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Financing to end hunger for today and tomorrow (Sustainable Development Goal 2)

Executive Summary

Ending global hunger by 2030 requires short-term relief to avoid setbacks during ongoing crises, as well as long-term investments to address the root causes of hunger together with poverty, inequalities, malnutrition and the weak performance of agrifood systems. "Investment" in this document refers to all interventions, short and long term, to achieve the 2030 Agenda. Achieving the necessary shifts demands careful planning of objectives, interventions, costs, incentives, policies, and financing options. The World Investment Report 2023 (United Nations Conference on Trade and Development [UNCTAD])[1] estimates that USD 4 trillion per year in additional financing is needed to meet the 2030 Agenda. Ceres2030,[2] while focusing on three of the five indicators of Sustainable Development Goal 2 (SDG 2), excluding nutrition-related indicators and using 2019 data, estimates that an additional USD 33 billion per year is required to end hunger sustainably by 2030. The Center for Development Research (ZEF) and FAO[3] study considers all five SDG 2 indicators and suggests that USD 39 to -50 billion per annum in additional finances is needed to achieve the SDG 2 targets by 2030. To mobilize the necessary additional financing, a

[1] UNCTAD. 2023. *World Investment Report 2023*. https://unctad.org/publication/world-investment-report-2023
[2] International Food Policy Research Institute (IFPRI), International Institute for Sustainable Development (IISD) & Cornell University. [2020]. *Ceres2030: Sustainable Solutions to End Hunger*. https://ceres2030.iisd.org/wp-content/uploads/2021/03/ceres2030_en-summary-report.pdf ; Laborde, D., Parent, M. & Smaller, C. (2020). *Ending hunger, increasing incomes and protecting the climate: What would it cost?* Cornell University, IFPRI and IISD
[3] Center for Development Research (ZEF), University of Bonn & United Nations Food and Agriculture Organization (FAO). 2020. *Investment Costs and Policy Action Opportunities for Reaching a World without Hunger (SDG 2)*. https://www.developmentaid.org/api/frontend/cms/file/2020/10/ZEF_FAO_SDG2.pdf

comprehensive approach is needed. This includes increasing domestic resource mobilization and leveraging international investments, attracting foreign direct investment, and accessing international financial flows, including official development assistance (ODA) and climate finance. Innovative financing mechanisms, such as blended finance, impact investments, and sustainable finance instruments, can also play a crucial role in closing the financing gap.

Suggested action by the Regional Conference

The Regional Conference is invited to:

a. take note of the financing options, both internal and external;
b. share experiences from countries of national approaches and policies to financing; and
c. provide guidance on financing pathways that FAO should focus on to accelerate the end of hunger.

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I. Overview of hunger, food insecurity and malnutrition: how big is the challenge?

I.1 Hunger, food insecurity and malnutrition

1. The prevalence of undernourishment in the Asia and the Pacific region stood at 8.4 percent in 2022. A total of 371 million people in the region faced hunger in 2022, which is more than 50 percent of the world's 736 million undernourished people. Furthermore, 1.03 billion people are moderately or severely food insecure. The region is going in the wrong direction on stunting, wasting, child and adult obesity, and anaemia in women. The average cost of a healthy diet surged to USD 4.15 per person per day, which 45.6 percent of the population cannot afford.[4] A detailed analysis is available through the document on *Global and Regional Food Security Outlook* (APRC/24/3).[5]

I.2 Major drivers of hunger, food insecurity and malnutrition

2. The relationship between SDG 2 and sectors beyond agrifood systems is highly interconnected. Consequently, the advancement of SDG 2 targets requires investments and advancements in other sectors as well. The World Investment Report, mentioned previously, acknowledges the significance of investment in all SDGs, including SDG 2. Some of the key challenges impeding the achievement of SDG 2 targets in the region include the following:

a. Climate change has significant impacts on hunger, food security and malnutrition. Rising temperatures, changing rainfall patterns, and increased frequency of extreme weather events pose challenges to agricultural production, food availability, and access to nutritious food. Some forecasts anticipate that by 2050, as a consequence of climate change, an additional 120 million people will be at risk of undernourishment, of whom 24 million will be children.[6]

   i. Yield decline: Evidence suggests that the projected temperature rise in the region is likely to reduce rainy season crop yields by approximately 10 to 15 percent and post--rainy season crop yields by approximately 20 to 25 percent in the region.[7]
   ii. Reduced productivity and food availability will push prices up, disproportionately affecting the poor, who spend most of their income on food and will no longer be able to afford healthy diets (IPCC, 2022).[8]
   iii. Reduced nutrient quality: Rising carbon dioxide levels will reduce the concentration of essential nutrients such as zinc, iron and protein in staple crops, leading to reduced nutritional value (IPCC, 2022).
   iv. Supply chain disruptions: Extreme weather events, such as storms and floods, will continue to disrupt transportation and infrastructure, affecting the distribution of food and causing supply chain disruptions (IPCC, 2022).
   v. Water scarcity: Climate change exacerbates water scarcity in the region, which is crucial for agriculture. Increased competition for water resources is limiting irrigation for crops, impacting food production. (IPCC, 2022).
   vi. Vulnerability of smallholder farmers: Smallholder farmers, who form a significant portion of the agricultural workforce in the region, are particularly vulnerable to

