
(RE)FRAMING THE FOOD WASTE NARRATIVE: INFRASTRUCTURES OF URBAN FOOD CONSUMPTION AND WASTE IN INDONESIA

Tammara Soma

The world's industrial food system is rife with paradox. The UN's Food and Agriculture Organization, along with the British Institute of Mechanical Engineers, reported that 30 to 50 percent of the food produced annually for global human consumption is wasted.¹ That staggering amount of wasted food is particularly appalling when one considers that industrial agricultural is responsible for 70 percent of global freshwater withdrawals, is highly dependent on fossil fuels, and has been identified as one of the Earth's largest contributors to anthropogenic greenhouse gas emissions.²

Some argue that reducing food waste is "a strategy for closing the food gap between food available today and food needed in 2050 to adequately feed the planet's

Tammara Soma is a Postdoctoral Fellow, Department of Geography and Planning, University of Toronto.

¹ See: Food and Agriculture Organization (FAO), "Global Food Losses and Food Waste" (Study conducted for the International Congress "Save Food at Interpack," May 12–18, 2011, Düsseldorf, Germany); and British Institute of Mechanical Engineers (IMECHE), "Global Food: Waste Not, Want Not," November 2, 2013, <http://www.imeche.org/knowledge/themes/environment/global-food>, accessed June 26, 2017.

² See: Paul Roberts, *The End of Food* (New York: Houghton Mifflin, 2008); Petra Döll, "Vulnerability to the Impact of Climate Change on Renewable Groundwater Resources: A Global-scale Assessment," *Environmental Research Letters* 4, 3 (2009): 035006; and Sonja J. Vermeulen, Bruce M. Campbell, and John S. I. Ingram, "Climate Change and Food Systems," *Annual Review of Environment and Resources* 37 (2012): 195–222.

projected 9.3 billion people.”³ The phenomenon of “scarcity amidst plenty” is evidenced by the fact that an estimated one billion people worldwide are malnourished, even though there is enough food to feed approximately ten billion people.⁴ However, the dominant food waste narrative—which states that food *waste* (due to consumer behavior) is a problem of the global North while food *loss* (due to harvesting limitations) is a problem of the global South—is overly simplistic and fails to account for factors such as the globalization of food production, market liberalization, urbanization, the growth of modern food infrastructure, and class/income inequality.

Research on food waste in the global South has largely ignored food wasted by consumers⁵ and is, instead, primarily focused on “food loss” during agricultural/processing stages.⁶ Because food waste is a multi-scalar problem and the trade of food products is connected globally, I use Zsuzsa Gille’s Food Waste Regime (FWR) framework in this essay to demonstrate that food waste solutions that are limited to innovation in a few sites or countries will likely exacerbate existing inequalities.⁷ The focus on increasing mechanical interventions at the farm level means that increased consumer consumption escapes criticism and may continue unabated.

Using urban Indonesia as a case study, in this paper I reframe the food waste narrative in the global South to reflect a more accurate and nuanced reality of food waste. To accomplish this, it is imperative to examine the transformation in food provisioning infrastructures and how this change impacts food consumption practices. The article also illuminates the need to understand the social element of food waste—in particular, the role of relationships in the creation of household food waste in Indonesia. By exploring the nexus between food provisioning, consumption, and waste, I hope to answer the following research questions. First, how has the growth of modern food retail systems transformed food consumption, provisioning, and wasting patterns in urban Indonesia? Second, who gets to define what is food and what is

³ Brian Lipinski, Craig Hanson, James Lomax, Lisa Kitinoja, Richard Waite, and Tim Searchinger, “Reducing Food Loss and Waste” (Working Paper, World Resources Institute’s Installment 2 of “Creating a Sustainable Food Future,” June 2013), 2, http://www.wri.org/sites/default/files/reducing_food_loss_and_waste.pdf, accessed June 26, 2017.

⁴ See: Rosamond Naylor, “Expanding the Boundaries of Agricultural Development,” *Food Security* 3, 23 (2011): 233; and Eric Holt-Giménez, Annie Shattuck, Miguel Altieri, Hans Herren, and Steve Gliessman, “We Already Grow Enough Food for 10 Billion people ... and Still Can’t End Hunger,” *Journal of Sustainable Agriculture* 36, 6 (July 2012): 595, <https://www.tandfonline.com/doi/abs/10.1080/10440046.2012.695331>, accessed April 4, 2018.

⁵ See exceptions, such as: Susan H. H. Oelofse and Anton Nahman, “Estimating the Magnitude of Food Waste Generated in South Africa,” *Waste Management and Research* 31, 1 (2013): 80–86; Gülten Pekcan, Eda Koksall, Ozge Kucukerdonmez, and H. Özel, “Household Food Wastage in Turkey” (Food and Agriculture Organization of the United Nations, Statistics Division, Working Paper Series No: ESS/ESSA/006e; Ankara, Turkey, February 2006); Violeta Stefan, Erica van Herpen, Ana Alina Tudoran, and Lisa Lähteenmäki, “Avoiding Food Waste by Romanian Consumers: The Importance of Planning and Shopping Routines,” *Food Quality and Preference* 28 (2013): 375–81; and Gustavo Porpino, Juracy Parente, and Brian Wansink, “Food Waste Paradox: Antecedents of Food Disposal in Low Income Households,” *International Journal of Consumer Studies* 39, 6 (2015): 619–29.

⁶ Felicitas Schneider, “Review of Food Waste Prevention on an International Level,” *Proceedings of the Institution of Civil Engineers* 166, 4 (2013): 189.

⁷ Zsuzsa Gille, “From Risk to Waste: Global Food Waste Regimes,” *The Sociological Review* 60, 2 (supplement; December 2012): 27.

waste? To answer the research questions, I conducted a qualitative study employing multiple repeat in-depth interviews with twenty-one household respondents of varying incomes, observing participants and going along on their shopping trips,⁸ and conducting twelve in-depth interviews with key stakeholders across the food system in Indonesia. As noted above, I use Gille's Food Waste Regime as an analytical framework to show how food production, distribution, and waste are a result of social relations.⁹

The Need to (Re)frame the Food Waste Narrative

Research on urban consumer food waste in the global South comes at a critical moment, as 66 percent of the world's population is projected to be urbanized by 2050, with the most rapid urban growth projected to occur in Asia and Africa.¹⁰ According to UN-Habitat data, cities in the Asia Pacific are home to approximately half of the global urban population.¹¹ It has also been estimated that the number of middle-class consumers worldwide will increase to approximately five billion by 2030, with the majority of growth occurring in Asia.¹² Robinson and Goodman noted that the definition of middle class is neither straightforward nor homogeneous. For some scholars the middle class represents the "bearers of modernity," while for others the middle class includes the new rich, and a class of professional as well as managerial bourgeoisie. This income trend will mean that the consumption patterns of a significant number of people in the global South will change. Middle-class groups "learn and perform 'modernist' consumption,"¹³ reflecting similar food consumption patterns found in developed countries. Increasingly, consumption habits of affluent populations in developing countries will converge with consumption patterns of those in developed countries, meaning that there will be an increase in demand for dairy, meat, and processed foods.¹⁴ In Indonesia, the middle-class population grew from 1.6 million in 2004 to 50 million in 2009 and was estimated at 150 million in 2014.¹⁵

⁸ Margarethe Kusenbach, "Street Phenomenology: The Go-Along as Ethnographic Research Tool," *Ethnography* 4, 3 (2003): 455–85.

