Chapter - 9

PROFIT, INVESTMENT, EMPLOYMENT AND WAGES AS BENEFITS IN KVI INSTITUTIONS

* Profit and Output in KVI Institution

* Investment and Employment

* Wage and Employment

* Social Cost Benefit in KVI Sector
9.1 PROFIT AND OUTPUT IN KVI INSTITUTIONS

9.1.1 Profit

Profit is the engine that drives the business enterprise to achieve its objectives and is the reward for entrepreneurship.¹

9.1.1.1 App Heat ion of Profit in Financial Management

The term "Profit" is viewed by different people in different perspective. For example, from the point of view of Financial Management; profit is the test of efficiency and measure of control; to the owners, a measure of worth their investment; to the creditors, the margin of safety; to the employees, source of fringe benefits; to the government, the measure of taxable capacity on the basis of legislative action; to the customers, demand for price cut; and, finally, to the country, an index to the economic progress, national income generated and rise in the standard of living.² A business enterprise is, thus, able to discharge its obligations to the various interested segments of society only through profits. It is, therefore, imperative that profit should be basic thing for which the business undertaking should strive in the interest of their all round development.
9.1.1.2 Profitability

Profitability is the basis of determining the functional efficiency of any business activity. Profit maximisation is the primary objective of all activities in a business enterprise.

9.1.1.3 Objective of 'Profit planning' are
1. To obtain annual earnings before tax of twenty percent of net capital employed, i.e on total assets less liabilities, 16 percent on shareholders-equity.
2. To improve profits after taxes by at least 10 percent a year.
3. To pay shareholders an annual return of 15 percent on shareholders equity after retaining 50 percent net earnings in business.'

According to Marx's theory, profit is the surplus emerging out of the expropriation of fruit of labour by the capitalists.

Profit is classified into the following concepts:

a) Gross profit,

b) Operating profit,

c) Profit before depreciation,

d) Profit aftertax.

These concepts create some ambiguity in selecting the right procedure for estimating the efficiency of business. Gross profit is the surplus of sales value of the output over variable cost of production. Its significance, from management point of view should be sufficient to cover operating expenses and leave a net profit.
Operating profit is obtained after subtracting depreciation personnel and other expenses from gross profit.

This is a measure of operational efficiency of the business and it is usually referred to as profit before Interest and Taxes (PBIT), Net profit after payment of interest but before tax is known as Profit Before Tax (PBT). Net profit after payment of tax is Profit After Tax (PAT). Thus PAT is the amount ultimately available to the enterprise for appropriation either for dividend or for retained earning or for both.

In financial management, rather than profit maximisation, it is maximisation of wealth which is emphasised as the goal of business."

Profit serves as a yardstick for judging the competence and efficiency of the management.

The profit is affected by the several factors. Some of the important factors are as follows:
1. Selling price of the products
2. Volume of sales
3. Variable cost per unit
4. Total fixed costs
5. Sales makes (or mix) of different products. The management can achieve their Target Profit goal by varying one or more of the above-variables."
There is a considerable academic debate about the impact of working capital on the profitability of a firm. One school of thought argues, that fixed capital only plays a very significant role in profit generating process. Moreover, they also suggest that there may be negative relationship between working capital and profitability. The other school of thought argues that unless there is a minimum level of investment in the working capital which provide a promising vehicle for increasing profitability, output and sales cannot be maintained. In this sense, working capital acts as an explanatory variable in profit function of a company industry. Obviously a large number of considerations play a significant role in the development of arguments and counter arguments in this regard. The profitability risk trade off, cost of factors in relation to investment in current vis-a-vis fixed assets, financing through long term versus short term sources are the common ones.\textsuperscript{6}

9.1.2 Statistical Tools

Intertemporal comparison of performance needs estimate of variations in various factors over a period of time. For this purpose some of the statistical tools are used. They are
a) Mean average,
b) Simple averages of annual growth rate,

9.1.3 Availability of Data

The date taken are from the audited balance sheet of the institutions under study. Net profit alone is taken for this study purpose.
9.1.4 Inadequacy of Data

Industry wise and product wise data on profit and value of production are not available.

