

# IMPACT OF PAPER INDUSTRY ON RURAL COMMUNITIES – EVIDENCES FROM ODISHA, INDIA

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**ABSTRACT-** An attempt has been made in the present study to examine the impact of paper industry on the rural community in context of sustainable development in Rayagada District of Odisha. A comparative approach i.e. with and without method has been adopted to know the impact due to industrialization. The study is based on the primary data which were collected by administering a structured surveyed schedule on the households of industrial and non-industrial villages during January to March 2018. It has been found that industrialization has positively as well as negatively affected the rural community. It provides an important source of livelihood to the people in industrial region as more than 60% of the workforce is engaged as industrial labors. It has also helped in improving the financial conditions of rural community apart from infrastructure development like providing transportation facilities, health and educational facilities. But all these benefits have been at the cost of environment. The region has witnessed a significant deterioration in the quality of environment. Thus, though industrialization boosts the development of rural community but deteriorates the environment thereby raising the issue of sustainability. Hence industrialization should be continued in the sustainable manner for the rural community and regional development.

**Keywords:** Industrialization, Rural, Development, Region, Environment, Livelihood

### 1. INTRODUCTION

Industrialization helps in paving the way of an economy towards economic development [1]. Advent of an industry ushers directly a number of benefits in a region. It generates employment opportunities, improves infrastructure, create wealth and increase in the welfare of the community [2-3]. Indirectly it induces output and employment growth through its linkages with other sectors [4]. For a long time, India had been considered as an underdeveloped economy which was subsequently referred as a developing economy. In order to harness the economic growth and to develop the backward regions, the process of industrialization has been taken up by the Government of India as a deliberate policy since independence [5]. But the economic development after 1991 has changed the old image of Indian economy. This has been due to wide structural changes of the economy including the new industrial policy of the economy.

Odisha is one of the most backward states in India [6]. But it is also one of the richest bio-diversity regions in south-east Asia [7]. With its vast natural resources, the state has a great potential to develop different

industries to give a better socio-economic life to its people. Industrialization has an impact on employment, income, population and household expenditure patterns which gives rise to urbanization of a locality [8]. Industries are made for the development of rural areas [9]. Large part of rural labour force engaged as industrial workers for their livelihood [10]. Due to industrialization, there is an expansion of educational opportunities for the rural community [11]. In rural areas there are so many unskilled workers for which this industrialization helps them to develop their skill [1].

To promote industrialization, Odisha has adopted strategic initiatives based on policy intervention, creation of infrastructure, investment promotion and business rule simplification [12]. The state has 213 units of large-scale industries with an investment of Rs 9197490 lakhs generating 1.09 lakh employments on 2017-18. However, various studies have shown that industrialization also lead to worsening of environmental conditions [13-14]. Additionally, people lost their land, houses and other assets for this industrialization [15]. Therefore, it is pertinent to analyze the impact of industrialization on rural community development. Rayagada is one of the natural rich districts of Odisha. The district has been richly endowed with many natural resources which are one of the important factors for the attraction of industries establishment. Thus, an attempt has been made in the present study to examine the impact of paper industry on rural community in Rayagada District of Odisha. The main research questions addressed in the present study are: (1) How does industry influence the livelihoods of the rural community? (2) And what exactly are the benefits/costs of the industrial projects and whether these leads to the sustainable rural development

## II. MATERIALS AND METHODS

Rayagada district of Odisha has been used as the study area for present research. Comparative Approach i.e. with and without method has been adopted to know the impact due to industrialization. Existence of industrial activity in a region is used as criteria in the present study to designate a region to be industrial region. The district has three large scale industries JK Paper Ltd., IMFA Ltd., and Fimachem India Ltd. JK Paper Ltd has been selected to assess the impact of industrialization in the present study. JK Paper Ltd. has two large integrated paper manufacturing units – JK Paper Mills, Rayagada, Odisha and Central Pulp Mills, Songadh, Gujarat with a combined capacity of 4,55,000 TPA. It is the market leader in Branded Copier paper segment and among the top two players in Coated Paper and high-end Packaging Boards. Two villages i.e. Sana chandili and Bada chandili from Chandili gram panchayat adjacent to JK paper Industry has been selected from industrial region. Under non-industrial region Tadmā and Tentuliguda villages from Tadmā gram panchayat were selected for the present study. Sample consists of 50 households i.e. 25 each from two villages in industrial areas and 50 households i.e. 25 each from two villages in non-industrial areas. Hence the total sample size is for the present study is 100 and the households are the sample units.

