

Document of

Report No: PAD4487

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED ADDITIONAL GRANT

FROM THE GLOBAL AGRICULTURE AND FOOD SECURITY PROGRAM

IN THE AMOUNT OF US\$5 MILLION

TO THE

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

CURRENCY EQUIVALENTS

(Exchange Rate Effective {May 31, 2021})

Currency Unit = Ethiopian Birr

US\$1 = SDR 0.69

US\$1 = ETB 43.53

FISCAL YEAR

July 8 July 7

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ABBREVIATIONS AND ACRONYMS

AF	Additional Financing
AGP2	Second Agricultural Growth project
ARAP	Abbreviated Resettlement Action Plan
ATA	Agricultural Transformation Agency
AS	Advisory services
CDSF	Capacity Development Support Facility
CLPP	Community Level Participatory Planning
CMU	Country Management Unit
COVID-19	Coronavirus Disease 2019
CPF	Country Partnership Framework
DPF	Development Policy Financing
DPs	Development Partners
EDRI	Ethiopian Development Research Institute
EFA	Economic and Financial Analysis
EIRR	Economic Internal Rate of Return
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ETB	Ethiopian Birr
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FHH	Female Headed Household
FIs	Financial institutions
FIRR	Financial Internal Rate of Return
FM	Financial management
FTCs	Farmer Training Centers
GAFSP	Global Agriculture and Food Security Program
GBV	Gender based violence
GDP	Gross domestic product
GHG	Green House Gas
GoE	Government of Ethiopia
GRM	Grievance Redress Mechanisms
GTP2	Second Growth and Transformation Plan
HHI	Household Irrigation
HHR	Household Rainfed
IAs	Implementing Agencies
ICT	Information Communication Technology
IFAD	International FurW* nBT/F2 11.04 Tf/Artifact BMC EMC q65.064 sW* nBT/F2

M&E	Monitoring and Evaluation
MAS	Manufacturing Agribusiness and Services
MDG	Millennium Development Goals
MDTF	Multi-Donor Trust Fund
MoA	Ministry of Agriculture
NPV	Net Present Value
PCU	Project coordinator unit
PDO	Project Development Objective
PforR	Program for Results
PIM	Project Implementation Manual
PMP	Pest Management Plan
PPE	Personal Protective Equipment
PPSD	Project Procurement Strategy for Development
PSNPs	Productive Safety Net Programs
RAP	Resettlement Action Plan
RF	Result Framework
RPF	Resettlement Policy Framework
SA	Social Assessment
SCFs	Standard conversion factors
SEA	Sexual exploitation and abuse
SEASNP	Strengthening Ethiopia's Adaptive Safety Net Project
SSI	Small Scale irrigation
STEP	Systematic Tracking of Exchanges in Procurement
ToR	Terms of Reference
UPSNJP	Urban Productive Safety Net and Jobs Project
USAID	United States Agency for International Development
VC	Value Chain
VLD	Voluntary land donation
WBG	World Bank Group





Country	Product Line	Team Leader(s)		
Ethiopia	IBRD/IDA	Vikas Choudhary		
Project ID	Financing Instrument	Resp CC	Req CC	Practice Area (Lead)
P148591	Investment Project Financing	SAEA3 (9247)	AECE3 (247)	Agriculture and Food



The Project Development Objective is to increase agricultural productivity and commercialization of small holder farmers targeted by the project.

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	Current Financing	Proposed Additional Financing	Total Proposed Financing
	661.80	5.00	666.80
	618.00	5.00	623.00
	43.80	0.00	43.80

Trust Funds			5.00
Global Agriculture and Food Security Program			5.00

Does the project depart from the CPF in content or in other significant respects?

Yes No

Does the project require any other Policy waiver(s)?

Yes No

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proof Ethiopian agriculture against drought, pests, diseases and changing weather, and (vi) upgrading agricultural marketing systems and infrastructure to minimize food loss and waste and increase efficiency of agricultural value chains. These actions are at the core of the GoE's climate change adaptation and mitigation strategies.

12.

There has been a general slowdown in economic activities particularly related to the movement of goods and people between rural areas and urban centers which has disrupted agricultural supply chains with a consequent spike in food prices, narrowed rural employment opportunities and limited rural services. The GoE has developed a COVID-19 response plan to minimize the economic impacts of the pandemic while controlling its spread. Nevertheless, the pandemic remains on the rise and the economic impact is expected to be serious.

