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Anastasia Telesetsky

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WASTE NOT, WANT NOT: THE RIGHT TO FOOD, FOOD WASTE AND THE SUSTAINABLE DEVELOPMENT GOALS

ANASTASIA TELESETSKY*

I. INTRODUCTION

If we want farmers to grow a surplus, they need processing and safe storage facilities so they are not forced to watch their harvested crops be eaten by pests or spoil in un-insulated sheds. They need roads that are not only paved but able to withstand more frequent and extreme weather. And they need reliable access to electricity and clean water, as well as links to markets and information.¹

Food producers and companies that support these producers would have us believe that there is not enough food quantity to feed the growing human population and so they urge an expansion of agricultural production.² Yet, these same producers give little thought to systematically reducing food waste even though this is one of the understated tragedies for our times. The Food and Agriculture Organization (“FAO”) estimates that one-third of global food production for humans is lost or wasted.³ With 1.3 billion tons of food being either lost or wasted,⁴ this is a topic that has shocked the moral conscience of global thought leaders. Pope Francis gave a passionate oration on waste when he spoke in St. Peter’s Square on World Environment Day in June 2013, observing that:

The culture of waste has made us insensitive even to the waste and disposal of food, which is even more despicable when all over the world, unfortunately, many individuals and families are suffering from

* Associate Professor University of Idaho College of Law, Natural Resource and Environmental Law Program. I would like to express my gratitude to Professor Ved Nanda for his generous invitation to participate in the Sutton Colloquium and his visionary leadership in the field of international environmental law. I am also grateful to Professor Carmen Gonzalez for her valuable review of this paper. Finally, I would like to thank the editorial staff of the Denver Journal of International Law and Policy for their excellent editorial work.

1. *World Environment Day 2013: Cutting Food Waste to Conserve Resources and Fight Hunger*, INT’L FUND FOR AGRIC. DEV. (June 29, 2013), <http://www.ifad.org/media/events/2013/wed.htm> (quoting Kanayo F. Nwanze, President of the International Fund for Agriculture and Development).

2. See, for example, *Increasing Food Production*, CROPLIFE AMERICA, <http://www.croplifeamerica.org/crop-protection/benefits/increase-food-production> (last visited June 29, 2014) urging an increase in food production to meet a growing population and suggesting an increase in pesticide application to reduce crop losses of 20–40%.

3. FOOD & AGRIC. ORG. OF THE U.N. [FAO], GLOBAL LOSSES AND FOOD WASTE: EXTENT, CAUSES AND PREVENTION, at v (Jenny Gustavsson et. al., 2011) [hereinafter Gustavsson et al.], available at www.fao.org/docrep/014/mb060e/mb060e00.pdf.

4. *Id.*

hunger and malnutrition . . . Throwing away food is like stealing from the table of the poor and hungry.⁵

As Pope Francis insists, we have globally become inured to various food waste practices across the community of nations that leave individuals and families hungry. Yet food waste is not simply a topic of moral concern, it is also, as this essay will argue, a topic of serious legal magnitude. Food waste has been historically the largest overlooked component of achieving the internationally recognized “right to food.” Creating a zero food waste sustainable development goal to measure progress towards achieving global food security is an appropriate and progressive step to achieving the “right to food.”

The problem of food loss and waste (“food waste”)⁶ is not simply an affliction of the wealthy nations. Even those countries most in need are losing food at unsustainable rates that are exacerbating existing shortfalls of food supplies. In Sub-Saharan Africa, it is projected that at current population growth rates and current production rates, the region will only be able to produce twenty-five percent of its own food.⁷ At the same time, recent FAO statistics indicate that due largely to production loss close to 150 kilograms of food is lost or wasted per year per person in Sub-Sahara Africa and South/Southeast Asia, two of the most vulnerable regions to food insecurity.⁸ United Nations Environment Programme (“UNEP”) reports that thirty million tons of fish are annually discarded, which accounts for about one-quarter of the annual marine landings.⁹

Food insecurity is a chronic problem, particularly in the developing world where droughts or floods may devastate food crops and there is no automatic government benefit plan to fill the shortfall for the dependent families. Between 2011 and 2013, about one in eight people in the world (842 million people) continued to suffer from chronic hunger particularly in areas such as Sub-Saharan Africa.¹⁰ While there are estimates that food production will need to increase

5. Joe Phelan, *Pope Declares that Wasting Food is Akin to Stealing from the Poor*, CHARTERED INST. WASTE MGMT. JOURNAL ONLINE (June 29, 2013), <http://www.ciwm-journal.co.uk/archives/1609>.

6. FAO defines food waste and food loss as two different concepts. FAO, FOOD WASTAGE FOOTPRINT: IMPACTS ON NATURAL RESOURCES 8-9 (2013), available at <http://www.fao.org/docrep/018/i3347e/i3347e.pdf>. Food loss refers to an inadvertent decrease in mass or quality of food intended for human consumption. See *id.* Food waste refers to the deliberate discarding of food that is appropriate for human consumption. *Id.* at 9. While FAO refers to the concepts of food loss and food waste together as “food wastage,” this paper will simply use the plain language term of “food waste.” *Id.*

7. GLOBAL HARVEST INITIATIVE, 2013 GLOBAL AGRICULTURAL PRODUCTIVITY REPORT: SUSTAINABLE PATHWAYS TO SUFFICIENT NUTRITIOUS AND AFFORDABLE FOOD 10 (2013), available at http://globalharvestinitiative.org/GAP/2013_GAP_Report_BOOK_ONLINE.pdf.

8. Gustavsson et al., *supra* note 3, at 5, fig.2.

9. U.N. ENVTL. PROGRAMME [UNEP], THE ENVIRONMENTAL FOOD CRISIS: THE ENVIRONMENT’S ROLE IN AVERTING FUTURE FOOD CRISIS: UNEP RAPID RESPONSE ASSESSMENT 29 (C. Nellemann et al. eds., 2009), available at http://www.grida.no/files/publications/FoodCrisis_lores.pdf.

10. FAO, THE STATE OF FOOD INSECURITY IN THE WORLD 2013: THE MULTIPLE DIMENSIONS OF FOOD SECURITY 8 (2013) [hereinafter THE STATE OF FOOD INSECURITY IN THE WORLD 2013], available at <http://www.fao.org/docrep/018/i3434e/i3434e.pdf>.

somewhere between fifty percent by 2030 and seventy percent by 2050 to meet the needs of an increasing population,¹¹ it becomes clear that states can and should invest in reducing and preventing food waste rather than simply investing in new production to meet the increased needs.

This article urges the development of a global economic development strategy based on the human “right to food” that takes into consideration the chronic and pervasive global food waste problems. Specifically, this article argues that the Sustainable Development Goals offer a significant vehicle for achieving the human “right to food” by focusing global attention on eliminating food waste. This article argues for increasing human prosperity not by pursuing new growth (literally, in this case), but rather by investing in the full protection of already existing agricultural resources. In international food policy, the adage “waste not, want not” should be the foundation upon which all other food decisions are made.

II. REDUCING FOOD WASTE AS PART OF THE PROGRESSIVE REALIZATION OF THE HUMAN RIGHT TO FOOD IN A “GREEN ECONOMY”

While most intergovernmental attention has focused on increasing food availability,¹² relatively little attention has been given to creating international, regional, and national legal frameworks for food waste reduction. In fact, only five percent of agricultural development money is allocated to storage and processing solutions with the remainder focused on new production.¹³ This lack of support is surprising because food storage does not require substantial financial investments on the part of either host governments or donor governments in order to make a measurable impact on improving livelihoods.¹⁴

According to the FAO, we produce enough food for each person to have approximately 2,700 calories each day and yet there is still chronic hunger.¹⁵ While part of the disconnect between the available calories and the hungry communities may be attributed to ongoing civil wars leading to internal displacement or to environmental catastrophes correlated with climate shifts, part of the story is also one of waste due in part to a lack of basic economic infrastructure to properly manage and store food along the entire food chain from production to consumption. Food is wasted at a number of different steps along the food chain, beginning with production losses due to either poor harvest

11. LUCIA WEGNER & GINE ZWART, OXFAM INT’L, WHO WILL FEED THE WORLD? THE PRODUCTION CHALLENGE 3 (2011), <http://www.oxfam.org/sites/www.oxfam.org/files/who-will-feed-the-world-tr-260411-en.pdf>; FAO, GLOBAL AGRICULTURE TOWARDS 2050, at 2 (2009), available at http://www.fao.org/fileadmin/templates/wsfs/docs/Issues_papers/HLEF2050_Global_Agriculture.pdf.

12. THE STATE OF FOOD INSECURITY IN THE WORLD 2013, *supra* note 10, at 10.

13. See UNEP, TOWARDS A GREEN ECONOMY: PATHWAYS TO SUSTAINABLE DEVELOPMENT AND POVERTY ERADICATION 54, Box 5 (2011), available at http://www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20Economy_Report_Final_Dec2011.pdf.

14. *Id.* (finding that an investment of between \$20-\$100 for either a small-capacity or large capacity metal grain silo would increase the price of grain per 100 kilograms from \$13 to \$38).

