groundwater at a frequency and duration to support and that under normal circumstances, to support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Other important characters of the wetlands are found to be predominantly hydric soils that are inundated by surface ground water with high prevalence of hydrophyte vegetation typically adopted for life in saturated soil conditions.

In Nagarahole National Park, this wetland was the main stay for elephants, and all herbivores. The duck weeds and cat tails were playing a great role in preventing evaporation and purifying the water from organic contamination. The aquatic vegetation gives abundant clue to determine the efficiency of the wetland and the role the Hydrophytes play in evolutionary strategies for survival which is amazing. The aquatic fish life and breeding habitats are keystone links for riverine systems by providing invaluable organic matter to support riverine aquatic biodiversity.

The steps undertaken have contributed in a big way to get recognition of one of the best game sanctuaries in the country and the regular visitors like Governor Dharmaveera, Field Marshal Manik Shaw and many other celebrities including the then finance minister Gorphade were responsible for projecting the uniqueness of Nagarahole National Park.

In 2015, the Moef requested me to send my bio data to appoint me as a member of Regional empowered committee to give forest clearances for projects. I had been nominated as one
of the empowered committee members. The regional principal Chief Conservator was the chairman of the committee and principal Chief Conservator of concerned state and other two expert committee members were supposed to study and offer their comments to clear the projects. Before placing the details of the project to the committee, the Regional Chief Conservator and the principal Chief Conservator occasionally visit the project sites and submit the fact files. In every file submitted, I observed that they were pre-determined to clear the files without due consideration on environmental damages. In spite of my comments, they ignored all my observation and gave clearances. Few examples, in Bellary Mining area, the quantum of landscape destruction and modus operandi to loot resources and to destroy the most fragile landscape is a well-known notorious story in the country. But the department and the government wanted to renew the license for the same lease holder by granting 30 year lease by levying a fine of Rs.13 crores. The lease holder has encroached forest land, and illegally dumped the ore in the forest land by destroying the ecosystem. For which the argument put forth by the committee members, especially the chairman, was that it was necessary to promote steel industry and they followed the polluter pay principle and took decision to permit the same lease holder.

Similarly in upper Bhadra Project, Yettinahole Project, Anshi National Highway project, which are the most valuable project tiger areas and the most sensitive water shed areas, which are already fragmented by various activities. In spite of my caustic observation and comments, they cleared the project. While analysing the fact files, they miserably failed to highlight the ecosystem services and granted permission to clear thousands of trees in the natural forests. Similarly in the Nagarahole National
Park, to evacuate power to Kerala State, thousands of trees were destroyed. In many other cases like quarry licences, wind mill projects in about 30 to 40 cases in which I participated, I pointed the care to be taken before clearing and precautions to be insisted, but they were not taken cognisance, so I was forced to resign and returned their honorarium also. I found that the environment department and forest department need to understand through bio-lenses, hydro-lenses on the principles of public trust doctrine.

The environment is a public entity which needs to be safeguarded for future generation.

In most of the cases, they have prepared fact files, especially the chief conservator who visits the spots, before placing the project file to the committee, has failed to look into as professional ecologist. Instead, he applied his mind to accommodate the project rather than taking precautions to safeguard the ecosystem integrity.

The state government officials also silently supported the projects without recognizing the need for maintaining the ecosystem services and the cost of the damage to the environment. It is needless to mention that no money or technology can substitute the climax world best ecosystem evolved billions of years ago.

Vellore citizen’s welfare forum fought for 40 years to bring in legislation and succeeded in 1996, where the court found that “Onus of Proof” of risk is on the actor or the developer. None of these directions were implemented or enforced by the enforcers. This clearly indicates that while giving environmental clearances none of the eco-logical and hydro-logical issues were examined to safe guard the fragile eco systems.
However, the most insidious scenario is, that the MOEF and the State Government tying the fate accompli to give clearance with a concept of monitory compensation, undermining the ecological services. So the idea is that nothing can be done to save the ecosystems in the present trend of mindless development.

In my opinion, it is a challenge to public policy to insist and handle eco system before things become irreversible. If we look into the era of Devaraj Urs in 1970's and the present era, in spite of disasters, the way our policy makers have taken things for granted will end up in irreversible changes. Already our country is facing acute shortage of water and pollution is increasing in several folds and invading every eco compartments including atmosphere, stratosphere, hydrosphere and oceans also are becoming the victims of human activities.

This clearly indicates that there is an increasing evidence of a callous disregard for social and environmental costs as the expansion of cities are negotiated and implemented. The country needs decisive changes or else the disasters will multiply.

On 28th of June 2016, a group of experts from International Energy Agency highlighted health crisis brought about by energy industry. A fortnight ago 17000 acres of natural forests were delineated for exploitation of coal to run thermal power plants.

The energy agency has pin pointed, air pollution as a major public health crisis leading to 6.5 million deaths each year, the root cause is energy industry.

In the year 1995, as the secretary of the environment department I insisted on the proponents of the project about precautions to be taken to mitigate air pollution in ecologically
sensitive ecosystem of our Western Ghats. The proponents were not willing to accommodate to incorporate available technologies because of the extra cost. I had been forced to take voluntary retirement because the then Govt did not relish my insistence of incorporating precautions. Today it has been proved air pollution is a major public health crisis.

