

Industrialization and the Problem in Tribal Economy : A Case Study of Odisha

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Abstract: The economic system and the social system in a tribal area are indistinguishable. The community heavily depends on the forces of nature which it propitiates by a variety of rites and rituals performed individually or in groups or by the community as a whole .The economic life of the individual, therefore, is not governed by concepts of utility and exchange ,which are not now commonplace in the modern society . The tribal community is governed by its own social code which is influenced by its level of economic development .The whole scenario now changed due to globalization and setting of new industries in tribal areas of Odisha . The research topic highlighted the need of industrialization; importance of environmental economy simultaneously discussed the hazardous effect of "Air Pollution" which is related to health of tribal's in different tribal districts of Odisha. The present research article throws insight look to the problem of industrialization in tribal areas and economic growth which is related to the Pollution hazards.

Key Words: Industrialisation, eco system, environment

1. Statement of the Problem

The economic system and the social system in a tribal area are indistinguishable. The community heavily depends on the forces of nature which it propitiates by a variety of rites and rituals performed individually or in groups or by the community as a whole .The economic life of the individual , therefore is not governed by concepts of utility and exchange ,which are not now commonplace in the modern society . The tribal community is governed by its own social code which is influenced by its level of economic development .The whole scenario now changed due to globalization and setting of new industries in tribal areas of Odisha . The research topic highlighted the need of industrialization; importance of environmental economy simultaneously discussed the hazardous effect of "Air Pollution" which is related to health of tribal's in different tribal districts of Odisha. The present research article throws insight look to the problem Industrialization in tribal areas and Economic growth which is related to the Pollution hazardous. The chief objectives of the research article justified the need of

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industrialization, improved economy emerging problem related to pollution and remedial measures taken by the company's.

2. Defining Industry – A formal institutions

An industry comes into existence as a result of conscious decisions of a group of people within a formal frame which may be defined by numerous laws, regulations and conventions. Whatever may be its form and each industry has a given objectives of specific production portfolio and schedule in its new investment .Therefore, its entire activity is organised with reference to achieving the production targets. Here one finds an example of programming by concern of the industrial system, particularly in the earlier part of its history, with higher production at minimum cost had resulted in severe adverse implication for the poor sections of the community who provided the required labour force .With the liberal concepts gaining ground, this practice became incongruous. Gradually extensive regulations were imposed on the industrial activity itself .These constraints in due course, came to be formalised either in the form of law or convention which will protect the environment primarily and the people concerned.

By the outstanding examples are the regulation of the labour relations, regulation of profits and regulations of standards of product .These constraints became necessary because the premise that economic actions of all individuals in the nation will get harmonised though the natural process of interaction between different groups and balancing forces does not hold good when some of the elements acquire greater strength because of their better organisations ,or when some groups acquire greater manipulative power because of their strategic position . Social intervention, therefore, becomes necessary to bring about harmony and balance, at least to the first order of approximation which could be expected to have been otherwise complexes are creatures of high level formal decisions. They are controlled and regulated by conventions, rules and statutes formulated in the light of experience into the more advanced areas. This essentially represents the mechanistic approach of the system .This approach not only extends to material objects and formal systems but tends to be applied with equal tenacity to human situations as well.

The above analysis on the industrial system may appear to be harsh and may represent the model in its extreme form .It is however, necessary to understand the central argument around which the whole system is built up so that its numerous varieties and manifestations in different forms can be better understood .The above principles are central of the system itself around which the entire industrial world and its economic system and the eco-system moves side by side.

3. Industrial Society and Tribal Community

We may now examine the social, economic and institutional systems of the industrial community which is superimposed on a simple tribal scene when an industry is established in a backward tribal area.