9.1.5 Data Analysis

The particulars of profit on value of production for the five institution are given in table No.9.1.1 - year wise, particulars of profit and output and their growths rate are given in appendix No.A-11.1 to A-11.5.
<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the Institution</th>
<th>GKV/VPCT</th>
<th>Net Profit Mean %</th>
<th>VP Mean</th>
<th>Percentage of Net Profit on VP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>1.79</td>
<td>0.80</td>
<td>42.97</td>
<td>1.96</td>
</tr>
<tr>
<td>2</td>
<td>MNSS</td>
<td>(-0.13)</td>
<td>14.75</td>
<td>62.54</td>
<td>2.13</td>
</tr>
<tr>
<td>3</td>
<td>GSS</td>
<td>1.46</td>
<td>63.54</td>
<td>51.5</td>
<td>1.03</td>
</tr>
<tr>
<td>4</td>
<td>KSS</td>
<td>0.56</td>
<td>44.48</td>
<td>51.5</td>
<td>1.03</td>
</tr>
<tr>
<td>5</td>
<td>TNSS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Share of % in value of Profit and Output in constant price

Value in Lakhs

Name of the Institution

GKVIPCT
MNSS
GSS
KSS
TNSS
9.1.6 Inference

Earning profit is essential for survival and sustainability of any business. In the case of Khadi and Village Industries, profit maximisation is not the main aim. As already stated, the main aim of Khadi and Village Industries activities are to generate employment in the rural areas. It does not mean that no profit should be earned. It was not possible to earn huge profit.

The net profit earned and the value of production i.e output of the five institutions under study are given in Table No.9.1. Institution wise particulars of profit and Value of Production are given in appendix No.A-11.1 to A-11.5. Mere perusal will reveal that the average profit earned by the five institution is less than one lakh and the percent share on Value of Production (output) is 1.03, MNSS and KSS contributed nearly 2% on Value of Production GSS contributed nothing towards profit because of its internal management problem.

Profit alone cannot be used as a tool to measure the efficiency of the Khadi and Village Industries activities, as its main objective is to generate employment. The reasons for low growth rate and meagre profit may be some of the following:

1. Long duration of operating cycle.
2. Low turnover of capital.
3. Cash cycle is high and hence shortage of credit.
4. No marketing facilities.
5. Sales effected only during rebate period of 90 days in a year.
6. Low productivity as there is lack of machine and tools.
7. Unskilled or semi-skilled workers yield less production with low quality.
8. Lack of application of modem scientific management.
9. Depend mainly on Government fund and rebate concession for sale.
10. Stiff competition from Handloom and Mill sector.
11. Lack of compatibility with other sector in market.
12. Lack of Mass media advertisements for its products.
13. Lack of Swadeshi spirit among the people to buy the products made by their own fellow beings.

9.1.7 Further Research Suggested

Industry wise, product wise research can be undertaken at the micro level in Khadi and Village Industries Institutions.
9.2.0 INVESTMENT AND EMPLOYMENT IN KVI INSTITUTIONS

9.2.1 Investment and Employment in KVI

KVI activities need less per capita investment. KVIC is the major financial agent to finance the KVI activities.

KVIC extends financial assistance to both KVI in the form of grant and loan. Khadi industries receive grant and loan without interest. The financial assistance consists of Capital expenditure loan for acquiring fixed assets and working capital for day to day operation. The loan issued for VI carries an annual interest of 4 percent. In case the above loan is not sufficient the institution can avail bank finance at higher interest rate but the difference between two interest rates will be given by KVIC to the institutions under interest subsidy scheme.

Chief rationale for the development of KVI is their contribution towards generation of employment opportunities in a thickly populated country. Thanks to relatively simple technology adopted in these activities, a worker uses tools and equipments of modest value.

9.2.2 Statistical Tools

Inter temporal comparison of performance needs estimate of variations in various factors over a period of time. For this purpose some of the statistical tools are used. They are

a) Mean average,
b) Simple averages of annual growth rate,
9.2.3 Data Available on the Issues

For the purpose of capital cost, investible funds of the institutions have been used. Investible funds consists of capital fund, accumulated profit, capital expenditure loan and depreciation reserve. Value of investible funds as in 1986-87 has been accepted as starting point. Net additions to investible funds in the subsequent years have been deflated to the price level of 1986-87. Thus cumulative value of investment in the price level of 1986-87 could be obtained for the twelve-year period under study. For each year amount of investment has been divided by number of workers and average capital cost per work place is obtained.

9.2.4 In Adequacy of Data

Industry wise and activity specific data on employment and investment are not available.