Water is a wonder molecule

Tribals of Nagarhole game sanctuary are truly ecological literates, because they know the value of the surface water and its role in maintaining the eco system. They were explaining in their own terminology about water properties. According to them, water possesses a tremendous advantage in a biological system, where the cell of each plant undergoes moderate biological activity which regulates and moderates the climate pattern. Despite the fact that large amount of heat is generated by this metabolic activity and temperature of the cell, water system does not rise beyond reasonable limits. The high heat capacity of water makes it possible even for ocean currents to carry heat in a very efficient manner. In their observation, water has a high heat of vaporization resulting in perspiration being an effective method of cooling the human body. Based on this physiology, they used to forecast the rainfall and intensity of the rainfall. The high heat of vaporization also prevents water sources from getting evaporated quickly because of greenhouse impact in a tropical forest. They had a clear idea of 500 sq. kilometres of game sanctuary about the vaporization mechanism, which influences the micro climate. Based on this observation, they divided the Nagarahole National Park into moist rhythmic zone, which in turn determines vegetation composition. It clearly indicates nature has designed the properties
of water to exactly suit the needs of the living ecosystem. These properties are due to unique kind of bond known as the hydrogen bond. This bond is a weak electrostatic force of attraction between the proton of a hydrogen atom and the electron cloud of a neighbouring electro negative atom. In other words hydrogen atom with its electron locked in a chemical bond with an electro negative atom which exposes positively charged proton. This in turn electrostatically interacts with the electron cloud of the neighbour.

Hydrogen bonding between water molecules occurs not only in liquid water, and also in water vapour. The water is highly hydrogen bonded and still a fluid and not a solid, this is a paradox. For which, they pray to the forest deity for this mystery. Their understanding of water and its structure as well as the surprising microscopic forces that define the structure of water is still fully not known to the modern science also, but the tribals are aware of there forces which are prevailing in their ecosystem. Because the interaction of free energy and interaction entropy, they were able to feel by mere observation and feel what they call is water pulse. Modern science also confirms this observation that hydrogen molecule is energy carrier which can be obtained from H₂O using primary solar energy source in a well-structured Forest ecosystem; perhaps this made them to worship forest deity for their life supporting resources and found happiness in arenas.

The importance of water to life can be gauged from the fact that cellular life evolved in water billions of years ago. The cells are filled with water and are bathed in watery tissue fluids. Water is the medium in which cells, biochemical reaction takes place. The cell surface, a lipid – protein, is stabilized by hydrophobic interaction.
The proteins and membranes in cells are hydrogen bonded through water which protect them from dehydration and conformational transition when there is thermal fluctuation. Transportation of ions from cell to cell is possible only because of the presence of water. Water is extremely important for structural stabilization of proteins, lipid membranes and cells. Any attempt to remove water from these structures will lead to many changes in their physical properties and structural stability. The tribals were able to explain the burr formation and other morphological structural changes in the old trees. This may be due to thermal fluctuations and disturbance in transportation of water ions from cell to cell. This clearly indicates that the observation of tribals appears to be interesting and scientific.

So, the question is, the biological systems can never survive without precise water transportation and stabilization in their body system, so it clearly conveys the divine message that there will be no life without water.

This clearly indicates the knowledge acquired by the tribals from their observation and the observation of their ancestors which have abundant meaning to be incorporated into wildlife management, watershed management and ecosystem management etc.

**How the Government systems function**

Hunasuru Timber Depot is known for its high quality timber, especially rose wood, teak wood, matthi and honne which are the well-known commercial timbers, are in great demand. Hunasuru depot was earning over 15 to 20 crores of revenue from the sale of the timber. I used to extract only dead and fallen timber with the help of the elephants. I had over 25 working elephants under
my control, and we were spending substantial amount on their maintenance and health care. Normally we used to call for tenders for cutting, conversion and transportation of the timber from the identified coupes.

After assuming charge I dispensed the contract system and entrusted the timber conversion work to the tribals and paid them substantial wages for converting fallen trees into logs. I was able to save a substantial amount and had rigid control over extraction of only dead and fallen trees which I used to sell in the depots. Only contract system which I accommodated was transportation to the depots for which I used to take adequate steps to prevent ring formation (connivance), that is they used to organize their own bidding before participating in tenders. They used to quote a very high rate and later they used to share the extra profits among themselves. I came to know about this malpractices and I requested them not to indulge in this practice to exploit the government. But, somehow one or two elements did not heed my request. But I managed to break the ring by motivating other bidders by which I was able to save few lakhs of rupees for the Government. I also entrusted the work of timber segregation into different categories, quality and size wise, before exposing for sale.

I entrusted this work to the local communities who were doing this job since time immemorial, but under the control of an outside contractor. He used to exploit them by paying meagre wages. I took initiative to pay slightly higher wages for those people who were working in the forest and also in depot by paying directly. They were able to earn higher wages with this change over. Government also saved considerable amount to an extent of
30 to 40% which contractors used to get higher profit with these deals. There was heartburn among contractors including my elephant, ration contractors, who also played mischief in quoting higher rates.

Constantly I used to appraise the Chief Minister about the initiatives I took and local people also used to brief him about the benefits they were getting and informed him about how I function and took adequate steps to safeguard Government interests and also the interest of the working class who are engaged in forest timber extraction and other related activities.