[4] FAO. 2023. *Asia and Pacific Regional Overview of Food Security and Nutrition*. https://www.fao.org/3/cc8228en/online/cc8228en.html
[5] https://www.fao.org/about/meetings/regional-conferences/aprc37/documents/en/
[6] FAO. 2017. *The future of food and agriculture – Trends and challenges*. https://www.fao.org/3/i6583e/i6583e.pdf
[7] Mukherjee A., Saha S., Lellyett S.C. & Huda, A.K.S. 2022. *Impact of climate change and variability on food security in the Asia-Pacific Region*. Asia Pacific Sustainable Development Journal, Vol 29. No.1, May 2022. https://www.unescap.org/sites/default/d8files/2022-06/APSDJ%20Vol.%2029%2C%20No.%201%2C%20May%202022-pp119-141_Rev.pdf
[8] Intergovernmental Panel on Climate Change (IPCC). 2022. *Climate change and land: An IPCC special report on climate change, desertification, land degradation, sustainable land management, food security and greenhouse gas fluxes in terrestrial ecosystems*. https://www.google.co.th/books/edition/Climate_Change_and_Land/N4adEAAAQBAJ?hl=en&gbpv=1&printsec=frontcover

climate change impacts. They often lack resources and adaptive capacity to cope with changing conditions (IPCC, 2022).

b. Poverty and income inequality play a significant role in driving hunger, food insecurity and malnutrition in the region. Limited access to productive resources such as land, skilled labour, finance, other assets and livelihood opportunities, are major challenges for many vulnerable populations.
c. Ongoing conflicts, political instability and social unrest in certain countries of the region contribute to food insecurity and malnutrition. These situations disrupt agricultural production, displace populations, and hinder access to food and essential services.
d. Limited agricultural productivity, inadequate infrastructure, and lack of access to modern farming techniques and technologies contribute to food insecurity. Insufficient and declining investment in agriculture and rural development hinders the region's ability to produce enough food to meet the needs of its population.
e. Rapid urbanization in the region poses challenges to food security and nutrition. As more people move to urban areas, there is increased demand for food, which puts pressure on food supply chains. Urban areas often face issues such as limited access to fresh and nutritious food, high food prices, and inadequate food safety measures (EC, 2023).[9]
f. Insufficient social protection programmes and safety nets exacerbate food insecurity and malnutrition. Vulnerable populations, including women, children, and marginalized communities, often lack access to adequate nutrition and support systems (EC, 2023).
g. Lack of access to clean water and sanitation facilities contributes to poor health and malnutrition. Contaminated water sources and inadequate sanitation practices increase the risk of waterborne diseases and hinder proper nutrition (EC, 2023).

II. Financing to end hunger, food insecurity and malnutrition: what is available and how much more is needed in the region?

II.1 Types and adequacy of financing to achieve the SDG 2 targets

3. Some of the key financing mechanisms that can contribute to the achievement of SDG 2 and indeed other SDGs include domestic public financing, domestic banking and credit, ODA, public--private partnership, multilateral development banks or international finance institutions impact investments, philanthropic funding and climate financing. Blended financed and other innovative financial instruments are key to sustained progress toward the SDG 2 targets.[10] Given the significant intersectoral integration in the Asia and the Pacific region, investment in related SDGs, in particular SDG 1 (No Poverty), SDG 3 (Good Health and Well-being), SDG 5 (Gender Equality), SDG 10 (Reduced Inequalities), SDG 13 (Climate Action), SDG 14 (Life below Water) and SDG 15 (Life on Land), are vital for progress towards the achievement of the 2030 Agenda.

4. FAO, the International Fund for Agricultural Development (IFAD) and the World Food Programme (WFP)[11] developed a twin-track approach to help achieve the SDG 2 targets, which involves addressing both the immediate and long-term needs of households for food security, nutrition and sustainable agriculture. The first track emphasizes the need for immediate action in the form of social protection, nutrition interventions and emergency assistance to address hunger and malnutrition. The second track emphasizes the importance of sustainable agricultural development in the context of climate change and competing demand for land, water and other natural resources.

5. To meet the global SDG targets, UNCTAD (2023) estimates that an annual investment of USD 4 trillion is required. In the Asia and the Pacific region, where about 50 percent of the 900 million severely food- insecure individuals reside, achieving the SDG targets by 2030 would

[9] FAO. 2023. *Asia and the Pacific – Regional Overview of Food Security and Nutrition 2022*. https://knowledge4policy.ec.europa.eu/publication/asia-pacific-regional-overview-food-security-nutrition-2022_en
[10] UN Sustainable Development Group. *Financing and funding*. https://unsdg.un.org/2030-agenda/financing
[11] FAO, IFAD and WFP. 2015. *Achieving zero hunger: the critical role of investments in social protection and agriculture*. http://www.fao.org/3/i4951e/i4951e.pdf

mean bridging an investment gap of roughly USD 2 trillion per year.[12] The Ceres2030 analysis, based on 2019 data and focusing on three out of the five SDG 2 targets, estimates that USD 14 billion a year from donors and USD 19 billion a year from low- and middle-income countries is required to achieve the global SDG 2 targets by 2030. Similarly, the ZEF and FAO study, considering all five SDG 2 indicators, estimates that a total of USD 39 million to 50 million in total annual investments is required to achieve the SDG 2 targets by 2030. Closing this gap requires mobilizing domestic resources, attracting private sector investments, providing incentives to domestic capital markets, strengthening public finance, involving banking institutions, accessing international financial flows, and utilizing innovative financing mechanisms. Governments should prioritize increasing public investments in agriculture and rural infrastructure, while fostering an environment conducive to attracting private investments and promoting sustainable practices. International cooperation, partnerships, financial inclusion and climate-resilient agriculture are also crucial components for success.

6. Rough estimates suggest that annual financial needs to meet the Nationally Determined Contributions in selected developing countries in the region is about USD 362 billion, which includes USD 258 billion for climate change mitigation and USD 104 billion for adaptation.[13] This investment is crucial to prevent nearly USD 1 trillion in damages and losses.

II.2 What is the current level of financing to end hunger, food insecurity and malnutrition?

