The process of development, in any society, should ideally be viewed and assessed in terms of what it does for an average individual. It has to be seen in terms of the benefits and opportunities that it generates for people and how these are eventually distributed between men and women, the well-off and deprived and across regions. Literature shows that, often, there is no direct correspondence between economic attainments of a society and the quality of life. Regions with high levels of income and economic growth need not necessarily have similar social attainments that are desirable not only in themselves but also because of their role in supporting better opportunities for people. It becomes necessary, therefore, to have a framework and evolve development strategies that forge and strengthen the link between the two, and encourage the most effective and efficient use of available resources for furthering the well being of the people.

Economic theorists have long since opined that the economic development of a region is mainly determined by the degree of industrialization achieved and from Lewis onwards, various models, strategies and policies have been framed for transformation of agro-based underdeveloped regions to industry-based developed region.

However, public interest about the environmental problems emanating from the industrialisation process has recently swelled significantly. It is universally accepted that the increase of Carbon Monoxide, Carbon Di-
oxide, Sulphur Di-oxide and Oxides of Nitrogen in atmosphere is a public health concern throughout the world. For decades, epidemiologic studies have been a cornerstone of our approach to investigate the health effects of air pollution and have been a principal basis for setting regulations to protect the public against adverse health effects. As the problem became well recognized, researchers have taken steps to examine, explore and measure the consequence of pollution through careful study design and data collection followed by rigorous statistical analysis. Growing interest in such issues have pointed to some basic negative impacts of pollution. Pollution damages the welfare directly (damaging health and drinking water) or indirectly by being detrimental to production elsewhere (reducing crop productivity, fish population and lessening available amenities). The cost of pollution is borne by the people in the form of damages such as health loss and natural resources degradation or reduced income from farming.

The most important types of pollution cost are observed in deterioration of both physical assets and longevity of living beings. Problem of air and water pollution remain important causes of concern affecting millions of people. Now there is accumulating evidence of human actions changing the environment on a global scale that leaves widespread impact on human health.

In this backdrop, industrialization process in any developing country cannot be viewed as an unblemished benefit. While it is necessary for occupational transformation of the economy, increased employment and growth of the economy, it also has substantial impact on environmental degradation, resource depletion and related social costs. It can be argued that every locality has a ‘carrying capacity’ in terms of environmental
degradation vis-à-vis the benefits accruing from industrialisation process. If the environmental situations reach this threshold level, the industrialisation process in that locality should be limited or downscaled. The net social benefit from increased industrialisation in a particular area needs to be carefully studied before allowing any further industries to come up in that area and regional development plans should be formulated accordingly. This study attempts to estimate the environmental costs in a rapidly industrialising locality so that proper regional policies can be drawn up, which may also serve as an example of impact assessment studies that should be mandatory in similar localities.

THE IMPORTANCE OF INDUSTRIALIZATION

Industry is that segment of the economy concerned with production of goods. Industry began in its present form during the 1800s, aided by technological advances, and it has continued to develop to this day. Industrialisation is a process of social and economic change whereby a human society is transformed from a pre-industrial (an economy where the amount of capital accumulated per capita is low) to an industrial state. It is a part of wider modernization process. This social and economic change is closely intertwined with technological innovation, particularly the development of large-scale energy production and metallurgy.

Industrialisation is also related to some form of philosophical change, or to a different attitude in the perception of nature, though whether these philosophical changes are caused by industrialization or vice-versa is subject to debate. The world's first industrialized city was Manchester in northwest England. Starting from the first industrial revolution in Great
Britain in mid nineteenth century, industry and industrial expansion have travelled to most part of the globe, though there are differences in the degree of its spread across countries.

From Adam Smith (1776) and Marx and Engels (1848) in centuries past to the “Washington Consensus” of the 1980s and 1990s as discussed by Williamson in 1990, many analysts have made the case that industrialization brings “development.” The implicit assumption is that industrialization improves a nation’s well-being along a number of dimensions, including education quality and attainment of education. At the same time, they have also warned of the potential downside of industrialization, including increased pollution, growing inequality, and lower social cohesion. Let us briefly underline some of the potential benefits of industrialisation followed by inherent dangers.

**POSITIVE IMPACTS OF INDUSTRIALISATION**

*Direct Benefits – Employment and Output*

The direct benefits of industrialisation operate through two channels: one, industries generate direct and indirect employment for skilled and unskilled labour; two, they generate income and contribute to national product and growth. Both of these benefits are self-explanatory and do not need further expansion. To add, expansion of industrial employment leads to occupational transformation towards higher percentage of tertiary sector employment, which has been accepted as an index of development in literature.
Indirect Benefits

Helping Agricultural Sector

Economic viability of the farm sector is very much important for sustainable and equitable development. In this regard industrialisation has immense contribution to make. Industries provide most of the modern inputs necessary for a productive and remunerative agricultural sector. On the other hand, industrial sector is also one of the largest purchasers of agricultural output. This linkage between the industrial and the agricultural sector helps the agricultural sector enormously. In many rural economies a major industrial transformation in which farming and farm-related industries have combined together to create employment and generate income. As agriculture becomes more industrialized, this linkage is bound to be consolidated.

Human Capital Formation Effects

There are various modes by which industrialisation can positively contribute to human capital formation. One is the firm level activity whereby the labour force acquires skills from within the firm through learning by doing on the job, and additional training on- and off the job. The second method involves linking the education system to cater to the needs of the local units. In Shenzhen, Sri Lankan and Mexican industries, institutes are established to improve technical and vocational skills of workers in the zone. In Taiwan, some cooperative training programmes between schools/colleges and the local enterprises are being developed. These programmes aim at providing technical education at the factory rather than at the institution.