Data have been collected and analyzed from both the primary and secondary sources. Primary data were collected by administering a structured surveyed schedule on the households of industrial and non-industrial villages during January to March 2018. A pre-tested interview schedule was employed. Various qualitative and quantitative variables have been used in the present study to assess the impact of industrialization. Data collected from survey then is summarized and portrayed in tables and figures. Beside this, mathematical and statistical techniques such as averages, percentages and t-test have also been used in the present study.

## III. RESULTS AND DISCUSSION

This section has been divided into three parts i.e. socioeconomic status of sample households, livelihood strategies of sample households and cost & benefit of JK paper industry.

### 3.1 Socio-Economic Status of Sample Households

Socio-economic status is defined as the combination of social and economic conditions associated with gender composition, education, income, and expenditure as well as health statuses of households. The study has categorized population distribution, gender status, education and types of houses of households under socioeconomic profile which are given below.

#### 3.1.1 Population distribution of sample households

Population distribution of sample households shows that numbers of sample households from each village of study area as well as the total population (family members) of those households.

Table-1: Population distribution of sample households

| Sample Areas   | Sample Villages | Sample Households | Total Population |
|----------------|-----------------|-------------------|------------------|
| Industrial     | Sana Chandili   | 25                | 138              |
|                | Bada Chandili   | 25                | 124              |
| Non-Industrial | Tadmā           | 25                | 125              |
|                | Tentuliguda     | 25                | 117              |
| Total          |                 | 100               | 504              |

Source: Surveyed and compiled by the Author

This table-1 represents that 25 sample households have taken from each study area which is compositely 100 sample households in total. Total population of sample households is 504 including all members of each household.

3.1.2 Gender Status of the Respondents

The gender status represents gender composition of households. From industrial areas total males are 30 and females are 20 as well as there are 26 males and 24 females in non-industrial area respectively which is given in table 2.

Table-2: Gender Status of Respondents

| Areas          | Villages      | Male | Female | Total |
|----------------|---------------|------|--------|-------|
| Industrial     | Sana chandili | 13   | 12     | 25    |
|                | Bada chandili | 17   | 8      | 25    |
| Non-Industrial | Tadma         | 15   | 10     | 25    |
|                | Tentuliguda   | 11   | 14     | 25    |
| Total          |               |      |        | 100   |

Source: Surveyed and compiled by the Author

3.1.3 Education Status of Sample Households

Education is an important factor of human being. Education plays a vital role in the socio-economic condition of people. Proper education leads to a good lifestyle and provides awareness of everything. Figure 1 shows the education status of households in industrial and non-industrial areas.

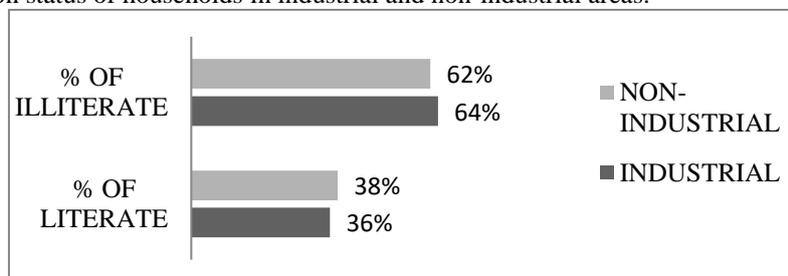


Figure 1: Percentages Literate and Illiterate of sample households

Among sample households the percentage of literate is 38% in non-industrial area as compared to 36% in industrial area. The percentage of illiterate in industrial area is 64% which is more than non-industrial area. Figure 2 shows the male and female literacy rate in industrial and non-industrial region.

