

Food Systems Summit Brief
Prepared by Research Partners of the Scientific Group for the Food Systems Summit, May 11th, 2021.

FINANCING SGD2 AND ENDING HUNGER

by Eugenio Díaz-Bonilla¹

EXECUTIVE SUMMARY

Among the important tasks of the UNFSS is identifying ways to finance the transformation of the global food system. This report analyses options for financing a specific, but crucial, part of the overall food system transformation, namely achieving SDG2 (and in particular “zero hunger”) by 2030 and examines the role of external finance in this effort. It reviews costs and possible resources and offers ideas for effective mobilization and use of the funds.

FOOD SYSTEMS TRANSFORMATION AND SUSTAINABLE DEVELOPMENT GOALS

The operation of food systems affects incomes and employment; poverty and food security; diets, health, and nutrition; energy sources and uses; climate change, environmental sustainability, biodiversity, and ecosystems; and even aspects of peace and governance. Hence, the adequate functioning of food systems is crucial for achieving the Sustainable Development Goals (SDGs) by 2030. However, current food systems are falling short in many of these economic, social, environmental, and political dimensions, and there are

¹ The author acknowledges the detailed and very useful comments from Joachim von Braun, Johan Swinnen, and Rob Vos. Those comments significantly improved this document. However, they are not responsible for any of my remaining errors and omissions.

mounting calls for their transformation. This will require defining the specific objectives desired and the interventions, costs, incentives, and financing that would lead to their achievement.

Financing food systems transformation will involve a variety of financial resources, including funds “internal” to food systems (consumer food expenditures and outlays by agrifood actors) and “external” funds (international development flows, public budgets, banking systems, and capital markets). The contributions of the different funding sources are likely to vary across different aspects of the transformation.

FINANCING OF SDG2 AND ENDING HUNGER

This paper focuses on one critical part of the overall food system transformation, namely achieving SDG2 (and in particular “zero hunger”) by 2030. It explores the role of external finance in achieving SDG2—that is, the availability and use of external flows to food systems that can augment the internal flows to help meet the additional costs of reaching SDG2 and ending hunger.

The paper reviews cost estimates from several studies and compares these with potential sources of funding. There are significant data limitations for this exercise. With the available data, estimates suggest that, in aggregate, sufficient additional resources are potentially available to finance the costs of ending hunger by 2030 (with “ending hunger” understood as lifting from 870 million to 1 billion people from hunger), including interventions that also contribute to nutritional objectives and to mitigation and adaptation to climate change in agriculture.

However, to move from “potentially available” to actual mobilization and effective use of those

financial resources, several problems and constraints must be addressed, both at the aggregate level and at the country level. At the aggregate level, the expansion and adjustment of existing sources of funding are required. At the national (implementation) level, even when necessary financial resources can be effectively mobilized, they will only be utilized in effective programs to end hunger and achieve SDG2 if individual countries are willing and capable of doing so. Therefore, institutional mechanisms are needed to support developing countries in the design, financing, and implementation of national programs, particularly considering the fiscal constraints that have been created by government responses to the current pandemic.

Mobilizing sufficient resources would require a series of changes for different sources of funds. Some ideas for mobilizing these resources are listed below.

MOBILIZING ADDITIONAL FINANCIAL RESOURCES

For public budgets

- Implement public expenditure and tax reviews to increase and reallocate agricultural subsidies in developing countries (about 50 billion dollars, without China) and scale up, better target, and redesign social safety nets using new and evolving cash transfer instruments that combine poverty, productive, nutritional, environmental, and financial inclusion components (such as the Cash Transfers Plus analyzed by FAO or the evolving instruments of social inclusion considered by the World Bank).
- Increase public expenditures/ investments in agriculture (for example, to an Agricultural Orientation

Index [AOI] of 0.5) and social protection expenditures (to 2% of GDP).

- Strengthen revenues in developing countries through better tax administration and revision of sales, income, wealth, and trade taxes, and by implementing international initiatives to control corruption, tax evasion, and other practices that erode those countries' tax bases. The use of carbon taxes needs to be considered.

For banking systems

- Reactivate the tools of the “developmental central banks,” using rediscounts to offer credit to small farmers, rural populations, and small and medium enterprises (SMEs) in food value chains (within a consistent monetary program that controls inflation).
- Revitalize and modernize public development and agricultural banks (with incentives, performance metrics, and controls to avoid the problems of the past in this type of institution) to increase credit (supported by central bank discounts) and offer other financial services to small farmers, rural populations, and SMEs in food systems, with particular consideration for women, vulnerable ethnic minorities, and youth.
- Increase the AOI of agricultural credit to at least 0.5.

For capital markets

- Create a project preparation/incubation/acceleration facility to structure productive opportunities for small farmers into investable opportunities for impact investors, using economic, social, and environmentally sound technologies with the support of One CGIAR and national agricultural research

institutes (NARIs). This facility can also support enhanced environmental lending by the agricultural public banks mentioned above.

- Design, guarantee, and launch a “zero hunger bond” (see below).

ZERO HUNGER BOND AND A ZERO HUNGER ALLIANCE & FUND

To finance food systems transformation to end hunger and achieve SDG2, the international development funds dedicated to agricultural and rural development, food and nutrition security, and environmental aspects of food systems would need to be increased by about 15 billion dollars annually—this implies doubling current levels. Two billion dollars of these 15 billion would be used to finance a Zero Hunger Alliance & Fund (ZHAF), designed to support institutionally and financially those countries that want to join a global partnership to end hunger.

Creation of the ZHAF would be complemented by the development of a “zero hunger bond,” with 2% of the future issue of Special Drawing Rights (SDRs) of 650 billion dollars allocated to offer guarantees for this new bond. The zero-hunger bond would help finance the economic, social, and environmental interventions (possibly a subcategory of “zero hunger green bonds”) needed to achieve SDG2 and end hunger. These instruments can be perpetual or very long-termed bonds, with an adjustable coupon and a cap on the maximum interest rate.

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 One of the United Nations Food Systems Summit (UNFSS). The ideas developed here aim to guide the institutional design with experiences and lessons learned from other initiatives,

including the Global Agriculture and Food Security Program (GAFSP), the Poverty Reduction Strategy Papers or Programs (PRSPs), and GAVI, the Vaccine Alliance.

Key lessons from these experiences are: (1) the importance of supporting country-owned, medium-term, integrated programs; (2) the need for clear and measurable objectives; (3) the strategic potential of scarce development funds to mobilize a far larger amount of financial resources, rather than financing individual, isolated projects directly; and (4) the benefits of flexible public–private institutions with strong coordination and operational capabilities.

Based on these lessons, the proposed Zero Hunger Alliance & Fund would have the following characteristics and objectives:

- It focuses on a clearly measurable objective: eliminating hunger by 2030.
- It is an independent public–private institution with a dedicated fund, and with personnel seconded from international organizations focusing on poverty, food security, and nutrition issues, who will work in close cooperation with local teams of partners in the participating countries—and as such form an *Alliance*.
- There will be a dedicated fund to (a) cover the operational costs (but not the salaries of the seconded personnel); (b) hire technical and operational expertise needed to support the countries in defining their programs and mobilizing the human, financial, and institutional resources to carry them out; (c) de-risk some financial operations to mobilize private capital (such as the issuance of zero hunger bonds); and (d) eventually, finance some interventions directly. The largest share by value of those funds will be used for (c), but the most important use, operationally, will be for (b).
- Funding will come from the additional international development funds (as discussed above, about 2 billion dollars), plus an effort to mobilize private funds, with the target of obtaining commitments from at least 50 companies (from food and other sectors) to donate about 10 million dollars each (these companies will be recognized as Champions of the Zero Hunger Alliance). Combined, those funds would reach 2.5 billion dollars per year.
- In addition, 2% of the planned allocation of SDRs (or 13 billion dollars) will be used to design, launch, and guarantee zero hunger bonds (and zero hunger green bonds) issued by countries with “zero hunger programs” supported by the Alliance. Depending on how the guarantees are structured and maintained over time, they could multiply the value of the SDRs directly allocated to this initiative by a factor of more than 10.
- Most of these funds will be leveraged to mobilize the country-level sources of financing discussed above—through public budgets, banking systems, and capital markets.
- The Alliance will support financially and operationally those individual countries that sign agreements to join this global partnership to end hunger by 2030, helping them to identify the target population, define specific institutional, programmatic, and instrumental components, mobilize the necessary funding, and structure the partnerships needed to carry out the programs to end hunger by 2030.
- In particular, it is suggested to expand the use of the new instruments that combine cash transfers based on poverty with additional productive,

nutritional, environmental, and financial inclusion components.

The institutional arrangement outlined here has several advantages, including that: It supports the country members of the Alliance in implementing country-owned, country-coordinated, integrated programs. It focuses on a single and measurable objective (ending hunger by 2030) but, given the type of agricultural technologies and environmental interventions supported, it also contributes to crucial objectives related to climate change mitigation and adaptation. It mobilizes a significantly larger volume of funds than those directly allocated to the Alliance. By relying on temporary secondment of personnel from existing organizations, it reduces the risk of creating another permanent international bureaucracy. And, finally, it has a flexible public-private institutional structure.

A. INTRODUCTION

The operation of food systems affects incomes and employment; poverty and food security; diets, health, and nutrition; energy sources and uses; climate change, environmental sustainability, biodiversity, and ecosystems; and even aspects of peace and governance. Hence, adequate functioning of those food systems is crucial for achieving the Sustainable Development

² “Interventions” refers generally to public sector actions, including policies, programs, investments, expenditures, taxes and subsidies, laws and regulations, and institutional aspects, that seek to address a specific problem.

³ The focus is on 2.1 “end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round”; 2.3 “double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers...”; and 2.4 “ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production...” In the text, references to SDG2 must be understood in this vein.

⁴ A more general discussion about food systems, financing, and SDGs can be found in the framing note (Food-Systems-Summit-Finance-Lever-framing-note-2021.pdf) and at <https://foodsystems.community/communities/lever-of-change-finance/documents/>; and in Díaz-Bonilla, Swinnen, and Vos (2021).

Goals (SDGs) by 2030 (von Braun, Afsana et al. 2020). However, current food systems are falling short in many of these economic, social, environmental, and political dimensions, and there are mounting calls for their transformation. This will require defining the specific objectives desired and the interventions,² costs, incentives, and financing that would lead to their achievement.

This paper focuses on the transformation of food systems to help achieve crucial components of SDG2³ and, in particular, ending hunger by 2030. This narrows the analysis of food systems to several relevant aspects, notably (1) agricultural production and rural development within the more general operations of food value chains, and (2) poor and hungry consumers, rural and urban, as part of the more general problems of diets and health that affect a larger number of consumers.⁴ Even with a focus on SDG2, the targets and interventions considered have important implications for a variety of nutritional and environmental objectives.