15. JEAN ZIEGLER ET AL., THE FIGHT FOR THE RIGHT TO FOOD: LESSONS LEARNED 3 (2012).

practices or bycatch discard practices. Waste problems are compounded by losses due to a lack of adequate storage, processing capacity, or available markets. The consumer is the last link in the waste chain with food discarded due to a lack of storage capacity or wasteful cultural practices. While there is less food wasted in the Global South at the consumer end than in the Global North, where the problem of food waste is particularly acute, there is still approximately 120-170 kilograms of food wasted per person per year in Sub-Saharan Africa and Southeast Asia with approximately six to eleven kilograms of that waste directly attributable to consumers.¹⁶

Given the high population densities in the Global South, the cumulative loss of food in the Global South is noteworthy. For example, researchers from China Agricultural University observed that edible food thrown out by restaurants in China between 2006 and 2008 accounted for almost ten percent of the country's annual crop production during that time period, or enough to feed 200 million people.¹⁷ FAO calculates that 300 million individuals could be fed with the lost and wasted food from Africa alone.¹⁸ Much of this loss can be attributed to "financial, managerial and technical limitations in harvesting techniques, storage and cooling facilities in difficult climatic conditions, infrastructure, packaging and marketing systems."¹⁹ Some food products are more problematic than others. Cassava, which is typically sold as a fresh root and tuber in the Global South, is highly perishable, and there have been insufficient efforts to address post harvest handling and storage.²⁰ Over half of the fruits and vegetables produced in Africa and non-industrialized Asia are wasted.²¹ Most of this waste occurs at the post-harvest and processing stage due to perishability in the humid climate of many states.²² Milk is also frequently wasted in the Global South due to a lack of easily available cold storage facilities.²³

Unlike some global challenges that require member states to make sacrifices, reducing food waste is a relatively tractable problem that depends largely on coupling targeted government food security interventions with pro-poor community agriculture investment programs. Reminding individual states of their ongoing obligations to fulfill the "right to food" for their citizens and to support other states in achieving their efforts to achieve the "right to food" may be one means of improving food security.

16. Gustavsson et al., *supra* note 3, at 5.

17. Zhou Wanqing, *From Famine to Food Waste: Time to Reflect*, CHINA DIALOGUE (Feb. 12, 2013), <https://www.chinadialogue.net/blog/5697-From-famine-to-food-waste-time-to-reflect/en>.

18. *Save Food: Global Initiative of Food Losses and Waste Reduction-Key Findings*, FAO, <http://www.fao.org/save-food/key-findings/en/> (last visited June 29, 2014).

19. Gustavsson et al., *supra* note 3, at v.

20. *Id.* at 6.

21. *Id.* at 7 fig.6.

22. *Id.* at 7-8.

23. *Id.* at 9, 12.

A. *Right to Food*

This lack of systematic attention to reduction of food waste reflects in part a lack of international commitment to progressively implementing the “right to food” enshrined in the Universal Declaration of Human Rights (the “Declaration of Human Rights”). Article 25 of the Declaration of Human Rights provides that, “[e]veryone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food”²⁴ Article 11 of the International Covenant on Economic, Social, and Cultural Rights (the “Covenant”) provides for State recognition of “the right of everyone to an adequate standard of living . . . including adequate food . . . and to the continuous improvement of living conditions.”²⁵ States are expected to “take appropriate steps to ensure the realization of this right” which includes “recognizing . . . the essential importance of international co-operation based on free consent.”²⁶ The Covenant provides one narrow reference to reducing food waste. Parties to the Covenant are expected “individually and through international co-operation” to “improve methods of production, conservation and distribution of food by making full use of technical and scientific knowledge . . . by developing or reforming agrarian systems in such a way as to achieve the most efficient development and utilization of natural resources.”²⁷ The choice of the words “conservation . . . of food” suggests an obligation to use existing knowledge to protect existing food resources from waste so as to ensure “efficient . . . utilization of natural resources.” While this language may have been intended to be narrowly tailored to the food waste that happens as food loss in the fields as part of agricultural systems, it can also be read to apply to a lack of storage, markets, commodity networks, and small-scale processing industries since the obligation includes “developing or reforming agrarian systems.” A connection between Article 11(2)(a) and the global efforts to reduce food waste has not been explicitly made, but is essential because it provides a needed legal catalyst for action beyond moral motivations.

General Comment 12, drafted by the U.N. Committee on Economic, Social and Cultural Rights, further refined the legal content of the “right to food” by indicating that the right included an obligation on the part of the State to respect, protect, and fulfill access to adequate food.²⁸ Each of these operative terms was further defined to provide guidance to states about basic content of the obligation. Regarding the obligation to “fulfill” the “right to food,” states are specifically expected to “pro-actively engage in activities intended to strengthen people’s access to and utilization of resources and means to ensure their livelihood,

24. Universal Declaration of Human Rights, G.A. Res. 217 (III) A, art. 25, U.N. Doc. A/RES/217(III) (Dec. 10, 1948).

25. International Covenant on Economic Social and Cultural Rights, G.A. Res. 2200 (XXI), art. 11(1), U.N. Doc. A/RES/21/2200 (Dec. 16, 1976).

26. *Id.*

27. *Id.* art. 11(2).

28. Committee on Economic, Social, and Cultural Rights [CESCR], General Comment No. 12: The Right to Adequate Food, ¶ 15, U.N. Doc. E/C.12/1999/5 (May 12, 1999).

including food security.”²⁹ This language when viewed in the context of continuing food losses and food wastage implies a defined obligation for states to actively protect food sources from wastage to ensure that its populations will have optimal use of existing food resources.

1. World Food Summit and Plans of Action

The “right to food” was further refined in the 1996 Rome Declaration at the World Food Summit (the “Rome Declaration”) with commitments by 180 nations to reduce the number of people with inadequate food by 2015.³⁰ To implement the Rome Declaration, states were expected to nationally “adopt actions . . . to enhance food security” as well as to “improve sub-regional, regional, and international cooperation” in order “to mobilize, and optimize the use of, available resources to support national efforts”³¹

In the “World Food Summit Plan of Action” agreed to by the states to implement the Rome Declaration, there were four significant references to food waste. In the most important food waste reference in the Plan of Action, states agreed to “formulate and implement integrated rural development strategies . . . that promote rural employment, skill formation, infrastructure, institutions and services, in support of rural development and household food security”³² Specifically “governments, in partnership with all actors of civil society, and with the support of international institutions, will, as appropriate . . . reduce post-harvest losses and ensure safe storage, food processing and distribution facilities and transportation systems.”³³ In the second reference, states and civil society groups agreed to “[d]evelop and promote improved food processing, preservation and storage technologies to reduce post-harvest food losses, especially at the local level.”³⁴ In the third reference, states agreed “[t]o pursue . . . reduced wastes and losses, taking fully into account the need to sustain natural resources”³⁵ without any further explication of how they would achieve this commitment. In the final reference to waste and loss, states agreed to “combat environmental threats to food security” and specifically to reduce bycatch waste from fishing.³⁶

After the World Food Summit, the FAO Committee on World Food Security was assigned the charge of monitoring, evaluating, and consulting on the implementation of the Plan of Action (the “Action Plan”).³⁷ The specific

29. *Id.*

30. FAO, ROME DECLARATION ON WORLD FOOD SECURITY AND WORLD FOOD SUMMIT PLAN OF ACTION 1 (1996), available at <http://www.fao.org/ag/againfo/programmes/en/lead/toolbox/indust/romedec.pdf>.

31. *See id.* ¶¶ 58-59.

32. *Id.* ¶ 36.

33. *Id.*

34. *Id.* ¶ 21(d).

35. *Id.* ¶ 32.

36. *Id.* ¶ 33.

37. *World Food Summit and its Follow Up*, FAO (June 1999), <http://www.fao.org/docrep/x2051e/x2051e00.HTM>.

commitments under Objective 2.3 and Objective 3.5 of the Action Plan reflect an explicit understanding by 1996 that more needed to be done at every stage of the food cycle including the final stages where food is wasted and lost, particularly post-harvest. Yet it was over a decade before countries began to engage in designing community-based infrastructure to address the ongoing tragic loss of food to spoilage. At the international level, post-1996 until almost 2004, there appeared to be little large-scale systematic effort on reduction of food waste or losses. In fact, as recently as 2012, FAO indicated in its Action Plan to Improve Agricultural and Rural Statistics that more attention needs to be given simply to statistically calculating post-harvest losses.³⁸ In the Mid-Term Review of the World Food Summit, ten years after the original summit, there was not a single mention of the need to curb food losses or food wastes. Rather, the lessons learned by states as reflected in the report of the Committee on World Food Security continued to focus on agricultural growth with the emphasis on enhancing the “performance of the productive sectors.”³⁹ No mention was made of tackling food waste in spite of the earlier commitments within the Action Plan.

2. Voluntary Guidelines on the Progressive Realization of the Right to Food

Only one mention is made indirectly to food waste reduction in the Voluntary Guidelines on the Progressive Realization of the Right to Food (the “Guidelines”), even though the guidelines were supposedly designed “to provide practical guidance to States in their implementation of the progressive realization of the right to adequate food in the context of national food security, in order to achieve the goals of the World Food Summit Plan of Action.”⁴⁰ Paragraph 27 provides that states will promote adequate and safe food supplies through, *inter alia*, storage and distribution.⁴¹ Appearing under the subtitle of “economic development policies,” it is unclear whether states are undertaking voluntarily the commitment to build more storage facilities and public markets for insecure food producers. With only one reference that remains ambiguous in terms of what states obligations are more specifically, the disconnect between the Plan of Action’s specific provisions on reducing post-harvest losses and the Guidelines’ generalizations seems to reflect a lack of political interest in addressing food waste as a human rights concern.

38. FAO, THE WORLD BANK & THE UNITED NATIONS STATISTICAL COMMISSION, ACTION PLAN OF THE GLOBAL STRATEGY TO IMPROVE AGRICULTURAL AND RURAL STATISTICS: FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT 46 (2012), available at <http://www.fao.org/docrep/016/i3082e/i3082e.pdf>.

