A Case Study on Green Jobs

Khajurico Nepal (P) Ltd.
Lalitpur, Nepal
I. Introduction:

The Khajurico Nepal (P) Ltd. is a small scale industry, which is located in Chapagaon VDC, Ward No. 7, Lalitpur District. It is involved in production of different bakery products like pastry and cookies. The products are consumed in domestic market. The industry has a workforce of 230 of which 80% are women. It covers land area of about 1.37 ha.

II. Production Process:

The production process mainly comprises of mixing, chilling, moulding, baking and packaging. The industry uses flour (maida), sugar, ghee, oil and others to produce 5 items of pastry and 5 items of cookies. It uses water supplied by Kathmandu Upattyaka Kanepani Limited (KUKL), the source of which is very near to the factory. Apart from electricity, diesel is another major fuel used in the industry.

III. Environmental Issues and pollution control:

The major environmental issues in the company are related with management of organic solid waste, packaging materials and wastewater from cloth washing.

A. Solid waste:

The main solid waste produced by the industry is floor dust of maida and waste ghee. The others are oil plastic jars, ghee tins, carton taps, and packaging materials. It is estimated that some 50 kg floor dust and waste ghee is generated in the company each day. Since the major solid wastes are easily recyclable, the industry collects it in especially provisioned Scrap yard and sells it afterwards. The organic waste is collected and fed into tank to produce biogas.

B. Water consumption:

The industry uses water supplied by KUKL from the nearby source. The water consumption per day is 8,000 lit at present. The water is mostly used in cleaning process, which produces wastewater.

C. Wastewater:

The industry cleans staff dress every after one shift or after 8 hours. It generates wastewater, which contains soap and detergents. It is managed through especially designed soak pit. Similarly, the water is consumed for sanitation purpose, which goes into septic tank to produce biogas.
D. Air pollution:

The industry uses considerable amount of diesel for manufacturing processes. In the process, gasses such as CO$_2$, NO$_x$ and SO$_2$ are emitted, in order to reduce air pollution industry installed 6 natural Air fans, which do not require energy for their operation.

IV. Environmental Management:

Khajurico Nepal participated in an Environmental Management System (EMS) programme implemented by Environment Sector Programme Support (ESPS) Project. At present, it has been carrying out several activities to improve its environmental performance. It has been implementing 5S programme with support from Asian Productivity Organisation (APO) to improve housekeeping for its continual improvement. The quality circles are formed and meetings are conducted on regular basis to maintain this programme.

It has been successfully operating biogas plant to produce energy, which also manages organic waste of the company. The company constructed soak pit to manage wastewater and incinerator to burn dirt wastes. It also erected chimneys to manage indoor air pollution and installed 6 natural roof exhaust fans. Considering fire safety, the diesel storage tank is constructed separately from main factory building. The industry has been maintaining greenery and garden for environmental conservation.

V. Best Practices

The following can be considered best practices on green jobs in the industry.

A. Biogas Plant: The industry installed this Plant to produce gas by using human excreta and organic waste. There are three toilets provisioned for the employees. The human excreta from these toilets is discharged into the tank where organic waste like flour/maida dust, sugar dust, floor sweeping dust, damaged bakery products etc. is mixed with them. In an average, some 180 employees working in two shifts (8:00-16:00 and 16:00-12:00) use these toilets everyday and some 40 kg organic waste is disposed in the tank each day. These wastes produce a cylinder of Gas (about 14.2 kg.) in two days, which is used for melting ghee. This practice not only manages night soil and organic waste but also produces energy which in turn saves about NRs. 700 per day.
B. **Solid Waste Management:** The Khajurico Nepal segregates wastes at source and provides for off-site recycling. It sells ghee tin boxes (about 100 per day) for roofing in hilly areas; plastic jars of soya-bean oil to milk collectors; waste plastic to plastic recycling industry for production of pipes and cartoon wastage for recycle/reuse. It also constructed an incinerator, where remaining waste (like cartoon tape, ghee plastic wrapper, dirt cartoon with ghee residue and carbon dust) are burnt which cannot be used in Biogas or sold to scarp dealers.

C. **Air Fan:** The industry installed 6 Air Exhaust Fans in the main factory building, which operates without consuming energy. This natural system of exhaust fan saves about considerable amount of energy in the industry.

D. **System Implementation:** The industry started development of Environment Management System (EMS) and successfully applying 5S principles to manage industrial activities. It trained all the employees on these principles and uses it for continual improvement of working environment. It prepared several posters on 5S principles and put in the wall.

E. **Emergency Preparedness Plan:** The industry uses flammable materials like diesel, ghee, oil and other packaging materials. It has provisioned separate house to store diesel underground, which is about 20,000 lit. capacity. It has provisioned emergency bell and placed 15 Fire Extinguishers in different places. The industry also trained staff on use of Fire Safety and other safety measures.