The paper compares the additional costs of achieving SDG2, including zero hunger (as estimated by von Braun, Chichaibelu et al. [2020] and studies referenced there), with potential sources of funding. The estimates of potential funding use the framework in Díaz-Bonilla,

Swinnen, and Vos (2021), which identifies two flows of funds “internal” to food systems (consumer food expenditures, on the one hand, which comprise the sales/revenues of the agents in the agrifood system, on the other), and four that are “external” to food systems (international development flows, public budgets, banking systems, and capital markets). The main question analyzed here is, given the estimated costs involved in such a transformation, what are the options to finance the interventions needed, what is their quantitative availability, and how can those potential sources of finance be mobilized and used effectively to achieve SDG2 and end hunger.

Adequate macroeconomic policies,⁵ a supportive business environment, and peace are basic requisites for the operation of food systems. Also, different policy interventions can influence the size and allocation of consumer expenditures and the productive outlays of the operators of food value chains (the internal flows) in ways that support the achievement of different SDGs (see a discussion in Díaz-Bonilla, Swinnen, and Vos 2021). However, those reallocations within the internal flows are not the focus of this paper. Rather, it analyzes the availability and utilization of external flows to food systems, which can augment the internal

flows (operating under an adequate set of incentives defined by more general macroeconomic policies) to finance the additional costs of reaching SDG2 and ending hunger.

This paper is structured as follows. Section B focuses on the costs of achieving SDG2, based on the work referenced in von Braun, Chichaibelu et al. (2020). Then those policy interventions and costs are analyzed against a matrix of potential sources of financing, using the framework in Díaz-Bonilla, Swinnen, and Vos (2021). Section C presents estimates of the current values of the external funds that can complement the internal flows⁶ and help finance the additional expenditures and investments needed to achieve SDG2 and end hunger. Section D compares the costs in section B with the availability of funds estimated in section C, and evaluates different financial alternatives, suggesting some specific adjustments to effectively mobilize the additional resources needed. Section E argues that it is not only a matter of financing a set of interventions but also of designing and implementing them adequately, which depends, to a large extent, on the willingness and capabilities of individual countries. Therefore, section F discusses a separate proposal, called a Zero Hunger Alliance & Fund (based on the idea of a fund to end hunger, advanced by different global leaders,⁷ and presented as

⁵ See Díaz-Bonilla (2015) for a discussion of macroeconomic policies in relation to agriculture and food security.

⁶ Internal flows of funds in food systems are estimated in a quantitative background paper at about 7,700–8,300 billion dollars, as an average of 2014–2018 in current dollars, corresponding to food expenditures by consumers, which are sales from the perspective of all the operators of the food value chains. Different policy interventions can influence the size and allocation of internal flows in ways that support the achievement of different SDGs (see a discussion in Díaz-Bonilla, Swinnen, and Vos 2021).

⁷ See, for instance, Pope Francis, who argued that, “A courageous decision would be to establish a “Global Fund” with the money that is used for weapons and other military expenditures, in order to definitively eliminate hunger and contribute to the development of poorer countries. In this way, many wars and the migration of many of our brothers and sisters and their families, forced to abandon their homes and countries to seek a more dignified life, would be avoided...”
http://www.vatican.va/content/francesco/en/messages/food/documents/papa-francesco_20201016_messaggio-giornata-alimentazione.html.

a specific proposal by Action Track One). Section G summarizes all proposals and Section H concludes.

B. COSTS OF INTERVENTIONS TO ACHIEVE SDG2 AND END HUNGER

The analysis of the costs related to SDG2 and ending hunger follows the work reported in von Braun, Chichaibelu et al. (2020), with the background of two other studies, ZEF and FAO (2020) and IFPRI, IISD, and Cornell University (Laborde, Parent, and Smaller 2020). The latter (part of the project called Ceres2030: Sustainable Solutions to End Hunger⁸) considers 14 interventions and policy instruments to

end hunger, increase agricultural incomes, and achieve some environmental outcomes. ZEF and FAO (2020) calculates the additional costs of lifting people out of hunger and malnutrition using a variety of interventions, selected by their favorable impacts on the elimination of hunger. Those interventions also support other components of SDG2 and, in particular, given the technologies considered, they are aligned with the objectives of mitigation and adaptation to climate change. The number of people who may be lifted from hunger depends on the range of interventions considered. These estimates are shown in Table 1.

Table 1. Estimates of Ending Hunger and other SDG2 Goals.

Source	People lifted from hunger (million)	Additional cost per year (billion dollars)
IFPRI, IISD, Cornell (Ceres 2030)	490	33
ZEF and FAO (2020)	870	56
ZEF and FAO (2020)	1050	163

Source: Based on the cited studies. For IFPRI, IISD, and Cornell, see Laborde, Parent, and Smaller (2020).

The costs of eliminating hunger are not linear, with each further reduction in the number of people affected becoming costlier (ZEF and FAO 2020). The largest estimate, of about 163 billion dollars annually,⁹ would lift about 1,050 million people from hunger by 2030. While the projections under business-as-usual assumptions for the number of hungry people in 2030 are about 900 million (under intermediate scenarios of climate change; see ZEF and FAO 2020), this number does not consider the possibility of

additional humanitarian, health, or environmental crises. In section C, for the matrix of financing, the focus is on the intermediate estimate, that is, lifting 870 million people from hunger, but the target of 1 billion lifted from hunger is also referenced, both as a cushion and because the additional interventions support further environmental objectives, particularly for climate change adaptation and mitigation.

⁸ <https://ceres2030.org/>

⁹ Another recent analysis (FOLU 2019) estimates the costs of 10 “transitions” needed for the transformation of food systems at 300–350 billion dollars per year until 2030. Those transitions involve several SDGs; but considering only those more directly related to SDG2, the costs would be about 170–190 billion dollars, which is in the same range as the estimates in ZEF and FAO (2020).

C. POSSIBLE SOURCES OF FUNDING

Each of the next subsections discusses quantitative estimates¹⁰ of the current values of the external sources.¹¹ They will be compared later with the additional financing needed (as discussed in the previous section), to give an idea of the extra financial effort required.

1. International development flows

International development flows include concessional development assistance and non-concessional lending¹² by bilateral agencies, multilateral development banks (MDBs), and some large private philanthropic funds. FAOSTAT provides data on development flows both as commitments and as gross disbursements.¹³ Using disbursements¹⁴ in current values, the annual average for the period 2014–2018 has been about 256 billion dollars for all uses/sectors, and 11.1 billion for agriculture, forestry, and fishing (AFF),¹⁵ or some 4.3% of all development flows.

ZEF and FAO (2020) also calculate development flows to other sectors related

to SDG2 (such as water and sanitation), which produces a higher estimate of the disbursements going to food security and rural development in 2018 of about 15 billion dollars, and of commitments to about 17 billion dollars.

2. Public budget

The public sector implements many interventions that affect the operation of food systems. Here the focus is on public expenditures. Considering the interventions discussed in section B related to SDG2,¹⁶ the analysis centers on two main types of public expenditures: on AFF and on social protection. A brief discussion of additional fiscal expenditures related to the COVID-19 pandemic is also included.

a) Agriculture, forestry, and fishing

Data from FAOSTAT are based on the IMF functional classification of expenditures.¹⁷ Table 2 shows total government outlays (current US dollar average 2014–2018) and outlays on AFF, using FAO's regional

¹⁰ Details are in a background paper that is based on the structure of Díaz-Bonilla, Swinnen, and Vos (2021).

¹¹ Remittances are an important flow of funds, estimated by the World Bank at about 700 billion dollars in 2019, of which about 550 billion were to developing countries. However, they are basically intrafamily flows, which may not be possible or desirable to reallocate through public policies.

¹² That is, not having highly subsidized interest rates and very long terms for repayment of principal.

¹³ The Development Flows to Agriculture (DFA) dataset is based on OECD's Creditor Reporting System (CRS). It includes Official Development Assistance flows, Other Official Flows and Private Grants reported to the OECD.

¹⁴ The values of disbursements are different from the net flows in the case of loans (concessional or not) because repayments of the principal of the previous loans must be deducted. This is not the case for grants.

¹⁵ It includes Agriculture (which covers Agro-industry, General Environment Protection, Food and Nutrition Assistance, Rural Development), Forestry, Fisheries, and Other Agriculture, Forestry and Fishing.

¹⁶ The public sector also has outlays related to other components of the agrifood system that may impact several SDGs. They are not considered here because the focus of this paper is on SDG2. Also, those additional public outlays correspond to different agencies and sectors and collecting them requires a detailed, country-based, review of public expenditures.

¹⁷ Using the distinction made by FAO (2012), they cover public outlays in agriculture (aimed specifically at enhancing primary production), but not for agriculture (which are government expenditures in other sectors that can also have a positive impact on the agricultural sector). Further, the classification does not include all the expenditures that can support the whole food system (see Díaz-Bonilla 2015).

classification of countries.¹⁸ Public expenditures for AFF by developing countries¹⁹ (not counting China) are about 86 billion dollars. If all outlays are considered, public expenditures by developing countries amount to almost 6,500 billion dollars (but only about 3,700 billion dollars if China is not included).

Table 2 shows the outlays related to AFF as a percentage of all public outlays. Developing countries spend a larger percentage of their budgets on agriculture-related activities than developed countries do. However, this percentage does not consider the size of the agricultural sector; that is taken into account in the Agricultural Orientation Index (AOI). The AOI is calculated as the share of agricultural expenditures in total expenditures divided by the share of agricultural GDP in total GDP. A number smaller (greater) than 1 indicates that the share of government spending on agriculture is less (more) than the share of agriculture in GDP, indicating that there would be under- (over-) spending in the sector relative to its economic relevance. The last column of Table 2 shows the median AIO values for

the countries in each region. Clearly, developed countries spend more as proportion of their agricultural sectors than developing countries.

Of course, the levels of public spending alone do not determine agricultural performance, nor is there any formula to indicate whether a certain level of spending is more adequate than another. However, several studies show that the types of expenditure matter, particularly their orientation toward the provision of public goods, such as agricultural R&D (see for instance Fan, ed. 2008).²⁰ Also, as noted, these numbers do not include public expenditures for agriculture, particularly in infrastructure, and, more generally, public outlays related to food systems as a whole. These considerations suggest the need to utilize a broader focus to analyze the level and composition of public expenditures at the country level (about 3,700 billion dollars of public expenditures in developing countries, not counting China) that are relevant for achieving the desired SDGs.

¹⁸ Some countries report expenditure for the General Government, others only for the Central Government, and finally some of them report both. Table 2 has been calculated with the largest of the two values reported.

