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Food Loss And Waste In India: Issues And Challenges

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Abstract:
Despite living in a digital age where the potential economic value could reach $9 trillion over the next decade, the world continues to grapple with a significant issue: More the one billion ton of food are lost or wasted each year. Embracing digitization as a primary driver of economic policies has already shown its intense effect on countries. Astonishingly, an estimated one-third of all food produced globally for human consumption goes to waste, amounting to $1 trillion in value (FAO). This wasted food could provide daily sustenance for 800 million starving people, with India accounting for over 200 million of those vulnerable individuals despite producing sufficient food for its 1.4 plus billion populations. Addressing food loss and wastage is a critical global concern, not only to combat poverty and hunger in less fortunate nations but also to reduce the environmental impact of the agricultural sector. This paper focuses on examining the issue of food wastage in India, especially at a time when the country is embracing robust digital schemes. It highlights the urgent necessity for enhancing pre and post-harvest infrastructures. The importance of addressing food lost and wastage is also underscored by the Sustainable Development Goals, with SDG12's third target aiming to have per capita global food waste at retail and consumer levels, as well as reducing food losses throughout production and supply chains, including post-harvest losses. Farmers in India, majority being poverty stricken, cannot hold back sale of their products for long in absence of modern technologies for storage. To effectively tackle this challenge, it is crucial to invest in cold chain facilities, which play a pivotal role in preserving food and alleviating hunger. This requires collaborative efforts between the government and industry bodies to adopt better and more efficient technologies.

Keywords: *Food waste, SDG, FAO, Cold Storage, Post-harvest technologies.*

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I. Introduction

Many physical and chemical changes take place in foods from the time of their harvest, transportation, sales, and preparation, stored or consumed. It is essential that the foods or the products be stored or transported in ideal conditions to preserve the quality and avoid spoilage. Today, many technologies have been developed to preserve the commodities and to stretch their availabilities in terms of time and distance. When the food productions do not match with the population growth in the country, it results in hunger, starvation, etc. India is always facing problems like this and majority of its masses suffer from various nutritional deficiency diseases. India, with its geographical feature and varied agro climate condition inhabited by people of multicultural society has very rich resource of plants and vegetables. The agro horticulture production is good but due to poor storage facilities, high percentage of fruits and vegetables are wasted annually due to lack of processing or preserving facilities. Another challenge is also intertwined with the changes in lifestyle and urbanisation.

II. The Issues

Over one billion tons of food are lost or wasted every year (UNEP, the UN Environment Programme). Financial costs of food wastage are substantial and amount to about USD 1 trillion each year.[i] Food wastes also cause serious environmental impacts. The Food and Agriculture Organization (FAO) released a study on 'Global Food Losses and Food Waste'. [ii]FAO stated that "in developing countries 40% of losses occur at post-harvest and processing levels while in industrialised countries more than 40% of losses happen at retail and consumer levels." This FAO study also provided data illustrating the nature of food loss and waste at global scale, with the per capita food loss in Europe and North-America being 280-300 kg annually. Sub-Saharan Africa, South and Southeast Asia recorded 120-170 annually. Total per capita produce of edible food parts for human consumption is, approximate of 900kg annually in Europe and North-America and 460 kg in sub-Saharan Africa and South and Southeast Asia. Per capita food waste by consumers in Europe and North America is recorded at 95-115 annually, sub-Saharan Africa and South and Southeast Asia showed 6-11 annually. Studies of Food wastes at consumer level in industrialised countries showed 222 million tons, which is almost as high as the total net food production in sub-Saharan Africa showing 230 million tons. These records of food waste in the North and in the South, if we take as averages and if mapped to populations and their habits

of food wasting, then, Bangladesh in 2011 had a total wastage of 1.275 million tons! This amount is to be highlighted in perspective. This food loss and waste, according to FAO[iii], referred to the reduction of food in all stages of food production and supply chain, which is planned for human consumption. Food is thus lost or wasted all along the supply chain, from harvest, initial production, storage, till final household consumption. This reduction, whether accidental, or intentional, but ultimately leads to decreased food intended for all. These are due to problems in harvesting, storage at farm level, packing, transport, infrastructure at storage or market, and also due to improper institutional and legal frameworks.

It is quite interesting to note that despite living in a digital age which represents $19 trillion in potential economic value over the next decade; more than one billion tons of food are lost and/or wasted every year. We're already seeing the profound impact that digitization can have on countries that embrace it as a core driver of their economic strategies. With the global population exceeding seven billion people in 2011, and predicted to reach 9.3 billion by 2050, the projected food demand may increase by 50-70%. With this as backdrop, we have 868 million people as chronically under-nourished, equating to one in eight people worldwide. Thus, reducing food waste will play a significant role in increasing the availability of food. The challenge lies in fulfilling the rising demands for consumption through environmental, economic and socially sustainable approach that will provide safe and healthy food for everyone. Aside from the cost implications, all the land, water, fertilizers and labour needed to grow that food is wasted, not to mention the generation of greenhouse gas emissions produced by food decomposing on landfill and the transport of food that is ultimately thrown away. To bring about the vision of a truly sustainable world, we need a transformation in the way we produce and consume our natural resources (UNEP Executive Director Achim Steiner, 2013).The backgrounds of food waste are not the same between developed and developing countries, with the bulk of losses in developing countries being at the initial, post-harvest and processing stage, while in developed countries, major losses occur at the sales and consumption phase. We need to gather area specific researches, study, discuss and frame policies required to reduce the food wastages.