In 1973, I received a Government order allotting 3,000 CFT of Matthi timbers for construction of market sheds in Mysore city at a scheduled rate stating that the material is for construction of government sheds etc. The contractor came with the government order and explained and requested to release the timber on priority. If I had implemented this order, the entire Matthi wood would have gone for this purpose and the other merchants who were coming from all over India for this sale to buy Matthi timber would not have got the Mathi timber for their regular business. I told the contractor that I would like to visit the place and the plans to find out the genuineness. After verification I came to know the quantity required is hardly about 30%, but he wanted to make money by selling at market rate. So I rejected and instructed him to compete in the bid and purchase. He carried the tales with the help of some politicians, but I did not budge and saved a considerable amount to the Government. Similarly in elephant ration contract also, rich contractors who had become defaulters also carried all kinds of tales against me, but each tale had contributed to increase my image at Government level, In one case where a rosewood
defaulter who was a very rich and well-known personality in Karnataka state and also a close friend of Sri Urs. Had become a defaulter. As per sale conditions, I re-auctioned all the lots purchased by him, except in two lots, I realized higher bids in all other lots worth of Rs. 30 to 35 lakhs. I forfeited the deposits and also issued a notice to make good, loss incurred for the 2 lots also. The timber merchant brought Sri Urs personally to claim refund and also forfeited amount, because Government had realized higher prize for the same lots. In the presence of the rosewood merchant, I explained about the provision of the sale condition and requested that it was not possible to refund. But Sri Urs as stated that if he issued order as a chief executive of the state, it was possible to refund. I pleaded and explained that it was possible, but it would become a precedence and many other defaulters would approach the court for refund etc. I also stated it would be an embarrassment to the Government and it would also result in heavy loss to the Govt. The timber merchant was rich enough and he could easily forgo that amount, instead of embarrassing the Government. Sri Urs nodded his head and left without further discussion.

In almost all cases, I used to safeguard Govt interest by insisting on the Govt to modify their orders. Among them, Silver Oak cultivated in coffee plantations was ordered to be released without collecting the 50% of the market value in unredeemed lands also, which amounted to several crores of Rupees loss to the government. I stoutly refused to implement the Government order giving technical explanation in spite of tremendous pressure from various quarters. I explained how the non-technical section officers and secretariat will interpret law, where the Government would have lost several crores of rupees. Sri Urs, as usual, nodded his head with admiration without expressing a word.
In Nagarahole National Park about 2,500 to 3,000 tribals were the dependents on forest activities. My decision to entrust the work of timber extraction to the tribals had made a big impact in their livelihood. I came across an evolved soul by name “Chaanda”. His age is around 60 and he has seen the comprehensive process of evolution of forest during his life. I wanted to seek answers about their philosophy and posed a series of questions such as, where did we come from? Where are we going? Why are we here? etc. He had an excellent explanation and revealed the gospel truth, meaning the things could not be explained by Science, in unscientific irrational means. He told me life was originally breathed by creator into a new forms produced by laws around us. These laws are growth, with reproduction, inheritance, and variability etc. I was really surprised to hear this from Chaanda, who knows nothing about Science and technology, I developed a great liking for his knowledge.

**Chaanda-the born- deep ecologist**

Chaanda had good understanding of intricate web relationships between organisms and their living and non-living surroundings. He used to explain in his own language about the interdependent living and non-living systems making up the ecosystem, especially forest diversity, hydrological regimes and the wetlands, ponds and their vegetation adaptations and so on. The combination of ecosystems occur in a similar climate and share a similar character and arrangements of vegetation what they called in scientific terms as bio mass. In his explanation, interconnections are the safety nets to maintain the climax and sub climax vegetation.
Surprisingly, his knowledge of Celestials, such as Pancha-Bhutas like Sun, Moon, Agni, Varuna and Vayu and Panchendriyas are interconnected and they alone can renew, life and only nature can disintegrate life, which is a force, the structured systems, relentlessly, operating continuously, and only the Supreme can devour everything and digest, no one else can perform this as efficiently and as precisely as the very Creator himself.

This indicates the depth of the knowledge acquired by tribals, in their intimate contact with Mother Earth, whom they defined as Universal Mother. After industrial era, this concept of deep ecology has undergone dramatic changes, which has altered the course of natural systems, which are vividly evident in the modern thinking of life science.

The episodes of the year 2015 and 2016, tell the stories of manmade crisis of the fate of Nile valley, Himalaya, Vindya, and Aravali, Eastern, and Western Ghats and many other fragile ecosystems which have been altered by plucking safety-nets and safety-valves, where man and his science and technology has been smashed in a fraction of a second. The wisdom of Chaanda of understanding is much ahead of our modern education system, which results in catastrophes and ecological disasters.

Chaanda had a sound knowledge about the causes of stability, which solely depends on its diversity. The more interdependencies in an ecosystem, the greater the chances, that they will be able to compensate for changes imposed upon it by natural causes. But Chaanda commented about monoculture of Teak plantations raised in Nagarahole National Park since 1900 onwards which is the root cause to de-stabilise hydrological and biological systems in Nagarahole National Park. Gradually the
water shed depletion of Lakshman Thirtha and Kabini Tributaries started diminishing. I was shocked at his observation. He explained the complex forest with rich mosaic interdependences, possesses greater stability than monoculture teak plantations, animal life also suffered irreversibly. According to him Mother Earth has been de-skinned by the drip of the teak leaf.