¹⁹ What is considered “developed” and “developing” countries varies across datasets. Therefore, the numbers presented must be considered approximations for those groups.

²⁰ A separate quantitative background note also includes an analysis of the OECD data to evaluate the possibility of “repurposing 600 billion dollars in subsidies” as part of the financing of the transformation of food systems. They show that the amount of subsidies that can be repurposed (average 2014–2018 in current dollars) is less than 240 billion dollars (about 132.5 billion dollars in OECD countries, of which the EU represents 82.5 billion, and 105.8 billion dollars for non-OECD countries, of which China amounts to 62.1 billion dollars). For developing countries (not counting China but including OECD members that are developing countries), the value is about 52 billion dollars.

Table 2. Government Outlays (Current Billion Dollars, 2014–2018)

	Billions of current USD (average 2014–2018)			Coefficient
	Total Government Outlays	Outlays for Agriculture, Forestry, and Fisheries (AFF)	AFF as Share of Total (%)	AOI median
Africa	366.8	7.8	2.1	0.17
Asia developing	4587.5	324.9	7.1	0.35
(of which China)	2781.4	268.0	9.6	0.28
(of which India)	352.5	24.1	6.8	0.41
LAC	1531.6	21.2	1.4	0.38
Oceania	561.0	3.5	0.6	0.19
Northern America & Europe	16545.8	66.0	0.4	0.56
Developing	6485.9	353.8	5.5	0.30
Developing w/o China	3704.5	85.8	2.3	0.30
Developed	19269.3	121.1	0.6	0.42
Total	25755.2	474.8	1.8	0.37

Source: FAOSTAT.

b. Social protection

Another important group of expenditures related to SDG2 and ending hunger are those for social protection, and within them, the programs of social assistance (which refers to those more directly linked to poverty and vulnerability and that are financed by general revenues from the government and not by contributions from beneficiaries—known as “non-contributory programs”). Here the focus is on the social assistance programs, using data from the World Bank’s ASPIRE database.²¹ Because these data are based on household surveys, they may not capture information about all programs defined statutorily by governments. Also, the database focuses on developing and emerging countries only. However, it does

provide a useful disaggregation of social protection programs and of the distribution of benefits across populations.

Social assistance programs included in the ASPIRE database are classified as conditional cash transfers, unconditional cash transfers, social pensions, school feeding, public works, food and in-kind programs, health fee waivers, and other social assistance. Table 3 shows an estimate of the money allocated to those programs (in current dollars for the period 2014–2018), with the first three program types grouped together as Cash Transfers and Social Pensions (CT+SP).²²

²¹ An estimate of expenditures on social protection in general is mentioned later.

²² The ASPIRE database covers 125 countries, 43 from Africa, basically from the sub-Saharan Africa (AFR), 15 from East Asia and the Pacific (EAP) (including China), 29 from Europe and Central Asia (ECA) (including Russia, Hungary, Ukraine), 22 from Latin America and the Caribbean (LAC), 10 from the Middle East and North Africa (MENA), and 6 from South Asia (SAR) (including India).

Total expenditures for social assistance by the countries considered are found to be somewhat less than 410 billion dollars annually (and about 260 billion

quintiles.²⁴ Social assistance is intended for the poorest segments of a population, and if properly targeted, larger percentages would go to the poorest quintiles and no

Table 3. Estimated expenditures for social assistance programs (billion dollars, average 2014–2018)

Billion USD	Total	CT+SP	School feeding	Public works	Food and in-kind	Health fee waivers	Other social assistance	Total excluding health fee waivers
AFR	20.2	12.6	0.9	2.8	1.3	0.5	0.6	19.7
EAP	164.9	47.1	0.8	13.8	9.1	92.3	1.7	72.5
(China)	146.7	39.1	0.0	13.8	5.4	88.4	0.0	58.3
ECA	72.8	59.1	0.3	1.5	0.6	5.8	5.5	66.9
LAC	84.8	44.2	3.9	1.2	2.9	25.9	6.6	64.2
MENA	24.7	10.5	0.0	0.0	9.5	3.7	0.9	21.0
SAR	40.3	4.9	1.5	6.4	24.5	2.2	0.7	38.1
(India)	35.3	1.3	1.4	5.8	24.0	2.2	0.6	33.2
Total	407.7	178.4	7.5	25.7	48.0	130.5	16.0	282.5
Total w/o China	260.9	139.2	7.5	12.0	42.6	42.0	16.0	224.2

Source: ASPIRE and WDI/WB.

dollars without China), with CT+SP as the main program type in value terms.²³ Countries in the ASPIRE database spend on social assistance less than 1.2% of their GDP (median value for those countries).

In addition to quantifying the level of expenditures for social assistance, another key characteristic is their distribution across the population, in particular the incidence of benefits for the poorest

benefits to the richest ones. However, in the case of sub-Saharan Africa, the poorest quintile receives 11.3% of the benefits (average for the countries; the median is 8%), while the richest quintile receives 41.5% (average; median is 38.9%). The East Asia and Pacific region also shows a distribution biased toward the rich, with the poorest quintile receiving about 17% (average and median), far less than the

²³ As a reference developing countries spent about 1.1 trillion dollars in social protection (on average for 2010–2017; based on IFPRI’s SPEED database using data from the IMF). This is around 3.5–4.0% of their GDP for that period. Without China, the amount spent on social protection drops to about 916 billion dollars.

²⁴ The estimates use all the annual household surveys for all the countries in the database (several countries have more than one household survey, and the years for each country vary; the average year of the surveys in the database is 2011). Benefit incidence is calculated as the percentage of benefits going to each quintile of the post-transfer welfare distribution relative to the total benefits going to the population (Sum of all transfers received by all individuals in the quintile)/Sum of all transfers received by all individuals in the population).

richest quintile, with an average of 33.4% (median of 22%). The other world regions show a better distribution, with the poorest quintile receiving somewhat more than 30% (average and median), but the richest quintile still gets 10–16% of the benefits. These numbers suggest critical problems with the targeting of these programs intended to help the poor and hungry.²⁵ In particular, countries in Africa seem to suffer the dual problem of both lower levels of expenditures overall (a median of about 0.9% of GDP) plus ineffective targeting of the poorest groups.

c. Brief consideration of expenditures related to COVID-19

The current pandemic is posing further challenges for fiscal accounts. Governments have implemented a variety of policies and investments in health, social protection, and support to employment and production, all of which require the use of a variety of unconventional monetary and fiscal instruments. As reported by the IMF policy tracker for governmental COVID-19 actions (covering most of 2020), developing and emerging countries made a strong additional fiscal outlay, surpassing 1.2 trillion dollars in 2020 (counting only additional public expenditures and until the time of reporting of the data), with 1.1 trillion dollars spent on non-health measures of social protection and maintenance of employment. However, not counting China, the amount is about 700 billion dollars, of which 680 billion dollars are for non-health measures of social protection and employment. Important questions to consider are

whether these levels of expenditures can be sustained in the future, and how to manage the already accumulated debt related to the expanded expenditures. These additional COVID-19-related expenditures and debt will determine whether developing countries have the flexibility to increase public expenditures for SDG2 in the aftermath of the pandemic.

3. Banking system

Of the external flows discussed here, international development flows and public expenditures (discussed above) are mainly tied to governmental operations. But the transformation of food systems to achieve the objectives of the 2030 Agenda will also require significant private investments from all operators in the food value chains. The internal cash flows from food operations (based on consumers' food purchases of some 7.7–8.3 trillion dollars, as mentioned above) can be expanded by loans from the banking system (which is discussed here) or by operations in capital markets (analyzed in the next subsection).

Table 4, based on FAOSTAT data, shows the total amount of loans provided by the banking sector to producers in agriculture, forestry, and fisheries (including household producers, co-operatives, and agro-businesses) and for all sectors (the average for 2014–2019, in current dollars). The previous sections presented finance data as annual flows; here, the information on loans is collected as annual stocks (that is, the total of loans outstanding at a point in the year).

²⁵ These are data from household surveys, which do not capture the wealthier segments of the population well; therefore, what appears as the richest quintile in the survey may not be so in real life.

Table 4. Value of loans outstanding, total and for AFF (current dollars; average 2014–2019)

	Total Loans (billion dollars)	Loans to Agriculture, Forestry, and Fishing (billion dollars)	% of AFF over Total Loans	AOI (median)
Africa	402.5	16.3	4.1	0.2
Asia developing	17043.6	427.9	2.5	0.4
(of which China)	11612.3	180.5	1.6	0.2
(of which India)	1201.3	143.2	11.9	0.7
LAC	1429.2	28.7	2.0	0.5
Oceania	995.7	93.3	9.4	1.4
Northern America & Europe	20978.8	404.4	1.9	1.1
Developing	18879.3	473.1	2.5	0.3
Developing w/o China	7267.0	292.6	4.0	0.3
Developed	22878.6	531.3	2.3	1.3
Total	41757.9	1010.2	2.4	0.4

Source: Author based on FAOSTAT.

The total stock of loans is almost 42 trillion dollars in current dollars, of which about 22.9 trillion dollars are in developed countries, and some 18.9 trillion dollars in developing countries, or 7.3 trillion dollars if China is not included. The stock of loans for AFF is somewhat more than 1 trillion dollars; of this, developed countries represent about 530 billion dollars and developing countries account for about 473 billion dollars, or about 293 billion dollars if China is not counted.

Considering flows, there are no data on net disbursements (loans minus repayments of principal), but the change in stocks can be an indicator of those net flows. For total credit, the yearly average (2015–2019) change in stocks is about 1.6 trillion dollars globally, but the average for developing countries (not counting China) is only 87 billion dollars. The average

annual change in loans for AFF during 2015–2019 is 24 billion dollars worldwide. The estimated flows for AFF in developing countries are around 14.2 billion dollars, or around 9.5 billion dollars if China is not included.²⁶

Table 4 also shows the percentage of AFF loans as a share of total loans. In the case of developing countries without China, the coefficient is about 4% of total loans. But, as with public expenditures, a more revealing indicator of the importance of lending to the AFF sector is the Agricultural Orientation Index (AOI). For credit, this is calculated as the percentage of AFF credit in total credit, divided by the percentage of agricultural GDP in total GDP. The last column in Table 4 provides the median AOI for the countries in each region. As in the case of public expenditures, developing countries show

²⁶ The actual annual flow of loans for AFF may be larger, considering that some short-term credit may be extended and liquidated within the year and thus not affect stocks from one year to the next. There is no information about loans approved and disbursed by year. Nor are there aggregated data on total credit to other operators in food systems.

far smaller AOIs than developed countries,²⁷ and values for Africa are lower than for other developing regions. In the case of India, the large share of AFF loans in total loans is also reflected in a higher AOI.