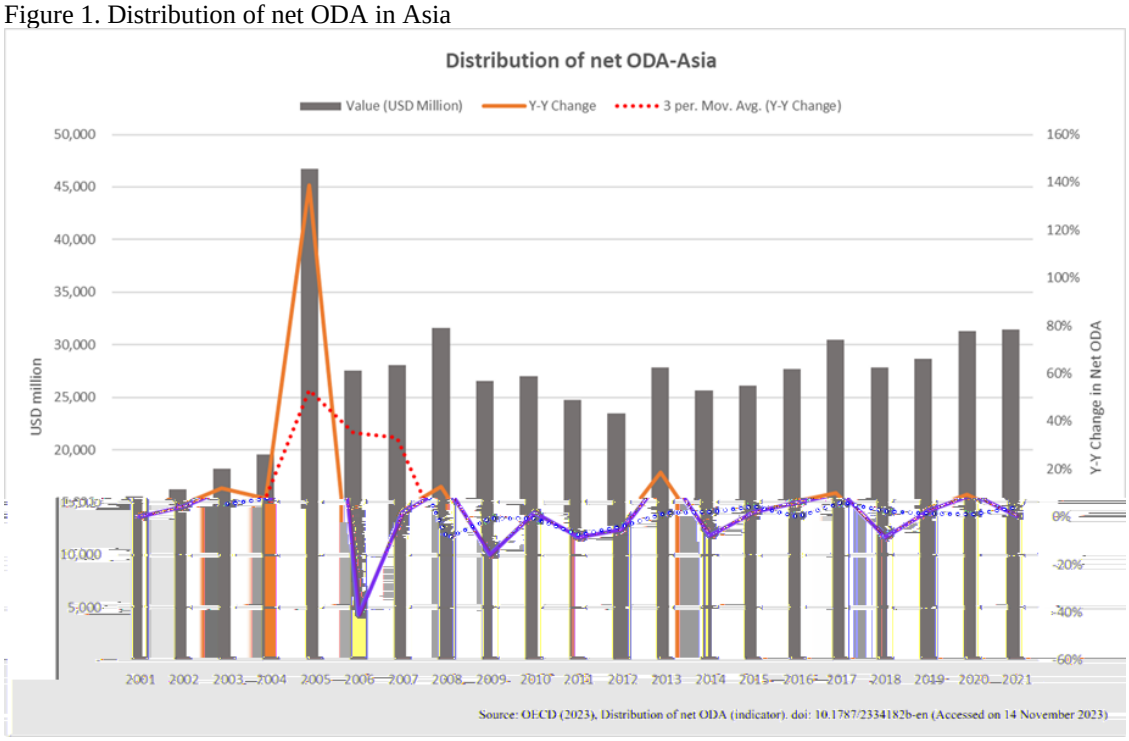
7. The Financing for Sustainable Development Report (FSDR) 2022 highlighted the "great finance divide", where poorer countries struggle to raise sufficient resources and borrow affordably for investment. Least Developed Countries (LDCs) – of which 11 are in the region – spend 14 percent of their revenue on debt interest, compared to 3.5 percent for developed countries. The LDCs in the Asia and the Pacific region are at high risk of or are in debt distress.[14]

8. To address these issues, the Group of Seven (G7) leaders pledged to lift 500 million people out of hunger and malnutrition by 2030, committing to mobilize an additional average of USD 14 billion per year until 2030. However, this requires a shift in mindset, moving beyond short-term crisis response to strategic investments that strengthen food security at its roots.[15]

9. The FSDR 2022 recommends three key pathways to bridge the finance divide: (i) increasing public financing for investment in priority areas and effectively deploying resources towards the SDGs and productive investments; (ii) reducing borrowing costs and volatility from commercial sources; and (iii) providing debt relief, restructuring and smarter lending practices to enable developing nations to allocate resources to critical development areas. While the net ODA to Asian countries has increased over the years, there has been minimal growth in recent times, despite the increased need for financial assistance due to the COVID-19 pandemic's impact on economies. Efforts must be made to address these financial challenges and ensure sustainable development and support for post-pandemic recovery in Asian countries.

[12] This is a very rough estimate based entirely on the global investment gap and the proportion of severely food insecure individuals in Asia and the Pacific region.
[13] The Economic and Social Commission for Asia and the Pacific (ESCAP). 2023. *The race to net zero: Accelerating climate action in Asia and the Pacific*. 79th Commission Session. https://www.unescap.org/kp/2023/race-net-zero-accelerating-climate-action-asia-and-pacific
[14] UN. 2022. *Financing for Sustainable Development Report 2022*. Office of the High Representative for the least developed countries, landlocked developing countries and small island developing states. https://www.un.org/ohrlls/content/financing-sustainable-development-report-2022
[15] Von Braun, J. & Torero Cullen, M. 2022. *Achieving the G7 Elmau Commitment in the Context of the COVID-19 Pandemic and Climate Change*. International Institute for Sustainable Development. https://sc-fss2021.org/wp-content/uploads/2022/03/Policy-Brief_elmau-commitment-CERES-ZEF-FAO-IFPRI_2022.pdf

Figure 1. Distribution of net ODA in Asia



Source: OECD (2023), Distribution of net ODA (indicator). doi: 10.1787/2334182b-en (Accessed on 14 November 2023)

10. While ODA plays a complementary role in overall economic growth, it is important to recognize that it falls far short of investment needs to achieve the SDG targets. Evidence suggests that ODA is more effective if guided by and channelled through national institutions, reflecting recipient governments' priorities.[16] Other sources of finance, such as increased and better targeted public investment, enhanced and inclusive financial services at national level, and direct foreign investment, among other sources, are necessary, and at times more effective, to facilitate economic growth and achieve the SDG targets, including SDG 2.

