

Sustainable Food Waste Prevention Strategies to Achieve Food Security in India

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Abstract

The need to address food security has never been greater and is moving up national agendas around the world. Achieving food security won't be easy considering the megatrends of growing population, greater affluence, and increasing urbanization. The global population is forecast to grow from the current 7 billion to 9 billion by 2050, creating the need for an increased food production of 70%. Recent investments in agricultural technology and advanced genetics have been making only a modest dent in meeting our global food demands.

Food is one of the most important drivers of environmental pressures, particularly in terms of water, land and resource use, greenhouse gas emissions (GHGs), pollution, and subsequent climate and habitat change. In terms of economic impacts, food waste represents high waste management costs and money wasted. Wasting food also raises social questions, particularly given the current global financial crisis, rising food prices and international food shortages. That's where waste prevention issue emerges. Even cutting waste in half would be a huge step toward global food security and a boon for the environment.

Food waste source prevention strategy focuses on preventing food waste before it is created.

Annakshetra is a unique initiative by Centre for Development Communication (CDC), Jaipur that connects the luxuries of the privileged ones with the sustenance issues of the other by collecting the surplus food left in the celebration gatherings like wedding / family occasion / festivities, then testing its edibility and feeding it to the underprivileged section of the society. The Annakshetra model based on 3Rs of waste prevention has been successful in minimizing food

waste on one hand and feeding the needy on the other. The paper describes strategies and best practices of this model to implement sustainable food service, addresses the need to move towards Zero waste economy to ensure poverty eradication, food security and sustainable cities.

Keywords: Food waste, sustainable city, waste prevention, Food security, India.

1. Introduction

For human populations, sustainability means transforming the ways of living to maximize the chances that environmental and social conditions will indefinitely support human security, wellbeing, and health. In particular, the flow of non-substitutable goods and services from ecosystems must be sustained. Much early discussion about sustainability has focused on readily measurable intermediate outcomes such as increased economic performance, greater energy efficiency, better urban design, improved transport systems, better conservation of recreational amenities, and so on. These are the true ends of sustainability— and there has been some recognition that their attainment, and their sharing, will be optimized by reducing the rich-poor divide. Our soil, water, native vegetation and oceans need to be sustainably managed so we can continue to produce food, improve our productivity and protect our environment.

India remains an important global agricultural player; despite the fact that agriculture's share in the country's economy is declining. It has the world's largest area under cultivation for wheat, rice, and cotton, and is the world's largest producer of milk, pulses, and spices (World Bank 2012). While India has seen impressive economic growth in recent years, the country still struggles with widespread poverty and hunger. India is home to 25 percent of the world's hungry population. An estimated 43 per cent of children under the age of five years are malnourished (WFP 2012).

Food security refers to the availability of food and one's access to it. The World Health Organization defines three facets of food security: food availability, food access, and food use. India faces a threefold challenge to achieve food security; to match the rapidly changing demand for food from a larger and more affluent population to its supply; do so in ways that are environmentally and socially sustainable; and ensure that the poorest people are no longer hungry. This challenge requires changes in the way food is produced, stored, processed, distributed, and accessed. Increase in production will have an important part to play, but they will be considered as never before by the finite resources provided by Earth's land, oceans and atmosphere. Prevention of postharvest loss is increasingly cited as a means to effectively contribute to available food supplies. The 2013 *Advancing Food Security* report of the Chicago Council on Global Affairs specifies an action recommendation to

“halve postharvest losses by 2023”. It notes that **“without adequate infrastructure to store and transport crops, enormous amounts of food are lost on the way from farms to consumers’ tables”**.

It's estimated that, on average, 30 to 50 percent of the world's food is never consumed. Food losses arising at the retail, food services (pre- consumer) and post-consumer stages of the food chain have grown dramatically in recent years, for a variety of reasons. Different strategies are required to tackle the two types of waste. Food loss and waste also amount to a major squandering of resources, including water, land, energy, labour and capital and needlessly produce greenhouse gas emissions, contributing to global warming and climate change.

With the growing economy, lifestyle changes are seen where rich people throw lavish parties where the quantity of food cooked is over estimated on most occasions and the left over or surplus food goes to the waste-bins in large quantities. A huge amount of food waste usually takes place at Weddings, Religious feasts, *Parsadi*, *Paus Bara*, and various social gatherings. At **Bangalore**, annually 943 tonnes of food wasted during weddings is enough to serve 2.6 crore people a normal meal and at an average cost of 40/- per meal the food worth Rs 339 crore is wasted. Wastage is more with buffet (22%) than served meals (20%). In **Bhubaneswar** food waste contributes to 26.63% of the city waste which is directly thrown into the bins. In **Jaipur** 835 tonnes of food is wasted every day out of the approximately 7500

tonnes food purchased every day. Most of the food waste occurs at catering services and in marriages because of the left over food in plates, this accounts to 30%, followed by hotels and wholesalers about 17%, hospitals about 15%, households about 13% and the minimum wastage is at Community centers of about 10%. In terms of money, food thrown away in Jaipur city costs about Rs. 6.2 million per day.

About 40,000 marriages take place in Jaipur every year and the wastage in such events accounts to more than 25-30%; which is enough to serve another 5000 marriage parties⁵. All this food goes waste when there is no channel to distribute it to the needy. The caterer needs to vacate the Party place overnight and therefore; much of the surplus food is thrown away in the bins.

