

Towards a sustainable food chain: responsibility against the ‘throwaway culture’: A Framework for Discussion

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The questions posed to this session on sustainable food chains as a responsibility to work against the ‘throwaway culture’ align very well with the overarching themes of the dialogue organized by the *Centesimus Annus pro Pontifice* Foundation. The discussion builds on a long history of Catholic social doctrine and debate on how people and society should confront the key issues of the time, leading to a “change of attitudes, opinions and lifestyles which is essential for building a world of greater justice, freedom and harmony.”¹ The inaugural session opened with the theme of detecting today’s New Things and socio-economic priorities. It referred to *Rerum Novarum*, the encyclical of Pope Leo XIII in 1891, in which that era’s “new things,” the most pressing issues of the day, were the ‘Rights and Duties of Labour and Capital,’ as indicated in subtitle, addressing the oppressive conditions of working people.

Pope John Paul II, in his encyclical *Centesimus Annus*, coming one hundred years later in 1991 returned to the theme of economic and social justice in the context of the political and economic issues of that time, following the end of the Cold War. It made the case that economic activity does not take place in a political or institutional vacuum but should be seen in an ethical context, and must stand at the service of people and the universal common good. Pope John Paul II also introduced explicit criticism of rampant consumerism and its impact on the earth’s resources and people’s lives “in an excessive and disordered way” (para 37).

Among today’s socio-economic priorities the issues of sustainability, inequality, hunger and malnutrition, environmental degradation and climate change loom very large, recognizing that they are all connected and that their impacts fall disproportionately on the most vulnerable. For example, we know that most of the world’s poor live in rural areas and depend on agriculture for their livelihoods, either as smallholder farmers or landless agricultural labourers. They have low productivity incomes and high levels of food insecurity and malnutrition. They have the most limited access to productive resources and are the most likely to suffer from the effects of climate change.

On the agricultural front, developments since the Green Revolution have led to major improvements in productivity and the ability to satisfy demands from a growing global population. However, progress has been uneven and has come at a great cost to water pollution and overuse, soil degradation, the decline of fish stocks and the loss of biodiversity. Boosting production and, equally important, food chain-related employment and incomes while correcting unsustainable natural resource depletion and greenhouse gas emissions will require profound changes in agriculture and food systems. The world will need to produce more and do so more efficiently, but with much greater emphasis on the social and environmental dimensions of sustainability. These are very significant but achievable challenges, among the most critical facing all regions of the world.

In response, for our time, we have the 2015 encyclical of Pope Francis, *Laudato Si’, on Care for Our Common Home*. It is a call to reject the “throwaway culture” of consumerism and to embrace a culture of care and a commitment to pursue an *integral ecology*, examining the inter-relatedness of what ails the economic, social and environmental spheres, combining care for our common home of the natural environment, along with the inseparable impact that this has on human lives especially the poor. It calls for an “ecological conversion,” both a profound inner conversion as well as a community one,

¹ From the address by Pope Francis to the CAPP Foundation, May 20, 2017.

“for social problems must be addressed by community networks and not simply by the sum of individual good deeds” (para 137).

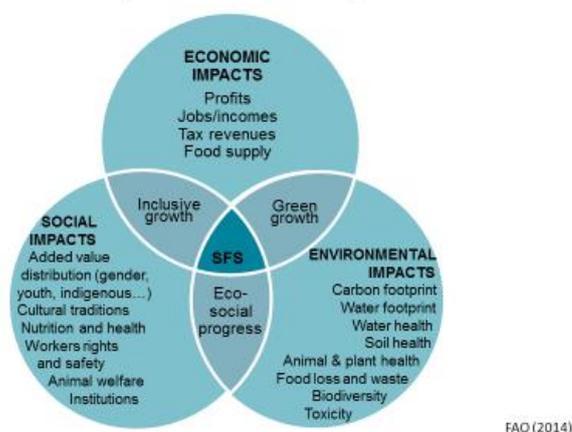
There are, of course, many other writings on these topics that cover similar ground but *Laudato Si'* caught the world's attention, coming out as it did prior to the Paris Agreement on climate, as a call for reflection and action precisely on the inter-connectedness of production, consumption and social and environmental crises. It came out also just ahead of complementarily themed *Agenda 2030, Transforming our World*, the set of 17 inter-linked sustainable development goals (SDGs) endorsed by and applicable to all member countries of the United Nations. As in *Laudato Si'* its call is to “leave no one behind” and to start with those furthest behind.