The economics of the industrial society is highly specialised, each individual is assigned a position with reference to his role in the system. The central industrial activity is supported by ancillary functional services both as an extension of the industrial activity itself and as supporting services to the community which provides the manpower to the central industry and its ancillaries. These may include small service establishment, shops, entertainment houses and these establishments primarily established by the community people etc. The core industrial system generally behaves as a "closed" system. It may draw its sustenance either from the immediate hinterland or from distant centres "market" being the guiding force in either case. In a more backward area, there is little linkage between the core industrial society and tribal society in the hinterland, particularly in the earlier phase. Normally if we examine we found that the local community should have substantial representation in the lower echelons. But in the tribal regions, there is a shadow zone comprising its hinterland and surrounding area, which contributes little to the central society. Mostly found the tribal community acts as unskilled labourers and never be the part of the establishment, they never enjoy the development of these companies; rather they suffer due to the pollution. The researcher used both primary data and secondary data for the discussion. For research study, researcher used anthropological analysis to the problem.

4. Economic Growth and Air Pollution

The present government signed a number of MOU's and many of them established their industries in tribal areas of Odisha. The researcher highlighted the tribal districts like Sundargarh, Keonjhar, Rayagada, Koraput.

Air pollution in Industries of Odisha is derived not only from stack emission of pollutants from relatively large industries, like iron and steel, non-ferrous metals and petroleum products industries, but also from fugitive emission of pollutants from small-scale factories. In Sundargarh Tribal areas, cement mills, created air pollution, in these areas inadequate pollution control measure exist and pollutants are allowed to escape to the atmospheres. Tribal areas like Sundargarh also suffered with cement particles or not free from air pollution. Similarly where multiple plants are working take an example of Sundargarh the kinds of air pollutants emitted varies from industry to industry. The concentrations of different pollutants in the atmospheres also vary widely from process

to process and from place to place exposure levels are much higher than of the general population is much longer than that of the workers. The sample of air pollution hazardous can be assed at different tribal populated areas like Sundargarh , Keonjhar , Raygada ,Koraput ,Jeypore . The researcher only highlighted out of two places like Jeypore and Lanjigarh. In Odisha these areas are the Industrial developed areas contributing good economy to nation. But last twenty five years of industrial development in these areas, the companies did not set up any hospitals or research units for the tribal's.

Some time anticipation of accidental releases of toxic substances into the atmosphere resulting in serious health risks are usually more common .The reason include inadequate safety planning ,lack of skilled technical personnel to maintain proper factories and difficulties in obtaining spare parts and so on . One of the worst of such accidents occurred in Bhopal, India in 1984, where leaking methyl isocyanides killed, 2000 people. If we examine the following districts, the government of Odisha never taken any safety measures in which the researcher investigated by visiting these areas.

5. Discussion and Suggestions

As Pollution is the importance topic of our discussion, let have scientific observation towards air pollution, an air pollutant is a substance in the air that can have adverse effects on humans and the ecosystem. The substance can be solid particles, liquid droplets, or gases. A pollutant can be of natural origin or man-made. Pollutants are classified as primary or secondary. Primary pollutants are usually produced from a process, such as ash from a volcanic eruption. Other examples include carbon monoxide gas from motor vehicle exhaust, or the sulphur released from factories. Secondary pollutants are not emitted directly. Rather, they form in the air when primary pollutants react or interact. Ground is a prominent example of a secondary pollutant. Some pollutants may be both primary and secondary: they are both emitted directly and formed from other primary pollutants.

6. Major Primary Pollutants Produced by Human Activity Include

- Sulphur oxides (SO_x) - particularly sulfur dioxide, a chemical compound with the formula SO_2 . SO_2 is produced by volcanoes and in various industrial processes. Coal and petroleum often contain sulphur compounds, and their combustion generates sulfur dioxide. Further oxidation of SO_2 , usually in the presence of a catalyst such as NO_2 , forms H_2SO_4 , and thus acid rain.[2] This is one of the causes for concern over the environmental impact of the use of these fuels as power sources.

• Nitrogen oxides (NO_x) - Nitrogen oxides, particularly nitrogen dioxide, are expelled from high temperature combustion, and are also produced during thunderstorms by electric discharge. They can be seen as a brown haze dome above or a plume downwind of cities. Nitrogen dioxide is a chemical compound with the formula NO_2 . It is one of several nitrogen oxides. One of the most prominent air pollutants, this reddish-brown toxic gas has a characteristic sharp, biting odor.

Carbon monoxide (CO)- CO is a colourless, odourless, toxic yet non-irritating gas. It is a product by incomplete combustion of fuel such as natural gas, coal or wood. Vehicular exhaust is a major source of carbon monoxide.