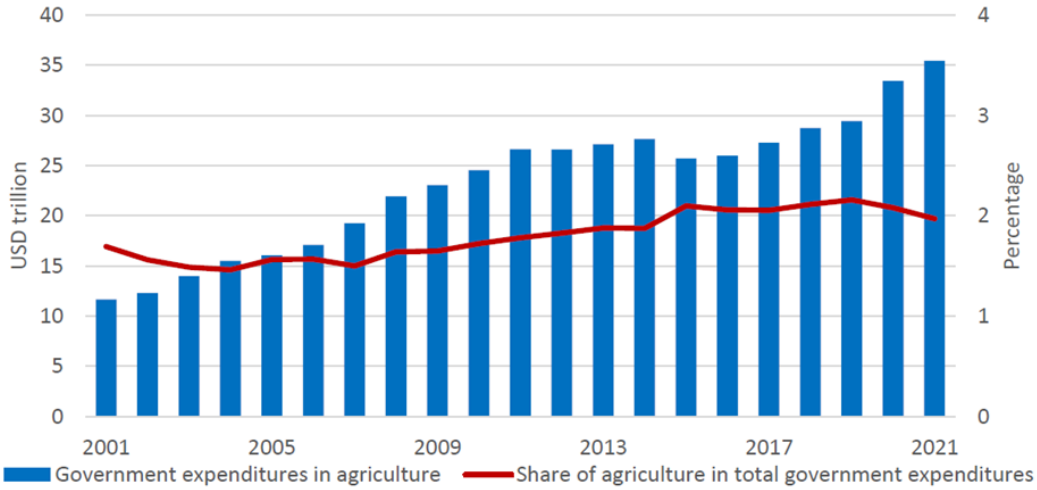
11. Globally, government expenditure on agriculture increased from USD 11 trillion in 2001 to USD 35 trillion in 2021, even amidst the COVID-19 pandemic.[17] During the same period, overall government expenditure also increased, but the share of government spending on agriculture compared to other sectors declined in most countries. Despite contributing 3.1–4.5 percent of global gross domestic product (GDP) between 2001 and 2021, the agriculture sector received only 1.5–2.2 percent of total government expenditures during that period. Although the share of agriculture in government spending reached its peak at 2.16 percent in 2019, it decreased to 2.08 percent in 2020 and 1.97 percent in 2021.[18] (Figure 2.)

[16] Deutscher E. & Fyson S. 2008. *Improving the effectiveness of aid*. Finance and Development, September 2008, Vol. 45, No. 3. A quarterly IMF magazine. https://www-imf-org.ezproxy.library.wur.nl/external/pubs/ft/fandd/2008/09/deutscher.htm

[17] International Monetary Fund. 2021. *Database of Fiscal Policy Responses to COVID-19*. In: *IMF*. Washington, DC. Cited December 2022. https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19

[18] FAO. 2022. *Government expenditures in agriculture 2001–2021. Global and regional trends*. FAOSTAT Analytical Briefs No. 58. Rome. https://doi.org/10.4060/cc3749en

Figure 2. Government expenditure on agriculture and share of agriculture in total expenditure



Note: The number of countries with data available may vary over time. Global estimates include imputed data.
Source: FAO. 2022. Government expenditures in agriculture, 2001-2021. FAOSTAT Analytical Brief 58. FAO, Rome, December 2022. https://doi.org/10.4060/cc3749en

12. Asia has been a major contributor to global public expenditures in agriculture, accounting for 73 percent of global agricultural expenditure between 2011 and 2021, with 5.35 percent of the total budget allocated to the agriculture sector. While Eastern and Southeast Asia increased government spending on agriculture, Central, Southern and Western Asia saw a decline in the share of agriculture in government expenditures. However, fluctuations in exchange rates have also impacted agricultural spending in dollar terms, particularly in countries where local currencies weakened against the US dollar, resulting in lower spending when measured in dollars.

13. In contrast, the LDCs and landlocked developing countries (LLDCs) allocate a significantly higher proportion of their government budgets (4.1 percent and 4.6 percent, respectively) to agriculture compared to the global average. These regions have some of the highest levels of agricultural spending. On the other hand, Small Island Developing States (SIDS) spend only 1.8 percent of their government budgets on agriculture, similar to the global average.[19]

14. The agriculture orientation index (AOI) provides a measure of the government's contribution to the agriculture sector relative to its contribution to gross domestic product, indicating the importance of agriculture to the overall economy. Globally, the AOI showed a modest positive trend, increasing from 0.44 percent in 2001 to 0.54 percent in 2019. However, from 2020 onward, the global AOI declined to 0.44 percent in 2021, partly due to the COVID-19 pandemic response, as governments allocated more resources and higher expenditures to non-agricultural activities such as social spending on health, education and social protection. Among the SDG regions, the AOI decreased in Western, Central, and Southern Asia. The only region that experienced an increase in AOI between 2011 and 2021 was Eastern and Southeast Asia, primarily driven by China.[19]

15. The agrifood systems in Asia are facing significant challenges and need adequate resources to overcome these obstacles, given their crucial importance. This sector employs 30 percent of the region's workforce[20] and provides food for 60 percent of the global population, which amounts to around 4.3 billion people. However, the support necessary to meet the sector's needs has not been forthcoming. Various factors, such as a depleted natural resource base, a growing world population, shifting demographics, and changes in income and dietary patterns, will require a 50 percent increase

[19] FAO. 2022. *Government expenditures in agriculture 2001–2021. Global and regional trends*. FAOSTAT Analytical Briefs No. 58. Rome. https://doi.org/10.4060/cc3749en
[20] International Labour Organization. 2022. *Asia–Pacific Sectoral Labour Market Profile: Agriculture*. ILO Brief, 2022. https://www.ilo.org/asia/publications/issue-briefs/WCMS_863302/lang--en/index.htm

in food supply by 2050.[21] It is evident that there is an urgent need for the transformation of agrifood systems.