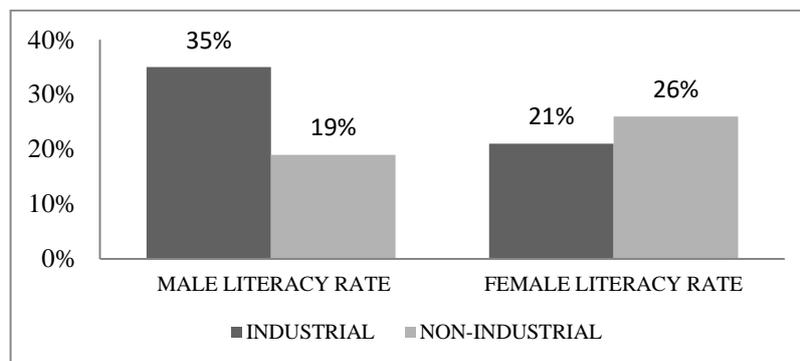


Figure 2: Male and Female literacy level in industrial & non-industrial areas

It is seen that male literacy rate in industrial area is 35% which is more than that of non-industrial area i.e. only 19%. In case of female literacy rate the non-industrial area performs better than the industrial area, here female literacy rate in industrial area is 21% whereas 26% in non-industrial area.

3.1.4 Housing Conditions

There are three types of houses that are kachha, pucca and mixed houses. Table 3 shows the distribution of household according to its type.

Table 3: Type of houses of sample households

| Areas          | Kachha House | Pucca House | Mixed House |
|----------------|--------------|-------------|-------------|
| Industrial     | 70%          | 20%         | 10%         |
| Non-industrial | 86%          | 12%         | 2%          |

Source: Surveyed and compiled by Author

Table shows that proportionate of kachha houses in non-industrial areas are 86% whereas only 70% are in industrial area. Pucca houses are more in industrial area as compared to non-industrial area. The type of mixed houses that means houses having both kachha as well as pucca are more in industrial area than that of the non-industrial areas.

### 3.2 Livelihood Strategies of Sample Household

Livelihood strategy is nothing but the occupational structure of households from which they live and feed their family. Occupation means the activity of persons for their livelihood to play a role in the society. In our study we found people have occupation as industrial labourers, agricultural farming, business activity, services, and MGNREGA labourers. In industrial areas most of the people are belonging to industrial labourers, business activity but in non-industrial areas we have seen people are depending for their livelihood in agricultural farming, services and MGNREGA labourers. It has been found that the percentage of male and female workforce in industrial areas is 53% and 36% respectively whereas this is 46% and 19% in non-industrial region respectively. Thus, male and female workforce is more in industrial region than in non-industrial areas. Higher percentage of female workforce in industrial than that of non-industrial areas indicates women empowerment and better gender participation in society.