Skill formation for the poor unskilled workers also occurs through assimilation of industrial discipline. This might increase the welfare of poor unskilled workers by increasing the range of job opportunities
available to them. Improved skills and productivity increase workers' income earning capacity. Finally, industrialisation through FDI brings with it technology transfer, managerial, marketing & distribution skills, and advanced training for staff. This knowledge is expected to spill-over to domestic firms also and then to those in the domestic economy.

NEGATIVE IMPACTS OF INDUSTRIALISATION

Not all of industrialisation is good for the people and the economy. Although our industrial ways seem to be a very progressive step into the future, there are many flaws in this strategy, which if followed blindly may lead to disasters. Over the past century economic well-being has improved and we can currently produce much more things much more efficiently in much less time, than before. The cost of this efficiency, however do not just include money, time and labour, but it also costs us our present and future well-being in a broader sense, as well as the beauty and comfort of our own home - the earth.

Industrialisation has spawned its own health problems. Modern stresses include noise, air, water pollution, poor nutrition, dangerous machinery, impersonal work, isolation, poverty, homelessness, and substance abuse. Ozone depletion, climate change as well as the direct effects of chemicals from industrial emissions and fuel combustion is a great threat to our planet and if nothing is done to resolve this problem soon, the results may be catastrophic.

Direct Impacts of Industrialization

The most important negative impact of industrialisation has been that on the environment. Industries have been chief pollutant of the atmosphere for long. Emission of CFCs and other chemicals lead to ozone layer
depletion, global warming and associated problems of UV exposure, break-down of food chain, and sea-level rising.

While these are global phenomenon, at the local level too, industrialisation creates environmental damages. Pollution from industries damages human and animal health, degrades drinking water, indirectly reduces crop productivity, fish population. The cost of industrial pollution is borne by the people in the form of health loss and natural resources degradation.

Thousands of workers employed in different factories face high occupational risk because of the chemicals they produce or use, and the general polluted and unsafe working conditions. The chemicals regularly handled include corrosive & poisonous chemicals, oxidizers and these have a direct effect on the eyes, skin, and respiratory system and eventually lead to cancer. Contact with these chemicals is dangerous mostly through inhalation, in gestation, skin absorption and often create accident. The effects of most chemicals are not only acute but also chronic. Carbon emission within and in the immediate vicinity of the factories also cause substantial damages to human health and to the vegetation around. The labour employed is neither warned about the risks involved nor is even given basic training in handling dangerous chemicals and because of their poverty & job insecurity the workers are willing to undertake any type of hazardous job.

In some places it is almost impossible to breathe and local residents often complain of burning sensation in the eyes. Some of them say that the waste materials are being discharged during the night and hence it is difficult to locate the source.
**Indirect Impact through Transport Sector**

Due to industrialization numbers of vehicles are increasing at an alarming rate in the industrial locations leading to an increase in automobile pollution. The effect of Carbon Monoxide (CO) emitted by petrol driven vehicles is extremely hazardous, particularly for children and expectant mothers. According to WHO studies Lead (Pb) present in auto fuel affects the nervous system of children while CO affects kidney functioning. In addition there are the issues of Suspended Particulate Matters (SPM), which enters the lungs during breathing and is mainly responsible for increasing incidences of Lung Cancer in polluted cities and industrial colonies.

**Industrialisation, Migration and Environmental Degradation**

Industrialisation is often associated with migration of people from rural areas to industrial sites in search of jobs. While some of them are absorbed, a great many are pushed into the urban informal sector where they do sundry jobs to keep the family hearth burning. These people often live in shanties and slums and have little regard (and no means to care) for environmental protection. These poor migrated workers are basically short-run maximisers - trying to meet the needs of the present without worrying too much about the future. Poor and hungry, they often destroy their immediate environment for their survival. They cut down trees for fuelwood, use open land for defecation, and very often collect, store and recycle industrial waste as means of livelihood. The cumulative effect of these changes is so far-reaching as to make poverty itself a major global scourge. It is in this context that the first global Human Development Report mentions, "Poverty is one of the greatest threats to
the environment” (HDR, 2000). This link between poverty and environment has often been mentioned in the debates on sustainable development and focuses on the ‘vicious circle’ between poverty and environmental degradation.

_Economic Costs of increased use of Industrial Product in Agriculture_

Next to industrial effluents, agricultural chemical runoff and leaching are also causing serious water pollution and degradation of soil quality. Degradation of farmland has caused significant decline in farm productivity and has induced the producers to remove land from production. The net result is the reduction in income earning capability of the farmers and thus has an indirect impact on their health and future well-being.

**IMPORTANCE OF ENVIRONMENTAL IMPACT STUDY OF INDUSTRIALISATION**

We have narrated why industrialization process in any developing country cannot be viewed as an unblemished benefit. While significant economic progress occurs due to industrialisation, there are substantial accounted and unaccounted costs too. While employment generation and production of output are the positive impacts, health damages and environmental degradation are the irreparable costs. To get a truer picture of the impact of the industrialisation process on a region, we need quantitative estimates of the environmental costs of the industrialisation process. In the present study we look at the Durgapur region of Burdwan district of West Bengal in India to understand how recent industrialisation process is causing environmental damages and to arrive at estimated costs of such damages.