He was fully aware of the role of microorganisms and chemical elements that make up the living system which depends on complex diverse sources, to prevent cyclic shortages. The oxygen cycle which is crucial for survival, depends upon a vast variety of green vegetation of three tier canopies above the ground and three tier root systems below the ground, which are tuber crops. The tuber crops are a staple food for tribals, which they used to harness carefully without affecting the productive ability. Diversity is essential for continued functioning of cycles by which atmospheric nitrogen is made available to allow life to exist. That means they were aware of the importance of nitrogen fixing climbers, trees. He pulled out a small leguminous herb and started explaining the role of rhizobium bacteria which is less than a pin head in science, is vital to life systems. He connected this rhizobium to rain God, thundering, lightning and transformation of unavailable nitrogen which is 71% in the atmosphere into an available form to support life building protein, molecules. This pin head size bacteria of leguminous herbs, shrubs, trees are the major source of protein production system in nature. Diversity of trees, climbers, herbs, shrubs, tuber crops are essential for continued function of water cycle, carbon cycle, nitrogen cycle, and this system alone can capture atmospheric nitrogen efficiently. Therefore varieties of organisms are vital for life to survive and to maintain the hydrological system.
So far, the legal systems in the country and even at the global level, fail to recognize the degradation gaps mainly due to uncertainties of our knowledge about environmental disruptions. So far, most of them have failed to identify the health impacts of thresholds of the pesticides, herbicides and chemical farming practices.

Scientists rarely draw a line to prohibit these hazards for various reasons. Thus, decision makers simply pick up a particular standard amidst a cloud of ambiguous evidence.

With the result, environmental problems are becoming complex every day and complex issues are becoming more dangerous, chemicals in the name of technical fixes, which will magnify the dangers for life in the planet.

**Kariya – a seasoned mahout acquired deep knowledge about elephants and their habitats**

Kariya was one of the most committed, knowledgeable, sincere wildlife professional. I used his services to understand the elephant behaviour and their requirements in the elephant habitat.

According to him, elephants greatly differ from one individual to other in temperament. We had over 75 captive elephants in 4 camps. He used to identify elephants that used to willingly perform day’s work; some would do so at the expense of much goading and abuse from the mahout. Some of them are very cowardly etc. So this variability among 75 elephants have been identified, and accordingly, their services were utilized for various activities including timber dragging, carrying tourists to game sanctuary. Our staff used to engage them for preventing poaching etc. For example, Ranga was a highly dignified elephant; he used to take
care of his mahout meticulously. His mahout used to go on every Friday to Kutta sandy for his weekly share of liquor. Ranga was fully aware about this on Friday and he used to watch his movements. When he became completely intoxicated Ranga used to carry him to his shed safely. Similarly Hamilton, a notorious male elephant, used to tease every female elephant. Varalakshmi was the only elephant, who used to teach him a lesson to get rid of his sexual perversions. Likewise, Ravana and Revathi elephants had a perfect understanding to live together and Revathi never allowed wild elephants to go anywhere near her.

For elephants, cowardice is not a natural instinct, but strong odour and sound are the two sense organs which are extremely sensitive, for them. Naturally, we assumed the elephants are fearless and always on the alert and usually be driven without much difficulty by understanding their concern for their young ones. The foster mother will always be more alert in taking care of young ones and they always take lead in reaching safe places without taking risk. They also hate unwanted sights and sounds. We use these techniques while conducting Khedda operation.

They were afraid of barking dogs, and whistling sounds, and quarry blasting etc. which were creating massive problems in the elephant habitats since 1980 onwards, especially from BRT, Kanakapura, where the core elephant habitat connects to Tamilnadu forest. Kariya used to tell me that most of the wild elephants are frightened about the smell of blood. He used to narrate the behaviour of elephant in wetlands. The mud bath was taking care of their massive body surface health. The combination of mud and dust and water protects them from the rays of the sun. It is also serving as effective balm to get rid of their skin parasites.
The social activity of playing in the mud bath represents an essential element in the apprenticeship and social bonding of the young one, who learns to communicate and live in harmony with others.

Whenever, we capture elephants, through pit method, the first thing we used to do is to take them to the water and touch their bodies with other tamed elephants and with human hands to get a good feel of human touch.

These majestic animals give a unique impression about peace and tranquillity. The strength, and their massive proportions, and their royal gestures inspire us and commend both admiration and respect from us. By observing these Majestic regal looking animal in their natural habitat, one can feel an intense emotion of pure wonder. Elephant trunk is an extraordinary anatomical feature, worked by over 40,000 muscles and it is formed by the prolongation and fusion of the upper lip. The lip of the trunk has only one lobe. The trunk enables to breathe, to smell, and pickup objects, inhale, suck and throw various objects and make sound, warning, and other loud signals as well as melody musical signals for their young ones which normal human ear cannot hear.

In the year 1979, when I was in research wing, Sri G. Ramegowda, Forest Minister directed me to capture 5 male elephants becoming constant crop raiders around Bannerghatta National Park. They were causing massive damage to agriculture crops, and local people were indulging in ill-treating these regal giants. I requested to summon tamed elephants along with Kariya and his team of elephant mahouts. I organized to capture all this elephants through pit method. I constructed temporary stockades, to put them in the stockades till they mellow down. I succeeded in
capturing all 5 elephants, but 1 elephant died after capturing, because of grievous injuries inflicted on him in the pit. But all the other four elephants have become good friends within a months’ time. Honourable minister Sri G. Ramegowda visited the elephant camp at Bannerghatta and felt happy by looking at the magnificent elephants, all of them tuskers with distinct body features. Among 4 elephants, one male was found to be a stylish eater of sugarcane. He never used to take sugarcane bits to chew directly instead, he used to keep sugarcane piece between the trunk and the tusk for a minute or two, and gently he used to chew with grace. All the four elephants responded and became friends within a fortnight. Kariya did a commendable job in taming them.

