7 A Conceptual Study on 'Green Management' in Food Processing Industry

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ABSTRACT

The word 'Green' generally is referred to healthy and a clean atmosphere. 'Green' blends into the other topics of sustainability, pollution control, and conservation. The concept of being or going 'Green' is given due importance in all the business firms as it is considered imperative to a healthy society. Many countries aim at achieving a green economy which is defined as a sustainable economy and society with zero carbon emissions as there is a threat of global warming. A green economy rigorously applies the triple bottom line of people, planet and profits across all corporations at the microeconomic level and throughout entire economy at macroeconomic level.

This paper attempts to study the concept of 'Green' applied in the food processing industry. Food Processing is a branch of food science. The United States Federal Food, Drug and Cosmetic Act, Section 201, Chapter II, defines processed food as "any food other than a raw agricultural commodity and includes any raw agricultural commodity that has been subject to processing, such as canning, cooking, freezing, dehydration, or milling."

Food processing is the method and technique used to transform raw ingredients into food for human consumption. The green growth model recognizes the steps to protect and conserve environmental resources, which can be a driver for national and global economic progress.

Keywords: Green growth, Food Processing Industry, Environmental Resources, Recycling.

1. INTRODUCTION

Food processing is the method and technique used to transform raw ingredients into food for human consumption. Food processing takes clean, harvested or slaughtered and butchered components and uses them to produce marketable food products. Waste materials generated from food processing and food service facilities can present difficult treatment problems since they contain large amounts of carbohydrates, proteins, fats and mineral salts. For example, the waste from dairy plants, food freezing and dehydration plants, and processing plants for red meat, poultry, and seafood can produce distinct odors and heavy pollution of water if the discharge is not treated properly. Organic matter of these wastes must be treated by biological stabilization before discharge into the body of water. In processing, water is an essential tool to help cleanse the product and serve as a cleaning medium to carry unwanted materials to sewage system. Processing of food leads to preservation of food, enhances its flavor and reduces the toxins in the food product. It leads to better distributional efficiency and eases marketing of the food products. Reduction, recycling and efficient processing of wastes forms the core of waste reduction management in food processing industry.

Food processing is a capital intensive, water consuming and moderate to highly polluting industry. Food industry wastages in terms of raw materials, water and energy consumption can be minimized and a major source of environmental pollution can be avoided. The green growth strategy recognizes that steps to protect and conserve environmental resources that can be a driver for national and global economic progress. The food industry is facing increasing pressure to ensure that their activities are environmentally sensitive and has special concerns about health and safety of the consumer.

2. ISSUES OF THE STUDY

a) To understand the importance of Green management.

b) To understand the concept of 'Green management' applied in the food processing industry.

c) To study the measures adopted to achieve food safety standards and quality in the food processing industry.

2.1 IMPORTANCE OF GREEN MANAGEMENT

Green Management is a new concept in the field of management; it employs a value based assessment methodology to understand how "green" values are internalized. Green management measures such as certified Environmental Management Systems (EMS) or tools like life cycle assessment activities are considered to improve corporate environmental performance directly by mandating companies to introduce environmental goals and management structures as well as programs to achieve them.

A recent United Nations Environmental Program, UNEP (2011 report) on green economy defined as one that "improves human well-being and social equity, while significantly reducing environmental risks and ecological scarcities":

The report makes two key findings: "that greening not only generates increases in wealth, in particular a gain in ecological commons or natural capital, but also (over a period of six years) produces a higher rate of GDP growth"; that there is "an inextricable link between poverty eradication and better maintenance and conservation of the ecological commons, arising from the benefit flows from natural capital that are received directly by the poor". At the global level environmental impact of agribusiness is addressed through sustainable agriculture and organic farming. At local level there are various movements working towards local food production, more productive use of urban wastelands and domestic gardens. Green management also refers to sustained and successful adaption to climate change at a local, regional and global level.