The questions posed for this session stem from these concerns, focusing on the sustainability of food production and consumption. How do food waste and other actions by individuals, families, businesses and countries contribute to inequality, hunger and environmental damage—or to their solutions?

To begin, a few definitions can help frame the dialogue. As much of the discussion deals with linkages of one kind or another it is helpful to look at sustainable food chains, as the title of this session indicates. A *food value chain* can be thought of consisting of all the stakeholders who participate in the production and value-adding activities that are needed to make food products. A *sustainable food value chain* is one that is profitable throughout all of its stages (economic sustainability); has broad-based benefits for society (social sustainability) and has a positive or neutral impact on the natural environment (environmental sustainability).

In addition to value chains per se, it is important to place them in the context of *food systems*. A food system includes the value chain but gathers all the other elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, the outputs of these activities and the resulting socio-economic and environmental outcomes. A *sustainable food system* is one that ensures food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition of future generations are not compromised. The elements of a sustainable food system can be seen as meeting overlapping sets of economic, social and environmental objectives, illustrated below.

The concept of sustainable food systems



Naturally, wasting food that is produced but not eaten comes up in this discussion. It makes intuitive sense that throwing away food should be seen as an element of the ‘throwaway culture’ and of what

needs to change for a more sustainable food system. From either the perspective of sustainable food systems or from the integral ecology perspective of *Laudato Si'* it is clear that excessive food waste is a symptom of deeper problems. Nonetheless, understanding where and why food is wasted, and what can be done about it, requires some thoughtful analysis. First taking up the question posed to the session on food waste may help frame and illuminate the other questions posed. What drives it and what are its economic, social and environmental impacts?

Given its visibility, reducing food waste was chosen as one of the targets of *Agenda 2030*, included as part of Sustainable Development Goals 12, on Sustainable Production and Consumption. It reads: *by 2030 halve per capita global food waste at the retail and consumer levels and reduce food loss along production and supply chains, including postharvest loss* (target 12.3). How large is food wastage and how does it relate to other SDGs on poverty, hunger, the environment and climate change?

Although definitions vary, in general food loss is considered to take place in the early stages of the food value chain, during on-farm production or storage for example, and food waste takes place at the later stages. The Food and Agriculture Organization of the UN commissioned a report in 2011² that pulled together existing studies to come up with a global estimate. It estimated that global food loss and waste (FLW) is around one-third of the mass of edible parts of food intended for human consumption, representing about 1.3 billion tonnes per year.

This estimate is widely debated, but it is clear that different regions and countries have much different shares of food loss and food waste, although the total combined loss and waste was estimated at around one-third in all regions. In Sub-Saharan Africa, for example, the total FLW per capita is estimated 174 kg/person/year with 167 kg/person/year coming from post-harvest losses and only 7 kg coming from consumer waste³. For Europe, the total is estimated at 375 kg/cap/year but with 281 kg coming from consumer waste and 94 kg coming from post-harvest losses.

Given these numbers, for most developing countries it is more useful to address FLW problems from a food security perspective and concentrate on reducing post-harvest losses and finding ways in which small food producers can increase their incomes and their share of the value added along the supply chain. The problems stem from poor storage facilities for grains and other staple crops, the lack of cold chain infrastructure for fruits and vegetables, poor transportation systems and other infrastructure problems. These losses represents a major challenge to eradicating hunger, a significant detriment to income growth and a huge social cost to households and society. It is a clear indication that the food system is not functioning as it should for economic, social and environmental sustainability.

For consumers, particularly in richer countries, food waste is seen as evidence of a throwaway culture and in part as a behavioural choice that needs to change. This is the sense of Pope Francis's 2013 World Environment Day address: *This culture of waste has also made us insensitive to wasting and throwing out excess foodstuffs, which is especially condemnable when, in every part of the world, unfortunately, many people and families suffer hunger and malnutrition. There was a time when our grandparents were very careful not to throw away any leftover food. Consumerism has induced us to be accustomed to excess and to the daily waste of food, whose value, which goes far beyond mere financial parameters, we are no longer able to judge correctly. Let us remember well, however, that whenever food is thrown out it is as if it were stolen from the table of the poor, from the hungry!*

In addition to this admonishment that we are not recognizing the true value of food, leading to a selfish and disengaged consumerism, food waste is a major contributor to greenhouse gas emissions (GHG) and climate change. It is estimated that 6-10 percent of GHG comes from wasted food in landfills. Furthermore, the environmental impact footprint of food waste is estimated to be eight times

² Gustavsson *et al.* *Global Food Losses and Food Waste*. FAO, 2011.