**Urs – A person with compassion and comprehension**

Before going into discussion about the personality of Sri Urs, I would like to record, that Mahatma Gandhi has mentioned seven sins a politician should not commit, which he published in young India in 1928,

1. Politics without principles is a sin.
2. Acquiring wealth without work is a sin.
3. Pleasure without conscience is a sin.
4. Knowledge without character is a sin.
5. Commerce without morality is a sin.
6. Science without humanity is a sin.
7. Worship without renunciation of ego is a sin.

Mahatma Gandhi wanted to initiate developmental programmes with greater, deeper, broader vision of self-sufficient, healthy environment. He also emphasized spiritual health needs.
Mental and physical health is essential. His philosophy was to protect all living things and their habitat for healthy co-existence and survival of all races.

Sri Devaraj Urs had acquired many such noble qualities; especially compassion for the poor was filled in his soul and his mind used to think about the poor and voiceless, minorities, who were suppressed. What I observed in him was how to live in perfect comfort with minimum facilities despite being a Chef Minister of state. He was a person with high moral values, which helped him to remain steadfast and face all crisis. For instance, after cremation of his mother, Grover’s Commissions were nominated to enquire all irregularities, which were published in all national new papers. But Urs has not showed a symptom of concern about Grover’s appointments to enquire into the irregularities committed by his Govt.

After taking bath he slept and went to deep sleep within 5 minutes, that showed his detachment from the worldly objects. I admired his steadfastness in the evening, when he conducted Village Panchayat Meeting with the local people and sorted out their disputes with great native ability. I spent about 2-3 hours with him on that day. I was thinking about him, how a human mind could restore emotions and thoughts about the conundrum operate in a human system, it has got great ability to deal with diverse functions, when the soul is divine. Soul is a vital force that inspires and energizes and stimulates even at the crisis, and maintain the stability. That was the quality I observed in him on that day.

In contrast to this episode, within a week, I had to face another episode with two politicians, one was a Deputy Minister in Urs cabinet, and the other was a Rajyasabha Member. The two
politicians, were camping at Nagarahole Guest house on a second Saturday, a Government Holiday. I received a call from my Range Forest Officer, who informed me that the above two politicians wanted to have dinner at Hunsuru Government Guest House on their way back to Bangalore. My Range Officer informed me, that they wanted Non-vegetarian food with 2-3 items. They wanted to have dinner at 7.00 p.m. and I got the message at 5.00 p.m. I told my Range Officer it might be difficult to arrange dinner within two hours and instructed the Range Officer to inform that I would instruct the guest house staff to make arrangements. Surprisingly the Rajyasabha Member came exactly at 7.00 p.m. and demanded the guest house staff to serve dinner. They were informed, it was getting ready. It might take another hour or so. The M.P. became furious and directed the staff to call me. I went to the guest house and the M.P. started shouting and threatened me to face the consequences, and also used all kinds of words as if I was meant only to function like a caterer to the politicians. I politely replied that I had been trained for forest management and not for Hotel Management. The argument went on for about 30 minutes and I walked out stating that I was prepared to face consequences. After half an hour, Deputy Minister also arrived and called me and shouted. I also shouted and told him to behave properly with the govt servants, and walked out. The entire guest house Staff was witnessing the scene and they also informed the local leaders who were close to Chief Minister. I expected that Chief Minister might enquire about the incident. Instead, he enquired the guest house staff, and ascertained about the incident. They informed him that both the politicians were under the influence of alcohol and misbehaved with me.
I totally forgot this incident. After a month I was sitting in his bedroom and discussing some important issues. He was in a hurry to go to Mysore and getting ready, but he continued the discussion while dressing. Meanwhile the Deputy Minister came along with some leaders from Belgaum. The Police Constable informed the CM about arrival of Deputy Minister. I wanted to vacate the room but CM asked me to sit and informed the constable to send him. There were only two chairs CM was sitting in one chair and myself in the other chair. As soon as Deputy Minister entered the room I wanted to get up, but CM signalled me to sit and a looked at Deputy Minister as he was explaining certain things, CM heard him for about five minutes and nodded his head and informed him that he would look into the issue. There ended the scene and he looked at me without saying a word.

In this incident he powerfully conveyed two messages one to me, and other to Deputy Minister without uttering a single word. A message for me was the quality of a person always commanded respect. For minister he conveyed that they should learn to respect the officers.

Again I was thinking about the art and skill of an administrator to deal with situations very effectively without even saying a single word. My respect for him increased many folds and with the population of twelve thousand people of his community, he managed to rule 7-8 years over Karnataka State with great skill and art which he practised. He adopted various skills to silence his opponents, especially the leaders of the major communities who wanted to create all kinds of problems to bring him down. I admired his handling skills like Ekalavya who silenced the barking dog by using arrows without hurting the dog.
There were other incidents which I witnessed. After losing power, I went along with Sri Shyam Sunder, our Principal Chief Conservator, to pay our respects to Sri Urs, for all his unforgettable contributions to protect forest wealth.