⁹ Gille, "From Risk to Waste," 27–46.

¹⁰ "World Urbanization Prospects Highlights," United Nations, 2014, <http://esa.un.org/unpd/wup/Highlights/WUP2014-Highlights.pdf>, accessed June 26, 2017.

¹¹ UN-Habitat, "The State of Asian Cities 2010/11" (State of Cities Regional Reports, United Nations Human Settlements Programme; Fukuoka, Japan, 2010), 1–280.

¹² Homi Kharas, "The Emerging Middle Class in Developing Countries" (OECD Development Centre, Working Paper No. 285, January 2010), 6, <http://www.oecd.org/social/poverty/44457738.pdf>, accessed June 26, 2017. Robinson and Goodman noted that the definition of middle class is neither straightforward nor homogeneous. For some scholars the middle class represents the "bearers of modernity," while for others the middle class includes the new rich, and a class of professional as well as managerial bourgeoisie. See David Goodman and Richard Robison, *The New Rich in Asia: Mobile Phones, McDonald's and Middle Class Revolution* (London: Routledge, 2013), 3–4.

¹³ Jon Cloke, "Empires of Waste and the Food Security Meme," *Geography Compass* 7, 9 (2013): 632.

¹⁴ H. Charles, J. Godfray, John R. Beddington, Ian R. Crute, Lawrence Haddad, David Lawrence, James F. Muir, Jules Pretty, Sherman Robinson, Sandy M. Thomas, and Camilla Toulmin, "Food Security: The Challenge of Feeding 9 Billion People," *Science* 327, 5967 (February 12, 2010): 812–18.

¹⁵ Fahwani Y. Rangkuti and Thom Wright, "Indonesia Retail Report Update 2013" (USDA Global Agricultural Information Network, Report Number ID1358, Jakarta, Indonesia, December 13, 2013), https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Retail%20Foods_Jakarta_Indonesia_12-13-2013.pdf, accessed June 26, 2017.

With growing middle-class consumption in Indonesia, and continuing extreme income disparity, the associated problems of food insecurity will occur alongside the problems of food waste.

Despite rapid urbanization, increasing numbers of middle-class consumers, and changing infrastructure in the global South, the food waste phenomenon has been identified primarily as an issue of “food loss” in the global South. “Food loss” is defined as wasted food occurring at production, post-harvest, and processing stages in the food-supply chain.¹⁶ Meanwhile, the term “food waste” refers to losses that occur at the end of the food chain (retail and consumer) and is related to “wasteful behavior” on the part of consumers and retailers.¹⁷ Food loss occurs during harvest due to financial limitations, poor infrastructure, inadequate handling skills, and the lack of mechanization, packaging, and storage facilities.¹⁸ Food waste in developed countries is mostly attributed to consumer behavior, namely, the “careless attitudes of consumers towards food” or the “throwaway mindset”¹⁹ and a lack of coordination among the various actors in the supply chain. Consumers’ poor or nonexistent food-purchase planning and retailers’ confusing best-before-date labeling are other food waste factors identified in countries with large middle and upper classes.²⁰ Thus far, studies have not adequately distinguished between urban and rural food waste, mostly lumping countries of the global South into categories such as “South and Southeast Asia.”²¹ In the case of Southeast Asia, where industrialized megacities such as Bangkok, Manila, and Jakarta are located in countries with a significant agrarian sector, generalization about the issue of food loss and food waste is problematic.²²

The issue of consumer food waste in the urbanized global South, and in Indonesia in particular, has also largely been ignored, even though urbanization and diversification of diet (such as buying more meat and dairy than in the past) are strongly correlated to an increase in food waste at the later stages of the supply chain.²³ To feed growing urban populations, localized short-distance supply chains have been replaced with elaborate global food supply chains. These changes require various new infrastructures to facilitate the logistics of food distribution (such as

¹⁶ Julian Parfitt, Mark Barthel, and Sarah Macnaughton, “Food Waste within Food Supply Chains: Quantification and Potential for Change to 2050,” *Philosophical Transactions of the Royal Society B: Biological Sciences* 365, 1554 (2010): 3065–81.

¹⁷ Parfitt et al., “Food Waste within Food Supply Chains,” 3073.

¹⁸ See: FAO, “Global Food Losses and Food Waste,” v; and IMG, “Global Food: Waste Not, Want Not,” 15.

¹⁹ FAO, “Global Food Losses and Food Waste,” v. For a critique of the so-called “throwaway society,” see David Evans, “Blaming the Consumer—Once Again: The Social and Material Contexts of Everyday Food Waste Practices in Some English Households,” *Critical Public Health* 21, 4 (August 2011): 429–40.

²⁰ See: FAO, “Global Food Losses and Food Waste”; and Tristram Stuart, *Waste: Uncovering the Global Food Scandal* (New York: Norton and Company, 2009).

²¹ See, for example, FAO, “Global Food Losses and Food Waste,” v.

²² Paul Teng and Sally Trethewie, “Tackling Urban and Rural Food Wastage in Southeast Asia: Issues and Interventions” (policy brief for Centre for Non-Traditional Food Security Studies, October 2012), https://www.rsis.edu.sg/wp-content/uploads/2014/07/PB121001_NTS_PB17.pdf, accessed June 26, 2017.