³ Food Losses and Waste in the Context of Sustainable Food Systems: A report by the High Level Panel of Experts on Food Security and Nutrition, Committee on World Food Security, HLPE Report No.8, 2014.

higher than food losses of equal volume, given the carbon footprint of the processing, transportation, refrigeration, etc. that goes into the supply chain ending with this unused food.

This environmental waste perspective is also highlighted in *Laudato Si'*. For example: *We have not yet managed to adopt a circular model of production capable of preserving resources for present and future generations, while limiting as much as possible the use of non-renewable resources, moderating their consumption, maximizing their efficient use, reusing and recycling them. A serious consideration of this issue would be one way of counteracting the throwaway culture which affects the entire planet, but it must be said that only limited progress has been made in this regard (para 22).*

The environmental footprint of food wastage is indeed enormous, given the amount of land, water and energy resources that go into the production of food and all the subsequent stages of the food value chain. A 2013 study by FAO entitled *Food Wastage Footprint: Impacts on natural resources* applied so-called life-cycle analysis to the quantities of food loss and waste of the 2011 study, breaking down production and consumption characteristics of seven regions of the world and eight commodity groups. It estimated total wastage (i.e., both food loss and food waste) at 1.6 billion of “primary product equivalents” with the total wastage for only the edible part of food at 1.3 billion tonnes. This compares with the size of total agricultural production for both food and non-food uses of about 6 billion tonnes.

Without accounting for greenhouse gas emissions from land use change (which are in themselves significant), the carbon footprint of food produced but not eaten is estimated at 3.3 billion tonnes of CO₂ equivalent. If we considered the GHG emission contribution of global food wastage as if it were a single country, it would rank as the third top emitter, behind USA and China. The water use footprint of food wastage, considering the consumption of surface and groundwater (known as blue water), is estimated at about 250 km³. This water footprint from food wastage would rank larger than the blue water footprint of any single country. In terms of land utilization, food produced but not eaten occupies almost 1.4 billion hectares of land, which is close to 30 percent of total agricultural land area. The production, processing and transportation of this unused food requires the consumption of 300 million barrels of oil per year.

The current levels of food loss and waste show that the global food system, as it is now, is not sustainable. It is not ensuring food security for all now nor for the long term. Food loss and waste, among other factors, hinders reaching the goal of food security and nutrition. The production of food that is produced but not eaten, whether it is lost during the production, processing or consumption phase represents a waste of economic and natural resources and has heavy social impacts.

Reducing food loss and waste would lead to food systems being more sustainable, with positive economic, social and environmental outcomes, which studies show would be greater than the cost of taking action. Given the desirability of moving in this direction and the potential payoffs, what drives the current unsustainability? Why is there such high waste and loss?

While there are many factors that go into an answer two concepts are key. One is the concept of “externalities” that occur where prices do not reflect the full cost of the goods, and in particular the full resource cost. The cost to society of the environmental impact of producing so much food that is not eaten is not included in the price of food, for example. Other externalities associated with food waste include GHG emissions, water depletion, loss in biodiversity, deforestation or other land use changes that have a negative long-term impact. These are real costs but they are external to the price paid for food.

Second are the incentives of various kind that influence the decisions and behaviour of producers, processors, retailers, restaurants and consumers. Supermarkets, for example, set standards for size, shape and quality of vegetables that they believe consumers want. These standards lead to throwing

out perfectly nutritious food at the start of the value chain. Supermarkets know that consumers are reluctant to purchase products that have less than one-quarter of their remaining “sell-by date.” Likewise, they need to keep their shelves continuously stocked, not waiting until most things are sold before setting out more. They are looking to increase sales, with promotions and packaging that can entice over-consumption. The food service industry likewise has incentives to “over-supply,” in portions that are larger than necessary, in maintaining buffet tables filled and in other actions that lead to food waste.