Within a fortnight the local leaders approached Mr Gundu Rao, the successor of Urs, to revive prepaid licenses to help farmers etc. We requested him to put in a word to Smt. Indira Gandhi to advice C.M. Sri Gundu Rao not to revive the privilege of letting carts enter the forest. Very graciously, he promised us to save and safeguard the interest of the forestland wild life. Both of us had not seen an iota of depression of losing power. He was holding his pipe and gracefully enjoying the puff with great dignity.

**Bengaluru was the first city to notify green belt**

1960 onwards, cities are growing in all countries including India. The economists started celebrating cities as a magic pill to get rid of poverty. Only cities can transform the landscape to eternal prosperity. Cities have become the highest pinnacles of human creation, and over 2/3 of global population will be in living urban areas by 2050 according to some predications.

Developing world will account for over 19% of the urban growth. Therefore every urban landscape planner should understand the rules of the game to manage the population, transportation, solid waste, sewage, industrial wastes, etc which impair the quality of the life of the urbanites.

The global climate risks were recognised in 1970’s. Simultaneously, Bangalore Urban sprawl started making a great impact on the salubrious environment of Bangalore, In the name of development. Bangalore urban agglomerations had numerous
flawed models which had been accepted by the civic authorities. They failed to look into better alternatives, utilize the unique geo-bio-hydro feature of Bangalore City. Instead they encouraged mindless growth, many authorities without inter and intra departmental co-operation which persist till today, is the bane. Bangalore like many other cities is becoming a beast, and difficult to tame because it is suffering from all kinds of bad and worst templates borrowed from the West blindly.

**Policy makers should have a concept of welfare, wellbeing.**

Sri Urs in 1978 was the first Chief Minister to notify green belt for Bangalore City. The origin of green belt notification had an interesting story, which conveys how a visionary politician can take firm decision to provide quality life to the urbanites.

I was in-charge of postcentral - silviculturist means (forest research). I had jurisdiction of many locations in and around Bangalore City, including some reserve forest areas, where I initiated several research projects to improve the bio-diversity, genetic improvement, productivity, eco restorations, and conservation of RET species(R-rare E-endangered T- threatened).

Kalkere Reserve Forest is situated near Bannerghatta Road, presently just adjacent to present Nice Road Junction. It was a eucalyptus plantation; the extent is 150 acres surrounded by all kinds of developments. I came to know that the Government had taken a decision to hand over this land to build a hospital by private entrepreneurs. I took up the issue with the Forest Minister and explained to him, about the need of maintaining greenery which was much more important to maintain the health of the urban
landscape and to provide quality life to Bangaloreans. I briefed him about the concept of ex-situ arboretum, which plays a great role to provide eco system services and conservation of RET species. I informed him that the landscape would be utilized to create biodiversity of Karnataka at different levels of ecological and biological organization among the indigenous forest trees of Karnataka State.

The concept of conservation of biodiversity and traditional knowledge, especially tribal’s knowledge shells have to be incorporated to protect all native knowledge and species.

It also secures the conservation of biodiversity, as per article 10 (c) which obliges to protect and encourage the customary use of tree corps in accordance with traditional practices for sustainable use of bioresources as per Art. 18.4 which oblige to develop and use of indigenous and traditional technologies to conserve tree crops and sustainable use and economic Growth.

**Tamarind Patenting**

Sri G. Ramegowda, the Forest Minister, was very practical and a person with abundant knowledge and common sense. He knew the economic value of tamarind trees in Bangalore, Kolar, and other districts; in 1975-1976 tamarind seeds had caught the attention of scientists across the world, with the number of tamarind-related patents issued by U.S. patent and trade mark office. (U.S.-P.T.O.) They issued 12 related patents, 1978 onwards. Japan has become active with regard to research on tamarind and they obtained over twelve patents.

U.S. and other major players like Merck and company patented 8 of the 30 patents issued in 1978. Likewise, Indian patent
office issued patents 1974 onwards but promoting the benefits for various industrial consumption and food processing industries, are yet to gain footings in our country.

Honourable Minister was able to appreciate the importance of conserving the tamarind varieties and to promote tree cultivation which is vital to support rain fed farmers as an insurance of getting fairly good income to the farmers. I explained the efforts made to identify mother trees of Jack, Nerale, Bela, Bilwa, Amla, Mango, Yelachi and other trees as food tree crop. Oil yielding tree crops like Honge, Bevu, Ippe which have a potential produce bio-diesels and other tree crops for medicinal purposes such as Arjuna, Honne etc. He encouraged tree crops in rain fed areas as supplement to the farmer’s income.

Similarly, Savandurga reserve forests were supporting excellent natural Bella and about 20 different types of native edible fruits yielding tree and shrubs were found naturally in this landscape. The Government has taken decision to hand over 1000 acres to rehabilitate farmers who lost their land in Manchanabele dam submersion. I explained to the Hon’ble Minister about the potential of Savandurga reserve forest and informed him about the importance to protect this watershed, to maintain the water supply to Manchanabele reservoir. The landscape is one of the very rich and ecologically sensitive hilly regions. I explained there were more than five thousand well matured Bela trees and their economic values, where I identified the best mother trees to produce quality seeds for propagation. Hon’ble Minister cancelled and recommended different degraded area which was suitable for agriculture. Today, though it is disturbed by human activities, still it supports very valuable tree crops. Some farmers earn five
to ten thousand rupees by converting Bela fruit pulp into healthy soft drink. In this very landscape, about 500 acres adjacent to Lakshmi Narayan temple, were identified where the landscape has distinct variation to support rich biodiversity of medicinal plant and fruit yielding tree crops. It has been notified as MPCA (medicinal plant conversation area). In the state, 12 distinct MPCA areas were identified and notified for in-situ conservation of native vegetation by rigid protection from grazing, fire and not diverting for other developmental activities.