Volatile organic compounds - VOCs are a well known outdoor air pollutant. They are categorized as either methane (CH_4) or non-methane (NMVOCs). Methane is an extremely efficient greenhouse gas which contributes to enhance global warming. Other hydrocarbon VOCs are also significant greenhouse gases because of their role in creating ozone and prolonging the life of methane in the atmosphere. This effect varies depending on local air quality. The aromatic NMVOCs benzene, toluene and xylene are suspected carcinogens and may lead to leukaemia with prolonged exposure. 1,3-butadiene is another dangerous compound often associated with industrial use.

Particulates, alternatively referred to as particulate matter (PM), atmospheric particulate matter, or fine particles, are tiny particles of solid or liquid suspended in a gas. In contrast, aerosol refers to combined particles and gas. Some particulates occur naturally, originating from volcanoes, dust storms, forest and grassland fires, living vegetation, and sea spray. Human activities, such as the burning of fossil fuels in vehicles, power plants and various industrial processes also generate significant amounts of aerosols. Averaged worldwide, anthropogenic aerosols—those made by human activities—currently account for approximately 10 percent of our atmosphere. Increased levels of fine particles in the air are linked to health hazards such as heart disease,^[2] altered lung function and lung cancer.

Persistent free radicals connected to airborne fine particles are linked to cardiopulmonary disease. Toxic metals, such as lead and mercury, especially their compounds.

Chlorofluorocarbons (CFCs) - harmful to the ozone layer; emitted from products currently banned from use These are gases which are released from air

conditioners, refrigerators, aerosol sprays, etc. CFC's on being released into the air rises to stratosphere. Here they come in contact with other gases and damage the ozone layer. This allows harmful ultraviolet rays to reach the earth's surface. This can lead to skin cancer, disease to eye and can even cause damage to plants.

Ammonia (NH_3) - emitted from agricultural processes. Ammonia is a compound with the formula NH_3 . It is normally encountered as a gas with a characteristic pungent odor. Ammonia contributes significantly to the nutritional needs of terrestrial organisms by serving as a precursor to foodstuffs and fertilizers. Ammonia, either directly or indirectly, is also a building block for the synthesis of many pharmaceuticals. Although in wide use, ammonia is both caustic and hazardous.

Odors - such as from garbage, sewage, and industrial processes

Radioactive pollutants - produced by nuclear explosions, nuclear events, war explosives, and natural processes such as the radioactive decay of radon.

6.1 Secondary Pollutants Include

Particulates created from gaseous primary pollutants and compounds in photochemical smog. Smog is a kind of air pollution. Classic smog results from large amounts of coal burning in an area caused by a mixture of smoke and sulfur dioxide. Modern smog does not usually come from coal but from vehicular and industrial emissions that are acted on in the atmosphere by ultraviolet light from the sun to form secondary pollutants that also combine with the primary emissions to form photochemical smog.

Ground level ozone (O_3) formed from NO_x and VOCs. Ozone (O_3) is a key constituent of the troposphere. It is also an important constituent of certain regions of the stratosphere commonly known as the Ozone layer. Photochemical and chemical reactions involving it drive many of the chemical processes that occur in the atmosphere by day and by night. At abnormally high concentrations brought about by human activities (largely the combustion of fossil fuel), it is a pollutant, and a constituent of smog.

Peroxyacetyl nitrate (PAN) - similarly formed from NO_x and VOCs.

Minor air pollutants include:

A large number of minor hazardous air pollutants. Some of these are regulated in USA under the Clean Air Act and in Europe under the Air Framework Directive variety of persistent organic pollutants, which can attach to particulates Persistent organic pollutants (POPs) are organic compounds that are resistant to environmental degradation

through chemical, biological, and photolytic processes. Because of this, they have been observed to persist in the environment, to be capable of long-range transport, bioaccumulate in human and animal tissue, bio magnify in food chains, and to have potential significant impacts on human health and the environment.