13. Disruption in agricultural supply chains and rural livelihoods due to the COVID-19 pandemic, variability in production resulting from erratic weather conditions and the current threat to the main harvest as the GoE faces difficulties in containing the desert locust outbreak highlight the vulnerability of the Ethiopian agricultural sector. Accordingly, the GoE has recognized the urgent need to build resilience of rural livelihoods, one aspect of which is to accelerate agricultural growth. Consistent with the parent project, this AF will address climate risks and vulnerabilities in the agricultural sector, by prioritizing support for small scale irrigation (SSI) and agricultural production.

14.

AGP1 and 2 supported agricultural growth by strengthening public agricultural support services, SSI and other infrastructure development (identified through a Community Level Participatory Planning [CLPP] process), and supported market development strengthening of agricultural input supply systems and initiatives to holistically develop selected agricultural commodity value chains. Based on the achievement of AGP1, a second project, AGP2, was designed and is currently under implementation (discussed further below) deepening DP support to agricultural growth. AGP is the GoE's flagship program in its collaboration with DPs to promote agricultural growth and has informed and been key to taking forward the government's approach to agriculture development. It constitutes a significant shift in DP's support to agriculture, moving away from a predominant focus on helping the GoE address food insecurity among vulnerable population groups to investing in growth. It also introduces collaboration among DPs pulling together

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agricultural potential in seven Regional States (Oromia, Amhara, Southern Nations Nationalities and Peoples Region, Tigray, Benishangul-Gumuz, Gambella, Harari) and in rural woredas of one city administration (Dire Dawa City Administration).

21. : a) inclusion of the Agricultural Transformation Agency (ATA) and the Ministry of Livestock and Fisheries as Implementing Agencies (IAs); b) inclusion of the Ethiopia Second Agricultural Growth Project MDTF as a source of co-financing; c) inclusion of GAFSP as a source of co-financing; d) extension of the Project closing date by 15 months from October 10, 2020 to January 10, 2022; and e) inclusion of US\$80 million AF, a Closing Date extension of the parent project from January 10, 2022 to June 15, 2023, and changes to the Result Framework (RF) to more accurately capture the accomplishments of the Project and ensure that issues such as Grievance Redress Mechanisms (GRMs) or environmental and social issues are documented.

22. Its achievement is currently being measured by the following indicators:

- a) Percentage increase in yield of selected crops by targeted households benefiting directly from the program; disaggregated for Female Headed Households (FHH).
- b) Percentage increase in yield for milk, honey, and eggs in targeted households benefiting directly from the project; disaggregated for FHH.
- c) Percentage increase in real revenue from selected crops in targeted household benefiting directly from the project disaggregated for FHH.
- d) Percentage increase in real revenue from milk, honey and eggs in targeted household benefiting directly from the project; disaggregated for FHH.
- e) Number of direct project beneficiaries.

23. y since effectiveness. Furthermore, quantitative and qualitative analyses of PDO status were undertaken at mid-term (June 2019) by the client through EDRI. The Project has registered significant achievements in terms of increased producti it b beneficiar households The Project sachie ements in terms of commerciali ation are also positive but lower and, somewhat below the midterm targets. On average across all crops, AGP2 beneficiary households have registered an ETB5,167 (US\$187) real⁶ income increase relative to the baseline. The real revenue from cereals and pulses increased by 113.540 G[(5)-3,(1)m aQQq315.05 43.94 b 265.25 T



procurement system and its performance. In general, the existing procurement structure in the host agencies with support from the respective PIUs have prerequisite capacity to implement the activities financed by the AF.

62. Nevertheless, the assessments noted that there are still drawbacks in preparing quality procurement documents, inadequate application of post qualification criteria, weaknesses in handling complaints timely and adequately. In addition, the project procurement activities and contract implementation are susceptible to risks associated with COVID-19. Thus, the overall project procurement risk as assessed to be Substantial. The residual risk after implementation of agreed actions as stipulated in the parent project is Moderate.

63. The Project's environmental category could remain unchanged at Category B and no additional social or environmental safeguards policy would be triggered under the proposed AF.

64. The Borrower had prepared, during the original project and subsequently updated in the first AF, an Environmental and Social Management Framework (ESMF), including a template for the preparation of Environmental and Social Management Plan (ESMP) and an Environmental Guideline for Contractors to be included in bidding documents. Since the project triggered the Pest Management Plan (PMP), its procedure has been included as part of the ESMF. In addition, the ESMF describes the institutional responsibilities, capacities, financial resources and monitoring needs essential to implement mitigation measures.