9.2.5 Data Analysis

Chief rationale for the development of Khadi and Village Industries is their contribution towards generation of employment opportunities in a thickly populated country. Thanks to relatively simple technology adopted in these activities, a worker uses tools and equipments of modest value. Thus capital cost per work place is very low in these activities. Variations in average capital cost have been measured in simple annual averages, during the twelve year period. Thus particulars of investment and employment for the five institution are given in Table No.9.2. Year wise, particulars of investment and employment and their growth rate are given in appendix No.A-12.1 to 12.5.
**Table No. 9.2**

Mean average of Investment and Employment

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of the institution</th>
<th>Mean average of employment</th>
<th>Mean average cost of investment per work place</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GKVIPCT</td>
<td>1763</td>
<td>12.287</td>
</tr>
<tr>
<td>2</td>
<td>MNSS</td>
<td>720</td>
<td>6.418</td>
</tr>
<tr>
<td>3</td>
<td>CSS</td>
<td>125</td>
<td>19.393</td>
</tr>
<tr>
<td>4</td>
<td>KSS</td>
<td>1102</td>
<td>6.561</td>
</tr>
<tr>
<td>5</td>
<td>TNSS</td>
<td>1033</td>
<td>8.070</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4683</td>
<td>52.474</td>
</tr>
<tr>
<td></td>
<td>Mean average</td>
<td>937</td>
<td>10.495</td>
</tr>
</tbody>
</table>

9.2.6 Inference

As already pointed out, Khadi and Village Industries activities do not required much capital investment. As it is labour oriented, the cost of capital per work place will be less. As per the study, (refer Table No.9.9.1). The mean average of capital cost per work place of the five institutions is Rs.10,495/-. Total employment generated by the institutions is 4683. The mean average of capital cost per workplace of the five institutions are given below. (refer Appendix No.A-12.1 to 12.5)
Three institution invested less than Ten thousand per work place. One institution is just above the average of Rs.10,495/-.

It is concluded that KVI activities are labour oriented and need less capital investment per work place. Hence, the second hypothesis is proved that the cost of capital is less as these activities are labour intensive.

9.2.7 Further Research Suggested

Industry wise, product wise, research can be undertaken at the micro level in Khadi and Village Industries Sector.
i.3 WAGE AND EMPLOYMENT IN KVI INSTITUTIONS

13.1 Wage and Employment in KVIC

It is needless to say that KVI activities are labour intensive. It uses simple machine and tools and employs people from rural area who aremostly illiterate. The KVI activities are able to provide employment to the people of all ages, in case of khadi, family members including children, adults, housewives and old people can contribute according to their ability. The process of pre-spinning, spinning and weaving etc. engages people of all ages. Hence Gandhiji took up this khadi activity for giving employment to the rural masses who are illiterate mostly and otherwise do work to earn their daily bread. During the pre-independence period immediately after the commencement of KVIC, khadi was the major 'duction of KVI sector and provide more employment to the people.

Table No.9.3.1

Fund Released from KVIC to Both Khadi & Village Industries, Employment, Wages

<table>
<thead>
<tr>
<th>Year</th>
<th>Employment (Lakh in person)</th>
<th>Wages paid</th>
<th>Per capita earning (per annum) (Rs in thousand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988-89</td>
<td>42.87</td>
<td>546.98</td>
<td>1.276</td>
</tr>
<tr>
<td>1989-90</td>
<td>46.26</td>
<td>674.30</td>
<td>1.458</td>
</tr>
<tr>
<td>1990-91</td>
<td>48.57</td>
<td>784.06</td>
<td>1.614</td>
</tr>
<tr>
<td>1991-92</td>
<td>50.16</td>
<td>888.54</td>
<td>1.771</td>
</tr>
<tr>
<td>1992-93</td>
<td>52.50</td>
<td>1013.63</td>
<td>1.931</td>
</tr>
<tr>
<td>1993-94</td>
<td>52.28</td>
<td>1140.65</td>
<td>2.141</td>
</tr>
<tr>
<td>1994-95</td>
<td>53.46</td>
<td>1269.37</td>
<td>2.374</td>
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<tr>
<td>1995-96</td>
<td>56.72</td>
<td>1363.85</td>
<td>2.405</td>
</tr>
<tr>
<td>1996-97</td>
<td>58.17</td>
<td>1532.85</td>
<td>2.635</td>
</tr>
<tr>
<td>1997-98</td>
<td>56.50</td>
<td>1546.34</td>
<td>2.737</td>
</tr>
<tr>
<td>Total</td>
<td>518.49</td>
<td>10760.57</td>
<td>20.342</td>
</tr>
<tr>
<td>Mean</td>
<td>51.85</td>
<td>1078.06</td>
<td>2.034</td>
</tr>
</tbody>
</table>

Perusal of particulars of wages and salary reveal the trend earning of workers over a period of time in the context of changes in level of
operations and capital cost. The computation of wages, salaries covers
data on wages, salaries, provident fund contribution by management
expenses on labour welfare. Relevant particulars for the KVIC for the
period of ten years can be found in table no.9.2.1 Per capita wage in
current prices is Rs.1,761.