**Origin of Green–Belt**

Adjacent to present J.P. Nagar, a small patch of Jalari (shorea trees) were found in the forest landscape of about seventy acres which was under my control. I came to know that the urban development Minister, wanted to acquire this land to form a layout. I requested the Principle Chief Conservator to take up this issue and move the Govt not to acquire it. The then CCF politely informed me, the Government would not agree and they would acquire it to expand Bangalore urban landscape. I took his permission to take up the issue with the CM Sri Urs, and try to retain with the research wing to take up various research projects in this landscape. I met Sri Urs at his residence at Bala Bruhi. Early in the morning, while walking in the garden, I briefed him about the Government intention to take over the Dorasanipalya Forest land and requested him to visit the area, and to retain it as a urban green landscape. He agreed for a spot inspection along with urban development minister and forest minister the very next day. I received him and other ministers at the spot, which was right opposite to present IIM Bangalore which did not exist in 1979-80. I took him round and explained the importance of trees and in the urban eco system I also emphasized the role of ecological services in urban eco-
system to prevent urban malignancy. I briefed him about the Bangalore landscape configurations and the need for protecting the public lands to regulate the climate and watershed areas, to ameliorate and to protect the existing Gunduthopu (tree groves) which has heritage in Bangalore landscape, both in public and private places. I also suggested enforcing by extending tree act into a green belt zone for the wellbeing and welfare of the Bangaloreans.

I took liberty to brief him about the global reality, after the geological explorations for precious oil; the Homosapiens have created havoc with global climate, loss of bio diversity and the health of rivers and ocean as well as atmospheres chemistry has been altered. We are also assaulting the phase of the landscape by dumping all kinds of non-degradable material. We are trying to imitate the West, in all our developmental planning, with the result people are shifting from rural agrarian society to urban industrial social systems. With this change more number of vehicles and people will be concentrating and engulfing the very urban area.

The intense activities exert very strong influence on the management of solid waste, liquid waste, hazardous waste; gaseous emissions will cause irreversible changes in the Bangalore urban ecosystem.

Mindless growth in the Bangalore city is leading to decay and increases aridity, if we lose greenery in and around Bangalore. While briefing the Hon'ble CM, the urban development minister wanted to silence me, but Sri Urs requested him to listen to the consequences man has to face. After our visit, about 1000 people were standing with applications, demanding sites. He quietly
received the applications and directed me to accompany him in his car. While travelling I informed him about the role of trees in urban ecosystem.

We reached the palace where he issued orders to identify all govt lands around Bangalore and notify them as green belt to preserve the ecology and climate of Bangalore city. I took steps to list out areas available with the help of topo sheets and submitted the proposal to notify. To my surprise, notification was issued within week.

However, this notification was abused and misused by de-notifying and shifting to their conveniences without even caring for ecologically sensitive zone, like wet lands, lake and lake beds, Gunduthopu, etc. resulting in the present chaos and crisis, the citizens are facing. Over 30% of the landscape of the Bangalore is infected by urban malignancy. The Bangaloreans are struggling to find out solution but there are no signs of getting in meaningful solutions, despite the fact there are few technical fixes, which may give some relief but no permanent and sustainable solution are in sight so far.

If the administrator and politician had restricted the growth and preserved the ecological, hydrological, and biological safety valves and safety nets, the present catastrophe would have been averted.

The accomplishments of Sri Urs - Achievements in safeguarding public doctrine trust.

To realize the importance of the part played by Sri Urs in protecting the forests in our state, we should have the knowledge of Forest rules and laws. Even before that we should be aware of
the fact that, how our forests got destroyed and the steps taken to protect them at the national level. In this background, we can see clearly the achievement of Sri Urs governances of natural resources of the state.

For the first time, in 1885, Governor General Dalhousie brought rules regarding the protection of forests. The religious ceremonies and moral ethics were the only way to protect forests. Once Lord Dalhousie enforced the law, the forest was segregated as state forest or Reserve Forest in stages. At that time, our forest was used for shifting cultivation to produce food crops.

They used to identify one particular area of the forest and grow crops in two to three rotations. They used to abandon that area. But in due course some vegetation used to establish coppice to recover and cover up the open landscape. This is called shifting cultivation by the natives and tribals. In 1870, this was banned by an officer called Cleghorn. This method of cultivation was very popular in old Mysore area and the Maharaja of Mysore was the first to ban this practice. In spite of the above, government supported the conversion of forest into plantation crops, like coffee, tea, cardamom, rubber etc, by clear felling the fertile rich forest areas to promote commercial crops, by encouraging the elite society to resort to plantation crops. They did not realise the vital role that the forest eco system played in maintaining river systems, though even some British officers warned not to touch the virgin eco system of Western Ghats which form the water bank for peninsular India.

Large extent of forest resources were looted during the First and the Second World War. Though in 1952. National Forest Regulation came into force, the foundation was not laid till today.
Instead the same practices of exploitation and conversion of natural forest are still going on in our country in the name of development. It is needless to mention the type of disasters the country suffered since three decades. We have built massive dams and the life span has drastically reduced and our landscape has been exposed to flash floods and devastation. We are yet to learn the lessons.