²³ Parfitt et al., “Food Waste within Food Supply Chains,” 3067.

roads, long-haul transport, storage, and refrigeration)—that impact the generation of food waste.²⁴

In their review of the food waste literature, Julian Parfitt et al. noted that they were unable to find published studies related to post-consumer food waste in the developing world. They attributed this to consumers' tendency to "buy today, eat today," which results in less food waste.²⁵ However, with a growing number of supermarkets, urbanization, and women's increased labor-force participation,²⁶ this paper demonstrates that the traditional "buy today, eat today" food culture is changing (especially in upper- and middle-income populations) as a result of advances in food distribution, storage, and available refrigeration.²⁷ The rise of retail modernization²⁸ entails new ways of building cities and leads to land-use policies that favor large infrastructures, such as hypermarkets. Understanding food-procurement processes also entails addressing and analyzing issues of class and spatial access. For example, in Indonesia, growing urbanization and the development of hypermarkets are changing the landscape of food retailing. Traditional food sources, such as wet markets and mobile vendors, are increasingly difficult to find, while bulk shopping for food at supermarkets is becoming the norm. These spatial transformations demonstrate the link between urban planning and food-consumption practices.

Case Study: Bogor Indonesia

This study took place in the City of Bogor, in the province of West Java, Indonesia (see maps on next page). Bogor is a city with a population of more than 1,030,000 people.²⁹ It is part of the Greater Jakarta region and has experienced rapid population growth due to urbanization and its proximity to Jakarta. Bogor's urban center is among the most densely populated spots in the world, with several hundred thousand people living in an area of approximately twenty square kilometers (7.7 square miles). Bogor City, which is part of the Bogor Regency, is a municipality divided into six districts (*kecamatan*). In 2010 Bogor's planning department embarked on vertical growth to combat sprawl and accommodate a growing population, and now Bogor's skyline includes many high-rise apartment buildings. Due to the high cost of land in Bogor, however, real estate development continues to sprawl beyond the city, consuming prime agricultural land. Decentralization and the deregulation of investments in Indonesia have also led to the proliferation of elite residential enclaves

²⁴ Parfitt et al., "Food Waste within Food Supply Chains," 3067.

²⁵ Parfitt et al., "Food Waste within Food Supply Chains," 3072

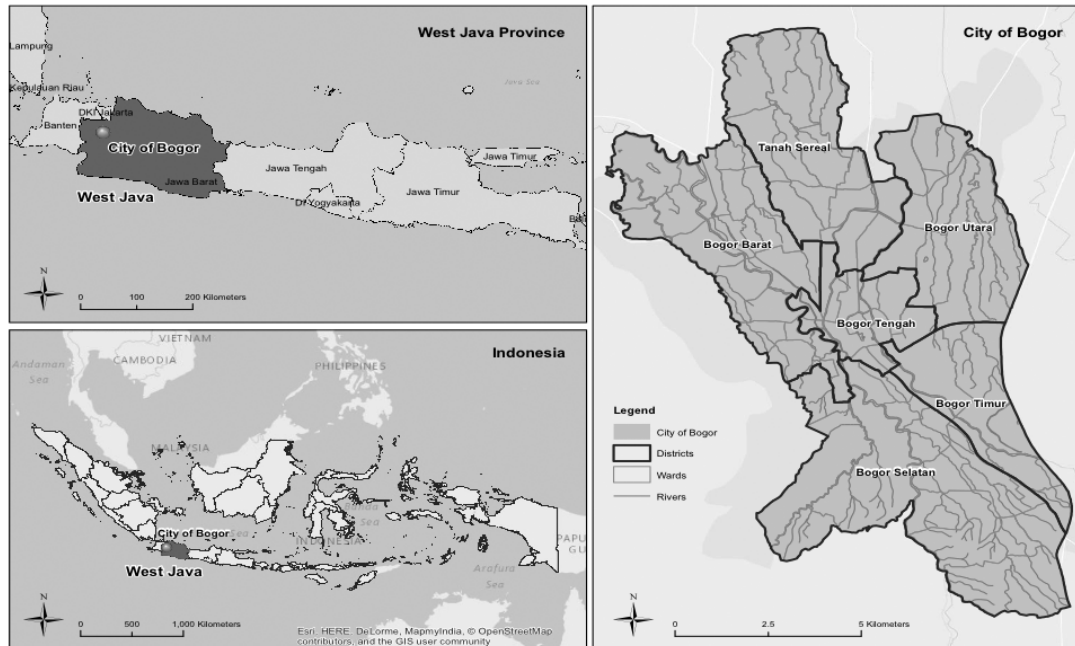
²⁶ Ariane J. Utomo, "Women as Secondary Earners: Gendered Preferences on Marriage and Employment of University Students in Modern Indonesia," *Asian Population Studies* 8, 1 (2012): 65–85, <https://doi.org/10.1080/17441730.2012.646841>, accessed August 15, 2018.

²⁷ Jeremy Greenwood, Ananth Seshadri, and Mehmet Yorukoglu, "Engines of Liberation," *Review of Economic Studies* 72 (2005): 111.

²⁸ Jeffrey Neilson and Bill Pritchard, "The Final Frontier? The Global Roll-out of the Retail Revolution in India," in *Supermarkets and Agri-food Supply Chains: Transformations in the Production and Consumption of Foods*, ed. David Burch and Geoffrey Lawrence (Cheltenham: Edward Elgar Publishing, 2007), 219.

²⁹ Statistics Bogor City, "Area and Total Population by Sub-districts in Bogor City in 2014," <http://bogorkota.bps.go.id/linkTabelStatis/view/id/15>, accessed June 26, 2016.

since the late 1990s.³⁰ Some of these, too, take up land that once was used for food production.



Maps of Indonesia and the City of Bogor (sources: maps created by Asya Bidordinova, based on GfK GeoMarketing GIS data from the University of Toronto Map and Data Library and, for the Indonesia map, Asia GIS File; and for the City of Bogor map, Somma Radite GIS files)

In low- to middle-income countries,³¹ food waste represents 50 to 80 percent of the municipal solid waste stream.³² This is true in the case of Bogor, where a staggering 70 percent of the solid waste collected daily is compostable, and food waste comprises 69 percent of the total solid waste collected.³³ Currently, there is no official composting program nor is there a mandate by the city that organic waste be separated from inorganic waste at the source. However, a pilot program to test recycling and composting officially commenced in thirteen neighborhoods in 2011. In

³⁰ Arai Kenichiro, "Only Yesterday in Jakarta: Property Boom and Consumptive Trends in the Late New Order Metropolitan City," *Southeast Asian Studies*, 38, 4 (2001): 481–51.

³¹ Indonesia, for example, is a lower-middle-income country, with an annual per capita gross national income (GNI) between US\$996 and US\$3,895. See World Bank, "World Bank Country and Lending Groups," <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>, accessed August 16, 2018.

³² See: Bijaya K Adhikari, Suzelle Barrington, and José Martinez, "Predicted Growth of World Urban Food Waste and Methane Production," *Waste Management and Research* 24, 5 (2006): 421–33; and Eric Achankeng, "Globalization, Urbanisation, and Municipal Solid Waste Management in Africa" (African Studies Association of Australia and the Pacific, conference proceedings, "Africa on a Global Stage," 2003,), http://www.wiego.org/sites/wiego.org/files/publications/files/Achankeng_Globalization_Urbanization_MSWMgmt_Africa.pdf, accessed June 26, 2017.

