

Chapter 8

Food Waste Reduction Towards Food Sector Sustainability

Giovanni Lagioia

University of Bari Aldo Moro, Italy

Vera Amicarelli

University of Bari Aldo Moro, Italy

Teodoro Gallucci

University of Bari Aldo Moro, Italy

Christian Bux

University of Bari Aldo Moro, Italy

ABSTRACT

FAO estimates on average more than 1.3 billion tons of food loss and waste (FLW) along the whole food supply chain (equivalent to one-third of total food production) of which more than 670 million tons in developed countries and approximately 630 million tons in developing ones, showing wide differences between countries. In particular, EU data estimates an amount of more than 85 million tons of FLW, equal to approximately 20% of total food production. This research presents two main goals. First, to review the magnitude of FLW at a global and European level and its environmental, social and economic implications. Second, use Material Flow Analysis (MFA) to support and improve FLW management and its application in an Italian potato industry case study. According to the case study presented, MFA has demonstrated the advantages of tracking input and output to prevent FLW and how they provide economic, social, and environmental opportunities.

INTRODUCTION

Since each human being needs energy and chemical products to maintain his vital signs and produce cells, skin, and bones, food plays a fundamental role in human life becoming an essential commodity for human feeding (Nebbia, 1995). However, since a huge percentage of food is wasted daily, a critical question comes to mind: is food available for all people on Earth?

According to Food and Agriculture Organization of the United Nations [FAO] (2018), nowadays the world population amounts to approximately over 7.5 billion people, divided between rural (45%) and urban (55%) population. Moreover, a huge percentage is employed in agriculture, even with a sharp decrease between 1995 (more than 40%) and 2016 (under 27%).

Worldwide, the food production value exceeds \$2.3 trillion with no homogeneous distribution (Table 1). More than 10% of the global population is undernourished because of severe food insecurity. Moreover, more than 22% of children under five suffer from stunting and more than 7% from wasting. Lastly, safely managed drinking water is used by approximately 70% of population. Thus, more than 30% people cannot access drinking water (FAO, 2018; FAO, International Fund for Agricultural Development [IFAD], United Nations International Children's Emergency Fund [UNICEF], World Food Programme [WFP], & World Health Organization [WHO], 2018).

Food insecurity presents different insecurity degrees. According to its meaning, the first indicator is uncertainty about obtaining food, followed by food quality and quantity reduction and meal skipping. In this phase of moderate food insecurity, people cannot afford a healthy diet because of insufficient money or resources. However, severe food insecurity means no food for one day or more (FAO, 2018).

These indicators focus the attention on food security and require several national and international policies to be adopted. According to the 1996 World Food Summit, food security represents a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. In order to better understand this problem, some definitions should be taken into account. Hunger represents a physical discomfort caused by lack of food and can be measured at the individual level. Underweight means individual anthropometric variables and regards two standard deviations below the global reference values. Undernutrition concerns insufficient caloric intake according to international standards. Malnutrition is related to undernutrition, obesity, and micronutrient deficiencies (Barrett, 2010).

Table 1. Worldwide food insecurity overview

Phenomena	Percentage	Million people
Undernourished people	10	750
Food insecure people	10	750
Obese people	13	975
Children under five years affected by wasting	7	50
Children under five years stunted	22	150
Children overweight under five years	5	40

Source: Authors' development based on FAO (2018)

21 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/food-waste-reduction-towards-food-sector-sustainability/241219

Related Content

Food Security and the Future Role of Agricultural Extension in Building Agricultural Human Capital in the Arab Countries

Mohamed Samy (2023). *Agricultural Education for Development in the Arab Countries* (pp. 278-305).

www.irma-international.org/chapter/food-security-and-the-future-role-of-agricultural-extension-in-building-agricultural-human-capital-in-the-arab-countries/320285

Internet of Things Practices for Smart Agriculture

S. Umamaheswari (2019). *Smart Farming Technologies for Sustainable Agricultural Development* (pp. 67-92).

www.irma-international.org/chapter/internet-of-things-practices-for-smart-agriculture/209546

Competitiveness of Turkey in the Sectoral Transformation Process: A Comparative Analysis With the BRIC Countries

Sema Ayand Hilal Yildirim Keser (2020). *Environmental and Agricultural Informatics: Concepts, Methodologies, Tools, and Applications* (pp. 1649-1668).

www.irma-international.org/chapter/competitiveness-of-turkey-in-the-sectoral-transformation-process/233034

Peregrinating Gardens From Traditional to Most Advanced Handy Approach for Avoiding the Unnecessary Utilization of Resources

Santosh R. Durugkarand Ramesh C. Poonia (2019). *Smart Farming Technologies for Sustainable Agricultural Development* (pp. 174-195).

www.irma-international.org/chapter/peregrinating-gardens-from-traditional-to-most-advanced-handy-approach-for-avoiding-the-unnecessary-utilization-of-resources/209550

A System Dynamics Model for Subsistence Farmers' Food Security Resilience in Sub-Saharan Africa

Benedict Oyoand Billy Mathias Kalema (2019). *Urban Agriculture and Food Systems: Breakthroughs in Research and Practice* (pp. 293-308).

www.irma-international.org/chapter/a-system-dynamics-model-for-subsistence-farmers-food-security-resilience-in-sub-saharan-africa/222394