7. Industrial Growth in Odisha and Investment

Odisha is notable as one of the first Indian states to have tackled its structural problems during the post-1994 Indian economic reforms. Odisha was also the first state in India to begin to privatise its electricity transmission and distribution businesses. Between 1994 and 2000 Odisha's former state electricity board (SEB) was restructured to form Gridco. This corporation was then divided into Transco and a collection of distribution companies. Attempts were then made to sell the distribution companies to the private sector. Like many other states, in 1996 Odisha was losing over 50% of the electricity it was delivering. The scale and importance of these reforms is notable and an important milestone in India's dramatic economic development.

Performance of Indian states in providing basic social services like education, healthcare, etc., in 2001. Darker states have done better.

Recently the number of companies who have signed memoranda of understanding (MoUs) to set up steel plants in the state has gone up to 50, including POSCO of South Korea which has agreed to construct a mammoth \$12 billion steel plant near Paradip port, named POSCO India. It would be the largest single investment in India's history. Arcelor-Mittal has also announced plans to invest in another mega steel project amounting to \$10 billion. Russian major Magnitogorsk Iron and Steel Company (MMK) plans to set up a 10 MT steel plant in Odisha, too. The state is attracting an unprecedented amount of investment in aluminium, coal-based power plants, petrochemicals, and information technology as well. In power generation, Reliance Power (Anil Ambani Group) is putting up the world's largest power plant with an investment of US \$13 billion at Hirma in Jharsuguda district. Vedanta Resources' 1.4 million tonne alumina project in Kalahandi district is the largest investment in aluminium. Vedanta has also announced a \$3.2 billion huge private University project on the lines of major American universities, which is unprecedented in the history of education in India. Bandhabahal is a major area of open cast coal mines.

The central government has agreed to accord SEZ (Special Economic Zone) status to eight sites in Odisha, among which are Info city at Bhubaneswar and Paradip. But all these plans are facing massive resistance from the people of the state who mainly depend on agriculture for their livelihood.

In the year 2009 Odisha was the second top domestic investment destination with Gujarat first and Andhra Pradesh in third place according to an analysis of ASSOCHAM Investment Meter (AIM) study on corporate investments. Odisha's share was 12.6 percent in total investment in the country. It received investment proposal worth ₹. 2,00,846 crore during the last year. Steel and power were among the sectors which attracted maximum investments in the state. Flood and cyclone are the major hurdles in Odisha's development as the important districts are situated near to the Bay of Bengal. In the five-year period between 2004 and 2005 and 2008–09, Odisha's GDP has grown by a stunning 8.74% way beyond the definition of 7% growth. It should be noted that the all-India growth during this period was 8.49%. In this period, Odisha was the fourth fastest growing state, just behind Gujarat, Bihar, Uttarakhand.

7.1 Infrastructure Development

Although Paradip is home to Odisha's only large port, the coastal towns of Dhamra and Gopalpur are also undergoing major port development. The government of India has selected the coastal region of Odisha, stretching from Paradip in the north to Gopalpur in the south, to be developed into one of five or six Special Economic Regions (SERs) of the country. The government of India and the state government of Odisha are working together to erect world-class infrastructure in this region to match that of Rotterdam, Houston, and Pudong. This is aimed at further private investment in petrochemicals, steel, and manufacturing. A recent Morgan Stanley report forecasts that Odisha would be flooded with massive investments for manufacturing related activities in the same manner that Bangalore had attracted software investment in the 1990s. The scale of the investments in Odisha would, however, be much higher.

As of July 2006, total planned investment in the state was \$90 billion. This includes investment in research, education, hospitals, roads, ports, airports, and hotels. There are many multi-state irrigation projects in development, including the Godavari River Basin Irrigation Projects. 14 locations have been identified on Odisha's coast to be developed as ports: Gopalpur (Ganjam district), Bahuda Muhan (Sonepur) in Ganjam district, Palur (Ganjam), Bali Harchandi (Puri), Astaranga (Puri), Jatadhari Muhan (Jagatsinghpur), Barunei Muhan (Kendrapara), Dhamra (Bhadrak), Chudamani (Bhadrak), Inchuri (Balasore), Chandipur (Balasore), Bahabalpur (Balasore), Subarnarekha mouth (Kirtania) in Balasore district and Talsara (Balasore). Most of them have already been developing as ports in the public private partnership (PPP).