³³ Municipality of Bogor, "DCKTR Terus Perbaiki Layanan Sampah" (City of Bogor, January 3, 2011), https://www.kotabogor.go.id/index.php/show_post/detail/438/dcktr-terus-perbaiki-layanan-sampah, accessed June 26, 2017.

areas outside those pilot communities, waste is often mixed (contaminated) and very difficult to sort. Out of the total amount of daily waste collected by the municipality (1,457 cubic meters/day, of which almost 70 percent is food), only 6.9 percent (100 cubic meters) is composted.³⁴ Moreover, decomposing food waste that is uncollected generates methane, leachates, and microbes, and attracts insects and vermin.³⁵ The Galuga landfill (Tempat Pembuangan Akhir, TPA; lit. “final disposal site”) is the City of Bogor’s only landfill and operates as an open dump that handles mixed waste. Unlike sanitary landfills, open dumps are not regulated by the state and are not environmentally managed to deal with leachates or methane gas emissions. Although the Galuga dump reached its capacity in 2005, the site was still being used in 2016 despite being well over capacity. According to the Indonesian National Standard of waste management, it is the responsibility of residents to get their household waste to a designated Temporary Dump Site (Tempat Pembuangan Sementara, TPS), which are usually located close to neighborhoods. Unfortunately, not all neighborhoods are located near a TPS, and in some cases a convenient TPS is unavailable. Since awareness of waste management is low and the waste infrastructure is lacking, many people litter.

Methodology

This article is based on data I collected from a total of seven months of fieldwork in Bogor between May 2014 and October 2015. I studied twenty-one households that were classified as low ($n = 7$), middle ($n = 7$), or high income ($n = 7$), and conducted twelve key informant interviews. In two of the high-income households, I interviewed domestic helpers instead of the homeowners, as those employees had more knowledge of the families’ food-buying and food-consumption habits. Due to the intimate nature of the research, which required that I hold multiple interviews and record personal observations made within the house, the households were selected through snowball sampling commencing with initial contacts from among my acquaintances. The respondents were drawn from various neighborhoods in the city of Bogor with the exception of two households located in a gated, elite residential community on the city’s periphery (yet still within the regency of Bogor).

I recruited and categorized the households based on income. I made an effort to ensure variety among the households chosen with respect to culture, religious beliefs, workplace, and shopping locations. My research included conducting in-depth, semi-structured repeat interviews;³⁶ “going along”³⁷ with the respondents on food-shopping trips; accompanying them during meal preparation; monitoring their management of

³⁴ Municipality of Bogor, “DCKTR Terus Perbaiki Layanan Sampah,”

³⁵ See: Adhikari et al., “Growth of World Urban Food Waste and Methane”; Martin Medina, “Globalization, Development, and Municipal Solid Waste Management in Third World Cities” (unpublished paper. El Colegio de la Frontera Norte [College of the Northern Border], Tijuana, Mexico, 2002), http://depot.gdnet.org/gdnshare/pdf/2002AwardsMedalsWinners/OutstandingResearchDevelopment/martin_medina_martinez_paper.pdf, accessed February 14, 2013.

³⁶ Jennifer Mason, “Qualitative Interviewing: Asking, Listening and Interpreting,” in *Qualitative Research in Action*, ed. Tim May (London: Sage, 2002): 225–41.

³⁷ Kusenbach, “Street Phenomenology.”

Household Interviewees' Profile

Informants' pseudonyms	Income category	Age	Occupation	Household Size	Family Members	Domestic Help
Puspa	High	52	Philanthropist, homemaker	5	Couple, 3 young adult children	2 live-out
Yulia	High	59	Businesswoman	4	Couple, 1 teenager	1 live-in, 1 chauffeur
Saskia	High	40	Teacher	5	Couple, 2 children	1 live-in
Indah	High	72	Housewife	7	Couple, adult son, 2 grandchildren to feed daily	1 live-in
Atheera	High	70	Retired professor	8+	Mother, son, her spouse, 2 children	1 live-in, 1 live-out chauffeur plus 5 temporary workers
Suci	High	37	Teacher	6	Couple, 1 child	2 live-in and one's son
Helen	High	42	Businesswoman	5	Couple, 2 children	1 live-in
Yuda (domestic helper Nani interviewed)	Middle	53	Manager	4/6+	Couple, 3 adult children, mother-in-law every other week	3 live-out
Ira	Middle	36	Housewife, private tutor	3	Couple, 1 child	None
Icha	Middle	30	Lecturer	4	Couple, 1 child	1 live-in
Sarah	Middle	54	Businesswoman	4/6	Couple, 3 children	1 live-in
Santi	Middle	40	Home business	2	Father, daughter	1 live-out
Joko	Middle	61	Retired businessman, entrepreneur	3/4	Couple, 3 adult children	None
Sinta (domestic helper Atun interviewed)	Middle	58	Professor	8/9	Couple, daughter, son-in-law, 2 grandchildren, grandmother	1 live-in, 1 live-out
Tuti	Low	36	Multiple part-time jobs	5	Couple, 3 children	None
Rita	Low	40	Domestic helper	4	Couple, 2 children	None
Hesti	Low	41	Domestic helper and other jobs	9	Couple, 5 children, daughter-in-law, granddaughter	None
Ayu	Low	61	Domestic helper	3/5	Couple, 1 adult child, daughter-in-law, often a grand-daughter visits	None
Diah	Low	34	Laundry washer	4	Couple, 1 child, mother-in-law	None
Nurul	Low	34	Housewife	5	Couple, 3 children	None
Wulan	Low	35	Housewife, neighborhood representative	4	Couple, 2 children	None

Source: Empirical data gathered by the author

food waste; checking the refrigerators and cupboards in most of the houses;³⁸ and observing participants in the household as well as around the neighborhood when possible. The in-depth interviews gave me a better understanding of each household's attitudes toward food and waste, and allowed me to gather information on food preferences and challenges with respect to food waste generation. By observing participants and going along on their shopping trips to supermarkets, wet markets (*pasar*), and vegetable sellers, I gathered information on how respondents decide what and how much to buy, as well as witnessed family dynamics and patterns of interactions (or the lack thereof) with food providers and vendors.

