



PAGE PARTNERSHIP FOR ACTION
ON GREEN ECONOMY



Policy Briefing

Policy Reform to Reduce Food Loss and Waste and Support Low Carbon Development in West Java, Indonesia



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POLICY POINTERS



SDG Target 12.3 on reducing FLW should be included as an indicator in national and regional development plans on the Sustainable Development Goals and reducing greenhouse gas emissions.



Policymakers should identify **clear fiscal incentives** for FLW reduction and disincentives for FLW generation and ensure proper enforcement and monitoring.



To monitor progress on GHG emissions reduction from reducing FLW, **harmonized and rigorous data collection** quantifying FLW should be supported by Indonesia's Central Statistics Agency.



A systems approach is needed to reduce FLW, by supporting circular food system planning, shortening food supply chains, and investing in local food infrastructure and sustainable food systems where nutrient cycles can be re-connected.



Policymakers should encourage **innovation, research and development and multi-stakeholder, inter-sectoral** collaboration to effectively reduce FLW.

Food waste contributes 7.3% of greenhouse gas emissions (GHG) every year in Indonesia. The amount of food that was lost and wasted in Indonesia annually between 2000 and 2019 could have fed approximately 29-47% of the population (61-125 million people). Reforming policies and fiscal incentives can reduce food loss and waste (FLW) and GHG emissions, while enhancing food security and benefiting nature. The current policy landscape provides opportunities to reduce FLW. However, there is a need to strengthen implementation, enforcement and monitoring. This briefing provides an overview of a policy study conducted by the UN Partnership for Action on Green Economy (PAGE). The study explored the impacts of different policies and fiscal measures on FLW in West Java and identified policy reforms needed to promote a sustainable and circular food system that minimizes FLW while promoting low carbon development.

Reducing FLW: Key to achieve the Sustainable Development Goals

Indonesia, the fourth most populous country in the world, is one of Asia's largest agricultural economies. The country's plan to feed its population of 262 million people requires the balancing of multiple priorities, such as addressing issues around yield, loss of prime agricultural farmland due to rapid urbanization, the declining number of farmers, and the need to take into account climate change and better management of scarce natural resources. Indonesia's population is projected to reach 319 million people by 2045 (BPS, 2018a) with the middle-income group projected to represent 70% (223 million people) of the population by 2045 (National Development Planning Agency [BAPPENAS], 2019). Ensuring food security is particularly important as Indonesia faces what has been termed the "triple burden of malnutrition,"

Key issues for FLW policies in West Java

1. Gap in explicit regulatory and budgetary support for FLW reduction.
2. Focus on increasing yield for food self-sufficiency without considering food loss reduction.
3. Gaps in financial resources that enable better livelihoods for farmers and small-to-medium food enterprises.
4. Lack of educational resources, accurate data collection, and research on FLW.
5. Cheap rates for waste disposal, as well as a lack of clear incentives and disincentives.
6. Long distance supply chains with numerous intermediaries, poor distribution logistics, and poor storage.



where malnutrition and undernutrition occur alongside overnutrition (IIED, 2019). It is estimated that 26 million Indonesians face food insecurity and are living below the poverty line as of 2018 (Asian Development Bank, 2019; Arifin et al., 2018).

As the country struggles with food insecurity, an estimated 115-184 kg of food was lost and wasted per capita per year in Indonesia between 2000 and 2019, according to Indonesia's National Development Planning Agency (2021). The economic impact of this waste is approximately

213-551 trillion Rupiah per year. Food waste generated an estimated 1702.9 Mt CO₂ between 2000 and 2019 (BAPPENAS, 2021). The province of West Java has been identified as an important priority by the national government to better understand the regional policy landscape (including fiscal policies) and explore possible reforms to reduce FLW. West Java is the third largest producer of rice in Indonesia (known as the “rice barn” of Indonesia) and the most populous province with over 49 million people. The provincial government of West Java is committed to becoming a “green province” by 2025 through efforts to invest in a green economy and reduce greenhouse gas emissions. The province has also expressed its commitment to the UN Sustainable Development Goals (SDGs) under its Regional Action Plan on the Sustainable Development Goals. These regional goals and the fact that the West Java is a key agricultural province make it an ideal region to explore opportunities for policy reform to reduce FLW.