9.3.2 Statistical Tools

Intertemporal comparison of performance needs estimate of variations'
in various factors over a period of time. For this purpose some of the
statistical tools are used. They are

a) Mean average,
b) Simple averages of annual growth rate,

9.3.3 Data Available

The data here are taken from the audited balance sheet of the.
institutions understudy. Employment here are taken from the annual
reports of the institutions.

9.3.4 Inadequacy of Data

Industry wise and product wise data on wage and employment are
not available .

9.3.5 Data Analysis

The particulars of wage and employment for the five institutions are
give in table No.9.3.1. year wise, particulars of wage and employment
and their growth rate are given in appendix No.A-13.1 to A-13.5.
9.3.6 Inference

Major share of value of production is shared by labour, in Khadi and Village Industries activities. This statement is proved by this study. Average earnings, and value of production of the five institution are given in Table 9.3.1. Institution wise particulars are given in Appendix A-13.1 to A-13.5. The average earning of the five institution is Rs.144.63 lakhs for the employment of 4683 and per capita earning is Rs.3.167. The percentage of wage on Value of Production is around 40%. Hence, it is well known that Khadi and Village Industries programme is mainly for the worker (or) poor artisans and not for augmenting wealth by earning more, profit.

9.3.7 Further Research Suggested

The industry wise, product wise research can be undertaken at the micro level of Khadi and Village Industries Institutions.
Figure 4f
Per Capita Earnings

Name of the Institution

Value in Thousands

- Earnings
- Average
9.0 SOCIAL COST BENEFITS IN KV! SECTOR

Besides measurable benefits such as profit, employment and wages, there are non measurable social benefits to the society from the KVI Sector. Some of the benefits are detailed below.

9.1 Benefits to the Individual Consumer

In the corporate sector, as stated already, the prime objective is to earn more profit. In order to make more profit, cost of production will have to be reduced by substituting low quality or substandard materials or synthetic raw materials. For example cardamom is costlier than cardamom essence, butter is costlier than margarine. To make more profit, business men will substitute synthetic products for natural products.

In Khadi and Village Industries, the main objective is not profit making and the main raw materials are mostly from Agricultural sector. Hence the consumer are assured of getting unadulterated, natural, fresh products from Khadi and Village Industries Sector. Health of the consumer is very much protected by the Khadi and Village Industries products.

9.2 Benefit to the Society as a Whole

As already stated, Khadi and Village Industries Sector process locally available raw materials and thereby give indirect employment to the agricultural labourers. During the off season, it provides employment to land less agricultural labourer. Supply the society with quality products and take care of the health of the people. It is not using any chemical or sophisticated machinery etc., it is not polluting the environment (this is discussed separately).
As people get employment, food etc., they don't find time to indulge in any other unlawful activities. Hence Khadi and Village Industries Sector, directly and indirectly facilitates peaceful social life.

9.4.3 Benefits to the Agricultural Sector

Khadi and Village Industries Sector consume agro-based raw materials and thereby help farmers to grow more agricultural products. It also process forest based oil seeds, and other materials. Bee keeping industry of Khadi and Village Industries Sector helps the agricultural sector for better production due cross pollination. It supplies neem oil cakes as fertilizer and neem oil as pesticides, and also supplies groundnut oil cake to the animals maintained by the farmers. Khadi and Village Industries and Agricultural Sector are closely linked with each other and are doing better service to the society.

9.4.4 Benefits to the Government

There are three 'E's which may often creating problems to the Government.

1. Energy
2. Employment
3. Environment

Any energy saved is energy produced. Khadi and Village Industries Sector hardly uses power, or Mineral oil for the purpose of production. It uses mainly simple tools and machinery. Major production is by the masses only and not by huge machines. Hence this sector
saves so much energy and help the Government to get rid of energy crisis.