System and sector-specific actions to mobilize resources

16. Financing the transformation of agrifood systems will require a diverse range of financial resources. This includes "internal" funds generated within the food systems themselves, such as consumer food expenditures and investments by agrifood businesses, as well as "external" funds sourced from international development assistance, public budgets, banking institutions and capital markets. The relative contributions of these funding sources are likely to vary across different aspects of the transformation process. The Ceres2030 study proposes investments in three crucial ways: (i) empowering marginalized individuals through social protection, assistance to farmer organizations, and vocational training; (ii) focusing on on-farm improvements such as infrastructure development (e.g. irrigation, rural roads, markets), research and development, direct support for sustainable crop production and protection, and livestock; and (iii) addressing challenges related to food movement, including reducing post-harvest losses, enhancing storage facilities, and providing support to small- and medium-sized enterprises, cooperatives, traders and processors.

17. The SDG Investment Trends Monitor[22] proposes six action packages to bridge the investment gap:

a. **Re-orienting investment promotion strategies of host countries.** Key actions include promoting: SDG-focused investment incentive schemes; SDG-focused special economic zones and their multiplier effects on the rest of the economy; SDG-focused bankable project development; and active marketing to attract domestic and international partners.
b. **Formulating a new generation of international investment treaties and guarantees.** International investment agreements should incorporate sustainability, mainstreaming SDGs into their objectives, and facilitating SDG investment through insurance and guarantees.
c. **Enhancing regional and South–South investment.** Establishing or strengthening cooperation in the development of regional and subregional industrial clusters and regional value chains focused on SDG-related sectors; developing cross-border infrastructure supporting, in particular, geographically closed countries; and establishing regional SDG investment compacts as part of the existing regional economic cooperation initiatives such as the Association of Southern Asian Nations and the South Asian Association for Regional Cooperation.
d. **Sustaining SDG investment in recurrent crises.** Making national, regional and global investment inclusive of building resilience; and factoring regional and global geopolitical trends in the SDG-related investments in terms of increased risks and opportunities.
e. **Enabling innovative financing and re-orienting financial markets.** Building synergies between public and private actors, joint ventures between domestic and foreign companies and project financing schemes involving traditional and institutional investors; promoting blended finance by providing credit lines, bonds, de-risking instruments (guarantees and insurance), hedging, grants and technical assistance; promoting digital finance to target the financially excluded and marginalized populations; and promoting integrated reporting on the economic, social and environmental impacts of private investors in order to align capital market signals with sustainable development.
f. **Establishing global partnerships for sustainable investment.** Establishing global alliances among special economic zones, investment promotion agencies and stock exchanges in support of SDG-focused investment; establishing global one-stop shop for SDGs to pool investment advisory and training instruments of all international organizations and multilateral development banks into one platform with easy access by all stakeholders; supporting the development of and accessibility to sizeable, impactful and bankable projects aligned with and supportive of SDGs; and promoting partnerships among governments of small vulnerable

[21] FAO. 2017. *The future of food and agriculture: Trends and challenges*. http://www.fao.org/3/a-i6583e.pdf
[22] UNCTAD. 2023. *The SDG Investment Trends Monitor*. September 2023, Issue 4. https://unctad.org/system/files/official-document/diaemisc2023d6_en.pdf

economies, private investors and multilateral development banks to promote investment in SDGs.

How much investment is needed to end hunger by 2030?

18. Since the onset of the COVID-19 pandemic, the financing gap for realizing the SDGs has widened from USD 2.5 trillion to about USD 4 trillion per year. This shortfall is anticipated to escalate further, by about USD 400 billion annually between 2020 and 2025.[23] In Asia and the Pacific region 371 million people faced hunger in 2022, over 50 percent of the world total.

19. To estimate how much it would cost to achieve SDG 2, especially in the context of ending hunger and improving nutrition, several models have been developed. This document considers the four most up-to-date and comparable models with some key differences, which are highlighted in Table 1. The four models are the International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT), developed by IFPRI (2012),[24] "Toward a Zero-Hunger by 2030",[25] Ceres2030[26] and Marginal Abatement Cost Curves (MACC).[27] For more details, readers are encouraged to refer to the sources provided in the footnotes. Table 1 presents key elements of interventions, financing sources, and annual and total investment costs for each of the four models considered.

[23] The Organization for Economic Cooperation and Development (OECD). 2022. *Global Outlook on Financing for Sustainable Development 2023: No Sustainability Without Equity*. OECD Publishing, Paris. https://doi.org/10.1787/fcbe6ce9-en

[24] Rosegrant M.W., Sulser, T.B., Mason-D'Croz, D., Cenacchi, N., Nin-Pratt, A., Dunston, S., Willaarts. B. 2017. *Quantitative foresight modelling to inform the CGIAR research portfolio*. Project Report for the United States Agency for International Development. IFPRI. https://www.ifpri.org/publication/foresight-modeling-agricultural-research

[25] Torero, M. & von Braun, J. 2015. *Toward a zero-hunger goal by 2030: some preliminary estimates of what it would cost*. Unpublished paper.