The above discussion shows the investment plan of industrial development in Odisha and the air pollutants which created hazardous atmospheric conditions in these areas.

8. Economic Deprivation of Tribals

The research article insights the economic development of the area and the economic deprivation of the tribal community. In the process, the community which enjoyed command over local resources by tradition, stands completely dispossessed. It may get nominal compensation for some land over which it may had a formed right. In relation to the forest resources, there has always been a vast conceptual difference in so far as the tribal community considers itself as the master of what it sees where as the State thinks otherwise. The research article signifies that besides economic deprivation of the tribal's next to health as the significant factor which has been affected by pollution. The ignorant tribal community silently suffers and when due to their ignorance of the common trades like petty vending or unacquainted with common business, they are preferred to migrate to other places as unskilled workers. The labour market of Damana square, Delta Square, Nayapalli Square, Kapila parasad square of Bhubaneswar are the examples.

9. Industrial Economy and Pollution as the factor

While industrialization is an essential feature of economic growth in developing countries,, industrial practices may also produce adverse environmental health consequences through the release of air and water pollutants and the disposal of hazardous wastes. This is often the case in developing countries, where less attention is paid to environmental protection, environmental standards are often inapaporitate or not effectively implemented and pollution control techniques are not yet fully developed. With rapid economic development, many developing countries, like China and other Asian countries, face some additional environment problems affected the places.

Case Study -1

Cited various case studies of Odisha , the researcher highlighted Jeypore District and Lanjigarh issues. Jeypore is located at 18.85 ° N 82.58° E .it has an average elevation of 659 meters As of 2001 India Census, Jeypore had population of 76, 650, Males constitutes 51% of the population and females 49% Jeypore has an average literacy rate of 69% higher than the national average of 59.5% male, literacy is 77% female literacy is 61% .In Jeypore 12% of the population is under 6 years of age .The population of jeypore, as estimated in late 2010, is 80,837.

Economy: Though traditionally as agrarian economy ,Jeypore is the business hub for southern Odisha as well as the bordering of Andhra Pradesh .There is high potential growth of this town to high minerals .opportunities ,resources around the district adding to all the facilities like rail air in this town .There are many renowned industries like Sewa Paper Mills and numerous rice and cashew processing units ,PSU Company Power

Grid Corporation of India has its 400 KV sub-station with FSC system at Kaligaon .NALCO, Hindustan Aeronautics Limited and Coffee Board are some prominent government based units situated nearby. Huge granite deposits on hills, rich forests and forest based produce are important contributions to Jeypore's economy .Koraput District small scale industries office is situated in Jeypore to promote and growth of industries in this reason.

Unusual Weather : The town of Jeypore experience a tropical monsoon climate , like the rest of Odisha .The monsoon season here is not as harsh as it is other parts of sthe state and summers here are hot and winters are very cold ..Summers in the town of Jeypore are very hot m and this season runs during the months of March, April, May and June .The summer months will experience a maximum temperature of around forty five degrees and a minimum temperature of around nineteen degrees. Similarly monsoon season in Jeypopre bring about moderate rainfall and this season is mainly during month July, August, September and October .The weather during this time is pleasant. But now due to industrial pollution in Jeypore winter before industrialization and after industrializations fluctuates , ,usually before winter months are November,December,January and February .These months will experience a maximums temperatures of around twenty two degrees 22⁰ C and a minimum temperature of around four degrees (4⁰ C). But last five years records say that the winter experiences are no more acute as it was before twenty years ago the researcher did not take the scientific analysis of the weather of these areas. This is an assessment of the researchers taken by various scientific journals analysis the change of the weather of these areas.

10. Remedies and Developmental Action Plan for Tribals by various organsations:

M.S Swaminathan Research Foundation has been working in the Jeypore region of Odisha throuth Biju Pattanaik Medicinal Plants Garden and Research Centre ,Jeypore since many years .Activities in the area increased conservations of biodiversity ,promotion of sustainable livelihoods through micro-level interventions' ,establishment of Community Managed Gene ,Seed ,Grain and Water Banks ,promotion of genetic literacy etc. Jeypore region of Odisha to receive the prestigious Equator Initiatives Award for conservation of plant genetic resources and traditions .The principal work the organisation done in these areas for tribal's that products of minor millets are some to the initiatives exemplifying the success of the work of tribal families, with support from MSSRF designed to create an economic stake in conservation.