4. Capital markets

Capital markets at the global and national levels offer another source of external funds; given that interest rates are at the lowest level in more than 70 years, these markets are an appealing option. The focus here is on social and environmentally oriented investments, a potentially relevant source of funds for the transformation of food systems, considering the global trend toward investments that consider broader objectives along with financial returns.²⁸

Definitions of these new investments are evolving, with some overlap among them (which means they cannot be added up across categories). The most common concepts are “environmental, social, and governance (ESG) investments,” which encompass the broad category of sustainable and responsible finance; “impact investments,” which try to generate a measurable positive social and environmental impact along with a financial return; and “thematic” bonds, such as green bonds, social bonds, and sustainability bonds, which are aimed, respectively, at specific

environmental, social, or a combination of both objectives²⁹ (see KPMG 2019; and International Capital Markets Association [ICMA] 2020).

Because of the variations in definitions, data on the actual volume of operations vary depending on the source. Table 5 shows some estimates.

Table 5. ESG, impact investment, and thematic bonds (billions of current dollars).

	Stock (billions of USD)	Flow (billions of USD)	Year of the estimate
ESG (a)	30000	78	2018
Impact investors (b)	715	n/a	2020
Green bonds (c)	750	260	2019
Social bonds (d)	167	131	2020

Source: Author’s estimates based on the following: (a) KPMG (2019); (b) GIIN (2020); (c) Climate Bonds Initiative (2019); and (d) Amundi Asset Management (2020).

However, the largest shares of investments in those categories take place in developed countries, and the amounts oriented to agriculture and the transformation of food systems are small. For instance, the survey of impact investments in GIIN (2020) shows that only 8.1% of the funds (average 2018–2019) were allocated to food and agriculture.³⁰

The challenge is to mobilize these resources for investments in support of the transformation of food systems to achieve SDG2 and end hunger (more on this below).

²⁷ In Oceania, the values are dominated by Australia and New Zealand.

²⁸ The FAOSTAT database includes estimates for Foreign direct investments (FDI) for Agriculture, Forestry and Fishing (AFF) and Food, Beverage and Tobacco (FBT). According to that source, developing countries received almost 2 billion dollars annually in FDI to AFF on average during 2014–2018, and about 2.7 billion dollars for FBT (but there are no data for some countries, such as China and Brazil, during that period). FDI for agriculture and agro-industries, in the aggregate, is part of the internal flows within food systems, but for individual countries they can be considered additional financing. They can be influenced by a variety of public policies as discussed in Díaz-Bonilla, Swinnen, and Vos (2021).

²⁹ There are also other themed bonds, such as “blue bonds” for sustainable fisheries (see Fitzgerald, Higgins, Quilligan, Sethi, and Tobin-de la Puente 2020).

³⁰ There are also several bonds issued by MDBs with agrifood components, but that money is then lent to developing countries as part of international development flows discussed above and, therefore, it is not included here to avoid double counting.

D. MATRIX OF FINANCING

This section presents an indicative matrix of financing using the information from the previous two sections. The question is: Given the current levels of the different sources discussed in section C, is it possible to finance the costs identified in section B? To define a matrix that helps answer that question, some assumptions must be made about the percentage of financing from the individual financing sources for each group of interventions. Also, it requires specification of the instruments to be utilized, because some of them may only be financed by public expenditures, while others could receive credit from the banking system or investments from capital markets.

Before turning to that specific exercise, it is important to note that global and regional aggregate savings are a macroeconomic constraint that cannot be ignored. Total available savings at the world level are about 21.6 trillion dollars (average of 2015–2019). Of this, 9.6 trillion dollars correspond to developing countries (but only 4.2 trillion not counting China); these savings are distributed very unevenly across regions. For instance, for sub-Saharan Africa, aggregate savings are only slightly more than 300 billion dollars.

Global savings are the counterpart to the corresponding levels of world investments. Therefore, any proposal to increase investments in certain activities would require either that consumption be reduced, for some given level of global incomes,³¹ or, that savings be redistributed toward the transformation of food systems, which would reduce investments in other activities, with the related impacts on those other sectors of the economy.

1. Indicative matrix

Table 6 assumes a matrix of financing with specific percentages by type of intervention and sources. It also shows the current values of flows of funds in those categories for developing countries calculated in the previous section (not counting China, to avoid its large values dominating the totals). The estimate for capital markets is a rough approximation, partially combining (to avoid double counting) the value of social bonds issued by developing countries (9.9 billion dollars), as surveyed in the Climate Bond Initiative and HSBC (2021) (although they were not necessarily financing aspects of SDG2) and of the results for impact investment flows into agriculture (8.3 billion dollars in 2019), according to the survey in GIIN (2020).

³¹ If there are enough idle resources at the global level so that world GDP can be enlarged, then savings and investments may be increased without affecting consumption.

Table 6. Matrix of incremental costs and financing, and reference flows, USD billions

	Average annual incremental investment cost	International Development Flows	Public Expenditures: AFF	Public Expenditures: Social	Public Expenditures: Infrastructure	Banking System	Capital Markets
AgR&D, Extension and ICT (a)	6.6	1.3	5.3	0.0	0.0	0.0	0.0
Irrigation (b)	3.8	0.8	1.1	0.0	0.0	1.5	0.4
Agricultural practices (c)	4.4	0.9	0.9	0.0	0.0	2.2	0.4
Infrastructure (d)	10.8	2.2	0.0	0.0	8.6	0.0	1.1
Gender and nutrition (e)	5.0	1.5	0.0	3.5	0.0	0.0	0.0
Social protection (f)	25.1	5.0	0.0	20.1	0.0	0.0	0.0
TOTAL (870 million lifted from hunger)	55.8	11.7	7.3	23.6	8.6	3.7	1.9
TOTAL (1 billion lifted from hunger plus expanded environmental interventions) (g)	163.1	16.3	41.8	27.1	8.6	56.6	12.6
CURRENT FLOWS		11 to 12	86	293	n/a	9.5	9.9

Source: Author using data from section C. The following notes indicate what interventions from ZEF and FAO (2020) are considered in each group. (a) Agricultural R&D efficiency enhancement, Agricultural extension services, ICT-Agricultural information services, and Agricultural R&D; (b) Small-scale irrigation expansion in Africa; (c) Crop protection-Insects; Crop protection-Diseases; Crop protection-Weeds; Integrated soil fertility management; (d) Roads, Rail, Electricity; (e) Female literacy improvement, and Nutrition-specific interventions; (f) Social protection; Scaling up existing programs; Social protection; Establishing new programs; (g) Irrigation-Efficiency enhancement; Irrigation-Global large-scale expansion; Nitrogen-use efficiency; Food loss reduction; Soil-water management; Optimal crop planting and varieties (Adaptation); Soil carbon sequestration (Mitigation).

For all interventions, it is assumed that international development flows and public expenditures will be present as sources of financing. But for investments in irrigation and agricultural practices, it is assumed that banking systems and capital markets will also play a role, and that capital markets can also help finance some additional infrastructure.

The difference in estimated costs between lifting 870 million people and 1 billion people from hunger is due not only to the nonlinearity in costs related to helping harder-to-reach groups of people but also to the expansion in environmental interventions required, mainly related to climate adaptation and mitigation (see the

notes in Table 6 for the type of interventions considered in each block of estimates).

With this matrix of financing, policy options for each source are discussed to ensure that those resources can be expanded and mobilized to achieve SDG2 and end hunger.

a) *International development flows*

International development flows will have to increase by about 12–16 billion dollars above current levels (within the range suggested by IFPRI, IISD, and Cornell University [Laborde, Parent, and Smaller 2020]). The suggestion of this paper is that 2 billion dollars of that increase be

allocated to support the Zero Hunger Alliance & Fund (discussed below). If total international development flows cannot be increased (because bilateral development aid may be limited by budgetary and political factors in donor countries, and net flows of non-concessional loans from MDBs may be constrained by their capital base and restrictive financial policies), this implies a reallocation of funds from other activities.

However, if bilateral aid can be increased and MDBs expand their capital, there would be no need to reduce support to other sectors. Even without capital increases, MDBs can negotiate with rating agencies to adjust risk parameters to allow for increased lending in the context of the pandemic (see Díaz-Bonilla 2020).

Developed countries can also consider using a percentage of their holdings of the new issue of Special Drawing Rights (SDRs) in the IMF to support developing countries (the new allocation is expected to be about 650 billion dollars, of which about 60% goes to developed countries). For instance, during the current crisis, some countries with strong external positions have allocated part of their SDR holdings to expand the IMF's Poverty Reduction and Growth Trust (PRGT), which provides concessional loans to low-income countries.³² At the recent 2021 spring meetings of the IMF and World Bank, there were discussions about developed countries donating or lending part of the SDRs that they do not need to support low-income countries, and some middle-income countries have asked to be included in that option.³³ Most of the conversation seems to focus on using those

additional SDRs for debt reduction or for lending.

Here, an alternative use is suggested that would multiply the impact of those SDRs (or any developmental funds, for that matter) for broader objectives: as guarantees for issuing “zero hunger bonds” (explained later), for instance, allocating 2% of the new issuance to a guarantee fund. This would have the additional benefit of targeting the resources to a specific humanitarian objective and would also help finance some policy interventions that address important environmental objectives (with the possibility of designing a subcategory of “zero hunger green bonds”).

In general, international development funds should be used more strategically, namely to leverage and mobilize the other sources of financing discussed here, including, as mentioned, guarantees to de-risk the issue of zero hunger bonds or other socially or environmentally themed bonds. In addition, multilateral and bilateral organizations should better coordinate their own operations to avoid the fragmentation of relatively isolated initiatives and competition across international agencies at the country level.

Specific proposals: Increase by 15 billion dollars annually the international development funds dedicated to agricultural and rural development, food and nutrition security, and environmental aspects of food systems, which would imply somewhat more than doubling current levels. Also, it is suggested to allocate part of those resources (2 billion dollars) to the Zero Hunger Alliance & Fund (discussed later). Finally, it is

³² <https://www.imf.org/en/About/FAQ/special-drawing-right>

³³ <https://www.imf.org/en/News/Articles/2021/04/07/tr040721-transcript-of-imf-md-kristalina-georgievas-opening-press-conference-2021-s/pring-meetings>

proposed to allocate 2% of the future issue of Special Drawing Rights (SDRs) of 650 billion dollars to create a fund to guarantee a new “zero hunger bond” to help finance the economic, social, and environmental interventions (and for the latter there may be a subcategory of “zero hunger green bonds”) needed to achieve SDG2 and end hunger.

b) Public expenditures

Public expenditures for agriculture and rural development and for social assistance will both have to be increased by about 8.0–8.5%, with the objective of eliminating the risk of hunger for about 870 million people. If the objective increases to lifting 1 billion people from hunger, along with other climate mitigation and adaptation measures, then public expenditures in agriculture and rural development will need to expand by about 50% and in social assistance by close to 10%, in the aggregate and with the assumptions of the financial matrix. These increases can be achieved through different policy instruments and fiscal options.