39. FAO Committee on World Food Security [CFS], *Mid-Term Review of Achieving the World Food Summit Target*, CFS: 2006/3 ¶ 74 (Aug. 2006), available at <ftp://ftp.fao.org/docrep/fao/meeting/011/j8303e.pdf>.

40. FAO, THE RIGHT TO FOOD: VOLUNTARY GUIDELINES TO SUPPORT THE PROGRESSIVE REALIZATION OF THE RIGHT TO ADEQUATE FOOD IN THE CONTEXT OF NATIONAL FOOD SECURITY 2 (Nov. 2004) [hereinafter THE RIGHT TO FOOD], available at <ftp://ftp.fao.org/docrep/fao/009/y7937e/y7937e00.pdf>.

41. *Id.* at 10.

Only recently has political attention to food waste begun to gain some traction as a priority topic for national governments making specific investments in food industries. In the past five to ten years, a number of countries issued national reports based on their implementation efforts under the 1996 Global Plan of Action.⁴² Most of these reports indicated that the states were still struggling with reducing post-harvest losses that were resulting in food wastage. In most cases, these losses were directly correlated with insufficient linkages between geographically dispersed producers and markets. For example, Bangladesh in its 2008-2015 National Food Policy Plan of Action explicitly noted that “[d]eficiencies in transportation/connections with markets, packaging, handling and storage facilities . . . continue to prevent farmers from getting full returns on their produce.”⁴³ In Pakistan, where twenty-five to thirty-five percent of food is lost to post-harvest losses, the government noted the need for “better harvesting, handling, storage, packing and packaging and transportation of the produce” with investments in “cold chain transportation and modern ware-house storage systems.”⁴⁴ Likewise in Malaysia, which is generally food secure when compared to Bangladesh and Pakistan, the Government emphasized the need for creating near production areas farm collection centers, packing house facilities, trading centers, and wholesale markets in order to reduce post-harvest losses.⁴⁵ A number of countries, such as Indonesia with high poverty rates and high food wastage, reported no efforts to examine food losses in their follow-up reports.⁴⁶ Generally, follow-up to the World Food Summit has been relatively poor or at least not very public.⁴⁷

While food waste and food loss is a known problem that has been identified by decision-makers over the course of the past two decades, it has received, at best, passing global notice until 2011 when the Swedish Institute for Food and Biotechnology at the request of the FAO published the report, “Global Food Losses and Food Waste.”⁴⁸ This report observed that food in the Global South was

42. FAO, THE RIGHT TO FOOD IN THEORY AND PRACTICE: IMPLEMENTATION OF THE WORLD FOOD SUMMIT PLAN OF ACTION 23 (1998).

43. FOOD PLANNING & MONITORING UNIT MINISTRY OF FOOD & DISASTER MGMT., GOV'T OF THE PEOPLE'S REPUBLIC OF BANGL., THE NATIONAL FOOD POLICY PLAN OF ACTION (2008-2015), at 43 (2008), available at [http://www.nfpcsp.org/agridrupal/sites/default/files/The_National_Food_Policy_Plan_of_Action_\(2008-15\).pdf](http://www.nfpcsp.org/agridrupal/sites/default/files/The_National_Food_Policy_Plan_of_Action_(2008-15).pdf).

44. MINISTRY OF FOOD, AGRIC. & LIVESTOCK, GOV'T OF PAK., COUNTRY REPORT FOR THE FOLLOW-UP OF THE IMPLEMENTATION OF WORLD FOOD SUMMIT—PLAN OF ACTION 18 (Aug. 2004), available at <ftp://ftp.fao.org/docrep/fao/Meeting/008/ae014e.pdf>.

45. MALAYSIA MINISTRY OF AGRIC. & AGRO-BASED INDUS. FOLLOW-UP OF THE IMPLEMENTATION OF THE WORLD FOOD SUMMIT PLAN OF ACTION 1 (May 2008), available at <ftp://ftp.fao.org/docrep/fao/Meeting/013/A1699e.pdf>.

46. See THE AGENCY FOR FOOD SEC., MINISTRY OF AGRIC., REPUBLIC OF INDONESIA, FOLLOW-UP OF THE IMPLEMENTATION OF THE WORLD FOOD SUMMIT PLAN OF ACTION 3 (Dec. 22, 2005), available at <ftp://ftp.fao.org/docrep/fao/meeting/010/ag310e.pdf>.

47. MICHAEL WINDFUHR & JANNIE JONSEN, FOOD SOVEREIGNTY: TOWARDS DEMOCRACY IN LOCALIZED FOOD SYSTEMS, at xi-xii (2005).

48. Gustavsson et al., *supra* note 3.

largely wasted either some point between production stage and the processing stage.⁴⁹ The authors recommended government investment in roads, energy and market accompanied by private investments in transportation, storage, cooling and markets.⁵⁰ Additional investments should be made to link farmers with either processors or consumers to reduce food losses.⁵¹ Current market facilities in the Global South are often unsanitary and lack appropriate storage equipment to maintain perishables.⁵²

3. 2013 Global Strategic Framework for Food Security and Nutrition

When the non-binding Global Strategic Framework for Food Security and Nutrition was drafted in October 2013 to improve coordination between the recently reformed Committee on Food Security and stakeholders, food waste was briefly identified as a cause of chronic hunger.⁵³ The Committee on Food Security noted that states must “reduce high levels of post-harvest losses and food waste through investment in improving rural infrastructure, including communications, transport, storage, energy . . .”⁵⁴ In spite of this explicit recognition of the waste problem, reducing waste did not play a primary role in the overall framework. Only two mentions were made in the document. First, the drafters concluded that waste needed to be addressed as a strategy for avoiding excessive food price volatility by increasing food production and availability.⁵⁵ Second, waste is addressed as a small-scale food production problem with states, international organizations and regional organizations encouraged to implement policies “reducing post-harvest losses and increasing post-harvest value addition, and on fostering smallholder-inclusive local, national and regional food markets, including transportation storage and processing.”⁵⁶ Curiously, the management of the food chain to avoid waste was identified as a potential food security and nutrition issue in a final section of the report for issues “that may require further attention” with the caveat that it may not be an issue to be handled by the Committee on Food Security.⁵⁷

The lack of prominence given in the framework to reducing food waste is surprising. While other food security themes, such as increasing sustainable agricultural production and climate-proofing agriculture, received their own sections,⁵⁸ the mention of reducing waste was extremely brief. The idea in the concluding section that reducing food waste may not be a priority for the

49. *Id.* at 10.

50. *Id.* at 11.

51. *Id.* at 13.

52. *Id.*

53. FAO COMM. ON WORLD FOOD SECURITY, GLOBAL STRATEGIC FRAMEWORK FOR FOOD SECURITY AND NUTRITION 9 (2013), available at http://www.fao.org/fileadmin/templates/cfs/Docs1213/gsf/GSF_Version_2_EN.pdf.

54. *Id.* at 10.

55. *Id.* at 18-19.

56. *Id.* at 17.

57. *Id.* at 50.

58. *Id.* at 23, 34.

Committee can be construed as irresponsible and reflects a lack of strategy on the part of the international community for achieving short-term food security. With food waste being downplayed in the document that reflects the most current thinking on international food security, there needs to be other means of tackling what seems to be both an obvious and a tractable problem requiring only limited new resources and technologies. One potential important venue for advancing the human rights agenda underlying the legal imperative to reduce food waste is the emerging concept of the “green economy.” As will be suggested in the final section of Part I, linking a “right to food” that includes an obligation to address food waste with the concept of the “green economy” holds great promise for restoring potentially up to one-third of our food stocks.

B. Green Economy

Wasting food is a multi-resource problem. The waste associated with food extends beyond simply the food products to include irrigation water, fossil fuel, agricultural inputs, soil, and labor.⁵⁹ FAO estimates that the ecological footprint for 1.3 gigatonnes of wasted food is 3.3 gigatonnes of carbon dioxide, 250 cubic kilometers of wasted water, and 1.4 billion hectares of typically monocropped land that could have been put to other uses.⁶⁰ In January 2014, scientists observed that croplands are continuing to expand at expense of savannah, forests, and grassland, with little consideration for how to use existing agricultural land more effectively.⁶¹ The use of these resources to make food that is never consumed is likely to have other unintended external consequences. For example, in China, agriculture has a greater impact on water pollution than any other industrial sector.⁶² Where food is produced and then never consumed because of waste, states will find themselves confronting the social costs of food production such as overexposure to pesticides without reaping equivalent social benefits from consumption.

The perpetuation of the food waste problem runs counter to the basic principles of the “Green Economy,” an idea actively promoted by the UNEP as a mechanism for achieving sustainable development and ensuring that per capita welfare does not decline over time.⁶³ As understood by policymakers, the outcome of a “green economy” is a low-carbon, resource efficient, and socially inclusive economy supported by public and private investments in improving resource

59. FAO, FOOD WASTAGE FOOTPRINT: IMPACTS ON NATURAL RES., *supra* note 6, at 10.

60. *Id.* at 6.

61. UNEP INTERNATIONAL RESOURCE PANEL, ASSESSING GLOBAL LAND USE: BALANCING CONSUMPTION WITH SUSTAINABLE SUPPLY 13 (2014), *available at* http://www.unep.org/resourcepanel/Portals/24102/PDFs//Full_Report-Assessing_Global_Land_UseEnglish_%28PDF%29.pdf.

62. UNEP, TOWARDS A GREEN ECONOMY: PATHWAYS TO SUSTAINABLE DEVELOPMENT AND POVERTY ERADICATION 50 (2011), *available at* http://www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20Economy_Report_Final_Dec2011.pdf.