On their part, consumers are interested in quality and food safety, often without very precise understanding of what these mean. They can be confused by labeling and sell-by or best-used by dates. Consumers, especially women, are often short of time, preferring to buy a larger quantity of what they might need rather than run the risk of having to spend time returning to purchase more. The value of their time may be greater than the value of the food that is eventually not consumed. In that sense, it may be a rationale trade-off in their eyes that leads to more waste.

Increasing consumption of processed food is a direct result not only of higher incomes but increasing urbanization and entry into the workforce by women. Time constraints of women, very often overlooked at all levels of development, are huge and need to be considered. Producers, processors and consumers may all have good reasons for behaviour that in the aggregate leads to bad results in terms of food waste.

There is by now quite significant experience by countries and businesses to increase people’s awareness, to waste less and to recycle food, examples of which will be discussed by the panelists. There is still a lot to be done to accommodate better the hidden costs to society of food waste, to the environment and to future generations. Finding the right policies, laws, incentives and awareness creation that lead to better choices, changed behavior and thus less food waste is the challenge.

Turning to the specific questions posed for this session, applying the types of systems thinking embodied in both food systems analysis and in *Laudato Si’* can be helpful in untangling what are inevitably complex relationships. A key question concerns the impact of food waste on food security, hunger and malnutrition. Food availability is definitely part of the equation but not the only underlying cause.

The number of chronically undernourished people in the world stands at the unconscionably high 815 million people and is again on the rise, for a number of reasons including conflict in many of the most severely food insecure countries. The recently published annual Global Report on Food Crises highlights that of the 124 million people in a state of severe food crisis and in need of humanitarian assistance, 74 million are in countries where conflict and insecurity is the main cause. Given this complexity, a reduction in food loss and waste in food exporting countries or food secure countries will not necessarily have any impact on increasing the availability of food in food-insecure countries.

Nevertheless, there are clear connections between food waste and food insecurity. For producers in both low and high-income countries food wastage reduces their income. As poverty and food insecurity are intimately linked, lowering food loss would benefit poor households. Food loss also lowers income for landless agricultural workers as their overall productivity, in terms of final agricultural product, is lower than it otherwise would be.

FLW reduces the global and local availability of food. Also, in the absence of food loss and waste food prices for consumers would be expected to be lower. As households in lower-income economies often spend a very high portion of their income on food, often 50 percent or more—in contrast to consumers in high income countries where the percentage rarely exceeds 15 percent—higher food prices represent a significant burden.

A proposal to counter this imbalance was put forward by Trueba and MacMillan⁴, to establish a global mechanism to cut food waste and over-consumption. Through a mechanism like this countries would establish a per-capita consumption target and if they exceed that amount they would pay penalties that would go into a fund to fight hunger and malnutrition.

Particularly in high income countries reducing food waste can have a real benefit in reducing hunger in their own societies, where unused food that would otherwise go to landfills is distributed to those who need it. This also has the double benefit of reducing the environmental impact of food wastage. We will hear more about this from the panel.

Furthermore, as mentioned above, the impact on the environment links food waste and food security in several ways. It uses resources that have costs, both in monetary terms and as externalities over the long run that contribute to GHG emissions and climate change. Climate change, both in terms of extreme weather events and in terms of long-term impacts, affects the poor and vulnerable disproportionately more than the affluent, increasing inequality and contributing to poverty and hunger. There are economic, social and environmental impacts of wastage that make food security and nutrition objectives harder to achieve, now and in the long run.

That everything is ultimately connected is at the heart of the Pope's message in *Laudato Si'*, which explicitly links individual and collective behaviour, the environment and wellbeing of the earth and all its inhabitants. It is an appeal to heed "the cry of the earth and the cry of the poor" (para 19), to reject the throwaway culture of consumerism, and to embrace a culture of care and commitment. It is a radical call to action and a reorientation of perspective that should influence our choices and actions.

The encyclical emphasizes the relationship between the poor and the fragility of the planet, critical of a consumerist culture, driven by an unfettered free-market capitalism that is accelerating environmental degradation, with the price paid by those least able to cope. From this perspective, it is inevitable that food waste in rich countries is somehow connected to environmental degradation, growing inequality and food insecurity. This is, naturally, a much different philosophical and spiritual perspective than that of sustainable food chains and food systems. There are, however, clear parallels with the analysis of what ails our currently unsustainable agriculture and food system pathway.