Developing countries (not counting China) have total annual government outlays of some 3.7 trillion dollars, but only 86 billion dollars go to AFF. The budget allocated to social assistance has been estimated at about 260 billion dollars. But indicators such as the AOI for agricultural expenditures or the percentage of social assistance expenditures in total GDP show that developing countries in general, and particularly in Africa and Asia (not counting China), devote comparatively fewer resources than other regions to those crucial interventions. Specific public expenditure reviews can help determine the adequacy both of the level and composition and of the efficiency, efficacy, and equity of public expenditures

dedicated to SDG2. Certainly, targeting could be improved in social and agricultural programs, and the more than 50 billion in agricultural subsidies in developing countries (not counting China) could be repurposed (see footnote 20).

Moreover, better instruments can be utilized, such as some new enhanced social safety approaches. For instance, cash transfers have been evolving into more complete mechanisms to address social vulnerabilities. In the rural sector, they have begun to include poverty, nutrition, environmental, and productive payments (FAO 2017; De La O Campos et al. 2018). Recent work by the World Bank has expanded the framework for social inclusion, both in rural and urban settings, by defining multidimensional programs with social safety nets, livelihoods and jobs, and financial inclusion (see Andrews et al. 2021). These instruments can help achieve zero hunger and also contribute to some important environmental objectives.

However, reallocating, better targeting, and repurposing public expenditures within a given agricultural and social budget envelope, even with better instruments, may not be enough to reach the levels needed for achieving SDG2 and ending hunger, and therefore, expenditures may have to be increased. In that case, the options are: (1) reallocation from other sectors, but within the same total budget envelope; and (2) an increase in expenditures (larger budget envelope) financed by monetary expansion (which may increase inflation), by additional public debt (which may lead to debt sustainability problems, requiring further debt relief schemes), and/or by increasing revenues. These options must be analyzed at the country level; here the focus is on increasing revenues.

Several developing and emerging-economy countries will probably have to

increase public revenues. One way to achieve this is by improving tax administration to reducing tax evasion. Also, these countries should reassess the multiple exemptions to value-added and sales taxes: in several countries those exemptions represent important an loss of revenue, and because they apply to all sales, the exemptions do not help the consumers most in need, nor do they address challenges of nutrition or environmental sustainability.³⁴ Further, more progressive taxation of incomes and wealth will have to be implemented. Carbon taxes can be considered as well.

Another consideration is that, in several countries, taxes on international trade are important both for fiscal purposes and because of their impact on domestic prices for consumers and producers. The adequacy of the taxes on international trade in terms of their fiscal, production, and consumption objectives will require a country-by-country analysis.

The Zero Hunger Alliance & Fund, discussed below, can help the interested countries conduct the specific fiscal analyses involved in the reallocation, refocusing, and scaling up of public expenditures needed to support programs to end hunger, considering the constraints posed by the fiscal response to the pandemic.

Additionally, all countries, but particularly the developed ones that have greater influence on the operation of global financial markets, must be more active at the international and national

levels to implement stronger controls on money laundering and tax havens that facilitate illegal financial outflows and tax evasion from developing countries. Also, proposals for a more unified system of taxation of international corporations, with an established formula to allocate the taxable base and a common minimum corporate tax, must be implemented.³⁵ These initiatives would help many developing countries to increase fiscal revenues that are now lost through corruption and tax evasion.

***Specific proposals:* Implement public expenditure and tax reviews as the basis for increasing and reallocating agricultural subsidies in developing countries (about 50 billion dollars without China); and for scaling up, better targeting, and redesigning social safety nets, using new and evolving cash transfer instruments that combine poverty, productive, nutritional, environmental, and financial inclusion components (such as the Cash Transfers Plus analyzed by FAO or the evolving instruments of social inclusion considered by the World Bank). To this end, it is also suggested that the AOI of AFF expenditures be increased to at least 0.5 and expenditures for social protection be increased to at least 2% of total GDP in developing countries. Finally, revenues in developing countries should be strengthened through better tax administration and the revision of sales, income, wealth, and trade taxes, and by implementation of international initiatives to control corruption, tax evasion, and other practices that erode**

³⁴ Taxing unhealthy and/or environmentally damaging food products has been recommended. Although these interventions may be useful to change the composition of food production and consumption, the amount of revenue collected may not be large. Also, the idea of using tax on unhealthy foods to subsidize healthy ones (and similarly for environmental purposes) could be considered, but must avoid specific earmarking of tax revenues, which fiscal best practices consider inadequate because of the budgetary rigidities and mismatches that such practice generates.

³⁵ Those proposals build on options analyzed by the OECD in its work on “based erosion and profit shifting” (see <https://www.oecd.org/tax/beps/flyer-inclusive-framework-on-beps.pdf>).

those countries' tax bases. Carbon taxes can also be considered.

c) Banking system

If irrigation and the adoption of improved agricultural practices are to be financed in part by loans from the banking system, as assumed in Table 6, then credit to the agricultural sector in developing countries (not including China) will have to increase (some 40% in flows in the central estimates of 870 million people avoiding hunger, as shown in Table 6). For the banking sector to play this role, the systemic barriers that limit the supply of financial services for agriculture, small farmers, and the poor and vulnerable (women, disadvantaged ethnic groups, and youth) must be addressed. Detailed country-level analysis of banking system operations will be needed to assess whether these systems can finance the activities need to achieve SDG2, while adequately performing the triple function of operating the payment systems, intermediating between savings and investments, and providing risk-management instruments.³⁶

This country-focused analysis should consider the following aspects related to agricultural credit and financial services. First, the adequacy of the overall macroeconomic and regulatory framework. Second, what is the origin and use of the funds that are to be intermediated (for example, deposits; budget allocations by the government; monetary sources such as rediscounts by

the monetary authorities; regulatory mandates to lend to the agricultural sector; loans from international organizations; and others). In particular, consideration could be given to employing an updated version of the unconventional monetary policies that sustained agrifood development in the 1960s and 1970s, implemented by what have been called “developmental central banks” (see below; a general discussion is found in Díaz-Bonilla 2015).

The third component of the analysis should look at what type of banking and financial institutions can intermediate those funds (and perform the other two functions of operating the payment systems, and providing risk-management instruments, as mentioned). A wide variety of formal and informal operators provide loans, manage savings, and offer other financial services to the rural population and to the agrifood system in general, and each type has its own advantages and disadvantages. In this context, it is relevant to reconsider the role of public development banks with an agricultural orientation, which were dismantled in many developing countries during the 1990s, but whose operations are now being reconsidered.³⁷ Public funds or public institutions that offer loan guarantees to banks are also important for expanding the coverage of credit to small farmers and SMEs in food value chains, particularly to women, vulnerable ethnic groups, and youth.

The fourth component is to consider financial instruments. Starting

³⁶ What follows is based on Díaz-Bonilla (2015); Díaz-Bonilla and Fernández-Arias (2019); Díaz-Bonilla, Fernández-Arias, Piñeiro, Prato, and Arias (2019). Those studies have a more detailed discussion of the issues mentioned here.

³⁷ An example was the November 2020 “Finance in Common Summit” of Public Development Banks (PDBs), co-organized as a joint initiative of the International Development Finance Club (IDFC), the World Federation of Development Finance Institutions (WDFI), SAFIN, IFAD, and the government of France (see https://www.ifad.org/documents/38714174/42142599/fic_statement.pdf/6a6fcfe1-6614-7786-c69a-743df3dcd5e6).

with credit, longer-term loans face agriculture-sector-specific problems, such as the dispersion and small scale of customers and the presence of covariant risks. They are also affected by macroeconomic volatility, and by regulations that are designed for the urban sector and for activities with more regular cash flows than the agricultural sector—agriculture requires flexible disbursement and payment schemes aligned with the rhythms of agricultural activity. Innovative insurance schemes, technical assistance, and better weather and market information can mitigate some of the risks in agriculture. But in any case, the development of credit for long-term investment may require funding from public fiscal or monetary sources (as suggested above and discussed below in greater detail), or intermediation in capital markets. Supply-chain and value-chain lending offer a flexible form of financing that can help to include small farmers; input and equipment suppliers should also be considered as potential vehicles for lending to small and family farmers.

Beyond the obstacles to credit, there is a dearth of other financial products and services needed by small farmers, rural populations, and SMEs. This is true both on the financing side (such as leasing, warrants, and discount of invoices, all of which require the adaptation of regulations and operational mechanisms) and on the payments and savings side (for instance, simplified checking and savings deposits, which are an important risk mitigation tool for rural households). In all these cases, digital technology can reduce transaction costs and generate more information about potential customers, lowering risk for financial institutions.

As noted above, in the past many developing countries operated with what were called developmental central banks, which offered loans (rediscount lines) to public agricultural banks (and also private financial institutions) with specific purposes, such as providing credit to agricultural producers. This combination of rediscounts by central banks channeled through agricultural banks was eliminated in many countries during the 1980s and 1990s in the face of dual concerns that the increases of money supply (generated by the rediscounts) were fueling inflation and that public banks suffered from a variety of problems (corruption, mismanagement, bias toward large producers, crowding out private sector financial options, and so on). However, in the context of the 2008 global recession and the current pandemic, central banks, mainly in developed countries, have revived the use of those dedicated lines of credit to buy both public and private credit instruments (under the name of quantitative easing).³⁸ That expansion of money supply is being made in the context of monetary programs that include inflation targets. At the same time, several public agricultural banks have been reformed and now operate more efficiently and with developmental objectives (Díaz-Bonilla 2015). Those operations must consider the financial needs of women, minorities, and youth.

Specific proposals: Reactivate the role of developmental central banks using rediscounts to offer credit to small farmers, rural populations, and SMEs in food value chains (within a consistent monetary program that maintains control of inflation). In addition, public development and agricultural banks could be revitalized and modernized (with incentives, performance metrics, and

³⁸ The U.S. Federal Reserve operated as a developmental central bank to help the U.S. economy in the 1930s (Fettig 2008).

controls to avoid problems experienced by these institutions in the past) to increase loans, including environmentally linked loans (supported by the central banks' discounts) and offer other financial services to small farmers, rural populations, and SMEs in food systems, with particular consideration for women, vulnerable ethnic minorities, and youth. Finally, the AOI for agricultural credit in developing countries could be increased (for example, to at least 0.5).