63. *Id.* at 17.

efficiency.⁶⁴ In relation to food waste, UNEP recognizes that increasing post-harvest storage and processing facilities are aspects of “the greening of agriculture.”⁶⁵ Food recovery may be improved “through simple targeted investments in post-harvest supply chains.”⁶⁶ In particular, UNEP promotes “village-level processing of farm products and by-products”⁶⁷ which would include taking food clippings and scraps from processing and processing them into organic fertilizers.⁶⁸ For foods that do not need to be immediately processed such as grains, UNEP suggests concerted efforts to provide appropriate storage facilities or packaging processes to prevent waste.

Unlike the food security agenda with the legally cognizable “right to food,” there is no legal framework negotiated for the implementation of a “green economy.” The concept of the “green economy” is instead a signifier to encourage the building of a normative bridge between the existing “business as usual” approach and a socially inclusive, environmentally protective economy. While this article suggests that UNEP’s vision of a “green economy” can be valuable in catalyzing food waste reduction, the “green economy” idea has many critics who consider it to be either not radical enough of a normative approach⁶⁹ or believe that it fails to take sufficient account of social aspects of growth and remains fixated on economic models.⁷⁰ One means of addressing both of these critiques is to connect the “green economy” explicitly to the achievement of the “right to food.”

UNEP suggests that states may be able to effectively mainstream green economy principles through the negotiation of a combination of environmental and social indicators that might be adopted by states as indicators of progress on achieving “green economy” sustainability.⁷¹ Among the proposed factors with relevance to food waste are water stress, land conservation, material productivity, water productivity, carbon dioxide productivity, fossil fuel subsidies, water subsidies, and access to resources.⁷² If these indicators were ever to become the basis for creating new legal obligations for states based on national “green

64. *Id.* at 16.

65. *Id.* at 42.

66. *Id.* at 47.

67. *Id.* at 53.

68. *Id.* at 54.

69. Donald K. Anton, *The 2012 United Nations Conference on Sustainable Development and the Future of International Environmental Protection*, 7 *CONSILIENCE: J. SUSTAINABILITY* 64, 69 (2012) (urging for global leaders to focus on environment and not merely “green economy”).

70. Barbara Unmüßig et al., *Critique of the Green Economy: Toward Social and Environmental Equity*, 22 *HEINRICH-BÖLL-STIFTUNG ECOLOGY* 1, 32, 35-36 (2012), available at https://www.boell.de/sites/default/files/Critique_of_the_Green_Economy.pdf (arguing that none of the deliberations on a green economy include considerations relating to human rights, issues of distribution or democratic rights of participation as key components of a green economy).

71. Andrea Bassi et al., *Green Economy: Measuring Progress Towards a Green Economy* 8 (UNEP, Draft Working Paper, June 2012), available at http://www.unep.org/greeneconomy/Portals/88/documents/research_products/MeasuringProgress.pdf.

72. *Id.* at 10-11, 14.

economy” laws,⁷³ eliminating food waste and those practices that contribute to ongoing food waste would transition from being marginal issues in national, regional and international policymaking to human security and sustainability priorities. Specifically, a “green economy” effort focused on these indicators would be an appropriate measure to achieving specific obligations of states to achieve “conservation . . . of food” under the “right to food.”

C. *Connecting the Right to Food with the Green Economy*

The World Food Summit Plan of Action and the “green economy” described above are products of international political consensus. What this means practically is that neither of the efforts have binding effect on states and achievement depends entirely on political will. They are merely guidance documents that may or may not be considered priorities for states. Based on the national plans by countries such as Bangladesh and Pakistan, there is an explicit recognition of the connection between practices that lead to food waste and food security.⁷⁴ While this is significant in terms of demonstrating government awareness of the problem, it does not mean that governments must initiate actions under the plans. In fact, a State can argue that because reducing food waste is just one alternative among many for achieving food security goals, it has instead chosen other paths for achieving food security such as increasing food production through, for example, large agribusiness investments.⁷⁵ For communities that currently lack appropriate food harvesting technology, food storage, food processing capacity, or access to markets, there are few means to ensure government accountability under the national plans.

Linking food waste to the fulfillment of a “right to food” might create new channels for accountability. The value in approaching the food waste challenge through the well-accepted legal “right to food” is that it makes explicit that states have legal human rights-based obligations not just to ensure opportunities for individuals to produce food but also to protect food that has been produced. This presents an important policy development because it opens the possibility for private ventures such as family farms to receive public support probably in the form of subsidies for the construction of food storage and processing facilities as well as the facilitation of food transport and marketing networks. While countries may prefer to pursue this type of infrastructure via public-private partnerships

73. See e.g., CAMERON ALLEN & STUART CLOUTH, A GUIDEBOOK TO THE GREEN ECONOMY, DIVISION FOR SUSTAINABLE DEVELOPMENT (2012), available at <http://sustainabledevelopment.un.org/content/documents/GE%20Guidebook.pdf>; Keshore Kumar Heeramun, *National Initiatives on Green Economy: The Case Study of Mauritius*, available at http://www.oecd.org/dac/environment-development/Presentation%20on%20Green%20Economy%20-%20Mauritius_K.Kumar%20Heeramun.pdf (explaining how Mauritius is mainstreaming “green economy” principles in existing laws and emerging policy frameworks).

74. FOOD PLANNING & MONITORING UNIT MINISTRY OF FOOD & DISASTER MGMT., *supra* note 43; MINISTRY OF FOOD, AGRIC. & LIVESTOCK, *supra* note 44.

75. *Fact Sheet—IFC and Food Security*, INT'L FIN. CORP. (2011), <http://www.ifc.org/wps/wcm/connect/837565804cf33c85aa12eff81ee631cc/Fact+Sheet+IFC+and+Food+Security.pdf?MOD=AJPERES>.

because it requires less financing from the government, the inclusion of food waste within the contours of the legal “right to food” does not rule out the possibilities of these types of liaisons between the public and private sector. Instead, the inclusion of food waste in a legally cognizable “right to food” centers attention on the adequacy of the government’s policies to address its most impoverished populations who have for over a decade lived marginal lives without fundamental publicly-supported community infrastructure to assist them in achieving basic economic development objectives.

Addressing the food waste concern has the potential to also contribute to progressive realization of other human rights including the right to water. Agriculture, particularly in the developing world, is one of the lead users of water.⁷⁶ To the extent that freshwater that has already been applied to grow food, eliminating food waste will also conserve water resources rather than lead to unnecessary water losses that benefit neither humans nor ecosystems. While statistics are not easily available in the Global South, one analysis found that the water and energy contained in food waste represent twenty-five percent of the total water usage and four percent of the total oil consumption in the United States.⁷⁷ If the numbers are equally high in the Global South, then addressing food waste becomes even more imperative given the concerns over an impending freshwater crisis.⁷⁸

Finally, explicitly connecting food waste to the achievement of the “right to food” may trigger the obligations of states both individually and as members of intergovernmental organizations to transfer technology and provide financing. While some organizations such as the International Fund for Agriculture and Development may already be pursuing efforts to reduce food waste in the programs that they oversee, there is no obligation for them to act. Linking food waste to the “right to food” makes it explicit to the states individually and as members of international organizations that there is an affirmative obligation on the part of each organization to cooperatively assist states in their efforts to achieve the “right to food.” The Committee on Economic, Social and Cultural Rights has indicated that international organizations “have a strong and continuous responsibility to take whatever measures they can to assist governments to act in ways which are compatible with their human rights obligations and to seek to devise policies and programmes which promote respect for those rights.”⁷⁹ In the

76. U.N. WATER, WORLD WATER DEVELOPMENT REPORT 3: WATER IN A CHANGING WORLD 8 (2009), *available at* http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/WWDR3_Facts_and_Figures.pdf.

77. Kevin D. Hall et al., *The Progressive Increase of Food Waste in America and Its Environmental Impact*, PLOS ONE, Nov. 25, 2009, at 4, *available at* <http://www.plosone.org/article/fetchObject.action?uri=info%3Adoi%2F10.1371%2Fjournal.pone.0007940&representation=PDF>.

78. Stewart Patrick, *The Coming Global Water Crisis*, COUNSEL ON FOREIGN REL. (May 8, 2012), <http://www.theatlantic.com/international/archive/2012/05/the-coming-global-water-crisis/256896>.

79. U.N. Comm. on Econ., Soc. & Cultural Rights, *Globalization and Economic, Social and Cultural Rights*, ¶ 5, U.N. Doc. E/1999/22 (May 15, 1998).

case of food waste, this applies not just to food-specific organizations such as the Food and Agriculture Organization or the World Food Programme, but also to financing organizations such as the regional development banks and trade organizations such as the World Trade Organization. Each international institution should consider how a “right to food” that includes elimination of systemic food waste can be effectively implemented using the functions and powers of the international institution. As will be explored in Part III below, the most immediate need for states in the Global South is small-scale financing for small-scale harvest, storage, and processing technologies.