Green management relates to adoption of clean technologies that lay focus on source reduction, recycling, reuse, and treatment of wastewater. Clean technologies are defined as "manufacturing processes or product technologies that reduce pollution or waste, energy use, or material use in comparison to the technologies that they replace." The food-processing industry has special concerns about the health and safety of the consumer. A green economy will maximize value and growth across the whole economy, while managing natural assets sustainably.

Green growth has the following features:-

i) Coherent domestic, trade and multilateral policies working to provide the right signals for input suppliers, producers, processors, retailers, food service, and consumers in the food supply chain that can contribute to realizing the economic growth, social equity and environmental performance potential.

ii) Recognition that there is not necessarily a conflict between growth and environment if government policies provide appropriate incentives that align economic, environmental and social goals. Economic growth in the food and agriculture sector depends on the sustainable management of natural resources (water, air, soil, fish stocks, and biodiversity) and ecosystem.

iii) Placing a higher priority on innovation. That is an essential element of improving sector performance.

iv) An understanding that how growth occurs (production methods) is at least as important as how much growth takes place.

These measures may be helpful in the transition towards green growth. The implications of green growth for agriculture and food system in the longer-term should be mutually reinforcing in terms of environmental sustainability economic growth and social well-being. Green Economy development will help improve ecosystem health and sustain its functionality. Green Economy is a new development path that is based on sustainability and ecological economics.

- Placing a value on ecosystem services through mechanisms that facilitate investment in ecosystems will at the same time benefit local people and private sector who are rewarded for good environmental stewardship.
- Developing a Green Economy within ecosystem capacity, can be planned by better understanding of the science of ecosystems.

Green growth is the pursuit of economic growth and development while preventing environmental degradation, biodiversity loss and unsustainable natural resource use. There is considerable interest in understanding contribution of the global food system to green growth, and role of policies in moving towards a greener growth model. In OECD (Organization for Economic Co-operation and Development) meet in 2010, 'Green growth' was identified as one of the priorities by Agriculture Ministers.

According to Green Growth Strategy, it offers opportunities to contribute for sustainable economic, social and environmental development. Agriculture has an important role to play in the process, as do open markets that facilitate the sharing of technologies and innovations supportive of green growth. In this context; it needs to be taken care to avoid all forms of protectionism. Climate change presents challenges and opportunities for the agricultural sector in reducing greenhouse gas emissions and the need for adaptation.

2.2 GREEN MANAGEMENT IN FOOD PROCESSING INDUSTRY

Food processing involves value addition to agricultural or horticultural produce and also includes processes such as grading, sorting, and packaging which enhance shelf life of food products. Green management applied in the food processing industry include improving the resource efficiency of production and reducing waste along the food supply chain, managing scarce natural resources – especially land, water, fish stocks, and biodiversity in a sustainable manner, reducing the carbon intensity of production throughout the food supply chain and avoiding harmful environmental impacts, while enhancing the provision of ecosystem services that provide critical life-support functions such as biodiversity, flood and drought control.

The American Public Health Association (APHA) defines a sustainable food system as "one that provides healthy food to meet current food needs while maintaining healthy ecosystems that can also provide food for generations to come with minimal negative impact to the environment". A sustainable food system also encourages local production and distribution infrastructures and makes nutritious food available, accessible, and affordable to all, thus protecting farmers, other workers, consumers, and communities. Concerns about the environmental impacts of agribusiness , obesity problems of the Western world, poverty and food insecurity of the developing world have generated a strong movement towards healthy, sustainable eating as a major component of overall ethical consumerism. The environmental effects of different dietary patterns depend on many factors, including the proportion of animal and plant foods consumed and the method of food production.

Waste materials generated from food processing and food service facilities can present difficult

treatment problems since they contain large amounts of carbohydrates, proteins, fats and mineral salts. For example, the waste from dairy plants, food freezing and dehydration plants, and processing plants for red meat, poultry, and seafood can produce distinct odors and heavy pollution of water if the discharge is not properly treated. Organic matter of these wastes must be treated by biological stabilization before discharge into a body of water. A hazard to humans and aquatic forms of life results from improper waste disposal.