65. The Borrower had also prepared a Resettlement Policy Framework (RPF) to guide and govern AGP2 subprojects that will entail involuntary resettlement. The RPF provides the basis for preparing Resettlement Action Plan (RAP) for individual subprojects (if required) once their location and scope are known. Whenever a project activity or subproject results in land acquisition, a land-acquisition plan or ARAP (Abbreviated RAP) or RAP, depending on the scope of the land take, will have to be developed and approved by the relevant AGP implementing agencies and the World Bank before the commencement of the sub-project activities. Likewise, as an integral part of the ESMF and RPF, the Social Assessment (SA) has been prepared to clearly define project affected persons who meet the criteria of OP 4.10, and those who fall under the category of vulnerable groups based on the National Social Protection Policy provisions. Besides, mitigation measures have been planned to address properly, those identified social risks and impacts. The ESMF, SA and RPF have been disclosed at MoA's website and at the World Bank's external website on August 6, 2020. The ESMF shall be updated before effectiveness of the AF project so that it could cover COVID-19 risk management activities. In addition, the existing Social Assessment will be updated to capture potentially disadvantaged groups or any vulnerabilities, created or exacerbated due to the impact of COVID-19, before effectiveness of the Project.

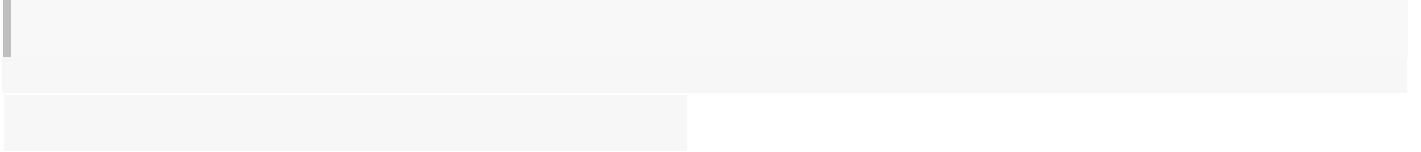
66. All subprojects that have been financed by the parent project were screened and approved by the respective regulatory bodies following the requirements of the ESMF. These subprojects include establishment of fruit, vegetable and coffee nursery, demonstration of agricultural technologies, equipping regional plant health clinics, construction and rehabilitation of small-scale irrigation dams. Based on the results of the screening reports, ESMPs were prepared for a total of 1447 sub projects. Moreover, 171 full Environmental and Social Impact Assessments (ESIAs) were prepared, reviewed and



approved for subprojects. New SSI subprojects, 2 RAPs prepared for micro dams and 82 Integrated Pest Management Plans (IPMPs) were prepared. As for the implementation of Dam Safety Policy, ESAs were prepared for the micro/small dams which were reviewed and approved by the regulatory agency. Qualified engineers were engaged in the design and construction of the small/ micro dams during the implementation of the parent project. Hence, the implementing agency has gained considerable experience in the preparation and implementation of environmental and social risk management tools.

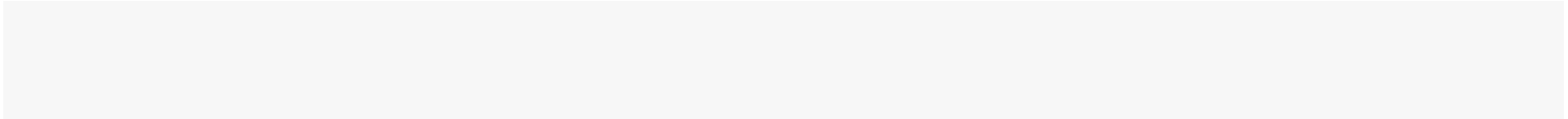
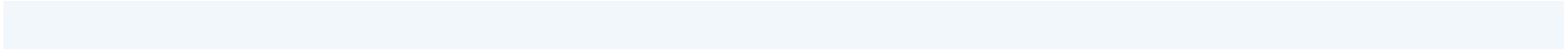
67. The implementation arrangements for the AF remain the same as the parent project.

68. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines the WB's response. (WB)





Small Scale Irrigation	278.68	Revised	Small Scale Irrigation Schemes	279.43



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Number of demand-driven improved agricultural technologies under research (total and disaggregated by gender sensitive, nutrition and climate smart technologies) (Number)	0.00		140.00
Gender sensitive (Number)	0.00		40.00
Nutrition (Number)	0.00		

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	<p>FHH). The proposed key crops at this stage are the following: cereals (Teff, Barely, Wheat, Maize, Sorghum and sesame) ; pulse (chick-pea and horse-bean), vegetables including root crops (onions, tomatoes and potatoes) and fruits/Permanent crops (Avocado, Banana, Mangoes and coffee). Two indexes will be developed based on the selected crops (i) cereals and pulses and (ii) vegetables/fruits). The current list of crops will be further defined.</p>				
<p>Percentage increase in yield for selected crops in targeted households benefiting directly from the project- Vegetables/Fruits (baseline 67.42 quintals per ha)</p>	<p>Assess agricultural productivity by a proxy with yield for selected key crops in targeted households (MHH and FHH). The proposed key crops at this stage are the following: cereals (Teff, Barely, Wheat, Maize, Sorghum and sesame) ; pulse (chick-pea and horse-bean), vegetables including root c</p>				

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<p>(Percentage)</p>	<p>targeted households (THH and FHH). The proposed selected key livestock products at this stage are the following: cattle milk, honey and egg (poultry). May not need to aggregate /pack indicators at this level or it will be calculated independently.</p>				
<p>Female beneficiaries (Percentage)</p>	<p>Assess agricultural productivity by a proxy with yield for selected key livestock products in targeted households (THH and FHH). The proposed selected key livestock products at this stage are the following: cattle milk, honey and egg (poultry).</p>				



	the following: cattle milk, honey and egg (poultry). May not need to aggregate /pack indicators at this level or it will be calculated independently.				
Female beneficiaries (Percentage)	Assess agricultural productivity by a proxy with yield for selected key livestock products in targeted households (THH and FHH). The proposed selected key livestock products at this stage are the following: cattle milk, honey and egg (poultry). May not need to aggregate /pack indicators at this level or it will be calculated independently.	End of the project	Household survey/evaluation report	Household survey/evaluation report	FPCU(Consulting firm under responsibility and supervision of CU M&E Officer and TC)
Percentage increase in real revenue from selected crops in targeted household benefiting directly from the project - Cereals/Pulses (Baseline 6279 Birr) (Percentage)	Assess the level of commercialization of the crop production by targeted households (THH and FHH) for selected key crops. The proposed key crops at this stage are the following: Horticulture (fruits (TBD),				



	coffee, sesame, chickpea, teff, sorghum, barley and fava beans). The current list of crops will be further defined. The indicator is disaggregated by cereals/pulses and vegetables/fruits groups. This indicator will be deflated by consumer price index				
Female beneficiaries (Percentage)	Assess the level of commercialization of the crop production by targeted households (THH and FHH) for selected key crops. The proposed key crops at this stage are the following: Horticulture (fruits (TBD), vegetables (onions, tomatoes and potatoes)), Cereals (wheat, maize, coffee, sesame, chickpea, teff, sorghum, barley and fava beans). The current list of crops will be further defined. The indicator is disaggregated by cereals/pulses and vegetables/fruits groups.	End of project	Household survey/ evaluation report	Household survey/ evaluation	FPCU/Consulting firm under responsibility and supervision of CU M&E Officer and TC



	<p>targeted households (THH and FHH) for selected key crops. The proposed key crops at this stage are the following: Horticulture (fruits (TBD), vegetables (onions, tomatoes and potatoes)), Cereals (wheat, maize, coffee, sesame, chickpea, teff, sorghum, barley and fava beans). The current list of crops will be further defined. The indicator is disaggregated by cereals/pulses and vegetables/fruits groups. This indicator will be deflated by consumer price index</p>		report		Officer and TC
Percentage increase in real revenue from selected livestock products in targeted					



Female beneficiaries (Percentage)	Assess the level of commercialization of the
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preservation and processing to improve availability of good nutritional quality and safe food. Climate smart