III. MILLENNIUM DEVELOPMENT GOALS, ZERO HUNGER CHALLENGE, SUSTAINABLE DEVELOPMENT GOALS AND FOOD WASTE

International social and environmental indicators as measures of sustainable development achievement do not yet exist.⁸⁰ At the close of 2015, there is a global expectation that states will agree to a series of sustainable development goals (“SDGs”) in order to extend some of the successes of the millennium development goals (“MDGs”) in motivating states to make systemic changes. This article argues that reduction of food waste should be made a top priority in the ongoing negotiations for SDGs. The inclusion of a SDG on reduction of food waste with long-term and short-term objectives would clarify that eliminating food waste is essential to achieving a robust “fight to food” not just for this generation but also for future generations.⁸¹

A. *Millennium Development Goals*

The current normative regime for achieving human development objectives is shaped by the MDGs. Four of the MDGs have direct relevance to reducing food waste particularly in the Global South. The most relevant goal for food security is Goal 1, which encourages states to eradicate extreme poverty and hunger by halving the number of people who suffer from hunger by 2015.⁸² Goal 4 urges states to reduce by two-thirds the number of children dying before the age of five by 2015.⁸³ Goal 7 suggests that states should “integrate the principles of sustainable development into country policies and programmes” in order to “reverse the loss of environmental resources.”⁸⁴ Finally, Goal 8 requests states to “[a]ddress the special needs of least developed countries.”⁸⁵ Measured progress

80. See UNEP (2011), *supra* note 62, at 43, suggesting proposals for establishing indicators.

81. See, for example, Edith Brown Weiss, *Our Rights and Obligation to Future Generations*, 84 AM. J. INT'L L. 198, 198-207 (1990), for a description an intergenerational obligation principle called “conservation of options.”

82. U.N. Dept. of Public Info., Millennium Development Goals and Beyond 2015 Fact Sheet: Goal 1 (Sep. 2013), http://www.un.org/millenniumgoals/pdf/Goal_1_fs.pdf.

83. U.N. Dept. of Public Info., Millennium Development Goals and Beyond 2015 Fact Sheet: Goal 4 (Sep. 2013), http://www.un.org/millenniumgoals/pdf/Goal_4_fs.pdf.

84. U.N. Dept. of Public Info., Millennium Development Goals and Beyond 2015 Fact Sheet: Goal 7 (Sep. 2013), http://www.un.org/millenniumgoals/pdf/Goal_7_fs.pdf.

85. U.N. Dept. of Public Info., Millennium Development Goals and Beyond 2015 Fact Sheet: Goal 8 (Sep. 2013), http://www.un.org/millenniumgoals/pdf/Goal_8_fs.pdf.

has been made on each of these goals, though it is unclear that concerted efforts to reduce food waste played much of a role in any the progress that has been made.⁸⁶ Even with the reduction in number of chronically hungry individuals, it remains to be seen whether Goal 1 on hunger will be achieved. The 2013 UNDP report on the status of the MDGs indicated that many smallholder farmers are net buyers of food.⁸⁷ While the report does not indicate whether this is the result of a lack of arable land, a lack of seed, or climate events, it is also reasonable to assume that smallholder farmers may also be victims of food waste where seasonal crops are unable to be processed or sold during to a lack of basic storage and transport infrastructure. In the short term, addressing food waste caused by inadequate community infrastructure also has the potential to contribute to climate adaptation for communities that continue to go hungry in the face of unpredictable weather.⁸⁸

B. Zero Hunger Challenge

Full implementation of the MDGs would still not eliminate chronic hunger faced by millions.⁸⁹ In fact, while states have collectively almost met the MDG goal on hunger, there are still 870 million people (one in eight people) who lacked adequate food between 2010 and 2012.⁹⁰ Most of these individuals are in the Global South, where some regions such as Sub-Saharan Africa and Oceania are struggling with meeting the targets for MDG Goal 1.⁹¹ At least fifty-seven million children in Southern Asia and thirty million children in Sub-Saharan Africa lack sufficient food.⁹²

In response to this ongoing hunger crisis, General Ban Ki-Moon launched the Zero Hunger Challenge in 2012 at the United Nations Convention on Sustainable Development (Rio+20).⁹³ Supporting the argument in this article that a “right to food” requires reducing food waste as part of the implementation of the right, the Secretary-General’s multi-stakeholder initiative includes among his five specific

86. U.N. DEP’T OF ECON. & SOC. AFFAIRS, THE MILLENNIUM DEVELOPMENT REPORT 2013, at 11 (2013) [hereinafter MDG Report] (referencing food waste in the report by discussing FAO’s investments to improve the quality of basic data on food production and food storage).

87. *Id.*

88. See, for example., U.N. News Centre, Over 2 Million People in Zimbabwe to Require Food Assistance, Warns UN Agency (Sep. 3, 2013), <http://www.un.org/apps/news/story.asp?NewsID=45756&Cr=zimbabwe&Cr1=#.UuQ1F-vTlcw>, indicating that some of the shortfall for grain is due to adverse weather conditions and the unavailability of agricultural supplies such as seeds and fertilizers which could be addressed in part through construction of community-based adequate storage facilities that could be used to store harvests for multiple seasons as a sort of rural food bank.

89. Millennium Development Goal 1, *supra* note 82 (intending to halve the proportion of people who suffer from hunger and not to fully eliminate hunger).

90. MDG Report, *supra* note 86, at 10.

91. *Id.*

92. *Id.* at 11.

93. U.N. Secretary-General, Remarks at the Launch of the Zero Hunger Challenge (June 21, 2012), http://www.un.org/apps/news/infocus/sgspeeches/statments_full.asp?statID=1580#.UuQ9C-vTlcw.

objectives a call for Zero Hunger Challenge partners to take measures to prevent food from being lost or wasted.⁹⁴

Unlike previous global efforts such as the World Food Summit Plan of Action or the MDGs, the challenge is open to more than just states. It was initiated in part as a call for involvement from civil society and businesses in meeting the hunger reduction targets. Secretary-General Ban Ki-Moon is doing an admirable job in focusing high-level political attention on the need for even more progress towards global food security. Yet it remains to be seen whether this approach will yield results where they are needed most – in food insecure states. However, a review of the webpages linked to the Zero Hunger Challenge reveals surprisingly little about how any of the named participants are seeking means to reduce waste.⁹⁵ Only a handful of countries have adopted the challenge⁹⁶ and it is unclear what they have done or are planning to do in response to the challenge.

Based on the limited results of two years of implementation, there is some question as to whether the multi-stakeholder approach is an ample approach for reducing food waste, particularly for those countries where the food waste is a systemic problem because of a lack of basic infrastructure. In the end, states, not NGOs or businesses, need to be held accountable for their failures to seek long-term solutions to the food waste problems. While NGOs and businesses can contribute to the realization of the “right to food” through financial support or contributions of technical resources that will provide the needed storage and processing of food in the Global South, it is the states themselves that have the legal obligations to fulfill their citizens “right to food” and to support other states in their efforts.

There is one interesting twist to the Zero Hunger Challenge that needs to be mentioned in light of the call for accountability. More than just states, NGOs, and intergovernmental groups have pledged to meet the challenge. So too have global leaders who have committed to language in signing the pledge “to hold myself accountable to deliver on my promise.”⁹⁷ While it is the position of this paper that

94. *Id.*

95. Most of the webpages simply link to general homepages. The Food and Agriculture Organization has a specific webpage designed to highlight FAO efforts. FAO: ZERO HUNGER CHALLENGE, <http://www.fao.org/zhc/en/> (last visited June 29, 2014). None of the highlighted efforts deal with implementation of infrastructure to address food losses in the Global South. See, for example, *Reduce Your Food Waste and Save Money and Our Natural Resources*, FAO (Dec. 18, 2013), <http://www.fao.org/zhc/detail-events/en/c/211072>, providing the following advice which is unlikely to be of any practical use to members of the Global South: “Buy only what you need . . . Don’t throw away perfectly good food . . . Store food properly . . . Reduce or share your portions.”

96. U.N. Secretary-General, Remarks at Closing Session of the High-Level Consultation on Hunger, Food Security and Nutrition in the Post-2015 Development Framework (Apr. 4, 2013), http://www.un.org/apps/news/infocus/sgspeeches/statments_full.asp?statID=1810#.UzR8cflDWS0.

97. *Global Leaders From Business and Civil Society Sign Zero Hunger Challenge at Davos*, U.N. WORLD FOOD PROGRAMME (January 24, 2014), <http://www.wfp.org/news/news-release/global-leaders-business-and-civil-society-sign-zero-hunger-challenge-davos>; ZERO HUNGER CHALLENGE: JOIN THE CHALLENGE, <http://zhc.feedingideas.com/join-the-challenge/> (last visited June 29, 2014) (joining the Challenge individuals declare: “I am actively working to eradicate hunger; I align myself with all

only states under their obligations to achieve the “right to food” can and should be held legally accountable for any failures to address food waste, the Zero Hunger Challenge introduces a second set of potentially accountable actors—the individuals who have made the pledge to reduce food waste. On the one hand, this is an exciting development to have business and government agency leaders making these commitments. The choice of the word “accountable” in the pledge, however, seems to be a strange choice in light of its technical legal meaning. Is the pledge empty rhetoric or is there some possibility that those individuals with decision-making power⁹⁸ who have signed the pledge could be held accountable when there are gaps in implementation? What if the U.S. Agency for International Development (“USAID”) Administrator Rajiv Shah, one of the signatories to the Zero Hunger Challenge, does not prioritize food loss as part of the agency’s development financing programs? What if Unilever Chief Executive Officer Paul Polman fails to make a good faith effort to reduce food waste associated with processing from Unilever factories in spite of his pledge? Can these individuals really only be personally accountable to themselves for their individual consumer food waste choices or can they be held socially accountable for their professional decisions that have system-wide implication? It is an intriguing puzzle; even if governments have the legal obligations under the “right to food,” it will ultimately be non-state actors who will have the power to effectively reduce waste at key junctures in the food production business.