2nd Case Study :

Lanjigarh Case Studies: Vedanta Alumina Refinery in Lanjigarh was criticised by human rights and activist groups .When the company operations in Niyamgiri Hills in Odisha

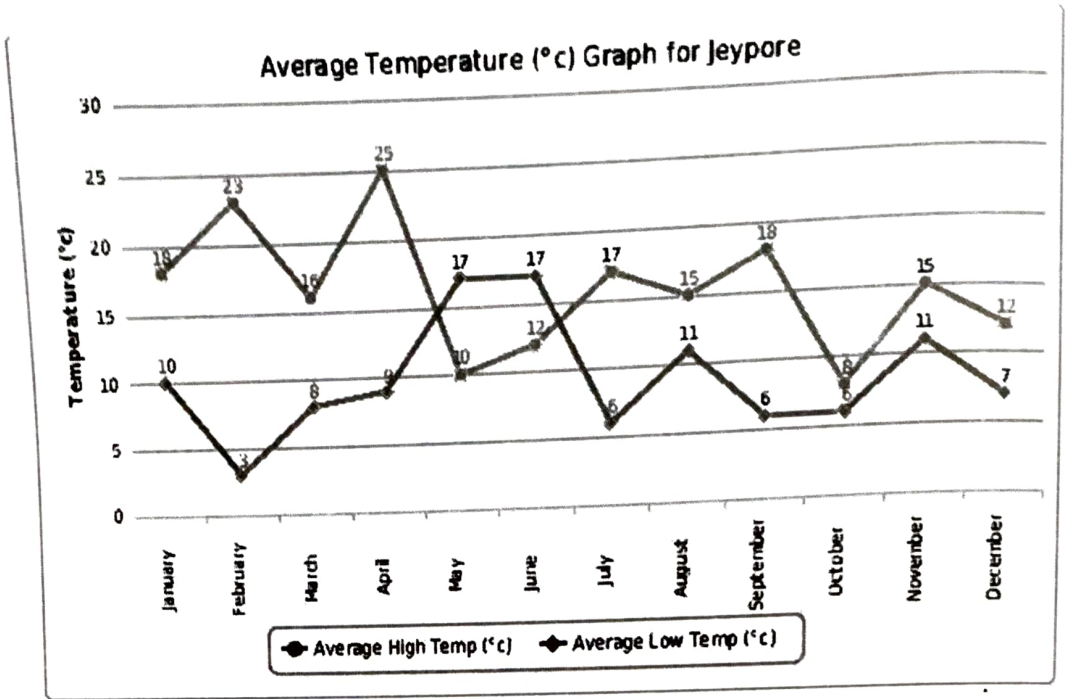
The tribal community Dongria Kondh people who populate this region. The Niyamgiri hills are also claimed to be an important wildlife habitat in Eastern Ghats of India as per a report by the Wildlife Institute of India as well as independent reports carried out by civil society groups. Vedanta Alumina Refinery in Lanjigarh was criticised by the Odisha State Pollution Control Board for air pollution and water pollution in the area. According to Amnesty International, local people reported dust from the plant settling on clothes, crops and food. The company claimed there was no dust pollution from the plant at all. An environment inspection of the plant reported water pollution by the plant including increasing the pH value of the river Varnshadrhara below the refinery and a high level of SPM in the stack emissions. Secondary case study found that in 2009 it was reported that the British government has criticised Vednanta for its treatment of the Dongria Kondoh tribe in Odisha. The Company refused to cooperate with the British government and the OECD investigation. It has rejected charges of environmental damage, saying it may be related to the increased use of fertiliser by farmer.