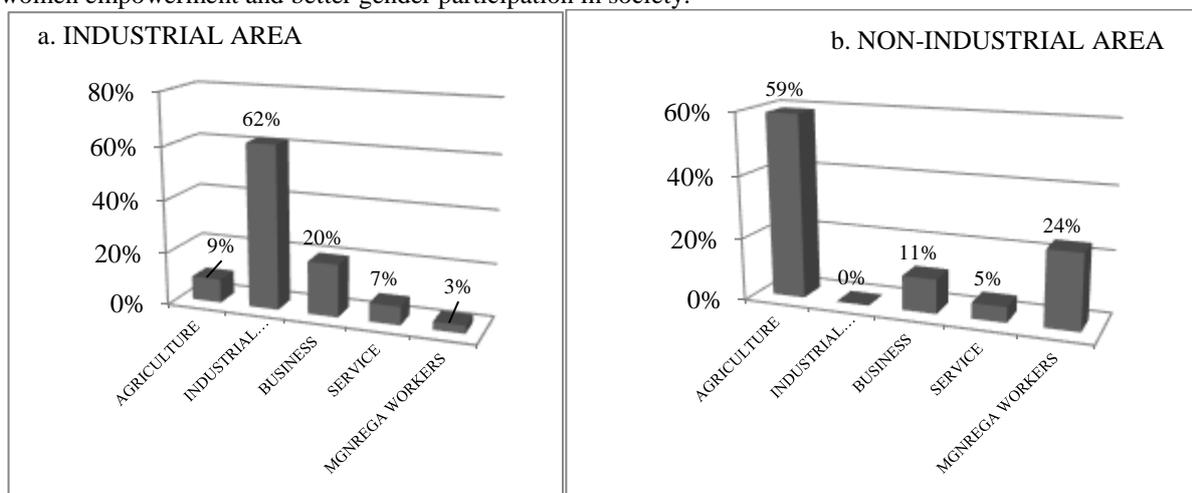


Figure-3 (a) & (b): Percentage of persons engaged in different occupation

From the above figure 3(a) it is observed that in industrial areas most of the people are engaged in industrial works. 61% of persons out of total workforce are industrial labourers, 20% are depend upon different business activity for their livelihood, 9% out of total workforce are having agriculture occupation which is very need, 7% of persons are engaged in service in different jobs in industry and other places. Out of total workforce only 3% are MGNREGA workers. These above figures in percentage present that most of people are industrial labourers and next to that they do business as occupation to feed their family. In the above figure 3(b) it has also shown that percentage of persons engaged in different occupation especially in major occupation as agriculture, industrial labourers, business, and service and MGNREGA workers. It has been found that the major occupation in non-industrial areas is agriculture, and there are no industrial labourers in this area. 60% of persons are engaged in agriculture, 24% of persons are engaged as MGNREGA workers, 11% of persons are engaged in business activity and only 5% out of total workforce are engaged service in different places. As in comparison we have found that for occupation to get income for their survival and to feed their families industrial area persons are mostly engaged in industrial labourers and business activity whereas in non-industrial areas most of the persons are engaged in agriculture and MGNREGA workers.

### 3.3 Cost & Benefit of Paper Industrialization

This sub-section analyses the cost and benefit arising out of paper industrialization and their impact on local community. This is done by comparing with their comparison with their non-industrial counterparts.

#### 3.3.1 Income level of industrial and non-industrial area

Income is important from any source for the livelihood in the society. Higher income indicates higher standard of living. It can be seen from figure 4 that income levels of four villages namely Sana Chandili, Bada Chandili, Tadma and Tentuliguda are Rs 78,250, Rs 74,350, Rs 61,560, Rs 65,220 respectively. Here Sana Chandili, Bada Chandili belong to industrial areas whereas Tadma and Tentuliguda represents non-industrial areas. Now the average annual income of industrial and non-industrial areas is shown in figure 5. It is found that

the average annual incomes in industrial areas are Rs 76,300 and in non-industrial areas it is Rs 63,390. This income level shows that the income level is higher in industrial areas than that of non-industrial areas. Further using t-test, it has been found that annual average income of households in industrial areas is significantly higher than that of households in non-industrial areas. Thus, industries provide better and higher financial benefits to its local people.

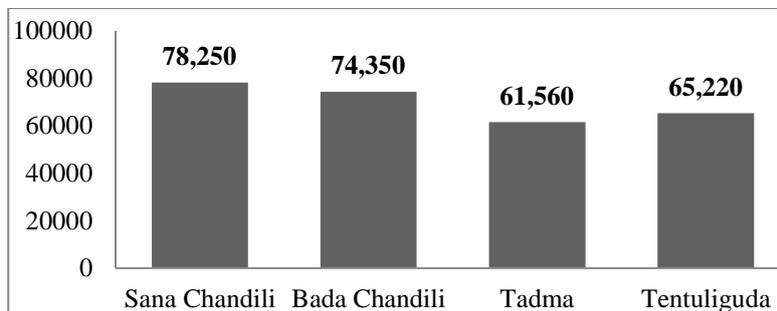


Figure 4: Average Annual Income of households (In Rs.)

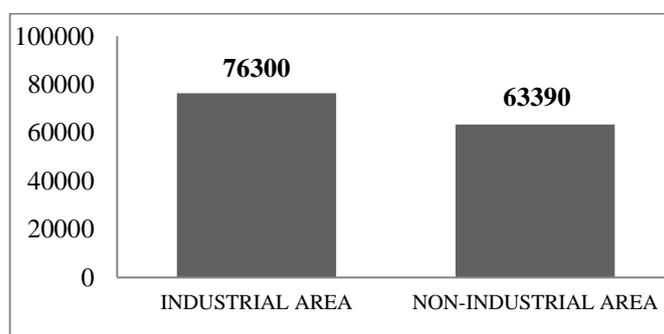


Figure 5: Average annual income in industrial and non-industrial areas

### 3.3.2 Consumption level in industrial and non-industrial area

Expenditure is an important part of livelihood. Different types of expenditure are made by households to fulfill their needs in day to day life. The household expenditure in our study we have taken expenditures on food, clothing, education, agriculture, health and miscellaneous. Here in the below the annual expenditure of households in industrial areas and non-industrial areas are given.