Reducing food loss in West Java: Improving efficiency and infrastructure and repurposing input subsidies

Many of the policy directives to increase food production and ensure self-sufficiency have focused almost exclusively on yield, while neglecting the need to address efficiency and reduce losses. By reducing losses, government targets for increased food production can be met without increasing the use of inputs, such as water, chemical fertilizers, pesticides, energy and others. The West Java Strategic Plan 2018-2023 notes that by using a combine harvester, post-harvest waste can be reduced from 10% to 3% (DTPH, 2019). As shown in Table 1 below, post-harvest

Types of agricultural tools and machines (Alat Mesin Pertanian [Alsintan])	Number of units supported Nationally	Number of units supported in West Java
Production	233,688 (total units)	22,953 (units)
2-wheel tractor (2016-2020)	118,817	11,944
4-wheel tractor (2016-2020)	7596	313
Rice planting machine (2020)	19,309	1142
Water pump (2016-2020)	87,966	9554
Rice post-harvest (2019-2020)	7814 (units)	1021 (units)
Threshing machine	5992	939
Harvesting machine	132	10
Harvester	1427	52
Milling	108	22
Dryer	155	9

Table 1: Number of units of agricultural tools and machines supported at the national and regional levels.

machinery only accounts for 3.2% of national government support and 4.4% of regional government support for agricultural machinery, with only 9 dryer machines allocated for the province. The impact of a lack of drying machines is costly as it increases post-harvest losses due to high water content in the unhusked rice. The lack of dryers also impacts farmers because the quality of the rice they produce will not meet the threshold for the government rice purchase price (HPP).

The government has also focused on increasing yield through the provision of fertilizers, pesticides, seeds and extension services as per West Java Governor Regulation 80/2014: Increasing Production of Agriculture Fishery Forestry in West Java. However, extension support should not only be used to increase yield. Government and CSO stakeholders involved in the UN PAGE study noted a major gap in extension support, particularly as it relates to post-harvest support, reducing losses, and marketing support. A 2017 survey by the Central Statistics Agency found that 70.72% of farming households did not receive extension support (BPS, 2017). In the Strategic Plan (2018-2023) document, the number of extension workers projected for the province from 2018 to 2023 remains the same at 2,203 workers in total (DTPH, 2019). The low number of extension workers will make it difficult to provide knowledge dissemination and resources to farmers on food loss reduction.

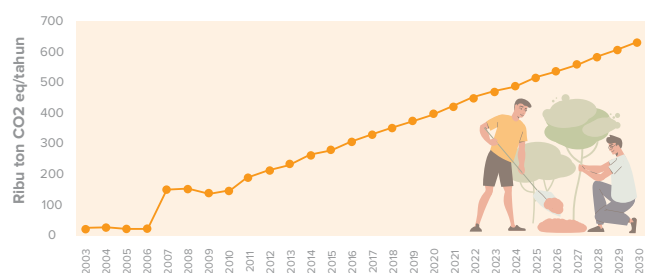


Figure 1. Projected emission CO2 from the use of urea fertilizer 2010-2030 in West Java (source: Revised Regional Action Plan on Greenhouse Gas Reduction 2018)

In addition to a gap in extension and infrastructural support for post-harvest production and storage, for decades there has been an emphasis on fiscally supporting chemical fertilizer subsidies, which does not support the goals of the Low Carbon Development Indonesia (LCDI) strategy. The government has projected a steady rise in GHG emissions through a tripling of urea fertilizer use, from 1,056.65 tons in 2021 to 3,144.49 tons in 2030 (Figure 1). There are also

impacts from nitrogen based (N_2O) and other fertilizers. Fertilizer support takes a significant amount of the state budget. The company 'PT. Pupuk Indonesia' received Rp 31.15 trillion in government subsidies in 2017 alone, which at that time was the largest non-energy subsidy (Wihardja, 2019). In the 2021 State Budget, the government allocated 8.2 million tonnes of subsidized fertilizer, but there is no line item stating the budget for this expenditure (Ministry of Finance, 2021). The subsidies for chemical fertilizers and pesticides can be used to support production of organic fertilizers through better use of food scraps (e.g. vermicompost, compost), and to support other post-harvest infrastructure. Focusing on the reduction of postharvest losses can indirectly contribute to reducing GHG emissions particularly through the reduction of chemical fertilizers (ADB, 2019; Wihardja, 2019). Increasing rice production without sufficient post-harvest support and infrastructure is problematic and will lead to further GHG emissions and waste of natural resources.