[26] Laborde, D., Parent, M. & Smaller, C. 2020. Ending Hunger, Increasing Incomes, and Protecting the Climate: What would it cost donors? Ceres2030. IISD and IFPRI. https://ceres2030.iisd.org/wp-content/uploads/2021/03/ceres2030-en-what-would-it-cost.pdf

[27] ZEF and FAO. 2020. *Investment costs and policy action opportunities for reaching a world without hunger (SDG 2)*. https://www.fao.org/documents/card/en?details=cb1497en

Table 1. Additional investment costs and policy action opportunities for reaching zero hunger in the Asia and the Pacific Region (SDG 2)

Model/ Framework & Institution/s	Target	Investments/ Interventions	Methodology	Financing Source	Per capita total cost of hunger eradication USD, (2022-2030)	Total Annual Costs billion USD
IMPACT (Rosegrant et al. 2017, IFPRI)	5% hunger	Agric. R&D, Irrigation, water use efficiency, soil management, transport and energy infrastructure	Partial equilibrium linked to biophysical and CGE model, includes climate	Public	929	43
Toward a zero hunger by 2030 (Torrero and von Braun, 2015)	3% hunger and improved nutrition	Crop yield enhancement, agric. R&D, market innovations, digital agric., reduce micronutrient deficiency & stunting	Partial equilibrium model (IMPACT)	Public and ODA	312	14
CERES2030 (IFPRI, IISD-2020)	5% hunger, double income of small-holders and limit greenhouse gas emissions vis Paris Agreement.	Food subsidy, vocational training, fertilizer subsidy, investment subsidy, capital endowment, production subsidy, extension, irrigation, agroforestry, forage, storage and roads.	Computable General Equilibrium (CGE), focusses on 3 out of 5 SDG2 indicators – leaving out nutrition targets.	Public and ODA	368	17
Marginal Abatement Cost Curves (MACC) ZEF and FAO (2020)	5% hunger, addressing child stunting and malnutrition.	24 interventions – social protection, agric. R&D, crop protection, integrated soil fertility management, child nutrition, youth capacity development, connectivity, trade, literacy.	MACC, synergies and multiplier effects of individual interventions are not captured.	Public and ODA	556	26

Source: Calculated for the Asia and the Pacific region based on the global figures from each of the models.

20. It is important to approach the differences in per capita eradication of hunger with caution, as they stem from varying assumptions and methodologies employed in the different models analysed. Table 1 should be interpreted with significant care and consideration. The per capita cost of hunger eradication is based on estimates for the period 2015–2030, and these same figures are used for the 2022–2030 period. Additionally, global figures are utilized for the Asia and the Pacific region, which may or may not be appropriate for several reasons.

21. First, investment costs and returns on investment differ considerably across the globe. Second, the estimation of per capita costs does not account for the type and severity of hunger. Third, the levels of investment in other SDGs that have synergistic and multiplier effects on SDG 2 targets are not taken into account, and these levels can vary significantly across different regions.

22. Nevertheless, the allocation of investment requirements to end hunger by 2030 in the region aligns with the region's proportionate share of global hunger. The MACC model, developed by ZEF and FAO, is comprehensive as it considers all five SDG 2 indicators. However, the MACC model evaluates each of the 24 interventions independently in terms of marginal cost and hunger reduction effects. This approach overlooks the synergistic effects of interventions, resulting in an overestimation of investment costs. The estimated MACC of total annual costs for the region, amounting to USD 26 billion over an eight-year period, is based on the upper estimates of investment needs (USD 50 billion per annum globally over a ten-year period). If we consider the lower estimate of USD 39 billion per annum, the figure for the Asia and the Pacific region would be USD 20 billion per year.

23. The Ceres2030 model, which is the second most recent model available, proposes that an annual investment of USD 17 billion is necessary between 2022 and 2030 to eliminate hunger in the region. However, it is important to note that this model only considers three out of the five SDG 2 targets, excluding nutrition-related outcomes. As a result, the per capita cost of hunger eradication reflects this particular omission in the model's scope.

III. A call to step up financing to end hunger, food insecurity and malnutrition, and the way forward

24. Global hunger in 2022 stood at 736 million people, 371 million of whom lived in the Asia and the Pacific region. Without a resolute response, the global figure is estimated to surpass 840 million.[28] In Asia[29] this figure is projected at 329.2 million, lower than the 381.1 million people estimated in 2019, but still far from the SDG 2 targets of Zero Hunger.[30] Inaction to address SDG 2 is highly likely to have significant repercussions not only for the SDG 2 targets, but for other SDGs as well through synergies and negative externalities.[31]

25. To eliminate the risk of 329.2 million people going hungry in the region, public expenditure needs to increase by approximately 17 percent. Evidence suggests that some of these funds can be obtained by repurposing agricultural subsidies with negative impacts, improving targeting mechanisms, and identifying more efficient policy and social protection instruments.[32] While these measures are necessary, they may not be sufficient to bridge the investment gaps, which may require a re-evaluation of public fiscal and monetary policies.

26. Increasing the tax revenue base, enhancing tax administration, and implementing taxes on unhealthy diets and environmentally damaging food products or farming practices can realign incentives and generate additional revenue. Establishing alliances to enforce stricter controls on money laundering, tax evasion, and illegal financial outflows is also crucial.

27. In most developing countries, credit to the agriculture sector needs to be increased by 40 percent to meet the SDG 2 targets.[33] Overcoming systemic barriers that hinder the provision of financial services to agriculture, small farmers, and socially and economically disadvantaged groups is essential for the banking sector to meet this challenge. Repurposing funds that contribute to negative externalities and allocating them to promote sustainable and inclusive agrifood systems can help bridge the financing gap. The resurgence of agriculture and public development banks in the region