Table 4: Annual expenditure of sample households (in Rupees)

| Items         | Industrial area | Non-industrial area |
|---------------|-----------------|---------------------|
| Food          | 18240           | 16320               |
| Clothes       | 6720            | 5448                |
| Agriculture   | 16080           | 27096               |
| Education     | 9600            | 7500                |
| Health        | 18720           | 10560               |
| Miscellaneous | 6912            | 3900                |
| Total         | 76270           | 70779               |

Source: Surveyed and compiled by the Author

In the above table 4, it can be seen that different expenditures of households on different factors are tabulated by calculating annually. As we know that the income level of industrial areas is high as in figure than that of non-industrial areas so that as we found from the above table that the expenditure level on different factors are also higher in industrial areas. But in some criteria the expenditure made in non-industrial areas are much higher than the industrial areas.

### 3.3.3. Environmental status in industrial areas

Pollution means any contamination of air, soil, water and environment by discharging of harmful substances. There are different forms of pollution that are air pollution, water pollution, noise pollution. In our study as in industrial areas we have been asking households that whether there is any pollution or not. As people stand their opinion yes or no. Figure 6 shows the results what the actual statement of households.

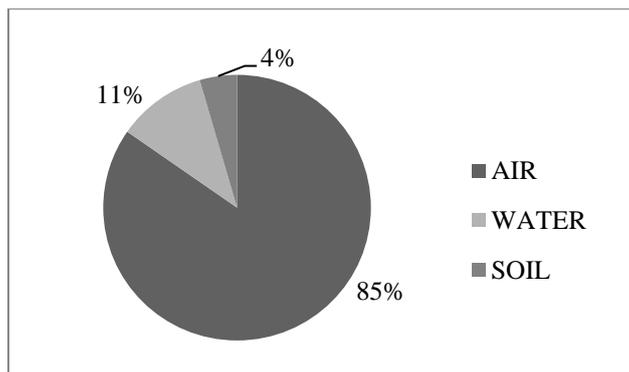


Figure 6: Statements about pollution from sample Households

As we have seen here that households gave their statement about pollution in their areas. As of the figure there are 85% households said there is air pollution, 11% stated there is water pollution those who used specially river water directly or indirectly, 4% of households stated that soil is also polluted due to industrial activity specially those who depend upon agriculture in industrial areas they suffered a lot.

According to local people the main reason behind water pollution are the wastes materials after pulping with chemicals are released directly to Nagavali River on which some local people depend. By using such polluted water people suffering from various diseases every year. Air pollution is also a threat to environment here, this happens due to dust particles that are come out when raw materials are put into industrial process. This polluted air is as harmful as to the children and also to old persons who are belonging to nearer villages from the industry. For this air pollution also, various harmful diseases are attacking to local people day by day.

### 3.3.4 Health status of sample households

Health is an important part of this present study as we comparatively analyzing in industrial and non-industrial areas. As in our study we saw that in industrial areas the health facility is better than that of non-industrial areas. In non-industrial no dispensary or health units are there but in industrial areas there are one health unit near jaykaypur and monthly health camps are made in villages. In non-industrial areas households depend only on nearer medical in Rayagada which is so far to the villages.

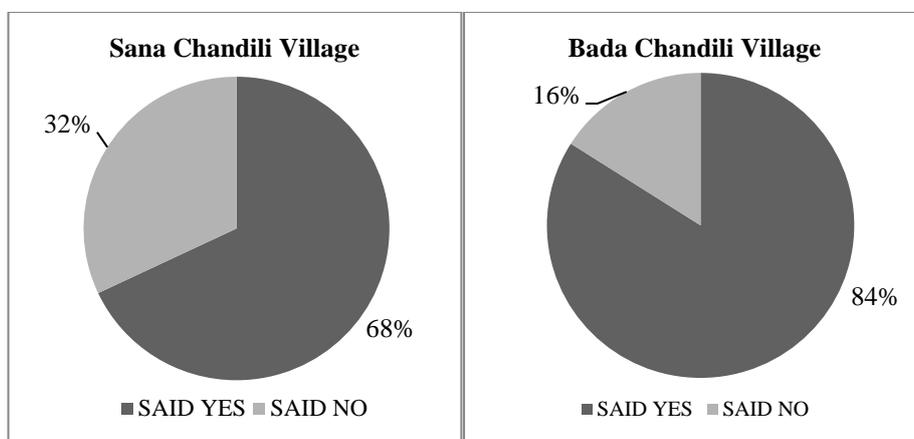


Figure 7: Perception of respondents regarding impact of industry on health of residents