While it is difficult to critique a well-meaning and ambitious initiative such as the Zero Hunger Challenge, the effort does raise questions about short-term effectiveness for communities who are currently relying on food aid because of a failed crop and no stored provisions. In an effort to create collective willpower across all sectors of society and perhaps achieve some of the positive features associated with polycentric governance such as adaptability,⁹⁹ will the international community fail to reach out to those who need help the most possibly because of coordination challenges among the various regional and national actors? While Secretary General Ban Ki-Moon is today actively championing the challenge and providing necessary leadership, what will come of the challenge in 2017 when the Secretary-General’s term has ended? If we have not achieved the Challenge, then who will be responsible? Arguably, responsibility will remain with the states, most of which have not taken on the challenge. Since it is the states that have ongoing human rights obligations to realize a “right to food,” there is an urgent need for states to accept and act upon the objectives of the Challenge. One means for generating system-wide food waste reductions might be the adoption of a SDG focused on zero food waste.

elements of the Zero Hunger Challenge; I encourage others to join in my activities and to take the challenge; I advocate for actions and policies that deliver Zero Hunger; and I will hold myself accountable to deliver on my promise.”).

98. *Global Leaders From Business and Civil Society Sign Zero Hunger Challenge at Davos*, *supra* note 97.

99. Elinor Ostrom, *Polycentric Systems for Coping with Collective Action and Global Environmental Change*, 20 *GLOBAL ENVTL. CHANGE* 550, 552 (2010).

C. Sustainable Development Goals

In July 2014, parties in a U.N. open working group negotiated SDG 12 which may, if adopted by the U.N. General Assembly, “[p]romote sustainable consumption and production patterns.”¹⁰⁰ Target 12.2 to achieve this goal calls for states to “by 2030 reduce by half global food waste and production and post-harvest food losses and those along food supply chains.”¹⁰¹

This outcome of a target rather than a food waste goal is somewhat disappointing given the attention that food waste had been receiving from intergovernmental groups and non-governmental groups. In the case prior to 2014, food waste was specifically called out as a development problem by the U.N. Secretary-General’s High-Level Panel Of Eminent Persons on the Post-2015 Development Agenda, including such politically influential individuals as the President of Indonesia and the Prime Minister of the United Kingdom.¹⁰² Including a food waste goal as one of the SDGs rather than simply as a target for a vaguely worded goal would have reflected a reasonable policy-making trajectory based on the already existing efforts under the MDGs to reduce hunger by half and Secretary-General Ban Ki-Moon’s Zero Hunger Challenge clear objective to reduce food waste.¹⁰³

When the High-Level Panel suggested focusing on food waste as a development problem, it did not recommend any specific percentage for states to reduce food waste. Instead it suggested a universal goal of ensuring food security and good nutrition with a national target to “[r]educe postharvest loss and food waste by x%.”¹⁰⁴ In notes, the High-Level Panel explained that further research is needed to decide what the appropriate indicator for food waste might be.¹⁰⁵ While

100. Introduction and Proposed Goals and Targets on Sustainable Development in the Post 2015 Development Agenda, at 10 (July 14, 2014) <http://sustainabledevelopment.un.org/content/documents/4523zerodraft.pdf> [hereinafter Proposed SDGs].

101. *Id.*

102. HIGH-LEVEL PANEL OF EMINENT PERSONS ON THE POST-2015 DEVELOPMENT AGENDA, A NEW GLOBAL PARTNERSHIP: ERADICATE POVERTY AND TRANSFORM ECONOMIES THROUGH SUSTAINABLE DEVELOPMENT 41 (2013), available at <http://www.post2015hlp.org/wp-content/uploads/2013/05/UN-Report.pdf> [hereinafter High-Level Panel Report] (discussing the appearance of the stresses of unsustainable production and consumption patterns, in areas like deforestation, water scarcity, food waste, and high carbon emissions).

103. In fact the Zero-Hunger Challenge is not just a political initiative of the UN but also a personal initiative of Secretary-General Ban Ki-Moon who has recently pledged to actively ensure the adoption of the challenge. In a set of remarks at the World Economic Forum, he made the following public pledge “I am actively working to eradicate hunger. I align myself with all elements of the Zero Hunger Challenge. I encourage others to join in my activities and to take the Challenge. I advocate for actions and policies that achieve Zero Hunger. I will hold myself accountable to deliver on my promise.” See U.N. Secretary-General, Remarks at World Economic Forum World Food Programme Dinner (Jan. 23, 2014), http://www.un.org/apps/news/infocus/sgspeeches/statements_full.asp?statID=2115#_UuREmevTlcw

(indicating that the Zero Hunger challenge is a personal initiative of Secretary-General Ban Ki-moon).

104. High-Level Panel Report, *supra* note 102, at 30.

105. *Id.*

there may be food losses or waste that occur because of droughts and whether events, these types of unanticipated events would not be covered by the proposed collective effort to end food waste, which the High-Level Panel suggested should only apply to “postharvest” losses. Therefore, the goal has been proposed to be “zero food waste” with “food waste” specifically defined to encompass any crop or meat product ordinarily consumed by humans in the country where it is produced.

Even though a “zero food waste” target supporting a “zero hunger” goal will be likely difficult to implement due to the realities of food distribution and current consumption habits, it will still be important to set the standard for food waste at zero as a clear expression that states are obliged to take affirmative steps to eliminate to the greatest extent possible both waste and wasteful practices. A useful analogy for “zero food waste” is the “no litter” policy in many countries. While the reality may not be an environment free of litter due to the inattention and the malfeasance of various actors, there is a shared understanding that it is better for communities to have a standard of “no litter” than an arbitrarily negotiated acceptable amount of litter. A complete prohibition on post-harvest food waste has a greater chance of creating a normative shift in states that have not prioritized basic food protection as well as helping the states to raise financing more quickly to address the problems.

Food waste is not being given the attention it deserves in the SDG process. While a negotiated target reflects some level of institutional commitment, each proposed target under the proposed SDGs will end up competing for the attention of policymakers operating with limited budgets. In the case of Goal 12, efforts to reduce food waste will also compete for funding and support on hazardous chemical reduction and other broader recycling efforts. Food waste should have been assigned its own goal with targets on how to achieve food waste reductions to indicate that it is a priority issue. The current proposed goals lack the needed clarity and structure for creating national and collective action on critical environmental security issues. In addition to the problem of setting vague goals, it is regrettable that the various U.N. stakeholders in their outcome document opted to characterize food waste as a primarily consumption and production issue under Goal 12 rather than as a food security issue under Goal 2. National implementation of these goals will likely be assigned to individual national agencies. Because the extent of existing food waste is a problem for long-term hunger and nutrition, it would have been better classified as a target for Goal 2 to “[e]nd hunger, improve nutrition, and promote sustainable agriculture”¹⁰⁶ so that food and nutrition related national agencies would be in charge of identifying opportunities to reduce food waste. Assuming that food waste remains as a target rather than being designated as a goal when the U.N. General Assembly reviews the goals, the food waste target really should be incorporated across multiple goals including Proposed Goal 2, Proposed Goal 6 on ensuring availability of water, and Proposed Goal 14 on conserving ocean resources.¹⁰⁷

106. Proposed SDGs, *supra* note 100, at 4.

107. *Id.* at 4, 7, 11.

If the U.N. General Assembly in September 2014 adopts any of the proposed SDGs, it is likely that states will adopt the abstract goal of ensuring sustainable consumption and production. Even with the adoption of such a goal, there will remain the question of what the next steps might be and what role, if any, international laws, regional laws, and national laws will play in achieving the food waste reduction targets. The final part of this article shares a number of suggestions about why law matters in systematically reducing food waste.

IV. NEEDED LAW AND POLICY INTERVENTIONS TO ACHIEVE A GOAL OF NEAR ZERO FOOD WASTE

Reducing food waste is not a panacea for achieving food security but it is a critical first step to re-establishing a baseline from which rational food production decisions can be made about where and how to invest in additional food production. Law plays a number of key roles in achieving a new sustainable development goal based on waste at the international, regional, and national level. Assuming that a state has some (albeit not much) financial capabilities, the most important interventions to be taken are those at the national level.

A. *International interventions*

At the international level, as described in Part II, most states accept a human “right to food.” Implementing this right in relation to reducing food waste particularly in food insecure countries has two parts. States that are chronically food insecure due to large levels of post-harvest waste resulting from lack of storage processing infrastructure or market infrastructure have a legal obligation to their citizens to ask for international assistance. Countries that are capable of delivering overseas development assistance have an obligation to support the efforts of states to assist their communities in reducing post-harvest waste. Part III of the Voluntary Guidelines on the Right to Food provides that, “[c]onsistent with the Monterrey Consensus, developed countries should assist developing countries in attaining international development goals, including those contained in the Millennium Declaration, by providing adequate technical and financial assistance.”¹⁰⁸ Countries that receive aid are expected to spend the money effectively to achieve development goals and targets and be accountable for the aid.¹⁰⁹

In the context of food waste, this means that states, either individually through their development aid agencies, or collectively through multilateral financial institutions, such as the Asian Development Bank, Inter-American Development Bank, the African Development Bank, and the World Bank, should be supplying loans and grants to states to address pro-poor reduction of food waste. The current structure of agricultural aid that puts close to ninety-five percent of support funds into crop production and only five percent into post-harvest challenges needs to be

108. THE RIGHT TO FOOD, *supra* note 40, at 36, ¶ 12.

109. *Id.*

reconceived.¹¹⁰ States are beginning to make contributions targeted at addressing the chronic food waste problems associated with poor storage options. For example, the United States through the USAID Program as part of its “Feed the Future” program is creating opportunities in Rwanda for strengthening the food chain post-harvest and avoiding waste by providing funding for rehabilitating rural feeder roads so that farmers will be able to better transport their crops.¹¹¹ While this support should make a definite positive contribution to “field to market” transportation, the strategy paper also raises some interesting tensions regarding which activities are best underwritten by development donors and which activities belong in the realm of private capital. In order to counter the post-harvest losses of beans and maize, which can be as high as thirty percent,¹¹² the USAID “Feed the Future” program has been supporting the Government of Rwanda with investments to improve “post-harvest handling practices and technologies, engaging private investors in the construction of new storage infrastructure, and linking farmers to storage, conditioning, and processing centers.”¹¹³ This program may indeed deliver better food security at a national level but its approach raises some questions for individual food-poor communities. Should storage infrastructure be under the control of private investors as the Rwanda program seems to provide? Are these investors required to make any concessions to the most vulnerable farmers to ensure that their crops can be stored? Equity needs to be a primary factor in developing food loss programs that support the most marginalized and likely most food-deficient groups. Otherwise, infrastructure programs may end up creating new and unintentional sharecropping relations.