Reducing waste: It is cheap to waste food - clear incentives and disincentives are needed

In general, the monthly fee for garbage disposal is quite inexpensive and there is therefore little incentive to reduce waste. For example, a class 6 home (the highest class - determined as a home with electricity capacity of



6600 VA (volt, ampere), land area more than 500 m², and a building area of more than 350 m²) is charged only Rp. 20,000/ month (US \$1.38 as of July 15th, 2021). This charge is not based on the actual volume of the waste but only on the size of the home. It is also easier for business owners to dump food waste in landfill than to divert it for more sustainable purposes such as compost, animal feed, or anaerobic digestion. While almost all policies addressing solid waste management in Indonesia note the importance of waste reduction, including a target of 30% waste reduction, strong and clear actions on the ground are needed to achieve this goal. Waste policies at the national level identify the regional government as the actor responsible for financing waste management, and for implementing incentives and disincentives to achieve waste reduction goals. This responsibility is also acknowledged by the regional government, as per Regional Regulation No. 12 of 2010 concerning Waste Management in West Java. In reality, there are no clear financial incentives or disincentives to address the issue of food waste, with most initiatives focused on raising awareness.¹ Current initiatives focusing on creating compost need more support to utilize the end product for landscaping or agricultural purposes. While existing policies provide an enabling framework to address the cheap cost of “business as usual”, i.e. dumping of food waste in landfill, these policies are not implemented. It is estimated that if Indonesia continues this status quo, by

¹(see, for example <https://www.kangpisman.com>)

2045, the amount of FLW would reach 344 kg/ per capita/ year (BAPPENAS, 2021). To help facilitate the creation of clear fiscal incentives and disincentives, rigorous and harmonized data collection to quantify food loss and waste is also needed.

Addressing SDG Target 12.3 and harmonizing policies from national to regional level

While Indonesia’s policy landscape offers the foundation and vision for sustainable food systems and FLW reduction, national and regional policies are not necessarily harmonized, and do not explicitly address SDG Target 12.3 to “halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses” (FAO, 2018). There are clear policy guidelines to develop regional and national action plans to reduce greenhouse gas emissions and support the Sustainable Development Goals that can serve as a framework to promote FLW reduction. It is therefore critical to include Target 12.3 as an indicator in these action plans and in national and regional medium-term development plans. Currently, Target 12.3 is not included as a priority in the Government Activities and Program Matrix of The Regulation of The Minister of National Development Planning/ Head of National Development Planning Agency No. 7 Year 2018. The inclusion of Target 12.3 as an indicator





will enable FLW to become a line item that is supported fiscally in national and state budgets. Target 12.3 can also be paired with fiscal policies to support research and development to reduce FLW, such as through the Ministry of Finance Regulation No. 153/ 2020 on the Granting of Reduction of Gross Income for Research Activities.

Scaling-up integrated local food systems to minimize FLW and bridging institutional siloes

To strengthen policy support for reducing FLW in Indonesia and West Java, an integrated, collaborative and multi-sectoral approach is needed, as identified by the regional and national SDGs Working Group (*Pokja TPB*), in order to break the policy silos between different government agencies responsible for FLW (e.g. the Department of Environment and the Department of Food Security). Scaling up an integrated local food system approach that minimizes FLW, supports biodiversity, reduces GHG emissions, fosters health and wellbeing, and supports equitable economic livelihoods are all part of the overall strategy needed to achieve Target 12.3. In the City of Bandung, West Java, the integrated urban agriculture *Buruan Sae* program seeks to do just that by promoting local food production, direct market links and compost utilization. Scaling up such initiatives by providing the infrastructure and resources

needed can help to create a more circular food economy, raise opportunities for green jobs, and support low carbon development.