III. The Challenges

The paper attempts to discuss the wastage of agricultural losses and food waste in India in such a time when the country is embracing robust digital schemes. The paper highlights the tremendous need for development of pre and post-harvest infrastructural facilities. The Sustainable Development Goal has put the spotlight on food loss and waste. Target 3 of the Sustainable Development Goal (SDG) 12 is to "halve per capita global food waste at the retail and consumer level, and reduce food losses along production and supply chains including post-harvest losses". [iv]Calculated food loss is $1 trillion globally (Food and Agriculture Organisation), enough to feed the hungry 800 million who sleep hungry every night. Out of this 800, over 200 million live in India, a country, ironically, that grows sufficient food to feed its burgeoning population of 1.4 billion.

India's Experience: India is transforming into a technology powerhouse and setting the stage for a digital future. However, food wastage is a shocking issue in India. The Central Institute of Post-Harvest Engineering and Technology (CIPHET), Ludhiana, estimated the annual value of pre and post-harvest loss of major agricultural produce at national level to be of the order of Rs. 92,651 crore, calculated using production data of 2012-13 at 2014 wholesale prices.[v] An approximate of 40% of the food produced gets wasted by the time it reaches our plate. Ankit Kawatra, Founder – Feeding India, describes the journey of one grain of rice. He stated that, out of every 10 grains of rice, 6 grains never reach a home. They are lost during poor transportation, improper storage and other steps in the supply chain process. In India, the post-harvest losses are calculated as approximately one lakh crore rupees, amounting to almost 10% of the budget 2017-18 allocation to the agriculture sector! A defective supply chain is a major reason.[vi] Prime Minister Narendra Modi even talks about food wastage in his 'Mann Ki Baat' says it is injustice to poor "The one issue that has bugged me is food wastage. People take lots of food in their plates, more than they can eat and then throw it away. This is injustice to the poor people. Take what you can eat. This is a step to a change" he alerted.

India has the record of world's second largest producer of fruits and vegetables, but losses fresh produce worth Rs 13,300 crore annually due to lack of adequate cold storage facilities and refrigerated transport.[vii] "The value of fruits, vegetables and grains wastage in India, is pegged at Rs 44,000 crore annually. "Fruits and vegetables account for the largest portion of that wastage. Eighteen per cent of India's fruit and vegetable production valued at Rs 13,300 crore is wasted annually," (report: Emerson Climate Technologies India). The report pointed two of the biggest contributors of food loss to be due to lack of refrigerated transport, lack of good cold storage facilities for food industries and food sellers. Without construction of proper cold chain infrastructure, from farm to table, the food problems in India, which is the world's second largest producer of fruits and vegetables, will remain vast and are likely to grow, warned the report.

India currently has 6,300 cold storage facilities unevenly spread across the country, with an installed capacity of 30.11 million tonnes. While cold storage capacity for all food products in the country should be more than 61 million metric tonnes. In order to reach this target, an investment of more than Rs 55,000 crore is needed by 2015—2016 just to keep up with growing fruit and vegetable production levels. Food waste is, thus, a major challenge for the Country. What can we do to reduce it? Can digitalization contribute to reducing food waste? In a study by Katrin Molin Besch, Department of Design Sciences, Lund University,[viii] it is found that packaging is also an important means of counteracting food waste. The primary task of packaging is to protect and preserve food. The packaging plays the protective function so that the food stays fresh longer, and result in reducing food waste. But identification is needed on which food products will profit environmentally from packaging and which will not. Many believes that digitalization will play a major role in the food industry of the future, where consumers place increasingly higher demands on products and the information that accompanies them, such as traceability, if it is locally produced or organic.

As the two contributors to food losses in India are the lack of refrigerated transport system and lack of good quality cold storage facilities, without improvements in this "cold chain" systems, from the farm to the table, India's food loss and waste problems will remain vast and are likely to grow.[ix] So India is suffering substantial price inflation. As this gap between supply and demand of cold storage facilities for the world's second largest fruit and vegetables producer is huge, this shortage is affecting the country's capability to prevent food waste. Even though a prominent producer of agricultural and horticultural crops, however, the extent of wastage of perishable products has been tremendously high due to lack of pre and post-harvest cold storage infrastructures. To reduce wastage, increase shelf-life, manufacture value added products and generate employment, cold chain infrastructure should be identified as a thrust area in the region.

IV. Conclusions And Policy Implications

While India is embracing robust digital strategies, it is now the only major developing economy without a clear plan to resolve Food Waste. With the present food shortage, food security and safety are issues taking on growing prominence. The paper argues for urgent need for finding solutions to Food Waste in this Digital Age. It has acquired urgency, as the trade and commerce with neighbouring countries, East and South-East Asian countries have improved and bright prospects are waiting for the entire country. The Sustainable Development Goals of the United Nation have also clearly put the spotlight on food loss and waste. Target 3 for the SDG 12 is to "halve per capita global food waste at the retail and consumer level, and reduce food losses along production and supply chains including post-harvest losses". This challenge of tackling food waste needs to take into consideration the whole supply chain; from production, transport, processing, and retail to consumption. Researches are also needed to be undertaken for patterns of consumer behaviour and choice. Considering the current levels of food loss and wastes, cold chain facilities will play big role in feeding India's hungry masses. In order to develop good cold chain infrastructures, the government and industry bodies need to join hands to adopt better and more efficient technologies.

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