Next major problem is unemployment especially rural employment to the unskilled rural people. Khadi and Village Industries Sector alone can provide employment to the unskilled rural masses, with low per capita investment. Large scale and corporate sector generated below one percent employment with huge investment. Khadi and Village Industries Sector generated 56.50 Lakhs employment. This sector helps the Government by providing employment to rural mass and reducing the problems of unemployment. The major problems due to unemployment is anti-social activities. Idle hands are used for the anti-social activities by the cheap, self-fish politicians which may create lot of social problems. To have peaceful society the role of Khadi and Village Industries Sector is very much essential.

The third 'E' is environment. This draws attention from all over the world. Any nation violating the environment laws becomes not eligible to receive aids from foreign countries especially from USA, based world organisations like, World Health Organisation (WHO) UNICEF etc. The problems of environment and the role of KVI Sector in promoting environment is discussed below.

9.4.4.1 Benefits to the Environment and Ecosystem

Ancient Indian sages said that in the current age of Kaliyuga, the sins of man kind are so bad that the Earth and mankind would be destroyed in the near future. What these sages said may not have been a
mere fantasy considering the environmental pollution which the people have inflicted on this planet, thereby contributing to the destruction of life on the Earth. Continued economic growth, mismanagement of resources and population explosion have an explosive impact on the environment. Now our Earth has become a very sick planet and urgently needs a cure. A disaster is looming. Unless every body joins hand to take on the environmental dangers and to find ways to halt the march to mankind's destruction.

9.4.4.2 **Environmental Pollution**

Pollution is an undesirable change in the physical, chemical or biological characteristics of our air, land and water that will harmfully affect the human life and other species, deteriorates our raw material resources.

**Pollutants**

Any substance which causes pollution is called a pollutant. Pollutants means "any solid, liquid or gaseous substance present in such concentration as may be tend to be injurious to the environment".

Pollutants are the residues of things we make, use and throw away. There are many sources of such pollutants. The lakes and rivers are polluted by wastes from chemical and other factories, and the air by gases of automatic exhausts, industries, thermal power plant etc.^8
Environmental Pollutants

The various principal pollutants which pollute our air, water, land are as follows.

1. Deposited matter - soot, smoke, tar, dust grit etc.
2. Gases - oxides of nitrogen (\(\text{No}, \text{No}_2\)), Sulpher (\(\text{So}_2\)), Carbon Monoxide, halogens, (Chlorine, bromine, iodine).
3. Acids Droplets - Sulphuric acid, Nitreric Acid etc.
4. Fluorides
5. Metals - Mercury, lead, iron, zinc, nickel, tin, cadmium, chromium etc.
6. Agrochemicals - pesticides, herbicides, fungicides, nematicides. bactericides, weedicides and fertilisers.
7. Complex Organic Substances benzene, ether, acetic acid, benzpyrenes etc.
8. Photochemical oxidants - Photochemical smog, ozone, peroxyacety Nitrate (PAN) Peroxybenzoil Nitrate (\(\text{PB}_2\text{N}\)), nitrogen oxides, aldehydes, ethylene etc.
9. Solid Wastes
10. Radioactive waste

Causes for Pollution

The following are the main causes of pollutions:

Human Activity: The main cause of pollution is man himself. His activities, civilization, culture etc, bring about environmental pollution. Hence pollution is said to be a 'necessary evil' in the present age.
Population Explosion: It is stated that population explosion causes pollution because more people produce more sewage, more solid wastes, more fuel being burned, more fertilizers and insecticides being used to produce more food.

Industries: Paper mill, Sugar factories, Soap factories, Cement factories, Chemical factories, Fertilizer factories, Oil plants, Rubber factories, Blast furnaces, Distillaries, Oil refineries, Leather industry etc cause pollution to a greater extent.

Automobiles: Automobiles like road vehicles, trains, aircrafts etc cause air pollution and noise pollution.

Smoke: Smoke arises from industries and hours.

Biocides: Insecticides, pesticides and other biocides cause pollution.

Fertilizers: The Synthetic fertilizers used for the improvement of crops cause pollution.

Sewage: It is the liquid pollutant emerging from houses and industries. The domestic sewage contains urine, faecal matters, kitchen wastes, etc.¹

Types of Pollution

Pollution is classified into the following types.

Air Pollution

Water Pollution
Land Pollution
Noise Pollution and
Thermal Pollution

INDUSTRY WISE POLLUTION
A. Common Industry Wastages

Pollutant

Cadmium, Zinc, Chromium, Polithin pack etc.