These same perspectives relate to possible connections between waste and growing inequality in rich countries. While a directional link between increasing inequality and food waste would be difficult to support empirically, in societies where more people are aligned with the ethos expressed in *Laudato Si'* we would expect to find greater individual and community efforts, and greater political pressure, to adopt policies that would discourage waste as well as countering the forces of increasing inequality. It is worth noting that inequality within countries has been rising in essentially all regions of the world over the past 20 years. Furthermore, inequality tends to be higher in countries with lower average incomes, highlighting the need for targeted policies that address the root causes of poverty, within which food production and consumption play outsize roles.

How might a food systems or integral ecology approach address the key questions concerning agricultural productivity and sustainability in developing countries? Over the past 50 years around 80 percent of the increase in agricultural production came from higher productivity, mainly higher yields per area of land. This percentage is expected to increase even more in the next 30 years as there is little scope for increasing the area under production. This greater productivity has had a positive impact on sustainability in that it helped keep land out of production that otherwise would have been needed to feed the much larger population. It helped save the land equivalent of the entire USA, which would otherwise have been subject to land use change, deforestation, draining of wetlands and other long-term environmental damage.

⁴ Ignacio Trueba and Andrew MacMillan, *How to End Hunger in Times of Crisis*, UPM Press, 2011

On the other hand, the green revolution has extracted a large toll sustainability from the unsustainable use of groundwater, soil degradation, biodiversity loss and high levels of fertilizer and pesticide use leading to water pollution. Consequently, the major issue is the development and adoption of technologies that boost productivity in a sustainable manner, particularly in environments of resource-poor farmers, now vulnerable to even greater variability due to climate change. There are promising technologies in this regard but much more needs to be done.

Similarly, when we look at the food system and the desired move towards greater sustainability we see enormous potential for expanding incomes and rural non-farm employment. There is great scope for increasing employment and incomes through the development of sustainable value chains, encouraging greater investment through appropriate policies and partnerships in storage, processing and distribution linking rural areas to small towns and cities. This includes investing in better roads and electricity grids, the enforcement of standards, food market regulations and overall coherence in policies and programmes that influence incentives that facilitate rather than hinder this development.

What roles do large and medium-size food and agribusiness companies play in this respect? Typically, these companies look for productivity gains at all levels of their operations. Their food losses tend to be very low as they have good storage facilities, seamless cold chains and highly developed delivery systems. The more complex question has to do with their actions that may be economically rational but that lead to greater food waste and other problems.

Examples of these seemingly rational choices that lead to food wastage include things such as labeling that encourages throwing out product that is near or past its “best-used-by date,” the widespread use of buy-two-get-three types of promotions, packaging that motivates consumers to buy more than they need, and the use of size and appearance standards that have nothing to do with the nutritional quality of fruits and vegetables. Consumer education and increasing consumer demands for more sustainable food retail practices are catching on and will likely grow, often with the support of supermarket chains that are increasingly aware of the problems and the potential payoff.

Finally, with regard to the question of the links between agricultural protectionism and food sustainability, in general, international trade and openness to trade have been positive in improving resource allocation. Trade can alleviate land and water shortages and reduce carbon emissions by shifting production to areas that are less carbon- or water-intensive. Nevertheless, as the prices of traded goods generally do not reflect the full resource cost of their production, trade can also lead to worsening sustainability.

One way to counter this would be to impose mechanisms that ensure the prices for traded goods reflect their true resource costs of production, taking into considerations the externalities mentioned earlier. This could take the form of a carbon tariff, for example, as an incentive to replace more carbon-intensive domestic production with less carbon-intensive imports. This could also be applied to water use efficiency or biodiversity implications. As mechanisms like this are not yet on the horizon, more trade may not lead to greater sustainability but may, in fact, lead to more negative environmental impacts as forest land is converted to agricultural production, for example, to satisfy increased foreign demand. Overall however, protectionism is likely to reduce food sustainability, except in those cases where measures like a carbon tariff—which could be seen as protectionist—lead to that prices reflect their true resource cost.

In conclusion, the questions posed all represent daunting challenges and the stakes are very high in meeting them. There is, however, a sense of optimism in *Laudato Si'*, as there is in working through the options needed to make food systems more sustainable, and in the examples that the panelists will present. Decisions and actions by individuals and communities are possible that lead to the desired goals. They remind us of the dictum of the philosopher Karl Popper: “optimism is a duty. The future is open... We all contribute to determining it by what we do.”