	<p>need to perform household duties could enable them to devote more time to productive farm activities. Qualitative studies will capture the type of gender sensitive technologies demonstrated including technologies for nutrition. Technologies for nutrition refers to technologies: (i) increasing production and consumption for a range of diverse nutrient dense food; and (ii) improving post harvest handling, preservation and processing to improve availability of good nutritional quality and safe food. Not all technologies are reducing the amount of women farm labor or reducing the time spent on household duties or contributing to improved nutrition, but it is still critical to know for the project if they are being demonstrated.</p>				
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		of PCU M&E Officer			
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	technologies that are accessible and affordable by women farmers.	M&E Officer and TC			
Collaborative research sub-projects under implementation/completed - Total FREGs	This indicator refers to the				



Collaborative research sub-projects -



	<p>project. If few technologies under research are selected through a qualitative process chances are that the number of technologies promoted to extension services will be very low. Gender sensitive technologies are defined as: (i) technologies based on needs and interest of female farmers; (ii) technologies that reduce time and labor for women farmers; (iii) and technologies that are accessible and affordable by women farmers. Technologies for nutrition refers to technologies: (i) increasing production and consumption for a range of diverse nutrient dense food; and (ii) improving post harvest handling, preservation and processing to improve availability of good nutritional quality and safe food. Climate smart technologies refer to</p>				
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	<p>address specific issues; (ii) the technologies under research contributes to productivity and commercialization; (iii) the choice of technologies under research take into account mainstreaming of gender, nutrition, and climate smart; and (iv) the choice of technologies under research is in line with the value chains of the project.</p> <p>Gender sensitive technologies are defined as: (i) technologies based on needs and interest of female farmers; (ii) technologies that reduce time and labor for women farmers; (iii) and technologies that are accessible and affordable by women farmers.</p> <p>Technologies for nutrition refers to technologies: (i) increasing production and consumption for a range of diverse nutrient dense food; and (ii) improving post harvest handling,</p>				
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	<p>identification of technologies under research is demand-driven: based on farmers, extension services and other actors demand to address specific issues; (ii) the technologies under research contributes to productivity and commercialization; (iii) the choice of technologies under research take into account mainstreaming of gender, nutrition, and climate smart; and (iv) the choice of technologies under research is in line with the value chains of the project.</p> <p>Gender sensitive technologies are defined as: (i) technologies based on needs and interest of female farmers; (ii) technologies that reduce time and labor for women farmers; (iii) and technologies that are accessible and affordable by women farmers.</p> <p>Technologies for nutrition</p>				
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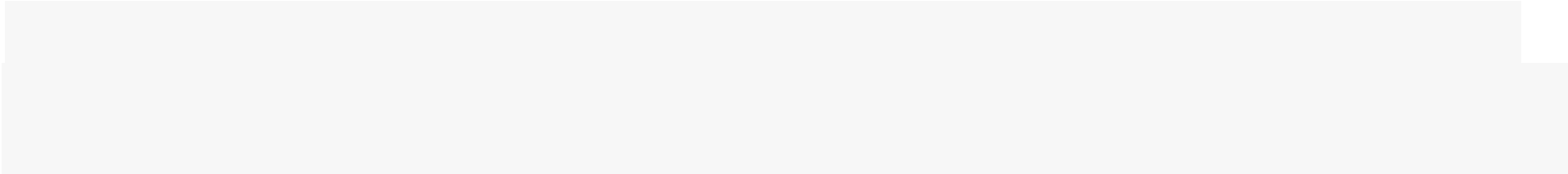
Area provided with irrigation and drainage services - new schemes (Hectare(Ha	As above, for new services.	M&E Officers, (FCU, RCUs, BoW)	Progress report		Bi-annually, starting year 2
Area provided with irrigation and drainage services - Improved (ha)		Semi-annually starting from 2021	Progress reports		M&E Officers, (FCU, RCUs and BoW)
Area provided with irrigation and drainage services micro/HH irrigation schemes	Irrigation and drainage services refers to the better delivery of water to,				

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	Percentage of female whose land or asset have been affected by the project; this includes FHH and MF				
Percentage of subprojects for which environmental mitigation measures have been implemented	Assess percentage of sub projects for which appropriate environmental mitigation measures have been implemented	Quarterly	Monitoring and evaluation reports		Federal Social Safeguard and Environmental safeguard Specialists and Regional ESSs
Annual progress reports meets World Bank quality and timely delivery requirements	This indicator only measures whether or not the M&E system ensure its basic function of providing quality and timely data for: identification of issues, tracking of progress towards intermediate outcomes and outcomes and support effective decision-making for project coordination unit. Quality requirements refer to the agreed format for reporting (data, analysis, recommendations, etc.) and therequired data (such as results framework and other critical indicators/data agreed upon).	M&E Officers /World Bank	Progress reports/Review		