Pollution
Water Pollution

Physico-chemical characteristics of the river Vaigai water samples, influenced by sewage avarage like pH value 7.9, Temperature of the water ranges from 28°C to 32°C, Total suspended solids (mg) 0.13 to 2.90, dissolved oxygen (mg/t) ranges from 1.30 to 5.6, biological oxygen demand (mg/t) ranges from 0.52 to 2.87, metals of pH ranges from 0.64 to 2.94, zinc 0.13 to 1.50, Cadmium ranges from 0.18 to 1.101.

Land pollution

Similarly the quality of soil is also affected enormously. That is the alkalinity of the soil is reduced to high level which leads to the low quality of soil.

Affected to Man

Such type of waters cannot be used for drinking purpose. Where the people drink the above type of river water which affect their biological system.
B. Paper Industry

Land application of waste water is a preferred alternative for its disposal since soil is believed to have a capacity for receiving and decomposing wastes and pollutants, where organic materials are stabilized through the activity of micro flora in the soil. Among the major industries in India, pulp and paper is one of those that contribute significantly to water pollution. The quantity of fresh water used in the production of 20 tones of paper is about 8000 m³ per day. Nearly 75% to 95% of fresh water used in the paper and pulp mill was discharged as effluent containing organic and inorganic pollutants and colouring materials. Effluents are used for irrigation in dry land areas after treatment. These effluents not only contain nutrients that enhances the growth of crop plants also have toxic materials effect of paper mill effluent under field situation like Physio-Chemical characteristics, biological properties and enzyme activities.

Physio-Chemical

Tamil Nadu Paper Limited (TNPL) Sludge added plots recorded higher pH values and compared to well water irrigated plots, effluents alone received treatments recorded higher pH value like 8.41, organic matter 0.73 and bulk density 1.33. In addition to that the hardness, electrical conductivity, Total Dissolved Solids (TDS), (COD) Chemical Oxygen Demand, BOD and other toxic materials like cadmium. Lead etc are also varied. When the above parameters vary from their tolerance limit, the quality of water changes.
**Biological Properties of the Soil Rhizosphere**

The available nitrogen, phosphorus and potassium status was higher in the effluent plots than the well water irrigated plots. The available nitrogen content carried from 180.60 to 205.80 and 161.07 to 182.44 kg ha$^{-1}$ in the effluent and well water irrigated soils respectively. The available phosphorus content varied from 10.54 to 15.24 Kg ha$^{-1}$ in effluent irrigated plots and 9.39 to 11.69 Kg ha$^{-1}$ in well water irrigated plots. Thus the effluent is more useful for irrigation than the well water. So, the plants' growth and development are well pronounced.

**Soil Enzyme Activities**

The Soil amylase activity increased in effluent irrigated plots. All the treatments showed significant variations in the main as well as interaction effects. The amylase activity varied from 0.35 to 0.61 and 0.29 to 0.46 mg in the effluent and well water irrigated plots respectively. The activities of invertase was higher in amendment received plots than the unamended plots. The cellulose activity of the effluent irrigated plots varied from 12.04 to 17.25 Mg but it varied from 10.6 mg in well water irrigated plots. The CQ$_2$ evolved showed a variation of 3.44 to 5.16 mg in effluent irrigated plots and 2.63 to 3.58 mg in well water irrigated plots. The fertility of soil is associated with the activity of amylase, inverts and cellulose. When the industrial effluent is combined with microbial-load, the soil fertility has to be enhanced. The mechanism is the soil are involved in various decomposition and chemical transformation in the soil$^{14}$. 


The above paragraph revealed that irrigation with treated effluent increase the rhizospher microflora soil enzyme activities. The above study revealed that pulp and paper mill effluent irrigation to soil was not harmful to the soil microbial population and its activities.

Solution

Hand made paper industry (HMP) is one of the major solution to the above problem of small paper industry pollution. Because hand made paper industry using the low level of chemical substance, but, the raw materials in the Handmade paper industry are waste paper, rags. sunhemp. banana fibre, jute, husk and other waste material. While mill made paper industry using the major raw material is bamboo, wooden scrape, paper pulp etc. Thus the hand made paper industry is one of the alternative industry for pollution control and save the environmental properties (like save tree).