Therefore, any international cooperation programs designed to reduce food waste must not interfere with the priorities of individual states to create long-term national food security strategies. Even though many donor states condition their aid in part to protect against corruption practices, recipient states should have some control over how aid will be distributed to the public. Depending on the ideology of a given state, recipient states should have the ability to directly invest greater resources in publicly shared benefits, such as a government facilitated market designed for the most vulnerable populations, rather than being required to indirectly support private investors such as the owners of storage warehouses. International interventions in law that are undertaken for the purpose of achieving a “right to food” should focus on creating an inclusive economy. The “right to food” creates not only positive obligations for states to ensure access to food for its citizens by eliminating waste, but also creates obligations of restraint for third-

110. UNEP, THE ENVIRONMENTAL FOOD CRISIS, *supra* note 9, at 35.

111. U.S. AGENCY FOR INT’L DEV., RWANDA: FY 2011-2015 MULTI-YEAR STRATEGY 23 (2011), available at <http://www.feedthefuture.gov/sites/default/files/country/strategies/files/RwandaFeedtheFutureMulti-YearStrategy.pdf>

112. *Id.* at 21.

113. *Id.*

party cooperating states who provide financial and technical support to states needing external assistance.¹¹⁴

The “Feed the Future” program is an important United States’ development program. But more needs to be done to ensure that producers are supported in protecting what they are already growing. The United States keeps a scorecard of its progress to reduce global poverty and hunger as part of its internal accountability.¹¹⁵ Surprisingly, the scorecard does not address waste as one of its metrics.¹¹⁶ One recommendation for the future of “Feed the Future” is for USAID to include specific reduction of post-harvest food waste as one of its key indicators of success. Until waste is systematically tackled, future new food production may also end up being inadvertently wasted.

B. Regional Interventions

One of the recurring triggers for food waste in developing countries is the lack of a viable market for surplus goods. Presently, groups of African farmers sell their goods into European markets because European companies have assisted them with creating distribution chains. This very same food could be consumed regionally with lower transportation emissions and lower waste rates. Due to a variety of aesthetic standards that have been imposed on food,¹¹⁷ there have been repeat incidents of food waste. Once a shipment has been rejected on potential aesthetic quality grounds then it is difficult for local wholesalers or growers to locate an alternative market in a timely fashion.

Regionally, greater attention needs to be given to growing functional intraregional markets among some of the low value regional economic communities, including the Economic Community of West African States and the Economic Community of Central African States,¹¹⁸ so that growers will have a broader array of alternatives markets where they can sell their produce, livestock,

114. Carmen Gonzalez, *International Economic Law and the Right to Food*, in *RETHINKING FOOD SYSTEMS: STRUCTURAL CHALLENGES, NEW STRATEGIES AND THE LAW* 1, 4 (Nadia Lambek et al. eds., 2013), available at <http://ssrn.com/abstract=2315311> (arguing that states contracting in bilateral and multilateral trade and investment agreements have an obligation to “ensure that these agreements do not violate the right to food of vulnerable populations in other nations”).

115. U.S. AGENCY FOR INT’L DEV., *FEED THE FUTURE: PROGRESS SCORECARD 1-2*, 5 (U.S. Agency for Int’l Dev. eds., 2013), available at http://feedthefuture.gov/sites/default/files/resource/files/feed_the_future_scorecard_2013.pdf (including specific metrics on reducing poverty rates and stunting rates in certain States with targets of reducing poverty and stunting by 20% by 2017).

116. *Id.*

117. TRISTRAM STUART, *WASTE: UNCOVERING THE GLOBAL FOOD SCANDAL* 106-107 (W.W. Norton & Co. eds., 2009) (some aesthetic standards in the European Union were removed in 2008 so that a banana for the EU market does not need to curve and a cucumber does not need to be straight; other standards remain in place for apples, citrus fruits, peaches, pears, strawberries and tomatoes).

118. Mwangi S. Kimenyi et al., *Introduction: Intra-African Trade in Context*, in *ACCELERATING GROWTH THROUGH IMPROVED INTRA-AFRICAN TRADE* 1, 3 (The Brookings Institution eds., 2012), available at http://www.brookings.edu/~media/research/files/reports/2012/1/intra%20african%20trade/01_intra_african_trade_full_report.pdf.

or dairy. In Africa as of 2009, intra-African trade only accounts for ten percent of the trade, which is a far lower intraregional trade rate than in other regions of the world.¹¹⁹

Achieving these potential common markets will require a high degree of legal harmonization in rules and regulations involving customs, transport, trade tariffs and cross-border financing. For example, one of the current barriers to regional trade in Western Africa is interpretive differences between Francophone and Anglophone banking regulations leading to a lack of exchange.¹²⁰ With chronic technical barriers such as these, there is an urgency for the introduction of a combination of regional public and private law mechanisms coupled with public education to help create new markets that may absorb some of the food products that are currently going to waste. Some of the tools already exist but there has been a lack of attention by states in entering into legal arrangements that would bolster individual state efforts to fulfill their “right to food” obligations by eliminating waste. For example, in 1970, an international agreement was introduced by the United Nations Economic Commission for Europe requiring states to handle any perishable food using the appropriate equipment necessary for handling the given food product.¹²¹ By December 2011, among the North African states who would otherwise be eligible, only the government of Tunisia has signed the agreement.¹²² The non-participation of the other North African states might be interpreted as a reflection that food waste arising through trade is not a priority.¹²³

A second regional intervention that may generate concrete opportunities for food waste reduction is South-to-South technology transfers. For decades, there has been an assumption that the flow of technology transfer is from the Global North to the Global South. Yet, there are a number of innovations designed in the Global South to handle geographical and climate specific challenges that should be mainstreamed throughout the Global South. FAO is well-positioned to organize a Global South learning network to reduce food waste. Three recent technologies with their roots in the Global South are illustrative of the value of a South-to-South

119. *Id.* at 1-2 (citing Asian intraregional trade at 17% of total trade and European Union intraregional trade at 60%).

120. African Trade Policy Centre of the U.N. Econ. Comm’n for Africa, Gender and Intra African Trade: The Case of West Africa, 2, No. 9 (2010), available at <http://www.uneca.org/sites/default/files/publications/atpcpolicybriefs9.pdf> (prepared by Amal Nagah Elbeshbishi).

121. Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be used for such Carriage (ATP), Sept. 1, 1970, 1028 U.N.T.S. 121, available at http://www.unece.org/fileadmin/DAM/trans/main/wp11/wp11doc/ATP-2013_e.pdf (even though this treaty might be considered primarily a health and safety treaty, it is also a treaty that can lead to a reduction in waste if properly implemented.).

122. U.N. ECON. COMM’N FOR AFRICA, HARMONIZING POLICIES TO TRANSFORM THE TRADING ENVIRONMENT: ASSESSING REGIONAL INTEGRATION IN AFRICA VI, at 27, U.N. Sales No. 14.II.K.1 (2013), available at http://www.uneca.org/sites/default/files/publications/aria_vi_english_full.pdf (citing Table 4.3).

123. *Id.* (stating the countries that have not yet signed include Algeria, Morocco, Libya, and Mauritania).

technology network. First, Cede Greenhouses in South Africa has designed a tunnel greenhouse called the Africa house, which is designed to withstand harsh growing conditions based on fluctuations between savannah winds and scorching heat.¹²⁴ Second, researchers at Universiti Sains Malaysia have developed FruitPlast by converting tropical fruit waste into flour.¹²⁵ This material can be fabricated into a biodegradable plastic film that can be used like normal plastic wrap.¹²⁶ The material will naturally degrade in three to six months, will last one to two years on the shelf, and will cost ten percent less than the current non-biodegradable plastic bags commercially used.¹²⁷ Finally, there are also refined technologies based on traditional designs that can be widely disseminated in areas where high-tech solutions are not viable. In Sudan, Mohammed Bah Abba designed a “zeer,” which is an evaporative cooler based on two vessels separated by wet sand which is re-wet twice a day, and which extended shelf life of vegetables from two days up to twenty days.¹²⁸ This technology has been further refined to create a “zero energy cool chamber” that is capable of cooling up to 100 kilograms of food.¹²⁹ Each of these technologies has a role to play in food waste reduction and can be incorporated into national strategies.

Law should play a role in South-to-South technology networks not just by creating distribution chains for the new technologies, but also in protecting the intellectual investment in new ideas with potentially large markets, such as Malaysian researchers’ FruitPlast idea. In order to support this type of food loss reduction innovation, the donor states discussed in the subpart above may want to invest through structured grants or regional business enterprise contests in supporting dissemination of technology within the Global South.