Strategies and policy reforms needed to reduce FLW

Through the UN PAGE policy study (Soma, 2021), including stakeholder focus groups, interviews and a multi-sectoral stakeholder roundtable convened by BAPPENAS on 1st July 2021, nine broad recommendations to reduce FLW were identified:

1. Update the presidential and ministerial regulations on greenhouse gas emissions reduction and the Sustainable Development Goals to explicitly include food loss and waste and include SDG Target 12.3 as an indicator in the national and regional medium-term and long-term development plan.
2. Include support for food loss and waste reduction in both the state and regional budgets for the National and Regional Action Plans on the Sustainable Development Goals, and the National and Regional Action Plans on GHG emissions reduction.
3. Increase budget allocations for post-harvest infrastructure and agricultural extension to improve rice quality, reduce losses and increase efficiency in

- food production, and provide better marketing support for farmers.
4. Improve the accessibility of farmers' insurance programs to protect farmers against losses due to growing climatic and economic uncertainties; and the accessibility of the People's Credit Program to support farmers and small-to-medium scale wet-market/food vendors to invest in food loss and waste reducing tools and equipment.
 5. Shorten the food supply chain by improving distribution logistics and good warehouse practices (particularly Bulog rice procurement and storing practices) while improving storage infrastructure at agri-food terminals and traditional markets and strengthening direct farm-to-market relationships.
 6. Incentivize food waste reduction and disincentivize food waste generation across the food supply chain and ensure accurate food loss and waste measurement.
 7. Support advocacy, education, and research & development in food loss and waste reduction.
 8. Raise consumer awareness on the need to reduce excessive rice consumption and diversify diets in order to reduce food waste, and on improving nutrition via the National and Regional Action Plans on Food and Nutrition.
 9. Integrate food system considerations into government planning processes to promote closed loop, circular food economies, communities, neighbourhoods and regions, such as through a scaled-up *Buruan Sae* program.



Policy and Strategic Recommendation FLW Matrix (Short Term)

No.	Policy Recommendations	until 2023	until 2028	until 2045	Link With National Studies					Implementing Agencies		
		Short-term	Medium-term	Long-term	1 Behavior Change	2 Improving Food System Support	3 Strengthening Regulations and Optimizing Funding	4 Utilization of FLW	5 Development of FLW Study & Data Collection			
1	Include funding support for FLW reduction in both State Budget (APBN) and Regional Budget (APBD) to implement Regional Action Plan (RAD) and National Action Plan (RAN) for SDGs as well as RAD and RAN for GHG POLICY IMPLEMENTATION STRATEGY 1 a. Document preparation and review of RAD for SDGs and RAD for GHG documents b. Periodic evaluation of RAD for SDGs and GHG c. Facilitation of assistance in the preparation of RAD for SDGs and GHG in Districts/Cities	V									National Development Planning Agency (Bappenas), Regional Development Planning Agency (Bappeda) of West Java Province, Provincial People's Representative Council (DPRD Provinsi), District People's Representative Council (DPRD Kabupaten) and Regional Government Budget Team (TAPD)	
		V										
		V										
		V										
2	Increase budget allocations for post-harvest infrastructure investment and agricultural extension support to improve rice quality, reduce losses and increase food production efficiency, and support better marketing POLICY IMPLEMENTATION STRATEGY 2 a. Improvement and utilization of pre-harvest and post-harvest agricultural tools and machinery (ALSINTAN) b. Increased adoption of the implementation of Integrated Crop Management Farmer Field School (<i>Sekolah Lapang Pengelolaan Tanaman Terpadu</i> or SL-PTT), Good Agricultural Practices Farmer Field Schools (GAP-FFS), Good Handling Practices Farmer Field Schools (GHP-FFS), Integrated Pest Management Farmer Field Schools (IPM-FFS) and Climate Field Schools (CFS) for food crops and horticulture c. Protection of food crops and horticulture from Plant Pest Organism (<i>Organisme Pengganggu Tumbuhan</i> or OPT) and the impacts of climate change	V									Office of Food Crops Agriculture, BAPPEDA, DPRD	
		V										
		V										
		V										