C. Tannery Waste

The wastes from this industry rank among the most polluting of all industrial wastes. It is probably the first industrial waste problem of mankind. Tannery effluent, being voluminous and highly putrefactive in nature, when discharged untraped, damages the ecosystem of the receiving steam. On the basis of process and chemicals used during the tanning operation, sulfides, chlorides, chromium, insecticides, arsenic, high pH, high BOD (Biological Oxygen Demand), suspended and dissolved solids constitute as major pollutants in the effluent. It is interesting to note that the total contribution from tanneries of BOD load on river Ganga at Kanpur is 20% which total volume is only about 1%.
Differing views have been expressed on the effect of chromium bearing tannery effluent and sludges on plant life and soil productivity. Chromium occurs in liquid wastes in two different forms, trivalent and hexavalent. Hexavalent chromium is toxic and know to be a carcinogenic substance. It is responsible for lung cancer, chrome ulcer, perforation of nasal septum and kidney damage. The major pollutant of the tannery effluent is chromium. Plants accumulate large amount of chromium. The translocation of chromium in plants mainly in the form of hexavalent accumulates in the roots. The experimental data explained that hexavalent ions don't have any toxic symptoms, in flowers and crops.

**Land**

There was a marked impact of tanneries effluent and soil properties. That is the soil pH and EC where decreased initially and than increase after some days. There was not much change in fertility of the soil but a small increase in Nitrogen, Phosphorus and Potassium (NPK). The translocation and reduction of chromium (+6) to (+3) favores least accumulation of chromium in plants. This is, the quality of ground water is damaged by pollutant chromium through the process 'leaching'.

**Air**

Gases affect the quality of air in the atmosphere. Physico-chemical analysis of tannery waste. The physical chemical characteristics of tannery waste and studied. The parameters pH, Electrical Conductivity (EC), carbonate, bi-carbonates, sodium, calcium of tannery effluent are studied. Such effluent affect the metapolic process of plant. The Harmful
gases like $\text{SO}_2$ (sulphur-di-oxide) affects the micro nutrients such as zinc, copper and manganese. Thus the yield of crop is affected.

The air pollutants like effluents from tanneries and industries are highly harmful to the human society. So the prevention the pollutants and effluents are more important. The following suggestions are very useful for preventing the above factors to some extent.

In KVI Sector, for tanning the raw hides, natural herbal products and lime are used, This will not create and effluent problem.

**D. Fertilizer Factory**

Fertilizer factories are pollute water, land and air. For example the Damodar river was studied with respect to the effluent discharged from the fertilizer factory at Sindri. The Damodar river runs through the coal belt of Bihar encompassing Sindri, Damodhar is seasonel rainfed river pasing through this industrial belt. Both of them are utilized for generating hydro-electric power. The discharge of effluent from the fertilizer factory into the Damodar river occurs via this sindri nalla and aggrevates the polluted condition already brought about by a load of suspended solids in the form of coal dust and fly ash released in the river from coal washeries, located along its length. The daily discharge of 18,000 $\text{M}^3$ of wastes from the factory includes alkalis, chromated ammonia, cyanide and phenols. Biology oxygen demand level is high due to the chemical released in the effluents level is high. Added to this the high oxygen demand of the pollution resistant species which utilized the available nitrates and phosphates to increase their concentration
considerably. Similarly, the presence in water of reluctance such as ammonia, nitrates readily oxidable substance, increase the oxygen demand and develops an oxygen deficit, producing an anaerobic conditions in which the microbes thrive. Thus, the anaerobic condition, high concentration of Total Suspended Solids (TSS) nitrogenous substances, acidic media, high ammonia concentration presence of poison such as cyanides and phenols have completed wiped out the normal fresh flora and fauna from the part of the Damodhar river under study. In this high pollution zone, only pollution tolerant species are dominant and their in anaerobic conditions with moderate nutriants. 

The chemical fertiliser industries are also important part explaining the quality of soils and drinking waters. In general, the chemical fertiliser industries are located on river belts. The discharged chemical effluents damage the aquatic life, nutrients of waters and other living organisations. Usually, the effluents contain highly positioness substances. Thus, simple and useful way of preventing the chemical effluents from fertiliser industries are the adaptation of bio-fertiliser. Because bio-fertilisers don't degrade the quality of drinking water and also enhance the growth of micro living organism in water.

It is proved beyond doubt that lot of social benefits discussed above are accrued from KVI Sector, but earn meagre net profit which is not worth noted. Thus third and fourth hypothesis and proved.
End Notes