In the figure 7 it is mirrored that the impact of industry on health of households in industrial areas is have or not. In Sana chandili village, 68% households said yes there has a bad impact of industry on their health and rest 32% of households said no. But in Bada chandili, 84% of households said yes there is impact of industry on their health and 16% of households said no on this statement. It can be seen that the village V1 is very close to the industry, the impact on health is more but village V2 is just far from the industry faces comparatively lower impact on health. In the study area company provides health facility by giving their laborers ESIC health card for free medicines at nearer dispensary. But some households reveal that this ESIC card is only for workers not for others.

Rapid growth of industrialization became the reason for degradation of health of local community. Polluted water and air create various health problems for local people who spread diseases like respiratory problem, Tuberculosis, Diarrhea, skin diseases, headaches etc. Figure 8 shows the percentage of people suffering from these diseases.

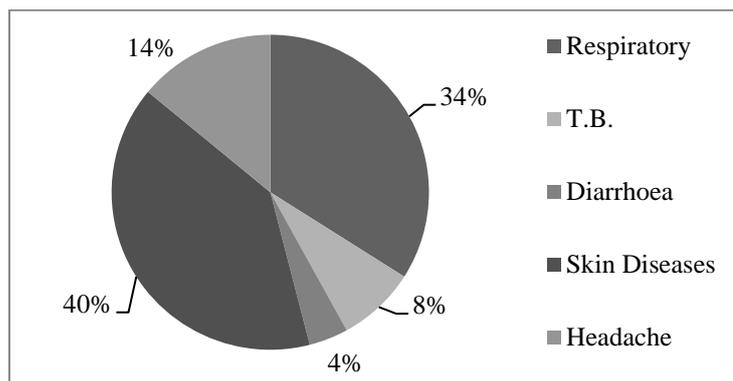


Figure 8: Percentage of people suffering from various diseases in industrial villages

It is also found that local community is suffering from various diseases due to water and air pollution. 40% of people are suffering from skin diseases due to usage polluted river water. 34% of people are affected by respiratory problems due to bad air quality specially dust particles that are released from industrial process causes this problem. Other diseases like Tuberculosis, Diarrhea and headaches also stand as health issues for the local people. In this regard JK paper ltd. has formed a health campaign to every village in a month but according to villagers this is not properly performed for eradicating these health problems.

#### IV. CONCLUSION AND POLICY SUGGESTIONS

The study concludes that industrialization has both positively as well as negatively affected the rural community. It provides an important source of livelihood to the people in industrial region as more than 60% of the workforce is engaged as industrial labors. Further the average annual incomes of industrial villages are significantly higher than non-industrial villages. It has also been found that the industrialization has also helped in improvement of living conditions as higher percentage of households in industrial region lives in pucca houses and access to electricity. The average annual expenditure of rural households in industrial region is higher than that of households in non-industrial area. Thus, industrialization has helped in improving the socio-economic conditions of rural community apart from infrastructure development like providing transportation facilities, health and educational facilities. But all these benefits have been at the cost of environment. The region has witnessed a significant deterioration in the quality of environment. 85% of households in industrial area states that there is environmental pollution specifically air pollution due to industrial activities. Consequently, environmental pollution has negatively affected the health of rural population. Households in industrial region spends more on health than non-industrial households as the average annual expenditure of households on health is higher than that of their non-industrial counterpart. This is despite of various medical facilities provided by the Industrial company.

Thus, though industrialization boosts the development of rural community but deteriorates the environment thereby raising the issue of sustainability. Hence, concrete and serious efforts and measures should be taken by both Government and Industry. Environment friendly methods should be used by the industry to minimize the impact of industry on environment. More health camps in industrial areas should be campaigned and initiated. Female literacy rate in industrial areas is low as compared to non-industrial areas. In this context as education is must nowadays. For the better education both in industrial and non-industrial areas it should always keep an eye to expand the education to increase the literacy rate. Frequent inspection and audit should be conducted by government official in the industrial region. Hence industrialization should be continued in the sustainable manner for the rural community and regional development.