[28] Von Braun J., Chichaibelu B. B., Torero Cullet, M., Laborde D. & Smaller C. 2020. *Ending Hunger by 2030 – Policy Actions and Costs*. https://www.zef.de/fileadmin/downloads/SDG2_policybrief.pdf
[29] Note that the categories “Asia” and “Asia-Pacific” do not include the same countries.
[30] ZEF and FAO. 2020. *Investment Costs and Policy Action Opportunities for Reaching a World without Hunger (SDG 2)*. October 2020. https://www.fao.org/3/cb1497en/cb1497en.pdf
[31] Machingura, F. & Lally, S. 2017. *The sustainable development goals and their trade-offs*. Overseas Development Institute, September 2017. https://euagenda.eu/upload/publications/untitled-80154-ea.pdf
[32] Diaz-Bonilla, E. 2023. Financing SDG 2 and Ending Hunger. In J. von Braun et al. (eds.), *Science and Innovations for Food Systems Transformation.* https://doi.org/10.1007/978-3-031-15703-5_35
[33] Diaz-Bonilla E. (2023). Financing SDG 2 and Ending Hunger, (pp. 661-683). In von Braun J, Afsana K, Fresco L.O. and Hassan M. H. A (2023) (Ed.*). Science and Innovations for Food Systems Transformation*. Springer. https://doi.org/10.1007/978-3-031-15703-5

shows promise in promoting inclusive rural finance and addressing market failures in agricultural and climate credit markets. Specific financial instruments are required to ensure that financial services reach agrifood system actors, given the high-risk nature of agriculture and the dispersed and small--scale nature of customers. Some countries in the region have gained promising experiences in pioneering supply chain finance, value chain finance, microfinance, and digital finance instruments.

28. Transparency, measurable objectives, and alignment with SDG 2 and related goals can attract more funds to capital markets. Developing SDG 2-aligned investible projects with clear outcomes, risks and rewards can appeal to investors, including impact investment funds, thematic bonds, and theme-based projects. FAO has initiated efforts in some priority countries under the Hand-in-Hand Initiative. International Zero Hunger guarantee bonds could be established to support public programmes related to SDG 2. This would provide access to finance for LDCs through a perpetual bond guarantee with a capped interest rate.

29. Ceres2030 indicates that ODA needs to increase by an additional USD 14 billion per year over the next eight years to meet the SDG 2 targets. Suggestions to bridge this gap include reallocating funds from projects without carbon capture and lower priority projects to SDG 2-related initiatives. Additionally, a guarantee fund for "zero-hunger bonds," as mentioned earlier, can generate significant financial resources for investments in SDG 2-related initiatives.

III.1 Financial mechanisms and instruments to bridge financial gaps in achieving SDG 2 targets

30. There are several financial mechanisms and instruments that countries can utilize to bridge the financial gaps in achieving the targets of SDG 2, as well as other SDGs. It is important to note that the following list is not exhaustive, and these mechanisms and instruments should not be considered in isolation. Instead, they can be adopted and adapted in conjunction with each country's context.

International financial institutions and bilateral and multilateral support

31. To effectively finance SDG 2 initiatives, there is a need for targeted and coordinated efforts that align international ODA, private sector investments, and emerging stakeholders. It is crucial to strategically deploy international development funds in a way that stimulates and mobilizes private sector investments in alignment with development goals.

32. In addition, multilateral and bilateral organizations should enhance coordination of their operations to address the problem of fragmented and isolated initiatives. This coordination is essential to minimize duplication of efforts among international agencies at the national level. By working together and streamlining their actions, these organizations can maximize the impact of their interventions and ensure more efficient use of resources.

Creation of a Zero Hunger Alliance and Fund

33. A Zero Hunger Alliance and Fund and a "zero hunger bond" (possibly a "zero hunger green bond" as a subcategory) with Special Drawing Rights to offer guarantees for this new bond should be designed to support institutionally and financially those countries that want to join a global partnership to end hunger. This proposal follows the suggestions of global leaders (including Pope Francis) and builds on the idea of a Zero Hunger Fund presented by Action Track 1 of the United Nations Food Systems Summit that focuses on ensuring access to safe and nutritious food for all. A number of countries in the region have already issued green bonds to mobilize financial resources for investment in agrifood systems.

34. To achieve the sustainable and equitable agrifood systems we urgently need, it is essential to have collective political will. This means implementing incentives for change and establishing financial and policy enablers. Governments and decision makers must prioritize food security, nutrition, environmental sustainability and social equity as key policy goals. Incentives should be created to encourage stakeholders to adopt sustainable practices, and financial resources need to be allocated to support initiatives. Policy frameworks should be developed to regulate farming practices,

ensure fair trade, and address food waste. Collaboration with stakeholders is crucial for inclusive decision making.

Public-private (and farmer) partnerships

35. In 2016, the Business and Sustainable Development Commission commissioned a study[34] that uncovered a significant business opportunity related to the implementation of SDGs in the food sector. The study estimated this opportunity to be worth over USD 2.3 trillion annually by 2030, presenting immense potential for the private sector. To seize this opportunity, an estimated investment of approximately USD 320 billion per year will be required during this period. The study highlights the substantial economic prospects available for businesses that align their strategies with the SDGs, particularly in the food sector. By investing in sustainable and responsible practices, companies can not only contribute to achieving the SDGs, but also unlock significant financial gains.

36. Private financing models offer significant potential to enhance funding for sustainable and resilient agrifood systems, thus facilitating the achievement of SDG 2 targets. When effectively leveraged and directed, these models can drive positive change. Here are a few examples:

a. **Sustainability-linked bonds**: These bonds, issued by public or private entities, raise capital for projects that contribute to sustainability objectives. Payments to bondholders are linked to the issuer's performance against predefined sustainability indicators. For instance, Hulic, a Japanese real estate company, issued Japan's first sustainability-linked bonds in 2020, complying with the International Capital Market Association's Sustainability Linked Bond Principles.
b. **Crowdfunding**: Online platforms facilitate crowdfunding, enabling multiple investors to lend money to companies through donations, rewards, lending, or equity, depending on the regulatory conditions in the country. CROWDE, an agriculture crowdfunding start-up in Indonesia, runs a financing platform for agriculture, aquaculture and livestock projects.[35]
c. **Inward remittances**: Remittance-linked investment products can support the transition to sustainable food and energy sectors. In 2019, the Government of Tajikistan collaborated with FAO and the International Organization for Migration (IOM) to design a pilot project that channelled remittances into agriculture. The initiative aimed to promote food security, nutrition, job creation and inclusive growth.
d. **Climate risk insurance**: Nontraditional index-based insurance pays out preset amounts based on objective conditions, such as disasters, rather than the value of the loss. The World Bank launched the Global Shield Financing Facility to help developing countries access financing for disaster recovery. Similarly, the United Nations Capital Development Fund launched a parametric microinsurance scheme in the Pacific Islands with support from partners, providing protection against climate risks.[36]
e. **SDG bonds**: These bonds raise capital for projects that advance the SDGs. For example, the Livelihood Innovation Fostering the Economy SDG Bond, issued by Grameen Impact Investments and Acumen in India, directed funds to social enterprises supporting sustainable livelihoods for youth in rural and urban areas.