A 50% reduction of food losses & waste at the global level would save 1,350 km³ of water (Lundqvist, J., 2012.). Billions of dollars are currently invested in genetic modification, advanced agricultural chemicals and farm machinery. However, there is no comparable investment in reducing food waste. We need to address our global resource challenges from a balanced perspective that includes bolstering efforts to improve the supply of resources, but it must also mean better management of our resource demands, especially in reducing waste and improving efficiency.

Annakshetra is a unique initiative by Centre for Development Communication (CDC), Jaipur that aims to minimize food wastage by effectively rescuing the excess food from weddings, parties, restaurants and temples. It is aimed at filling the gaps in existing society by delivering the spare food collected from donors to the needy people of local community. The program strives to implement sustainable food service,

addresses the need to move towards Zero waste economy and works to ensure poverty eradication, food security and sustainable environment.

Annakshetra's vision is to position India as a zero food wastage economy by mobilizing social change and redeploying food resources in an efficient manner. Pioneering efforts like Annakshetra demonstrate enormous opportunities to reduce food waste — and enhance food security, food safety, environmental sustainability and economic competitiveness worldwide. It would make sense for venture capitalists to match the investment currently made in agricultural biotechnology with parallel investments in reducing food waste. Given the enormous food security, health, environmental and business benefits at stake, Annakshetra Foundation is probably the first Indian project for effective utilization of excess leftovers from weddings, parties, restaurants and temples (ISWA in its paper 'Food waste Global issue').

Annakshetra activities focus on following Millennium development Goals-

- a. Eradicating extreme poverty and hunger- Target 1C: Halve, between 1990 and 2015, the proportion of people who suffer from hunger.
- b. Ensuring environmental sustainability- Target 7D: To have achieved a significant improvement in the lives of at least 100 million slum-dwellers.

Annakshetra makes use of the 3R model to minimise food waste at post- consumer level.

Reduce

Annakshetra runs awareness campaigns to prevent food wastage. If food is effectively reduced at the first stage then not only is the food saved for a large part of the population but also harmful effects on the environment are prevented. Source reduction means buying less quantities of any kind of processed or unprocessed food products that may end up into garbage.

Reuse

Reuse is Annakshetra's recovery program. It collects the leftover food from sources and distributes among the hungry and poor. Thus value is obtained from discarded food of immense importance which would otherwise have been wasted. Also through Annakshetra people are motivated to use small portions to reduce post-consumer waste also called "plate waste" or "table scraps". Consumers are encouraged to donate themselves if the leftover food is small in quantity.

Recycle/Compost

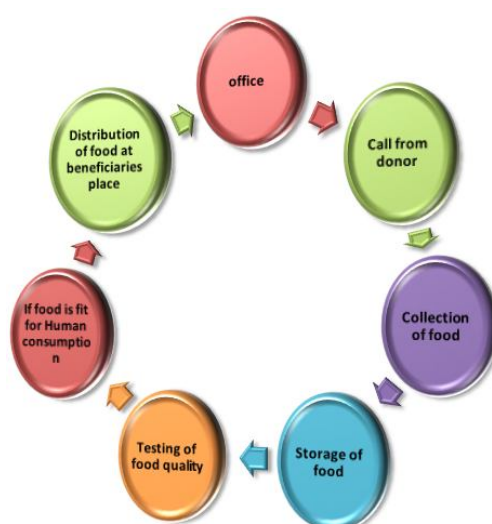
If the tested food is not suitable for human consumption, it is sent for composting. By recycling, Annakshetra ensures that the bio-waste does not land into landfill sites thus preventing environmental damage and improving agricultural output by improving soil. It is ensured that the pre-consumer waste provided by donors is not ultimately wasted but is recycled.

Annakshetra focuses at the first two stages of waste control i.e. source reduction and utilizing the pre-consumer waste to feed the hungry and poor. Effective waste control measures at the first two stages results in competent utilization of waste.

2. The Process:

Annakshetra has a 24 hour helpline number, circulated among party places, caterers and people of Jaipur, through newspapers, posters, banners and pamphlets. An android based App has also been prepared for smart phones to reach Annakshetra.

People call on this helpline to donate the high quality surplus food as soon as the party is over. The Annakshetra van reaches the venue and food is collected in reusable containers. Food is brought to Annakshetra office where it is stored in deep freezer. Next day morning after checking the quality of food, it is taken to the beneficiary site (Muhana agriculture produce market) where it is fed to workers and their families.



- If the food is not fit for Human Consumption, then it is sent for Anaerobic digestion/ composting.

3. Conclusion

Rising food prices or the prevalent food inflation in India can be effectively evaded by good food waste management practices. If consumers have a fair idea or keep a track of what percentage of food purchased gets discarded as pre-consumer waste, costs can be saved on various fronts like labour, disposal and goods purchased. By increasing individual savings, food waste prevention contributes towards India's GDP. If the resulting bio-waste is not thrown away into landfills but is rather reused and recycled, green house gases like methane which is more harmful than CO₂, can be debarred from deteriorating the environment. Also waste reduction would imply using less of

fuels for refrigeration, transportation purposes thus preserving the environment. In the process of reducing waste, the society awakens about the sensitive and unrealized issue of food wastage. In return the community i.e. farmers, food industry, guests, consumers, government, policymakers etc., gets engaged and contributes thus making a positive move towards Food security in India.

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