No.	Policy Recommendations	until 2023	until 2028	until 2045	Link With National Studies					Implementing Agencies	
		Short-term	Medium-term	Long-term	1 Behavior Change	2 Improving Food System Support	3 Strengthening Regulations and Optimizing Funding	4 Utilization of FLW	5 Development of FLW Study & Data Collection		
3	Increasing the accessibility of farmer insurance programs and people's business credit (KUR) programs POLICY IMPLEMENTATION STRATEGY 3 a. Facilitate Agricultural Insurance to protect farmers from crop losses due to natural disasters, infectious animal disease outbreaks, climate change and/or other types of risks. b. Facilitate access to banking	V								Office of Food Crops Agriculture, BAPPEDA, DPR	
		V									
		V									
4	Streamline food supply chains by improving distribution logistics, good warehousing practices, and strengthening farmers' direct links to markets POLICY IMPLEMENTATION STRATEGY 4 a. Develop food distribution center b. Establish agricultural centers in West Java c. Processing and marketing systems for food crops and horticulture	V								Office of Food Security and Livestock, Logistics Bureau (BULOG), Office of Industry and Commerce, PD Pasar	
		V									
		V									
		V									
5	Raise consumer awareness on reducing food waste through better food diversification and nutrition through national and regional action plans on food and nutrition POLICY IMPLEMENTATION STRATEGY 5 a. Consolidate the diversification of food consumption through socialization b. Increase food diversification and safety c. Increase public access to quality food	V								Office of Food Security and Livestock	
		V									
		V									
		V									
		V									
6	Integrate food system planning based on a circular food economy POLICY IMPLEMENTATION STRATEGY 6 a. Application of regulations for the protection of sustainable food agricultural land b. Strengthen the cultivation area development planning c. Strengthen the capacity of food planners based on the food system	V								Department of Public Works and Spatial Planning	
		V									
		V									
		V	V	V							

Policy and Strategic Recommendation FLW Matrix (Medium Term)

No.	Policy Recommendations	until 2023	until 2028	until 2045	Link With National Studies					Implementing Agencies
		Short-term	Medium-term	Long-term	1	2	3	4	5	
					Behavior Change	Improving Food System Support	Strengthening Regulations and Optimizing Funding	Utilization of FLW	Development of FLW Study & Data Collection	
7	Provide incentives for FLW reduction and disincentives for FLW generation and support accurate FLW data collection		V							Regional Development Planning Agency (Bappeda), Regional People's Representative Council (DPRD), District Government, Municipality,
	POLICY IMPLEMENTATION STRATEGY 7									
	a. Optimize the use of Information Technology as a database for the availability of food plant and horticultural products		V							
8	Support advocacy, education, research & development on FLW prevention and reduction and sustainable food systems		V							Bappeda, DPRD, District Government, Municipality, Office of Communication and Information Technology, Office of Environmental Affairs of West Java Province
	POLICY IMPLEMENTATION STRATEGY 8									
	a. Strengthen the extension institutions and build the capacity of human resources for food crops and horticulture		V							
	b. Utilization of environmentally friendly agricultural technology		V							
	c. Advocacy on the prevention and reduction of FLW in sustainable food systems	V	V							

Policy and Strategic Recommendation FLW Matrix (Long Term)

No.	Policy Recommendations	until 2023	until 2028	until 2045	Link With National Studies					Implementing Agencies
		Short-term	Medium-term	Long-term	1	2	3	4	5	
					Behavior Change	Improving Food System Support	Strengthening Regulations and Optimizing Funding	Utilization of FLW	Development of FLW Study & Data Collection	
9	Align presidential regulations and ministerial regulations on SDGs, GHG, LCD and FN to explicitly include target 12.3 as an indicator in the Regional Medium Term Development Plan (RPJMD) and National Medium Term Development Plan (RPJMN)			V						Bappenas, Bappeda Provinsi Jawa Barat
	POLICY IMPLEMENTATION STRATEGY 9									
	a. Provision of baseline data on FLW generation at the regional level	V		V						
	b. Strengthening the SDGs working group in preparing RPJMN/D academic texts that integrate FLW	V		V						
	c. Determination of FLW indicators in national and regional development issues	V	V	V						

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Indonesia has made significant progress in mainstreaming green economy activities into the country's macroeconomic and national development plans. The country has also increased their global climate commitments – including setting a net zero emissions target by 2060. However, the energy sector in Indonesia remains the country's second-largest carbon emitter, with national power generation being highly dependent on fossil fuels – particularly coal. As such, energy transition is a critical mechanism to achieving Indonesia's climate targets and green economy ambitions.

Energy transition will, however, create significant employment changes in the energy and electricity sectors. In the face of such changes, developing a supportive policy ecosystem to enable future green jobs growth and to ensure a Just Transition is critical. This green jobs policy readiness assessment aims to develop a baseline perspective of current green jobs and Just Transition policy frameworks in Indonesia, with a focus on the energy sector. To this end, the report explores recommendations for measures aimed at supporting the labour market, from both the supply and demand sides, as well as for overarching measures that will promote the enabling environment needed to ensure a Just Transition process.

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