In addition, I conducted twelve key informant interviews with people from various food and food waste sectors to gain their expert opinions on managing waste collection, devising waste policy, and working in food retailing. My informants included two directors of a hypermarket (a large store with a variety of goods and ample parking), a manager of a midsize supermarket, three mobile vegetable vendors, four local government representatives from the waste and planning department, a neighborhood leader, and a waste collector. Respondents' names as well as the neighborhood names have all been changed to protect my informants' anonymity. The ways in which I discuss the narratives of my respondents echo the method applied by Gregson, Metcalfe, and Crewe in their ethnographic study on household waste disposal and processes of ridding.³⁹

Food Waste Regime Framework

The Food Waste Regime framework argues that waste constitutes a social relationship and should therefore be studied as "something that is produced materially and conceptually via social relations."⁴⁰ In essence, the power dynamics and class relationships that exist as part of Indonesia's social fabric provide a window into how food waste is produced and who is most affected. The FWR framework also allows for a time-based comparison of food waste patterns during different economic regimes. Such a comparison is relevant in the context of Indonesia considering a shift in economic regimes from a largely closed economic system to an open market that encourages foreign direct investments. According to Gille, "economic risks are a key aspect of the production of waste," which is premised on an uneven playing field.⁴¹ An example of economic risk is the uneven playing field experienced by Ethiopian farmers vis-à-vis large US agribusiness.⁴² Surplus production in the United States encouraged the movement of excess wheat overseas under the guise of "food aid."⁴³ As a result, an

³⁸ Sarah Pink, "Home Truths: Gender, Domestic Objects, and Everyday Life" (Oxford: Berg Publishers, 2004).

³⁹ Nicky Gregson, Alan Metcalfe, and Louise Crewe, "Moving Things Along: The Conduits and Practices of Divestment in Consumption," *Transactions of the Institute of British Geographers* 32, 2 (2007): 187–200.

⁴⁰ Gille, "From Risk to Waste," 29.

⁴¹ Gille, "From Risk to Waste," 32.

⁴² Roger Thurow and Scott Kilman, *Why the World's Poorest Starve in an Age of Plenty* (New York: Public Affairs, 2009), 289.

⁴³ Oxfam, "Food Aid or Hidden Dumping? Separating Wheat from Chaff" (Oxford: Oxfam Briefing Paper, March 2005), 2, <http://policy-practice.oxfam.org.uk/publications/food-aid-or-hidden-dumping-separating-wheat-from-chaff-114492>, accessed September 8, 2016.

immense amount of food grown in Ethiopia is wasted because US food aid (consisting of US-grown commodities) makes the local food produced by Ethiopian farmers unprofitable.⁴⁴ In other words, the United States had the power to deal with its uneconomical “risk” of producing too much food, as it was able to shift this risk by selling or dumping the surplus in countries of the global South, such as in Ethiopia. Meanwhile, Ethiopian farmers were unable to compete with the influx of cheap or free food, and this resulted in their crops being wasted. In Indonesia, mobile vegetable vendors (*tukang sayur*) and traditional wet markets are on an unequal playing field when it comes to competing with multinational supermarkets and hypermarkets for customers. The corporatization of Indonesia’s food-provisioning infrastructure makes it imperative to reframe the food waste narrative to understand the uneven playing field that results in increased food waste. Unpacking how food waste is problematized and framed is critical, as “the construction of the food waste problem actually contributes to the production of the problem itself.” For example, one such construct is the way in which the issue of class-power dynamics has been ignored in food waste discussions in the global South. According to Gille, the economy is a place where value begets value, but where value also begets waste. An example of this is reflected in the purchasing power of upper- and middle-income groups, which often leads to them purchasing more food than needed and, consequently, generating more waste. FWR argues that the ability of some groups to avoid risks (e.g., by buying a lot of food, buying more varieties, and avoiding old/expired foods), while creating an exposure to risk for others (e.g., the impact of food waste on waste pickers and low-income residents living near dumpsites, the gifting of past-its-prime food to low-income people), is a key source of risk and the result of unequal economic power.⁴⁵

Uneven Playing Field: Modern versus Traditional Food Infrastructures

The inclusion of agriculture in free trade agreements and in the trade liberalization and neoliberal agenda of President Suharto’s *Orde Baru* (New Order) eliminated the constraints on corporations to operate in spheres that were once dominated or subsidized by the public sector. This meant that Indonesia became a fertile frontier for the intensification of industrial agriculture and the corporatization of food infrastructure. While small- to medium-size supermarkets have existed in Indonesia since the 1970s, they were primarily located in urban centers.⁴⁶ By the late 1990s, Suharto’s government had opened the retail sector to foreign direct investment and encouraged the entry of foreign supermarket chains, such as Carrefour and Giant.⁴⁷ In 2000, Presidential Decree No. 96/2000 approved Carrefour’s expansion of retail operations in Jakarta.⁴⁸ By 2005, 30 percent of purchased food in Indonesia was from

⁴⁴ Thurow and Kilman, *Why the World’s Poorest Starve in an Age of Plenty*, 289.

⁴⁵ Gille, “From Risk to Waste,” 37.

⁴⁶ Daniel Suryadarma, Adri Poesoro, Akhmadi, Sri Budiayati, Meuthia Rosfadhila, and Asep Suryahadi, “Traditional Food Traders in Developing Countries and Competition from Supermarkets: Evidence from Indonesia,” *Food Policy* 35, 1 (2010): 80.

⁴⁷ Suryadarma et al., “Traditional Food Traders in Global South,” 80.

⁴⁸ Rangkuti and Wright, “Indonesia Retail Report Update,” 3.

supermarkets.⁴⁹ With respect to market share, supermarket sales have grown at an average of 15 percent per year since 2004 while traditional retail sales have declined 2 percent per year.⁵⁰

Large supermarkets can afford to wage price wars versus local competitors to gain customers. Moreover, while international stores previously catered to the upper class, they are now attracting low-income consumers.⁵¹ Modern supermarkets' bulk offers and "buy one get one free" (*beli 1 gratis 1*) deals have been blamed for enabling food waste due to people being encouraged to buy more than they need.⁵² This marketing system has been adopted by large Indonesian supermarkets. According to most of my respondents, the option to shop at supermarkets is a relatively recent one. As Joko (a middle-class respondent) noted with regards to the growth of supermarkets:

Before, the only supermarket was Gelael, so those who went there were the rich people, now that's not the case. They are everywhere and when you shop at supermarkets, the products you get are cleaner and the price difference is quite small compared to traditional markets ...