Capital markets

With this matrix of funding (and recognizing the very preliminary value of the estimates in Table 6), capital market operations may have to increase by about 20% over current estimated levels to lift 870 million people from hunger by 2030 (it would likely have to increase by almost 130% if the objective is to lift about 1 billion people from hunger and achieve other environmental objectives in SDG2).³⁹ This will require developing a robust pipeline of investable opportunities (including individual projects, impact investment funds, and/or thematic bonds) with the adequate profile of risk/reward to attract investors, and clear, measurable, and monitorable impact objectives, aligned with achieving SDG2 and ending hunger.

A specific unit could be set up at the international level to link private capital with investable opportunities for small farmers and rural populations in social and environmentally relevant activities. In this case, the objectives of zero hunger, doubling productivity, and environmental sustainability can be achieved with adequate technologies. Díaz-Bonilla et al. (2018) presented a proposal for a project

preparation/incubation/acceleration facility, based on CGIAR technologies and focusing on small farmers, and leveraging the presence that the CGIAR Centres have in more than 100 developing countries, where they work with a variety of national agricultural research institutes (NARIs).⁴⁰

The project preparation/incubation/acceleration facility would carry out a series of key actions (see Díaz-Bonilla et al. 2018). First, individual opportunities need to be identified and business plans prepared. They generally will be small- and medium-scale projects involving small and family farms; these are complex and difficult to structure. Site-specific technological options and marketing opportunities must be analyzed. Second, those small projects must be aggregated and structured (as a different type of investable vehicle), with adequate rates of return and risk profiles, and with value sizes that compensate investors for the transaction costs and due diligence requirements. Third, both the small farmers and the investors will require technical assistance, particularly in relation to sustainable technologies; this can be based on the work of the CGIAR Centers and participant NARIs. Fourth, metrics for the impacts desired must be defined and monitored. All those activities require a dedicated cadre of specialists.

This facility can also support enhanced environmental lending by the agricultural public banks mentioned in the section on banking.

The facility can be structured as a revolving fund, where the preparation costs are in total or in part reimbursed by the appropriate private and/or public

³⁹ Expanding the focus further to other SDGs would lead to larger investments from capital markets.

⁴⁰ More recently, there have been other similar ideas regarding the need for an institutional device to link investable opportunities and investors (see, for instance, Millan, Limketkai, and Guarnaschelli [2019] and Finance for Biodiversity Initiative [2021]).

partner after the investment opportunity materializes. With this mechanism, the facility could mobilize funds that will be a larger multiple of the resources allocated to the facility. International development funds, as well as some national public expenditures, can be used more strategically in this facility as blended finance with private sector funds and to de-risk investments.

As discussed above, thematic bonds offer another type of instrument in capital markets. Although these can finance private sector operators,⁴¹ the focus here is on their potential for funding public sector operations. Additional funds mobilized through this instrument are therefore considered as part of public expenditures, and do not appear as a separate line in capital markets in Table 6. In particular, international development funds could be used to design and reduce the risk of zero hunger bonds issued by developing countries.⁴²

The specific design will have to be discussed with potential private and institutional investors, but some features to consider are discussed here. The “zero hunger bond” can be a console or

perpetual bond;⁴³ issued in dollars; paying an adjustable rate with a cap (say 5%⁴⁴); and callable, with call protection (for example, until 2050). As mentioned, 2% of the new allocation of SDRs of 650 billion dollars (13 billion dollars) can be assigned to a fund, which could be set up within the IMF, to guarantee the interest rate payments of zero hunger bonds issued by countries with programs to end hunger as part of the Zero Hunger Alliance discussed below. Other official development aid and private philanthropic funds could be utilized as well to guarantee the interest payments and thus eliminate country risk for the countries participating in the global program to eliminate hunger.

This use of international development funds will greatly increase their impact: for instance, 13 billion dollars can guarantee an issuance of up to 260 billion dollars in zero hunger bonds (under the assumptions in the footnote⁴⁵). As mentioned, this approach, in addition to providing resources for a specific humanitarian objective (zero hunger), would also help finance agricultural technologies and other environmental interventions that address crucial objectives related to climate change

⁴¹ An example is a social bond issued by the private firm Danone for 500 million euros in 2018, which included some agricultural aspects (iiLAB 2018).

⁴² These may be mainly an option for developing countries that do not have access to highly concessional loans or grants. MDBs may also find it useful to issue long term zero hunger bonds to finance developing countries (but then the intermediation charges will have to be adjusted accordingly).

⁴³ Alternatively, 100-year bonds can be considered, with payment periods during the last 10 years.

⁴⁴ The cap considers that the average nominal yield since 1953 for US 10-year bonds has been 5.7% (4.4% since 1990); average consumer inflation in the United States has been about 3% since 1913 (2.4% since 1990); and the average real interest rate for the last 200 years has been 2.6%, but it has been declining in the last 100 years (see for instance, Schmelzing 2020). The yield for the 10-year inflation-adjusted bond for the period 2003–2021 has been 0.93% (data from the U.S. Federal Reserve; <https://fred.stlouisfed.org/series/DFII10>).

⁴⁵ A perpetual bond with a floating coupon with a cap of 5%; the default rates of the interest payments that have to be paid by the guarantee fund are similar to those of the IMF or the World Bank; and that the erosion that those payments inflict on the guarantee fund are covered by additional international public money. If the guarantee fund is not replenished, the total amount of bonds to be guaranteed will depend on the assumptions about the default rate, and whether the guarantee is calculated against the cumulative value of such erosion for a certain time frame, or some other formula. For example, a default of 1% per year on the original value of the guarantee fund, in 50 years would have cut the value of the guarantee fund by half.

mitigation and adaptation (therefore, some of them could be zero hunger green bonds). Further, it will offer a safe asset that can help absorb some of the excess liquidity in global capital markets.

Certainly, the financial scheme suggested here can also be utilized for special bonds with other purposes, such as financing pandemic-related expenditures (for example, a “COVID recovery bond”).

Specific proposals: Create a project preparation/incubation/acceleration facility to structure productive opportunities for small farmers into investable opportunities for impact investors, using economic, social, and environmentally sound technologies with the support of One CGIAR and national agricultural research institutes (NARIs). In addition, countries participating in the Zero Hunger Alliance & Fund (see below) could be supported through the design, guarantee (using 2% of the new allocation of SDRs and perhaps other public funds), and launch of a new type of social and environmental bond, called a “zero hunger bond, as a perpetual (or long-dated) bond, with capped adjustable rates. Both proposals can be operationalized as part of the work of the Zero Hunger Alliance & Fund discussed below.

2. An alternative financial matrix based on expanding public sector instruments

The financing matrix presented in Table 6 is just an example, and different percentages of financing by sources can be considered. Those percentages depend on the specific conditions in individual countries and on the instruments to be utilized. For instance, a government may decide to scale up the instrument that combines the use of cash transfers based on poverty considerations with grants

linked to productive activities, environmental sustainability, and similar activities. In that case, the additional costs of improved technologies will be financed by grants from the public sector (as suggested in IFPRI, IISD, and Cornell University [Laborde, Parent, and Smaller 2020]), instead of loans from the banking system.

Scaling new social assistance and productive programs, which are based on public expenditures, would significantly reduce the need for bank financing. In this scenario, the use of capital markets will depend on the investable vehicle; there may be a greater need for thematic bonds, including the new zero hunger bond, issued by governments (or by MDBs that then lend to governments) to finance public sector expenditures.

E. THE NEED FOR COUNTRY-BASED INSTITUTIONAL ARRANGEMENTS

The quantitative estimates and the financing matrix discussed above suggest that, in the aggregate, additional resources are available that could be used to lift 870 to 1 billion people from hunger by 2030. Several adjustments, improvements, and specific proposals were presented for each of the financing sources analyzed.

However, even if the resources exist and the potential for mobilizing them effectively can be increased with the adjustments and proposals recommended, they can only be transformed into solid programs to end hunger and achieve SDG2 if individual countries are willing and capable. The potential sources of financing and whether they are sufficient cannot be judged only at the aggregate level; they also need to be assessed in each individual country.

Further, achieving SDG2 and eliminating hunger is not only a matter of financing the necessary interventions but also requires that a country and its authorities have the political will and the institutional capacity to carry them out. Institutionally weak governments cannot design and finance the programs and coordinate the work of their own ministries and agencies and of the international organizations operating in their countries. Such countries could benefit greatly from the establishment of institutional mechanisms at the country level and international support to help design, finance, and implement national programs. The fiscal constraints entailed by the public responses to the current pandemic increase the need for these country-based arrangements.

Therefore, implementing institutional mechanisms at the international and national levels is recommended to coordinate the activities needed to achieve SDG2, and, in particular, those focusing on ending hunger, as analyzed immediately.

F. THE ZERO HUNGER ALLIANCE & FUND

1. Introduction and background

This section discusses the creation of a public–private institutional arrangement, called the *Zero Hunger Alliance & Fund* (the *Alliance*) to support, financially and operationally, those

individual countries that want to participate in a global program to achieve zero hunger by 2030.⁴⁶

The idea of a fund dedicated to eliminating hunger has been proposed by different international leaders. The proposal outlined here builds on the idea of a Zero Hunger Fund, which has been suggested by Action Track One of the UNFSS.⁴⁷

The proposal in this section is based on the premises outlined in section E—that although it was shown that, in the aggregate, there seem to be sufficient sources of funding that can be mobilized, real availability must be assessed at the country level; and that achieving SDG2 and eliminating hunger requires that a country and its authorities have sufficient political will and institutional capabilities. Therefore, adequate institutional coordinating mechanisms are needed to support countries committed to ending hunger to design the programs, mobilize the resources available to them, and implement the interventions needed.

But what would those potential global institutional and financial arrangements for ending hunger be? The following brief review of three experiences can illuminate the options: the Global Agriculture and Food Security Program (GAFSP), the Poverty Reduction Strategy Papers or Programs (PRSPs), and GAVI, the Vaccine Alliance.

⁴⁶ In what follows the word “Alliance” (capital letters) refers to the institutional arrangement suggested, while “alliance” (lower case letters) denotes the country partnerships.

⁴⁷ See Action Track 1: Ensure Access to Safe and Nutritious Food for All. Potential Game Changing and Systemic Solutions: An Initial Compilation” Submitted to the UN Food Systems Summit Secretariat, 19 February 2021. It recommends channelling “private sector resources to investments to end hunger by 2030,” with matching funds from governments and other donors, with the objective of creating a fund of some 4–5 billion dollars. Contributions from the private sector are assumed to come mainly from food companies (0.2030% of their profits), allowing them to repurpose their corporate social responsibility (CSR) efforts. Food companies have not, in general, supported the idea, arguing that it would be a corporate social responsibility (CSR) tax.