C. National Interventions

While this section started with international and regional interventions, the most important interventions in eliminating food waste will ultimately be at the national level, since this is where decision-makers are likely able to respond swiftly to the demands of “ordinary” food insecurity.¹³⁰ While states may work

124. *Community*, CEDE GREENHOUSES, <http://cedegreenhouses.co.za/Community.html> (last visited June 29, 2014); see also *Structures*, CEDE GREENHOUSE, <http://cedegreenhouses.co.za/images/Basic-Structure-Design.jpg> (last visited June 29, 2014) (describing additional UVA and wind protection to address Southern African weather conditions).

125. Andrea Filmer, *USM Invents Cheap Biodegradable Plastic Bags*, ECOTOURISMHUB.COM (May 14, 2010), <http://ecotourismhub.com/fruitplast.html>.

126. *Id.*

127. *Id.*

128. Musa Elkheir, *The Zeer Pot: A Nigerian Invention Keeps Food Fresh Without Electricity*, SCIENCE IN AFRICA (Sept. 2004), <http://www.sciencein africa.co.za/2004/september/refrigeration.htm>.

129. Brian Lipinski et al., *Reducing Food Loss and Waste, Working Paper 14* (UNEP World Res. Inst., Working Paper, June 2013), available at http://pdf.wri.org/reducing_food_loss_and_waste.pdf.

130. As noted earlier in this paper, there are numerous causes for food insecurity including armed conflict, internal displacement, and unusual disasters. This paper is not addressing food waste in the context of these extraordinary tragedies but is focused instead on “ordinary” food insecurity caused by

cooperatively in seeking financial and technical cooperation, much of the effort to fulfill the human “right to food” by eliminating systemic food waste will be territorially based. The situation in Kenya in 2011 exemplified the need for greater national political investment, particularly in infrastructure. During 2011, communities in North Kenya were going hungry from a lack of access to basic foods while farmers in the Rift Valley had surpluses that were going to waste.¹³¹

The most urgent national need is for physical infrastructure. Farmers need storage units, and, depending on the product, the units may need to be refrigerated, or at least designed to keep food relatively cool. The same farmers (if they do not sell to wholesalers) will need to have access to either processing facilities for surpluses or to markets that can absorb the surplus. In either case, there is likely to be a need for a reliable transport network. Africa is a young region with much of the available infrastructure being either a product of European colonialism or the Chinese expansion.¹³²

But physical infrastructure alone will not serve to reduce waste; law has a facilitative role to play. In a number of instances, law, or at least what is perceived as “law”, may be contributing to systems of food waste. In some regions of Africa, it is difficult to get food to market not simply because of the hurdles of infrastructure but also due to frequent police roadblocks and checkpoints where taxes might be collected and bribes are often paid.¹³³ In other parts of Africa such as Tunisia, burdensome licensing processes can prevent food from coming to market.¹³⁴ These roadblocks and licensing requirements may be sufficiently onerous to prevent sellers from putting their surplus goods into the channels of commerce.

Just as existing law and legal practices may end up encouraging waste, the law can also remove hurdles by creating incentives or removing disincentives. For example, as an incentive for communities to invest in food waste reduction technologies, the national government could make available pro-poor grants or loans that would supply a public subsidy for farmers in need of storage or cooling facilities. Governments must also contribute to planning for intermediary markets, not just subsistence farmers. Here, governments can provide assistance in the form of producer organizations that can coordinate production among members to

lack of community infrastructure and lack of government support to rural food producers. *See supra* Part II.

131. Olumide Taiwo & Nelipher Moyo, *Eliminating Barriers to Internal Commerce to Facilitate Intra-regional Trade*, in ACCELERATING GROWTH THROUGH IMPROVED INTRA-AFRICAN TRADE 8 (The Brookings Institute eds., 2012), available at http://www.brookings.edu/~media/research/files/reports/2012/1/intra%20african%20trade/01_intra_african_trade_full_report.pdf.

132. *Id.* at 10 (describing the boom in road infrastructure in Africa due to Chinese investments).

133. *Id.* at 11 (describing a particular problematic stretch of road in Cameroon with forty-seven roadblocks and twenty-seven from Mombasa, Kenya to the Ugandan border).

134. *How a Fruit Seller Caused Revolution in Tunisia*, CNN (Jan, 16, 2011), <http://www.cnn.com/2011/WORLD/africa/01/16/tunisia.fruit.seller.bouazizi> (describing the individual who sparked the protests in Tunisia that started the revolution in that State as a fruit/vegetable retailer who was unable to easily obtain a vendor permit from the government).

ensure a diversity of products that can withstand fluctuations in market prices. With sufficient numbers, a producer organization may have sufficient clout to lobby for future public sector investment in food processing and food storage. Producer organizations may also be able to better share risks associated with being a farm producer. East African dairy farmers represent a successful example of the economic clout of a medium sized producer organization.¹³⁵ Operating within a collective governance framework, East African dairy farmers who previously competed against each other now operate group owned and run refrigerated milk collection centers and milk processing facilities.¹³⁶

In terms of removing disincentives, states can create regulations that eliminate existing unfair trading practices, particularly between Global North companies and Global South producers. Global South countries may forbid contracts that currently permit large processing companies or retailers from rejecting products on the basis of aesthetics.¹³⁷ If the companies cannot prove that they are rejecting goods on the basis of human safety reasons, then the companies will be expected to fully perform on their contracts. This intervention will be particularly important in the case of resource-limited countries that export food needed to other countries where “quality” regulations continue to dictate appearances of products and not just the nutritional values. Arguably, this approach could lead to a reduction in off-shoring of agriculture to Africa from certain retailers who may insist on certain food aesthetics. Given the pressures that this export-oriented agriculture has already placed on parts of Africa’s food chain, the focus on Africa’s food markets rather than foreign markets may be the needed stimulus to generate production for regional markets.

Given that the government has limited funding and many Africa states confront ongoing challenges with petty corruption, one possible way of funding national food waste reduction reforms is social impact bonds. These bonds could be funded by private investors who would receive bond payments from the government when specific service providers deliver on pre-defined service goals. In the Global North, these bonds have been used to cover the gamut from prisoner rehabilitation¹³⁸ to asthma management.¹³⁹ Using a social impact bond to reduce

135. Jennifer Wheary, *In East Africa, Milk is Money*, WORLD ARK MAG. (Spring 2013), <http://www.heifer.org/join-the-conversation/magazine/2013/spring/in-east-africa-milk-is-money.html>.

136. *Id.*

137. See Sarah Bentley, *Who’s to Blame for Supermarket Rejection of Ugly Fruit and Vegetables?*, ECOLOGIST (Dec. 29, 2011), http://www.theecologist.org/News/news_analysis/1174157/whos_to_blame_for_supermarket_rejection_of_ugly_fruit_and_vegetables.html, for a description of the 90% of a wasted crop in a UK field because of the failure to meet aesthetic standards described as “technical specifications.”

138. David W. Chen, *Goldman to Invest in City Jail Program, Profiting if Recidivism Falls Sharply*, N.Y. TIMES, (Aug. 2, 2012), http://www.nytimes.com/2012/08/02/nyregion/goldman-to-invest-in-new-york-city-jail-program.html?_r=0.

139. Press Release, Social Finance, Inc., The California Endowment Awards Grant to Social Finance and Collective Health (Mar. 25, 2013), available at <http://www.socialfinanceus.org/sites/socialfinanceus.org/files/Fresno%20Asthma%20Demonstration%20Project%20Press%20Release.pdf>.

hunger by reducing food waste would be a conceivable investment that NGOs and private investors particularly through corporate social responsibility programs might finance.

V. CONCLUSION

It is essential that any discussions of the human “right to food” contain some recognition that states have an obligation to reduce food waste based on the already existing human “right to food.” With nearly 1.3 billion tons of food being wasted annually, there is room for improvement at many levels. This essay assumes that because of the attention being given to problem with excessive food waste as part of the Zero Hunger Challenge, international policymakers will adopt at least a SDG target that will prioritize eliminating food waste. This is significant because the SDGs will provide the needed international framework for creating an accountability regime to measure progress towards sustainability.¹⁴⁰ Unfortunately, the specific goal and target that have been proposed by the international community to reduce food waste are inadequate to address the food security challenges related to the massive inefficiencies that currently exist in the food production, distribution, and retail system. As part of food security strategies, insufficient funding has been allocated to address food waste elimination; most funding is provided instead to increase production that may eventually go to waste. A zero food waste SDG or target would prioritize the political need for protecting long-term food resources by reducing waste and should contribute meaningfully to achieving a green economy.

Due to limited technical and financial capacities, states in the Global South experience greater challenges with reducing food waste in part because of a lack of both commercial infrastructure and access to basic storage technologies that will protect agricultural yields. There are a number of legal interventions that are possible from increasing targeted aid from the Global North to the Global South for food waste reduction, creating regional markets, and introducing national “fair trade” laws that prevent food from being wasted on the basis of aesthetics. With population projections at nine billion by 2050,¹⁴¹ and much of this growth in the Global South, we collectively must do more to achieve the “right to food” in order to “waste not, want not.”

140. SAKIKO FUKUDA-PARR, INT’L POLICY CENTRE FOR INCLUSIVE GROWTH, GLOBAL GOALS AS A POLICY TOOL: INTENDED AND UNINTENDED CONSEQUENCES I (2013), *available at* <http://sustainabledevelopment.un.org/content/documents/864IPCOnePager193.pdf>.

141. U.S. CENSUS BUREAU, INTERNATIONAL DATA BASE WORLD POPULATION: 1950-2050 (June 2011), *available at* <http://www.census.gov/population/international/data/idb/worldpopgraph.php>.



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