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includes flowers, fruits, vegetables, herbs and spices, stood at US\$318 million. Following the outbreak in early March 2020, most European and Middle Eastern countries closed their borders. As a result, the horticulture sector has suffered a significant loss. In a similar vein, the private sector in the apparel and garment industry experienced an unprecedented global demand shock. Disruptions to the global value chains continue to weigh on the supply of intermediate inputs and imported raw materials, which are vital for the manufacturing sector. Against this backdrop, several small and micro enterprises have shifted their production lines to fulfill the growing need for both PPE and items for consumer use such as masks and hand sanitizers. As most workers in industrial parks are women, the pandemic weighs more adversely on women's participation in the labor force.

5. The GoE declared a state of emergency under Article 93 of the constitution on April 8, 2020. It moved quickly to institute measures to limit the spread of COVID-19, including outreach activities for awareness raising and behavioral changes, expanding COVID-19 testing capacity and institutions to provide clinical care and



had been previously planned but were accelerated and design was adjusted to meet COVID-19 challenges. A US\$14.9 million COVID-19 Education Response project, financed by the Global Partnership for Education, was approved in August 2020 to complement the ongoing General Education Quality Improvement Project (P163050). A new US\$100 million Additional Financing for the Women Entrepreneurship Development Project (P122764) was rapidly prepared and approved in December 2020. A US\$500 million Access to Distributed Electricity and Lighting, central to improving connectivity, was approved in March 2021. A US\$200 million Digital Foundations Project was approved in February 2021, recognizing the central role of connectivity to help overcome the human development and commercial impacts of COVID-19 restrictions. A second phase under the COVID-19 Emergency Response Multiphase Programmatic Approach was approved in April 2021 to support Ethiopia's anticipated rollout of vaccines in 2021. Support for small businesses and jobs creation is being fast-tracked through a previously unplanned US\$200 million Additional Financing for Small and Medium Enterprise Support Project, was approved in April 2021. Finally, a new US\$250 million AF for the Enhancing Shared Prosperity through Equitable Services Program for Results operation was approved in June 2021 to help sustain service delivery improvements at the local level.

		Business growth and jobs	Strengthen policies and institutions



adequacy). Regarding MAS sectors, IFC is looking to provide working capital lines to firms with headroom to take on debt. In particular, the MAS team is supporting clients operating in the agribusiness sector to enter new regional export markets with the aim to increase diversification and minimize longer supply chain risk. The infrastructure sector, given the specific case of Ethiopia, private sector involvement is already limited so there is not much to protect/restructure as a result of the COVID-19 pandemic. As of June IFC's potential program size in Ethiopia stands at US\$ million in Investment Services (IS) (base case) and US\$25.5 million in Advisory Services (AS) for the five-year period. In line with IFC's COVID-19 response framework, going forward the strategy will aim to reduce market destruction and subsequently restructure and create new opportunities in the tourism, agribusiness and health sectors.

12.

- < . The COVID-19 fallout will likely exacerbate shortages of foreign exchange, in part due to reduced exports, remittances, and tourism receipts. In addition, given the financial sector's mounting vulnerabilities, the pandemic will likely result in a local currency liquidity crisis, putting additional strain on the private sector's limited access to finance. Last, FIs will likely require additional working capital to provide liquidity support to their SME clients.
- < . A prolonged COVID-



prepared US \$1.2 billion Second Growth and Competitiveness DPF alongside the IMF's approval in March 2020 of a Rapid Credit Facility of US\$410 million which supplemented its own three-year US\$2.9 billion program for Ethiopia. With respect to financing for health services to save lives, the World Bank's provision of US\$82.6 million was complemented by support from the Global Fund, GAVI, the Jack Ma foundation and other bilateral and multilateral donors. The World Bank also played a central coordination role for managing financing for the productive safety nets programs. In particular, the rural safety nets program will be complemented by US\$190 million in financing in Fiscal Year 2021 from eight other development partners (and US\$967 million over five years). The World Bank also plays a similar

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6. The purpose of elaborating on typical crop and farm models is to assess whether improved technologies and associated risks linked to their adoption under the with project situation are likely to attract the interest and participation of targeted smallholders, generate enough additional income for them and increase their food security and resilience to shocks.