While foods sold at the wet market or by mobile vegetable vendors are generally domestically grown and seasonal (with the exception of some varieties of carrots and garlic), large supermarkets rely on large-scale food manufacturers as well as producers, whose goods are often imported from multinational providers.⁵³ Shipping foods through long-distance food-supply chains encourages waste, as the opportunity for spoilage exists at every stage of the transaction.⁵⁴ The Indonesian government views modern retailers as the primary driver for the growing consumption of imported agricultural commodities in Indonesia.⁵⁵ Therefore, with the 2013 Law on Protection and Empowerment of Farmers (UU RI No. 19), Indonesian lawmakers sought to limit the expansion of modern food retailers that are not owned by or do not cooperate with farmer groups, associations, and cooperatives.⁵⁶ The implementation of that law was supposed to introduce penalties for importing agricultural products during the local

⁴⁹ Ronie Susman Natawidjaja, "Modern Market Growth and the Changing Map of the Retail Food Sector in Indonesia" (paper presented at Pacific Food System Outlook, Ninth Annual Forecasters Meeting, May 10, 2013).

⁵⁰ See: Suryadarma et al., "Traditional Food Traders in Developing Countries," 80; Thomas Reardon and Rose Hopkins, "The Supermarket Revolution in Global South: Policies to Address Emerging Tensions among Supermarkets, Suppliers, and Traditional Retailers," *The European Journal of Development Research* 18, 4 (2006): 522–45.

⁵¹ Suryadarma et al., "Traditional Food Traders in Global South," 80.

⁵² H. C. I. Godfray, John R. Beddington, Ian R. Crute, Lawrence Haddad, David Lawrence, James F. Muir, Jules Pretty, Sherman Robinson, Sandy M. Thomas, and Camilla Toulmin, "Food Security: The Challenge of Feeding 9 Billion People," *Science* 327 (February 2010): 812–18.

⁵³ Thomas Reardon, C. Peter Timmer, Christopher B. Barrett, and Julio Berdegué, "The Rise of Supermarkets in Africa, Asia, and Latin America," *American Journal of Agricultural Economics* 85, 5 (2003): 1140–46.

⁵⁴ Carlos Mena, B. Adenso-Diaz, and Ozgur Yurt, "The Causes of Food Waste in the Supplier-retailer Interface: Evidences from the UK and Spain," *Resources, Conservation and Recycling* 55, 6 (2011): 648–58.

⁵⁵ Ibnu Edy Wiyono, "Indonesia's New Farmer Empowerment and Protection Law Introduces New Trade Barriers" (USDA Global Agricultural Information Network Report, Washington, DC, July 23, 2013), https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Indonesia%E2%80%99s%20New%20Farmer%20Empowerment%20and%20Protection%20Law%20Introduces%20New_Jakarta_Indonesia_7-23-2013.pdf, accessed June 26, 2017.

⁵⁶ Rangkuti and Wright, "Indonesia Retail Report Update," 3.

harvest time of the same products. However, according to the manager of a Bogor supermarket, the store sells 80 percent imported food and only 20 percent local food. With respect to selling imported products versus local foods, the store manager told me:

The local fruits are seasonal and do not always fulfill our quality standards. We have standards and our quality must reach a certain level. This is because our customers are from the middle- to upper-income class.

Aesthetic standards are now an integral part of the modern supermarket structure in Indonesia and elsewhere, where seasonal local fruits and vegetables may be rejected by supermarkets for not meeting cosmetic standards. The director of a hypermarket chain in Indonesia noted the importance of aesthetics as part of a “modern” store experience:

[Regarding] the fruit display, the level of ripeness is important, because we are a modern store, so aesthetics are important and we must pay attention to that. It has to be nice, attractive ...

Unlike the modern supermarket, local *warung* (small neighborhood convenience shops)⁵⁷ do not enforce strict aesthetic standards, as they sell in small amounts to the local community. Low-income respondents who shop in the *warung* may only have one or two varieties of fruit from which to choose (usually local papayas, mangoes, or bananas), and from an aesthetic perspective, these fruits may have blemishes or shapes that would be considered “undesirable” in a modern supermarket. Due to the strong ties and trust between the local community and the neighborhood *warung*, however, it is possible for buyers to pay at a later date or barter for their food. Such business practices and the types of food sold at the *warung* are not possible at a multinational supermarket that is premised on standardization and an economic model of industrial food production that is answerable to global markets, corporations, and investors. In essence, the infrastructure of food distribution plays a role in influencing the culture of food and people’s relationship with food based on the consumer experience connected to shopping, as well as expectations for certain aesthetic standards.

Restricted Spatial Access for Traditional Vendors

According to a study of the impact of modern retail on the profitability of traditional markets, the closer a modern retail outlet is located to a traditional market, there is an increased probability that the traditional wet market’s profits will decrease.⁵⁸ While Presidential Regulation No. 112/2007 and the Ministry of Trade Regulation (MOT) Number 53/2008 attempt to regulate the size, ownership, and distance of new, modern outlets from traditional markets, the zoning rule regarding

⁵⁷ Note that when I refer to *warung* I am not referring to *warung makan*, *warung tegal*, or *warung nasi*—terms that are commonly used to refer to a small restaurant.

⁵⁸ Elis Maisari, “Dampak Kehadiran Ritel Modern Terhadap Profitabilitas Pedagang Pasar Tradisional di Provinsi DKI Jakarta” [The impact of modern retail on the profitability of traditional wetmarket vendor in the province of DKI Jakarta] (undergraduate thesis, Bogor Agricultural University, 2014), 10.

distance between modern and traditional markets is vague and lacks detail. The Presidential Regulation simply stated that “the establishment of modern retail must consider [the] distance between the hypermarket and the traditional wet market.” Secondly, this law does not consider traditional vendors, such as *tukang sayur*.

Another consequence of the influx of modern supermarkets and the unequal regime of power is the marginalization of traditional vendors. Asep, who has been a *tukang sayur* since 1982, goes to the *pasar* at 2:00 AM to buy produce. He returns home to sort his goods in small plastic bags or boxes, and by 7:00 AM he does his neighborhood rounds. According to Asep:

If we are talking about comparing my net income before and now, we’re talking about a huge difference. Since Giant [a multinational hypermarket chain] arrived, my net income now is much smaller compared to the past. It’s because of the price difference; the prices at Giant and the prices at the *pasar* are different. I need to make some profit to feed my family ...

The *tukang sayur* who can afford to “modernize” by leasing or borrowing a motorcycle can cover longer distances and therefore acquire more customers, but other limitations may intervene: the *tukang sayur*’s presence in some neighborhoods has been restricted.