37. By effectively utilizing these models, we can accelerate progress towards sustainable and resilient energy and agrifood systems.

Private sector investment in the form of venture capital and impact financing

38. Exciting developments are underway in the realm of financial products, supply chain partnerships, and investment vehicles, aiming to redirect capital from the traditional asset-heavy but low-yielding investments to more efficient, inclusive, resilient and sustainable economic activities.

[34] https://www.hulic.co.jp/en/sustainability/ecology/management/linked_bond.html
[35] https://crowde.co/en
[36] United Nations Capital Development Fund. 2022. Parametric Insurance Meets a Critical Demand in the Fiji Market. https://www.uncdf.org/article/8036/parametric-insurance-meets-a-critical-demand-in-the-fiji-market

This shift is facilitated by blending public, private and philanthropic capital. Public sector engagement in such financial arrangements has the potential to influence investment in SDG 2.

39. In Southeast Asia, the agrifood technology startup landscape has experienced remarkable growth in recent years. From 2013 to 2022, approximately USD 4 billion was invested in agrifood technology ventures, with a consistent upward trend.[37] Notably, investment in upstream agrifood technology innovations, focusing on on-farm and novel food production, saw significant growth in both 2022 and the first half of 2023.[38]

40. The advancements in agrifood technology introduce solutions to address inefficiencies in the financial system. These innovations aim to: (i) capture the value of nature; (ii) incentivize resource-efficient outcomes; and (iii) leverage public and philanthropic funds to mobilize private finance at scale. The *Better Finance, Better Food: Case Study Catalogue*[39] presents a new business model and financing archetypes that tackle key inefficiencies in the current system. This catalogue proposes innovative approaches to improve the financial aspects of the agrifood sector, fostering sustainability and efficiency.

41. Overall, the emergence of new financial products, supply chain partnerships and investment vehicles, alongside the growing agrifood technology landscape in Southeast Asia, offers promising opportunities to transform the food and land-use economy towards a more sustainable and efficient future. However, there is a risk of over-capitalization of the agrifood system in the region, which often benefits investors. The involvement of the public sector in promoting agribusiness incubators, facilitating investment finance, and providing some degree of market access guarantee to youth and disadvantaged groups can help mitigate this risk.

IV. Conclusion

42. In 2022, more than 371 million people in the Asia and the Pacific region experienced hunger, accounting for over 50 percent of the global total[40]. Without adequate intervention, this number could rise to 381.1 million people by 2030. The SDGs are interconnected and investing in SDGs related to SDG 2 (Zero Hunger) can have positive spillover effects in achieving its targets.

43. This document examined four comparable studies that aimed to estimate the additional investment required to achieve SDG 2 targets by 2030. The most recent studies – Ceres2030 and MACC, published in 2020 – provide up-to-date and comprehensive insights to answer the main question: how much will it cost to achieve Zero Hunger in the Asia and the Pacific region by 2030? The MACC study covers all five SDG 2 indicators, while the Ceres2030 study focuses on three of the five indicators. According to the MACC model, an annual additional investment of USD 26 billion is needed to achieve the SDG 2 targets by 2030. However, it is important to interpret this figure cautiously as it applies global parameters to the region and does not consider synergies across interventions and investments in other SDGs.

44. This document suggests that nearly 58 percent (USD 15 billion per year) of the estimated additional financing should come from the public sector, with the remaining USD 11 billion per year sourced from ODA. To bridge the financial gap, recommendations include repurposing public finance to prioritize the SDG 2 targets, increasing tax revenue, improving fiscal governance, removing barriers for farmers and rural enterprises to access finance, and promoting various forms of partnerships.

[37] *AgriFoodTech In Southeast Asia*. 2023. Ecosystem Report, Singapore Economic Development Board. https://forwardfooding.com/food-tech-reports/

[38] *Asia-Pacific AgriFoodTech Investment Report 2023*. AgFunder 2023. https://agfunder.com/research/asia-pacific-agrifoodtech-investment-report-2023/

[39] *Better Finance, Better food: Case Study Catalogue*. Blended Finance Taskforce. (n.d.). Blended Finance Taskforce. https://www.blendedfinance.earth/better-finance-better-food

[40] FAO. 2023. Asia and the Pacific Regional overview of food security and nutrition 2023: Statistics and trends. https://doi.org/10.4060/cc8228en

45. Scaling up ODA will require reallocating funds from projects that do not prioritize carbon capture and lower-priority initiatives to SDG 2-related endeavours. Additionally, establishing a guarantee fund for “zero-hunger bonds” can generate significant financial resources for investments in SDG 2-related initiatives.

46. This document emphasizes the importance of harnessing the multiplier effects of transformed agrifood systems. Such systems are not only sustainable and ensure food security, but also empower women farmers, stimulate economies, reduces waste and conserve resources. By embracing this comprehensive approach, we can unlock the full potential of sustainable agrifood systems and achieve significant positive impacts across various dimensions of development.