2. Lessons learned

a) *Global Agriculture and Food Security Program (GAFSP)*

The creation of another fund to directly finance ending hunger by 2030 would lead to questions about how it would fit with other existing initiatives. The proposal for GAFSP's creation led to discussions about the complementarities (or lack thereof) with other financial mechanisms, such as the World Food Program (although the WFP is intended largely for emergencies), and IFAD (which offers loans and grants to support small farmers mainly in poor countries). Also, the World Bank's mission statement calls for ending extreme poverty (which is usually defined by a minimum-calorie poverty line, below which there is hunger) and other MDBs have similar objectives. Within that framework of potentially overlapping missions, GAFSP was able to establish a niche as a grant-maker in support of small farmers.

There are other considerations as well, highlighted by the experience of GAFSP. For instance, what size should the fund be? Evaluations of GAFSP have noted that the demand for its grants far exceeds the size of the fund, and the gap is too large to be filled (LTS International.2018). GAFSP tries to place its operations within the more general agricultural programs in the countries where the grants are approved and has also been able to mobilize additional funding in its projects. However, following the model of directly financing interventions with grants, given their relatively small size and dispersion, it would be difficult to achieve the scale needed to end hunger. On the other hand, using the funds to mobilize a multiple of the potential additional resources available

may be more promising, as discussed below.

Another issue is where to locate the fund institutionally. Eventually, GAFSP was placed within the World Bank, which acts as host, trustee, and is one of the implementing partners (which also include other MDBs and UN agencies). Another institutional consideration is the mechanism of co-ordination with the other institutions and funds mentioned above. The proposal discussed below takes those concerns into consideration.

b) *Poverty Reduction Strategy Papers or Programs*

The experience of the Poverty Reduction Strategy Programs (PRSPs) also offers relevant lessons. They were initiated by the World Bank and IMF in September 1999 as a mechanism for linking debt relief with poverty reduction under the Enhanced Heavily Indebted Poor Countries Initiative (HIPC). The PRSPs were also expected to become a framework for concessional and non-concessional development support from other multilateral and bilateral agencies in low-income countries. They were based on five core principles for the programs: country-driven; comprehensive; based on a long-term perspective; results-oriented; and partnership-oriented (World Bank and IMF 2005).

The experience of the PRSPs showed:

- the need for country-initiated and country-owned, _____ medium-term, integrated programs, as a coordinating mechanism for the work of the national ministries and agencies and for support from the international community;
- but also, the limitations of the PRSPs being anchored in specific

international organizations, with their own institutional requirements.⁴⁸

c) GAVI. The Vaccine Alliance⁴⁹

GAVI is an independent public–private partnership and multilateral funding mechanism that is not housed in any of the international organizations. First, this frees its operations from idiosyncratic institutional requirements. Also, being an independent partnership, it can work with all public international and national organizations, as well as the private sector. In fact, its operating model is based on partnerships with a variety of public and private organizations.

Second, GAVI has a simple, measurable, and well-defined objective (help countries to reach a specific number of people vaccinated) and uses streamlined instruments and delivery mechanisms.

Third, it applies its funds strategically to mobilize a variety of local and international financial resources, thus multiplying its impact.

Fourth, the work depends on the initiative of a country that decides to participate in the Vaccine Alliance and is based on that country’s specific program. But the Alliance offers technical and financial support to design and implement the program, while helping with a flexible architecture of public and private partnerships, national and international, that are needed to carry it out.

Fifth, its governance is also streamlined, with a Board that represents the main countries and organizations contributing funds and a limited Secretariat (with a chief executive officer, and a team of country responsible officers, who work

directly with countries to implement programs according to the agreements reached).

Sixth, in addition to the traditional funding source of periodic pledges, it has a financing mechanism that uses donor funding commitments to back the issuance of special bonds in capital markets to finance the vaccination programs.

The proposal presented here considers the key lessons from the three experiences analyzed, including: (1) the importance of focusing on country-owned, medium-term, integrated programs; (2) the need for clear and measurable objectives; (3) the strategic use of scarce development funds to mobilize far larger financial resources; and (4) the design of flexible public–private institutions with strong coordinating and operational capabilities.

At the same time, it is important to monitor operations to ensure that the focus on a single objective does not end up diverting scarce human and financial resources in developing countries from other relevant objectives. Therefore, the need to have country-owned, integrated programs that set the framework.

3. Key Characteristics of a Zero Hunger Alliance & Fund

Based on these lessons, the proposed Zero Hunger Alliance & Fund would have the following characteristics and objectives:

- It focuses on a clearly measurable objective: eliminating hunger by 2030.

⁴⁸ See some of those points in World Bank and IMF (2005).

⁴⁹ <https://www.gavi.org/our-alliance/about>

- It is an independent public–private institution,⁵⁰ with a dedicated fund and with personnel seconded from international organizations focusing on poverty, food security, and nutrition issues, who will work in close cooperation with local teams of partners in the participating countries—and as such form an *Alliance*.

- There will be a dedicated fund to (a) cover the operational costs (but not the salaries of the seconded personnel); (b) hire technical and operational expertise needed to support the countries in defining the programs and mobilizing the human, financial, and institutional resources to carry them out; (c) de-risk some financial operations to mobilize private capital (such as the issuance of zero hunger bonds); and (d) eventually, finance some interventions directly. The largest value in the use of those funds will be for (c), but the most important use, operationally, will be for (b).

- The funding will come from the additional international development funds (as discussed above, about 2 billion dollars), plus an effort to mobilize private funds, with the target of obtaining commitments from at least 50 companies (from food and other sectors) to donate about 10 million dollars each (these companies will be recognized as Champions of the Zero Hunger Alliance). Combined, those

funds would amount to 2.5 billion dollars per year.

- In addition, 2% of the planned allocation of SDRs (or 13 billion dollars) will be utilized to design, launch, and guarantee zero hunger bonds (and zero hunger green bonds) issued by countries with programs to end hunger as part of the Zero Hunger Alliance. Depending on how the guarantees are structured and maintained over time, they could multiply the value of the SDRs directly allocated to this initiative by a factor of more than 10.

- Most of these funds will be leveraged to mobilize the other sources of financing discussed above (public budgets, banking systems, and capital markets) at the country level.

- The Alliance will support financially and operationally those individual countries that sign agreements to join this global partnership to end hunger by 2030, helping them to identify the target population, define the specific institutional, programmatic, and instrumental components, mobilize the necessary funding, and structure the partnerships needed to carry out the programs to end hunger by 2030.

- In particular, it is suggested to expand the use of the new instruments that combine cash transfers based on poverty with additional productive, nutritional, environmental, and financial inclusion components.

⁵⁰ Other options would be to insert the Zero Hunger Alliance and Fund into an existing institution, such as the World Bank, or in a specific consortium or dedicated task force of institutions, such as FAO and IFAD, created for that purpose. These options can have the benefit of accelerating the start of the work, but also the potential cost of slowing the subsequent operation due to idiosyncratic institutional requirements and/or by being seen as “dominated” by some specific institutions, when its role is to support countries to coordinate a variety of partnerships, national and international, public and private. Still, these are alternatives to be also considered.

The institutional arrangement outlined here has several advantages, including that (1) it supports the country members of the Alliance in implementing country-owned, country-coordinated, integrated programs; (2) it focuses on a single and measurable objective (ending hunger by 2030) but, given the type of agricultural technologies and environmental interventions supported, it also contributes to crucial objectives related to climate change mitigation and

adaptation; (3) it mobilizes a significantly larger volume of funds than those directly allocated to the Alliance; (4) it reduces the risks of creating another permanent international bureaucracy by relying on temporary secondment from existing organizations; and (5) it has a flexible public–private institutional structure.

Table 7. Summary of Proposals.

TOPICS	PROPOSALS
International Development Flows	*Increase by 15 billion dollars annually the international development funds dedicated to agricultural and rural development, food and nutrition security, and environmental aspects of food systems, which would imply about doubling current levels.
	*Allocate yearly 2 billion dollars of the additional 15 billion dollars to the Zero Hunger Alliance & Fund.
	*Allocate 2% of the future issue of Special Drawing Rights (SDRs) of 650 billion dollars to offer guarantees for a new “zero hunger bond” to help finance the economic, social, and environmental interventions (and for the latter there may be a subcategory of “zero hunger green bonds”) needed to achieve SDG2 and end hunger. These instruments can be perpetual or very long-termed bonds, with an adjustable coupon.
Public Budgets	*Implement public expenditure and tax reviews to increase and reallocate agricultural subsidies in developing countries (about 50 billion dollars, without China) and scale up, better target, and redesign social safety nets using new and evolving cash transfer instruments that combine poverty, productive, nutritional, environmental, and financial inclusion components (such as the Cash Transfers Plus analyzed by FAO or the evolving instruments of social inclusion considered by the World Bank).
	*Increase the Agricultural Orientation Index (AOI) of expenditures for agriculture, forestry, and fisheries (for example, to not less than 0.5) and social protection expenditures as percentage of GDP (for example, to at least 2%).
	*Revenues in developing countries should be strengthened by better tax administration and revision of sales, income, wealth, and trade taxes, and by implementation of international initiatives to control corruption, tax evasion, and other practices that erode those countries’ tax bases. Carbon taxes can also be considered.
Banking Systems	* Reactivate the tools of the “developmental central banks,” using rediscounts to offer credit to small farmers, rural populations, and SMEs in food value chains (within a consistent monetary program that maintains control of inflation control).
	*Revitalize and modernize public development and agricultural banks (with incentives, performance metrics, and controls to avoid the problems of the past in this type of institution) to increase credit (supported by central bank discounts) and offer other financial services to small farmers, rural populations, and SMEs in food systems, with particular consideration for women, vulnerable ethnic minorities, and youth.
	*Increase the AOI of agricultural credit to at least 0.5.

Table 7. Summary of Proposals (cont.).

Capital Markets	*Create a project preparation/incubation/acceleration facility to structure productive opportunities for small farmers into investable opportunities for impact investors, using economic, social, and environmentally sound technologies with the support of One CGIAR and national agricultural research institutes (NARIs) and partners in more than 100 developing countries.
	*Support countries that participate in the Zero Hunger Alliance & Fund with the design, guarantee (using 2% of the new allocation of SDRs and other public funds), and launch of a new type of social and environmental bond, called a “zero hunger bond.”
	Both proposals can be operationalized as part of the work of the Zero Hunger Alliance & Fund.
Zero Hunger Alliance & Fund	*Create a public–private international institution, with a dedicated fund, to organize country-based alliances to eliminate hunger by 2030.
	*It will function with personnel seconded from international organizations dedicated to poverty, food security, and nutrition issues, who will work in close cooperation with local teams of partners in the participating countries—and as such form an Alliance.
	*There will be a dedicated fund to (a) cover the operational costs (but not the salaries of the seconded personnel); (b) hire the additional technical and operational expertise needed to support participating countries in defining the programs and mobilizing the human, financial, and institutional resources to carry them out; (c) de-risk some financial operations to mobilize private capital (such as the issuance of zero hunger bonds); and (d) eventually, finance some interventions directly.
	*The funding will come from the additional international development funds (about 2 billion dollars per year), plus a mobilization of private funds (a target of 500 million per year).
	*In addition, 2% of the planned allocation of SDRs will be utilized to design, launch, and guarantee zero hunger bonds (and zero hunger green bonds) issued by countries with programs to end hunger as part of the Alliance.
	*The Alliance will support financially and operationally those individual countries that sign agreements joining this global partnership to end hunger by 2030, helping them identify the target population, define of the specific institutional, programmatic, and instrumental components, mobilize the necessary funding, and structure the partnerships needed to carry out the programs to end hunger by 2030.