Changing the concept of Money as the Power

The above discussion indicated that the penetration of money economy without adequate preparation continues to weaken the tribal community in Odisha and provides an upper hand to industrial society in which it is the example of Mine Scam in Odisha. It is well known that the cost of living in the far off industrial centres is very high and liberal compensation is provided to the members of new community as a part of the Project design itself. If the same phenomenon is viewed from the side of the tribal community it provides a completely different picture. The internal equations of social and economic relationship in the tribal communities are determined without any reference to money. Monetary sanctions by the industrial sectors are the biggest deterrents. For the modern man, money is everything but for the tribal's this is a cheap concept from the cultural point of view. Money can't buy their indigenusness' therefore we have to change the altitude and change the concept of money is everything for the tribal's. We may now examine the way the entire system begins to operate in the context of economic growth and regarding establishment of industry in tribal areas.

The Odisha Governments Altitude towards development

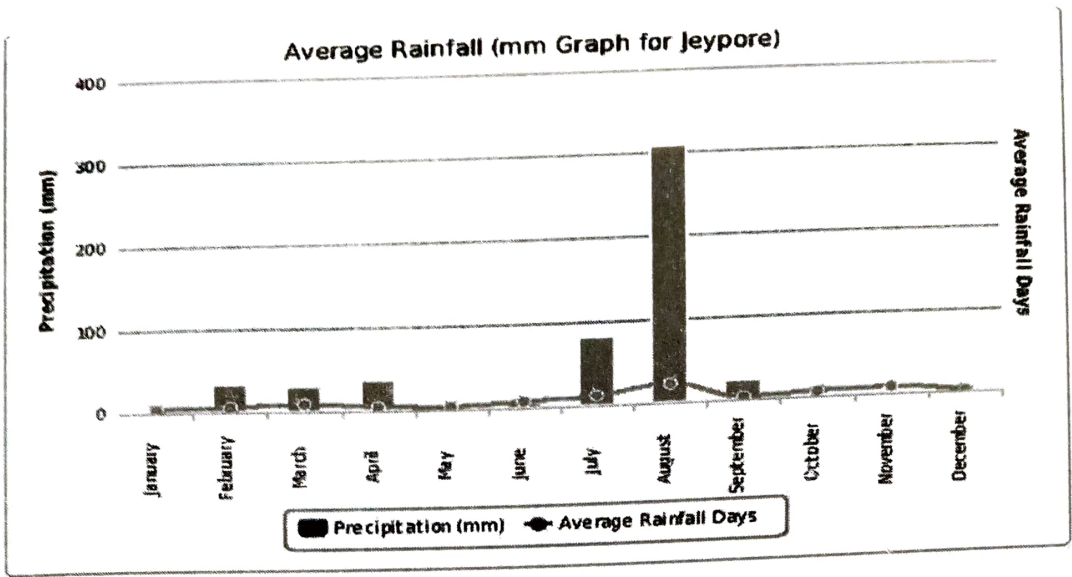
Now the government of Odisha decided to renovate the worshipping places of the tribal and sanction good amount of money for their restoration. But unfortunately the so called development areas now prone with a new culture of environmental pollution and the cultural places of tribal's are now going to vanished due to massive construction and developmental activities occurred by the companies. Though Industrialization in the



Average Temperature

tribal belts started in the pre-independence age, it took a dynamic turn only in the post independent India when heavy industries like heavy engineering plants in Ranchi, iron and steel factories at Rourkela, Bhilai, Durgapur etc were established in the tribal areas .In course of time, now the tribal land which was free from environmental problems, is full of with industrial garbage and smoke. In spite of that the tribal people get almost nothing as in return. In last Adivasi Mela at Bhubaneswar , the Government of Odisha showed the dummy of tribal houses and publicized the statistics of development but nowhere show the picture of environmental pollution and the environmental degradation due to industrialization in tribal areas specially in Sundargarh, Keonjhar, Koraput, Raygarda,Jeypore the industrial as well as the mining richer areas

In conclusion we can say with the coming of the "Industrial Revolution", humans, were able to advance further into 21st century .Technology developed rapidly, science became advanced and the manufacturing age came into view. With all of these came one more effect, industrial pollution. Early industries were small factories that produced smoke as the main pollutant. However, since the number of factories were limited and worked only certain number of hours of a day, the level of pollution did not grow significantly.



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Average Rain Fall

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