The food processing factories should follow the major technological innovations in the industry, including those in clean technologies and processes. Clean technologies include:

a) Advanced Wastewater Treatment Practices.

b) Improved Packaging.

c) Improved Sensors and Process Control.

d) Food Irradiation.

e) Water and Wastewater Reduction

Ikerd (1993) defined sustainable agriculture as capable of maintaining its productivity and usefulness to society indefinitely. Such an agriculture must use farming systems that conserve resources, protect the environment, produce efficiently, compete commercially and enhance the quality of life for farmers and society.

Reduction, recycling and efficient processing of wastes forms the core of waste reduction management in food processing industry. To achieve this overall objective, the food processing plants have to take recourse to the following general principles:

1. Use raw materials of good quality;
2. Minimize wastage during handling, preparation and processing of raw materials and packaging of processed foods;
3. Use appropriate technology and process equipment to minimize energy consumption;
4. Minimize the wastage of water by reasonable care during preparation and processing without sacrificing quality;
5. Use recyclable or biodegradable packaging material as far as possible;
6. Recycle raw material and process waste as far as possible;
7. Use appropriate technology to process the non-recyclable wastes preferably into usable inputs, products or energy.

There are two types of Effluent Treatment Plants (ETP's), in the food industry- those working on aerobic conditions (i.e. in the presence of oxygen) and those working under anaerobic conditions (i.e. in the absence of oxygen). Food processing is a capital intensive, high energy & water consuming and moderate to highly polluting industry. However, fact remains that food industry wastages in terms of raw materials, water and energy consumption can be minimized and a major source of environmental pollution can be avoided. In the food processing industry waste is very often created in the production process, and is often disposed off in a landfill site. Using biogas technology it is possible to utilize the energy contained in this waste to produce green energy which can be sold or utilized.

2.3 MEASURES ADOPTED TO ACHIEVE FOOD SAFETY STANDARDS AND QUALITY IN THE FOOD PROCESSING INDUSTRY.

In August 2006, Government of India had passed a new legislation Food Safety and Standards Act. The Act proposes establishment of a new authority, the Food Safety and Standards Authority, re-organization of scientific support pertaining to the food chain through the establishment of an independent risk assessment body.

New concept such as Good Agricultural Practices (GAP) have evolved in recent years to become international standards in the context of a rapidly changing and globalizing food economy and as a result of the concerns and commitments of a wide range of stakeholders about food production, food security, food safety quality and the environmental sustainability of agriculture. GAP applies available knowledge to address environmental, economic and social sustainability for on-farm production

and post-production processes resulting in safe and healthy food products.

ISO 22000 establishes a global standard for safe food supply chains from feed producers and farmers to processors, retail food outlets and restaurants. The goal is to harmonize the many national and private standards in existence and incorporate the management systems approach of ISO 9001, tailored to food safety management. ISO 22000 incorporates the principles of Hazard Analysis and Critical Control Points (HACCP) and can be applied to any company in the food chain—from field to store.

HACCP

HACCP is a food safety management system that relies on process controls to minimize food-safety risks in the food-processing industry. It provides a structure for assessing risks and putting controls in place to minimize those risks relying on extensive verification and documentation to ensure that food safety has not been compromised at any step of an operation. This provides basic industry-accepted food quality and safety standards.

The policies of the Government with regard to achieve green management in food processing industry includes encouragement and enhancement of biological cycles within the farming system involving micro-organisms soil, flora and fauna, plants and animals. Renewable farm resources are those which can be re-used on the farm. Integration of animal husbandry with the farm providing proper living conditions to livestock. The most effective approach for food waste management is source minimization and by product recovery.

3. CONCLUSION

Organizations are making conscious efforts to use chemicals responsibly. Taking the lead, many in food processing industry have adopted the National Organic Program standards and are also implementing Green Pest Management (GPM), which is a relatively new concept in India. The industry, over the last two decades, has moved towards practicing integrated pest management (IPM), which is at the heart of "green" practices. Consumers are becoming more conscious of corporate social responsibility when choosing goods and services. Using biogas technology to deal with waste is beneficial to society and can help to promote the company by improving 'green image'.

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