Source: Author

The institutional arrangement outlined here has several advantages, including that (1) it supports the country members of the Alliance in implementing country-owned, country-coordinated, integrated programs; (2) it focuses on a single and measurable objective (ending hunger by 2030) but, given the type of agricultural technologies and environmental interventions supported, it also contributes to crucial objectives related to climate change mitigation and adaptation; (3) it mobilizes a significantly larger volume of funds than those directly allocated to the Alliance; (4) it reduces the risks of creating another permanent international bureaucracy by relying on temporary secondment from existing

organizations; and (5) it has a flexible public–private institutional structure.

G. SUMMARY OF PROPOSALS

Table 7 summarizes the proposals. It should be noted that the adjustments in the operation of banking systems discussed above also address the main issues raised by the following proposals in the Action Tracks: “Establish a catalytic SME financing facility to transform food systems”; “Global matching investment fund for small-scale producers’ organizations”; “Invest in the future—Making food systems finance accessible for rural people”; “Public development bank initiative to catalyze green and inclusive food system investments”; and “Blended financing

mechanism to small projects/initiatives locally owned by women and youth along agricultural value chains.”

Also, the preparation/incubation/acceleration facility can help with other financial proposals from the Action Tracks, such as a “\$200m climate smart food systems impact investment fund”; and a “Soils investment hub.”

Creation of a Zero Hunger Alliance & Fund is based on the idea of a dedicated fund to end hunger presented by Action Track One, with the specific objective of supporting institutionally and financially those countries that want to join a global partnership to end hunger. The proposed zero hunger bond (or zero hunger green bonds) can also be an important component of the financing mobilized by the Zero Hunger Alliance and Fund.

H. CONCLUSION

This paper analyzed the costs and potential financial mechanisms for achieving SDG2 and ending hunger and made a series of specific proposals to reach those objectives. If implemented, those proposals would lead to an additional 15 billion dollars in development funds annually; may mobilize an additional 230 billion dollars in public expenditures per year in developing countries (not including China) for sustainable agricultural and rural development and social assistance; may increase the loan portfolio for agriculture, forestry, and fisheries (in developing countries not counting China) by about 195 billion dollars (a stock); and would support the issuing of up to 260 billion dollars in zero hunger funds (depending on how the guarantees are structured). The proposals also support the creation of a Zero Hunger Alliance & Fund, with 2.5 billion dollars per year and the operational capacity to mobilize the resources mentioned above in

support of country-owned and country-coordinated integrated programs to end hunger by 2030. The options discussed also contribute to the implementation of other financial proposals considered by different Action Tracks, in particular the proposal of a Zero Hunger Fund from Action Track One. It is hoped this paper can contribute to the debate on how to achieve the SDGs and end hunger in a transformed, improved global food system.

REFERENCES

- Andrews, C., A. de Montesquiou, I. Arévalo Sánchez, P. Vasudeva Dutta, B. Varghese Paul, S. Samaranayake, J. Heisey, T. Clay, and S. Chaudhary. 2021. *The State of Economic Inclusion Report 2021: The Potential to Scale*. Washington, DC: World Bank.
- Amundi Asset Management. 2020. *Social Bonds: Financing the Recovery and Long-Term Inclusive Growth*. Investment Insights Blue Paper (Nov.)
- Climate Bonds Initiative. 2019. *Green Bonds: Global State of the Market 2019*.
- Climate Bond Initiative. 2021. *Sovereign Green, Social, and Sustainability Bond Survey: The Ultimate Power to Transform the Market*. Climate Bonds Initiative and HSBC.
- Díaz-Bonilla, E. 2015. *Macroeconomics, Agriculture, and Food Security: A Guide to Policy Analysis in Developing Countries*. Washington, DC: International Food Policy Research Institute.
<http://dx.doi.org/10.2499/9780896298590>
- Díaz-Bonilla, E. 2020. “Fiscal and Monetary Responses to the COVID-19 Pandemic: Some Thoughts for Developing Countries and the International Community.” In *COVID-19 and Global Food Security*, eds. J. Swinnen, and J. McDermott, 98–101. Washington, DC:

- International Food Policy Research Institute.
https://doi.org/10.2499/p15738coll2.133762_22
- Díaz-Bonilla, E., and E. Fernández-Arias. 2019. "Políticas Públicas y Mercados Financieros para el Desarrollo Rural y Del Sistema Agroalimentario en América Latina y el Caribe." LAC Working Paper 2, International Food Policy Research Institute, Washington, DC.
<https://doi.org/10.2499/p15738coll2.133331>
- Díaz-Bonilla, E., E. Fernández-Arias, V. Piñeiro, B. Prato, and J. Arias. 2019. "Foro de Análisis Financiamiento e Inclusión Financiera para el Desarrollo Agropecuario, Rural y de Sistemas Alimentarios en América Latina y el Caribe: Documento Resumen." LAC Working Paper 5, International Food Policy Research Institute, Washington, DC.
<https://doi.org/10.2499/p15738coll2.133448>
- Díaz-Bonilla, E., A.M. Loboguerrero, L. Verchot, E. Viglizzo, and A. Mirzabaev. 2018. *Financing a Sustainable Food Future*. T20 Argentina: Food Security and Sustainable Development Task Force Brief. Washington, DC: International Food Policy Research Institute. <https://t20argentina.org/wp-content/uploads/2018/06/TF3-3.5-Task-Force-3-FINAL-v4-EDB-revised-after-peer-review.pdf>
- Díaz-Bonilla, E., J. Swinnen, and R. Vos. 2021. "Financing the Transformation to Healthy, Sustainable, and Equitable Food Systems." In *Global Food Policy Report 2021: Transforming Food Systems after COVID-19*, 20–23. Washington, DC: International Food Policy Research Institute.
- Fan, S., ed. 2008. *Public Expenditures, Growth, and Poverty in Developing Countries: Lessons from Developing Countries*. Baltimore: Johns Hopkins University Press.
- FAO (Food and Agriculture Organization of the United Nations). 2012. *The State of Food and Agriculture 2012: Investing in Agriculture for a Better Future*. Rome.
- FAO (Food and Agriculture Organization of the United Nations). 2017. *Cash+: FAO's Approach*. Rome.
<http://www.fao.org/3/i7864e/i7864e.pdf>
- Fettig, D. 2008. "The History of a Powerful Paragraph." *Banking and Policy Issues Magazine*. Minneapolis: Federal Reserve Bank of Minneapolis.
- FOLU (Food and Land Use Coalition). 2019. *Growing Better: Ten Critical Transitions to Transform Food and Land Use*. Global Consultation Report of the Food and Land Use Coalition.
- Finance for Biodiversity Initiative. 2021. *Greening Sovereign Debt: Building a Nature and Climate Sovereign Bond Facility*.
- Fitzgerald, T.P., P.R. Higgins, E. Quilligan, S.A. Sethi, and J. Tobin-de la Puente. 2020. "Catalyzing Fisheries Conservation Investment." *Frontiers in Ecology and the Environment* 18(3): 151–158.
- GIIN (Global Impact Investing Network). 2020. *Annual Impact Investor Survey 2020. 10th Edition*. New York.
- Laborde, D., M. Parent, and C. Smaller. 2020. *Ending Hunger, Increasing Incomes, and Protecting the Climate: What Would it Cost Donors?* Ceres2030: Sustainable Solutions to End Hunger. Washington, DC: International Food Policy Research Institute; Winnipeg, Canada: International Institute for Sustainable Development; Ithaca, New York: Cornell University.


- iiLab (Impact Invest Lab). 2018. *The Social Bond Market: Towards a New Asset Class?* Paris.
- ICMA (International Capital Markets Association). 2020. *Social Bond Principles. Voluntary Process Guidelines for Issuing Social Bonds*. Paris.
- KPMG. 2019. *The Numbers That Are Changing the World. Revealing the Growing Appetite for Responsible Investing*. Amstelveen, Netherlands.
- LTS International. 2018. "Program Evaluation Final Report: Global Agriculture and Food Security Program (GAFSP). Edinburgh.
- Millan A., B. Limketkai, and S. Guarnaschelli. 2019. *Financing the Transformation of Food Systems under a Changing Climate*. CCAFS Report. Wageningen, Netherlands: CGIAR Research Program on Climate Change, Agriculture and Food Security.
- Schmelzing, P. 2020. "Global Real Rates 1311-2018." *Underground* (blog) July 7. <https://bankunderground.co.uk/2020/07/07/global-real-rates-1311-2018/>
- Von Braun, J., K. Afsana, L. Fresco, M. Hassan, and M. Torero. 2020. "Food Systems: Definition, Concept and Application for the UN Food Systems Summit." Unpublished draft paper for the Scientific Group of the UN Food Systems Summit.
- Von Braun, J., B.B. Chichaibelu, M. Torero, D. Laborde Debucquet, and C. Smaller. 2020. *Ending Hunger by 2030—Policy Actions and Costs*. Policy Brief. Bonn: Center for Development Research (ZEF).
- World Bank and IMF. 2005. *The Poverty Reduction Strategy Initiative: Findings from 10 Country Case Studies of World Bank and IMF Support*. Washington, DC: World Bank.
- ZEF (Center for Development Research, University of Bonn) and FAO. 2020. *Investment Costs and Policy Action Opportunities for Reaching a World without Hunger (SDG 2)*. Bonn and Rome.

Food Systems Summit Briefs are prepared by researchers of Partners of the Scientific Group for the United Nations Food Systems Summit. They are made available under the responsibility of the authors. The views presented may not be attributed to the Scientific Group or to the partner organisations with which the authors are affiliated.

The author is:

Eugenio Díaz-Bonilla, Head Latin American and Caribbean Program of International Food Policy Research Institute (IFPRI)

For further information about the Scientific Group,
visit <https://sc-fss2021.org> or
contact info@sc-fss2021.org

 [@sc_fss2021](https://twitter.com/sc_fss2021)