Mobile vegetable vendors are useful intermediaries who can prevent or reduce household food waste, as they sell local foods from the wet markets in quantities that can easily be tailored to their customers’ needs or household size. Because households can buy customized amounts from mobile vegetable vendors (for example, half a cabbage), the issue of buying more food than needed due to supermarket restrictions and packaging can be avoided. However, *tukang sayur* generally only come in the early morning, and with more and more women participating in Indonesia’s workforce⁵⁹ and commuters daily facing traffic gridlock (*macet total*),⁶⁰ a “buy today–eat today” practice is becoming less practical in comparison to “stocking up” once or twice per week. More important, the pattern of stocking up is more prevalent with the overall growth of refrigerator ownership in Indonesia and in Asia.⁶¹

As Asep (the *tukang sayur*) stated, it is a challenge to deal with the rising cost of food and difficult to get the upfront capital needed to buy the vegetables, all the while competing with powerful players such as supermarkets. Accordingly, the flexibility offered by *tukang sayur*, whereby households can easily buy in customized quantities, may not be available in the future. In fact, for households in some elite areas, the option to purchase from *tukang sayur* already no longer exists. I asked Asep whether some neighborhoods are off limits to him.

There are gated areas that are closed off for us, for example, Green Town and Pristine Enclave, those areas are off-limits ... Because [the property-

⁵⁹ Utomo, “Women as Secondary Earners,” 34.

⁶⁰ Doreen Lee, “Absolute Traffic: Infrastructural Aptitude in Urban Indonesia,” *International Journal of Urban and Regional Research* 39, 2 (2015): 234–50.

⁶¹ Asian Development Bank, *The Rise of Asia’s Middle Class*, <https://www.adb.org/sites/default/files/publication/27726/ki2010-special-chapter.pdf>, accessed September 7, 2016.

management firms] have paid the security guards ... the ones who forbid us from entering are the security guards.⁶²

Suci (an upper-income respondent) is in her forties and lives with her husband, her son, a nanny, and a domestic helper and the helper's son. Suci's neighborhood cluster is only accessible by car and is tightly guarded. There are two hypermarkets nearby, both located in shopping malls within the gated community, approximately one kilometer from her neighborhood. Suci and her neighbors almost always drive to those stores; they very rarely use public transportation or walk. Many supermarkets are located within large shopping centers or malls that offer one-stop shopping for busy consumers. Large supermarkets are air-conditioned, clean and well-lit, stocked with a great variety of food, and open for many hours each day. In the large stores, all items have posted prices (although these tend to be more expensive than *pasar* prices). Because wet markets have different operating hours than supermarkets (some are open from 9:00 PM to 2:00 AM and others from 2:00 AM to 3:00 PM) and there are no fixed prices (individuals can bargain), it can be inconvenient for busy individuals to shop at a *pasar*.

To summarize, not only are traditional food-distribution infrastructures (e.g., *pasars* and *tukang sayurs*) being marginalized and in some cases restricted, people's patterns of food purchasing and consumption are transforming due to broad social changes (rise in car ownership, women joining the workforce, access to refrigeration). The power relationship between "modern" and "traditional" food infrastructures is uneven (in favor of modern systems), and that imbalance is further shaping urban food consumption patterns and creating increased risks for traditional food sectors.

Food Preferences, Class, and Risk

Unequal power relations are not restricted to food production and distribution infrastructures. Rather, at a micro (household) level, it is important to understand the distinct dynamics among households of different classes and between employers and domestic helpers. Yulia (an upper-income respondent) is in her fifties and lives with her husband, son, and a domestic helper. She also employs a chauffeur and commutes to Jakarta six days per week, often spending four hours per day commuting. Her pattern of food shopping is very different from the traditional model of buy today, eat today. Yulia goes grocery shopping in Jakarta at a supermarket at least once per week, although she admits that she often goes back mid-week to stock up again. The supermarkets where Yulia shops offer premium products, and she told me that she frequently purchases organic rice and organic vegetables. Rather than shopping in Bogor, Yulia prefers the stores in Jakarta because they have a large variety of organic items and she feels that she can trust the quality of those products.

At the time of my study, Yulia was training a new domestic helper who had just arrived from central Java. The helper had not yet learned to cook foods that suited Yulia (i.e., fresh and healthful), and therefore Yulia felt that she was "forced to cook," in addition to doing the food shopping. Yulia is very health conscious, saying that she

⁶² "Green Town" and "Pristine Enclave" are pseudonyms; the real names have been changed to help protect the identities of respondents.

usually eats salad and fresh fruits for lunch. Freshness is important and new foods must be served everyday:

I want everything fresh because everything that is fresh has good nutrition. Food that has been stored and reheated over and over is not that great.

Since Yulia is focused on providing herself and her family with freshly made food daily, she does not like to serve leftovers. Yulia said that she puts any leftovers in a plastic bag that is then refrigerated before being given to the garbage collector first thing in the morning. (In other households, domestic helpers who don't live in may take leftover food home.) Yulia's strategy supports Evans's findings about the connections between health concerns and the generation of food waste in UK households.⁶³ However, unlike in the UK, where households generally do not give away or share their leftovers, in Indonesia it is easy and common to pass along leftover food to someone who will use it. Cappellini and Parsons argue that the sharing of leftovers is related to social proximity rather than physical distance.⁶⁴ With respect to Indonesia (although not exclusively), it is not always familial proximity, but rather patron-client/employer-employee relationships that place domestic helpers or other low-income individuals in a position of providing the upper and middle classes with a convenient means of disposing of food waste (leftovers). While the sharing or gifting of food may in many cases demonstrate the giver's commitment to charitable acts, it is important to note that, due to social-power imbalances, members of low-income groups may not have the power to refuse the food.⁶⁵ In the global North, "food rescue" organizations absorb some of the food that would otherwise be wasted by supermarkets, and some innovative ideas for food sharing allow strangers to share extra food via communal refrigerators.⁶⁶ In Indonesia, the gifting of leftovers to avoid wasting food has been successful largely due to the extreme income disparity between giver and recipient and their unequal power relations. This phenomenon confirms Gille's FWR theory that the ability to shield oneself from risks (e.g., food scarcity) and to increase another's exposure to them (e.g., by giving away old or tainted food) is a result of power.⁶⁷

In my study, Joko (a middle-income respondent) was the only male respondent who claimed to be mainly responsible for buying the food for his household. He is a retired businessman and his wife works as an executive. Their three children are in university and only occasionally come to stay with them in Bogor. When asked about leftovers and whether it was common in his household to have leftovers, he stated that having any leftovers meant that he had "failed in his cooking." Consequently, he cooks "just enough" (*secukupnya*) each time, and if there are leftovers, he throws them away immediately because he fears that animals might be attracted to the smell and he wants to keep his house clean. He also considers storing leftovers in the fridge as "unclean," so the uneaten remains of meals get thrown out.

⁶³ Evans, "Blaming the Consumer—Once Again."