In Karnataka, from 1962 to 1971, the destruction of forest land reached its peak, because of rehabilitation and other developmental activities consuming the rich forest. So, Government started releasing the forest land, when people came with their application, and before even sanctioning, the authorities concerned never enquired whether that particular land was fit to cultivate.

Because of this lacunae, large extent of water logged area has been formed and lying fallow today. The extent of that is few lakhs of acres are lying fallow and alien weeds have invaded them.

In 1962, the capability of a D.F.O. was measured on basis of extent of forest cleared and handed over to the Deputy Commissioner who used to write the confidential reports. This explains the mode of governance in the country.

In 1972, Smt. Indira Gandhi gave an extraordinary speech in world conference at Stockholm, regarding the importance of environment protection and the consequences of forest destruction. The whole world started thinking about it and realised the importance of forest and wild life.

Sri Urs and K.H. Patil, the forest minster combination took many legal interventions to safeguard the forest and forest wealth.
After this, Govt of India enacted a law called Forest Conservation Act and included it in the concurrent list.

**Human Relationship to Nature**

From 1971 to 1975, Sri K.H. Patil, was holding the portfolio of the Forest. This period, according to me, was a golden Era, and created history in forest governances in Karnataka state. Even before Smt. Indira Gandhi raised her voice in 1972 against forest destruction, the combinations of Urs and Patil have taken many positive steps to protect and conserve forests. As a proof, we can see that they surrender the power to de-notify reserve forest for non-forestry purposes to legislature. This gesture clearly indicates that they are keen to protect the forest wealth of the state,

As far as I know, Sri Urs was the first person, who brought rules against cutting trees, in the country and perhaps it may be first of its kind even at the global level. Because of this, farmers and general public could not cut trees according to their will and wish. If they cut trees, it is mandatory to plant ten new trees in the place, for their own utility has insurances for future generations. This rule has helped to bring in awareness among the public and this policy has prevented reckless destruction of trees and forests.

During this period, the pre-paid licence system was abolished as a policy, with the result, Reserve Forest, National parks could breathe freely and new life to game sanctuaries and national parks was given. After Sri Urs’s regime there was an idea of reintroducing this licence system in the state. When Sri Shyamsunder and myself apprised him about the consequences, he wrote a letter to the PM and CM not to revoke the system.
He was able to visualise, that Bengaluru citizens would face grave disasters if the mindless growth was allowed in an unplanned way, the citizen would face disasters. He agreed to declare and notify the green belt to safeguard eco-hydro-systems in Bangalore city. Whatever problems the Bangaloreans are facing today would have been mitigated to a great extent if the policy of green belt was enforced rigidly.

The period I served in Hunasuru during, Sri Urs regime was a golden era, wherein, various conservation philosophies were introduced,

He was also responsible for starting socio and economic transformation in the state and many people-friendly programmes were also initiated in the state.

The concept of green belt in an urban ecosystem was conceived by Sri Rabindranath Tagore in his Shanthi Nikethan Ashram school, a unique campus built for universal learning in 1901. It is an attempt to revive and recreate the modern harmony, for total expression of environmental art, in architectural setup, in representing the human element in all ecofunctional aspects, Shanthi Nikethan Envois-habitations design is one of Tagore’s finest experiments. For better humane future, he created an expression of the holistic habitat with nature to impart an environmental knowledge to improve the quality of life. He used low-cost remedial options for better living condition based on the experiences and the theory of life on environment. His approach was to take care of the vital life forces of Sun, Earth, Air, Water,

His Philosophy was not to offend ecology, but to respect ecosystemic process. The question he would put was how much
we destroy habitability of the life providing plant. Our personal collective and social responsibility will lead us to establish sustainable relationship with all ecocomponents and environment. There is an urgent need for greater attention to re-address the urban dynamics of growth.

We are experiencing the decay of cities and explosion of the formless auto dominated city and degradation of the environment, thus we need new urbanization landscape development with totalistic, ecological and architectural approach.

The design of green ecological architectural and totalistic approach for sustainable future, environmentally packaged related technology of eco social product, instead of gross national product, that is ESP (eco, social product) instead of GNP, needs to be taken cognizance of during urbanization planning.

Social need and values of urban society include human attitudes and values which will never remain static and change is a rule rather than an exception.

Cultural value with physical environment includes the perception of human kinds and relationship with natural world, as advocated by Rabindranath Tagore.

According to prediction, over 60% of the population may shift to cities by 2050. This shift will re-define our relationship with natural world, with the result the human species and the physical environment will reach a pinnacle, and they will be forced to live in climate controlled housing, Air conditioned offices, factories, and they will been capsulated in micro climate, after damaging the eco components of the planet.
The social aspect, among children in an urban society is weaning them away from the natural world and forcing them to live in front of TV, computers, laptops, 4G mobiles, etc. Normally, children will have intense curiosity about the living world around them, such as observing the tree canopy, touching, tasting and smelling and watching birds and butterflies which will create positive values. Therefore, renewals of positive values are essential. In this century we have realised that it not wise to divorce ourselves from the natural world.

The city’s interface needs support of ecological components to purify the breathable air and to treat the polluted water and to take care of urban malignancy. Eco engineering and social engineering shall have to be incorporated for self-healing process.

Bangaloreans have realised great features of trees, which are the visual deities possessing dynamic properties of incense, sensory, symbolic, and provide shade and shelter to animals and to Mother Earth to mitigate ground level temperature.

**Undoubtedly they are the symbols of good life.....**