#### REFERENCES

- [1] Sarma, B.K. (2014). *Impact of Paper Industry on Environment: A Case Study of the Nagaon Paper Mill*. International Conference on Trends in Economics, Humanities and Management, Pattaya (Thailand). Retrieve from <https://docplayer.net/26793541-Impact-of-paper-industry-on-environment-a-case-study-of-the-nagaon-paper-mill.html> as on 10/02/2020
- [2] Tran, T. & Doan, T. (2010). Industrialization, economic and employment structure changes in Vietnam during economic transition. MPRA Paper No. 26996. Retrieve from [https://mpra.ub.uni-muenchen.de/26979/1/MPRA\\_paper\\_26979.pdf](https://mpra.ub.uni-muenchen.de/26979/1/MPRA_paper_26979.pdf) on 2009/09/2018 as on 12/02/2020

- [3] Athukorala, P. C. & Sen, K. (2015). *Industrialization, Employment and Poverty*. Forthcoming in Michael Tribe and John Weiss (eds.), *Routledge Handbook of Industrial Development*, London: Routledge, pp. 84-95.
- [4] Xiaojian, L. (1993). Industrial linkages and rural industrialization: A case study of Henan Province, China. *Chinese Geographical Science*, Vol 3(3), 255-263.
- [5] Singh, A. (1994). *The state and industrialization in India: successes and failures and the lessons for the future*. MPRA Paper No. 54986. Retrieve from [https://mpra.ub.uni-muenchen.de/54986/1/MPRA\\_paper\\_54986.pdf](https://mpra.ub.uni-muenchen.de/54986/1/MPRA_paper_54986.pdf) on 2010/09/2018 as on 12/02/2020
- [6] Ministry of Finance (2013). *Report of the Committee for evolving a Composite Development Index of States*. Government of India. Retrieve from [https://finmin.nic.in/sites/default/files/Report\\_CompDevState.pdf](https://finmin.nic.in/sites/default/files/Report_CompDevState.pdf) as on 01/02/2020
- [7] Government of Odisha (2007), State of the Environment Report – Orissa, 2007. Retrieve from <https://landportal.org/library/resources/state-environment-report-orissa> as on 15/01/2020
- [8] Josling, T. (1971). Rural Industrialization: The Impact of industrialization on two rural communities in Western Ireland. *Economica*, New Series, 38, 104
- [9] Rahmer, B.A. (1946). The Industrialization of Backward Areas. *The Economic Journal*, 56, 657-662.
- [10] Papola, T. S. & Misra, V. N. (1980). Some Aspects of Rural Industrialization. *Economic and Political Weekly*, 15, 1733-1746.
- [11] Park, K.A (1995). Women Workers in South Korea: The Impact of Export-Led Industrialization. *Asian Survey*, 35, 740-756.
- [12] *Economic Survey of Odisha (2017-18)*, Planning and Coordination Department, Directorate of Economic and Statistic, Government of Odisha. Retrieve from [https://pc.odisha.gov.in/Download/Economic\\_Survey\\_2017-18.pdf](https://pc.odisha.gov.in/Download/Economic_Survey_2017-18.pdf) as on 05/02/2020
- [13] Dhama, J. K., Singh, H. and Gupta, M. (2013). Industrialization at the Cost of Environment Degradation- A Case of Leather and Iron and Steel Industry from Punjab Economy. *Innovative Journal of Business and Management*, Vol. 2(1), pp.19 - 21.
- [14] Bhandari, D. & Garg, R. K. (2015). Effect of Industrialization on Environment (Indian Scenario). *Global Journal for Research Analysis*, Vol 4(12). Retrieve from [https://www.researchgate.net/publication/315726291\\_Effect\\_of\\_Industrialization\\_on\\_Environment\\_Indian\\_Scenario](https://www.researchgate.net/publication/315726291_Effect_of_Industrialization_on_Environment_Indian_Scenario)
- [15] Behera, P.K. (2015). Socio-Economic Impact of Industrialization and Mining on the Local Population: A Case Study of NALCO Industrial Area, Koraput. *International Journal of Economics & Management Sciences*, 4(8). Retrieve from <https://www.hilarispublisher.com/open-access/socioeconomic-impact-of-industrialisation-and-mining-on-the-local-population--a-case-study-of-nalco-industrial-area-koraput-2162-6359-1000273.pdf>