7. Typical crop models (per ha basis) have been developed for the main crops currently cultivated by targeted smallholders in the six regions. These are the following: (i) Cereals: teff, wheat, maize; (ii) Vegetables (both rainfed and irrigated): tomato, green pepper; head cabbage, (iii) Tubers: potato; and (iv) Onion.

8. The calculations should enable us to compare the without project and the expected with project that is adopti

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14. The cropping practices are based on the discussions with the national team involved in AGP2. All output prices have been collected by the Central Statistical Agency. All the parameters and data were collected from the MoA.

15. The distribution of the crops of the HHR model (0.35ha) is presented in Table 2.2. Although a large variety of crops could be c

ologies (less expensive well types; treadle, washer or rope pumps) or reduce
r might translate into an even higher profitability and return.

es the financial performance of the agricultural-farm models. The FIRR, NPV,
e models are good, indicating the financial viability of the proposed activities.

Models' net incremental benefits -NIB (in ETB)		
Farm models (agriculture)		
Model 1: Household Rainfed Model (HHR) Cereals	Model 2: Household Irrigation Model (HHI) Horticulture (2 cycles)	Model 3: Household Irrigation Model (HHI) Horticulture (3 cycles)
-2.085	-33.340	-49.332
2.415	-10.151	-12.644
1.415	1.208	5.947
2.415	12.134	24.104

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34. The Project's economic cash flow represents the overall project aggregation of economic costs and benefits. It includes the net incremental benefits of each financial model in economic terms, converted with shadow prices, and multiplied by the number of direct beneficiaries of each category.

35. The Project components financed by the GAFSP AF were taken into account in calculating the economic cost of the project. Economic costs associated with improving agriculture productivity were estimated at US\$11.25 million. After the Project period, an annual cost of US\$0.5 million is assumed to maintain the results of the Project. The economic costs of the Project were generated using Excel. To avoid double counting, some deductions were made directly in Excel before generating economic costs. In particular, the financing of the irrigation systems and the provision of seeds and fertilizers for the targeted area of 14,000 hectares (it was deducted from the project cost, as these expenses have already been considered in the models).

36. Based on this methodology and assumptions, the cash flows from the financial models developed for the various activities were transformed into economic values, which made it possible to obtain additional net benefits at economic prices. In order to take into account the possibility that, for various



	< 938 ha of rainfed agriculture (cereals and horticulture) 1 cycle	< 938 ha of improved irrigated agriculture (cereals and horticulture) 3 cycles
Consumption of fertilizer and agro-chemicals (insecticides, herbicides)	Use (ton/ha/year): < Urea: 1,635 ton/year < N- fertilizers: 365 ton/year < Phosphorus: 1,184 ton/year < Potassium: 773 ton/year	Use (ton/ha/year): < Urea: 3,322 ton/year < N- fertilizers: 942 ton/year < Phosphorus: 3,139 ton/year < Potassium: 1,570 ton/year

Consumption of fuel and electricity for all the project coordination

No project vehicles or offices



Project Name	Agricultural Growth Project Ph.	Climate	Warm Temperature (Moist)	Duration of the Project (Years)	20
Land Use-changes					
Deforestation					
Afforestation					
Agriculture					
Other LULUCF					
Annual					
14,010					
-613,351					
Grassland & Livestocks					
Grassland					
Livestocks					
Deciduous & Coniferous					
Per hectare					
33					
25					
-8					
22,3					
-44,6					
22,3					
15,0					
-0,7					

7. The monetary value of the GHG balance has been estimated and considered as economic benefit of the project in the Economic and Financial Analysis. The recent draft Guidance Note on Shadow Price of Carbon in Economic Analysis (September 2017) recommends that a project's economic analysis uses an estimation range of carbon price starting from US\$41 up to US\$78 respectively in 2019 and 2050, and increasing to US\$50 by 2030. Marginal abatement costs are designed to reflect the carbon price necessary to achieve various climate change targets. Carbon market prices are the market value of CO₂e emission reductions or sequestration (offsets) that are registered and sold through various market structures. The sensitivity analysis of the EFA shows different scenarios. The economic indicators have been calculated for (i) excluding environmental benefits, the EIRR is 17.2 percent; (ii) environmental benefits at constant market price (US\$10, the EIRR is equal to 17.5 percent; (iii) at low estimate range (average US\$51), the EIRR is about 18.8 percent; and finally (iv) at high estimate range (average US\$102), the EIRR is around 20.4 percent.