⁶⁴ Benedetta Cappellini and Elizabeth Parsons, "Practising Thrift at Dinnertime: Mealtime Leftovers, Sacrifice, and Family Membership," *Sociological Review* 60, S2 (special issue; December 2012): 121–34.

⁶⁵ Tammara Soma, "Gifting, Ridding and the 'Everyday Mundane': The Role of Class and Privilege in Food Waste Generation in Indonesia," *Local Environment* 22, 12 (2017): 1444–60.

⁶⁶ See, for example, foodsharing.de

⁶⁷ Gille, "From Risk to Waste," 28.



The two images on the left show the contents of upper- and middle-income-household refrigerators; the image on the right shows the contents of a low-income-household refrigerator (author's photos)

Many of my upper-income respondents have two refrigerators (or a large double-door fridge), allowing them to stock up on food. On my shopping outings with respondents,⁶⁸ it was common for upper- and middle-income respondents to purchase items that were not on their shopping list and perform what Wood defines as “discretionary unplanned buying.”⁶⁹ My upper-income respondents confirmed that they have issues with forgetting what food is in fridge. I found that large refrigerators likely promote consumers’ wasteful tendencies and, in some cases, increase household food waste. One respondent in particular, Saskia, an upper-income respondent who lives in an elite gated enclave, notes that her fridge is often overstuffed:

I leave food too long in there [referring to the refrigerator], so then I forget about it. For example, in the fridge there are too many things piled on top of each other ... then comes the realization [referring to her daughter], “ahhh, Mom, there is still this, and there is still this.”

In contrast to Saskia’s situation, I observed that low-income families’ refrigerators are generally empty and are primarily used as a place to keep the water cold—with the rare exception that some of those households may have a few eggs or some vegetables. In other words, low-income families’ refrigerators are not used for storing quantities of food, as poor families do not have the financial resources to stock up on or consume a wide variety of foods. Within Gille’s FWR framework, the luxury of being able to store food, or to purchase more varieties, results in more waste. This increase in waste is inextricably linked to economic power.

⁶⁸ Kusenbach, “Street Phenomenology.”

⁶⁹ Michael Wood, “Discretionary Unplanned Buying in Consumer Society,” *Journal of Consumer Behaviour* 4, 4 (2005): 268–81. According to Wood, discretionary unplanned buying is arguably the hallmark of a consumer society.

The lack of diversity in the foods consumed by Indonesia's low-income population is similar to that observed in the West.⁷⁰ Tuti lives with her husband and three children (ages seven, eleven, and sixteen) in a village (*kampung*) adjacent to a middle- to upper-class neighborhood. She works as a laundry washer in a nearby middle-income neighborhood and her total household income is five dollars per day. Hesti also lives in the *kampung* and is in her forties. She lives with her five children (ages five to twenty-two) and her husband, who is unemployed. She is the sole-income earner and works three jobs, making anywhere between 100 and 150 dollars per month. For grocery shopping, Hesti walks to a *warung* daily or buys from the *tukang sayur* when he passes by her employer's house. Both Hesti's and Tuti's meal planning is based on "buy today, eat today," and sometimes they do not have enough money. Hesti's family eats instant noodles on a daily basis, and sometimes she can afford to add an egg for protein, although she tries hard to buy vegetables and make soups. Like Hesti, Tuti also consumes instant noodles daily:

Almost every day, for example, if the meal from lunch is all done, then we will definitely eat noodles later.

In middle- and upper-income households, instant noodle consumption is limited, as they are considered to be unhealthy due to their high MSG content. It is also not considered to be a "proper" meal.⁷¹ However, in the case of Hesti and Tuti, instant noodles are practical, cheap, and a daily feature of meal planning. Instant noodles are portioned for individual consumption and therefore food waste is non-existent. While upper- and middle-income households stress "cleanliness," "quality," and "healthful" as important considerations when food shopping, and emphasize the importance of serving freshly made foods, low-income respondents are primarily concerned with affordability and practicality. This demonstrates why what is not considered a proper meal for upper-income families may be a basic staple for low-income households. It also demonstrates that the ability to categorize "what is food" and "what is waste" is highly tied to class and power.⁷²

Class and Privilege in Food-waste Studies

Indonesia's patterns of consumption reflect a neoliberal regime of corporatization and deregulation, and demonstrate that there is a need for clear policies to protect traditional food infrastructures, such as door-to-door vegetable vendors and wet markets. Those vendors provide vital purchasing options for low-income households in particular, and fresh and healthful products for everyone. Nevertheless, the time demands of commuting and working, as well as the increasing difficulty of accessing traditional food infrastructure in urban areas, impacts the ability of households to follow "buy today, eat today" practices. Moreover, food waste in the global South is exacerbated by urban areas' growing upper- and middle-income groups, an increase in

⁷⁰ Gerardo Otero, Gabriela Pechlaner, Giselle Liberman, and Efe Gürçan, "The Neoliberal Diet and Inequality in the United States," *Social Science and Medicine* 142 (2015): 47–55.

⁷¹ For examples on what constitutes a "proper" meal from UK households, see David Evans, *Food Waste: Home Consumption, Material Culture and Everyday Life* (Bloomsbury: London, UK, 2014).

⁷² Benjamin Coles and Lucius Hallet IV, "Eating from the Bin: Salmon Heads, Waste, and the Markets that Make Them," *Sociological Review* 60, S2 (special issue, December 2012): 156–73.

available non-seasonal and imported foods, and the expansion of food varieties and choices, as well as supermarkets' stringent cosmetic standards.

Food waste impacts the health of communities in an uneven manner, as vulnerable neighborhoods do not have the resources or the power to shield themselves from the risks associated with food waste and its associated packaging. This study's examples of who gets to define what food is and what waste is (from Gilles's FWR) shows that income levels are pertinent, as the creation of food waste is predicated on diverse sets of values that are tightly connected to unequal social relations, power, and class. Such values in the global South are converging towards a preference for corporate-controlled industrialized food production due to the influence of modern food-provisioning infrastructures. Rapid urbanization also plays a role in changing patterns of food consumption and waste by further distancing residents from the source of their food and surrounding agricultural land.

Finally, this paper demonstrates that class and privilege are key factors influencing household food-provisioning and -wasting practices in Indonesia, and should be central considerations in future food-waste studies. By analyzing the practices of Indonesia's modern food-provisioning infrastructures, this paper critiques the status quo of global policy interventions that focus on agricultural-stage food-loss interventions while neglecting solutions that can improve the urban poor's access to food and lead to better management of urban food waste in general. This paper defines a new frontier of research by highlighting the connections between decisions on spatial infrastructure and how access to privilege (i.e., capital, social resources) influences food consumption and food waste.