Part I: Project Information

Name of Parent Program
Financing Agrochemical Reduction and Management (FARM)

GEF ID
10915

Project Type
FSP

Type of Trust Fund
GET

CBIT/NGI
CBIT **No**
NGI **No**

Project Title
Financing Agrochemical Reduction and Management (FARM) in Agri-Food Value Chains

Countries
Viet Nam

Agency(ies)
ADB

Other Executing Partner(s)
Viet Nam Ministry of Agriculture and Rural Development (MARD)

Executing Partner Type
Government

GEF Focal Area
Chemicals and Waste

Sector
Mixed & Others

Taxonomy

Chemicals and Waste, Focal Areas, Waste Management, Hazardous Waste Management, Pesticides, Persistent Organic Pollutants, Plastics, Open Burning, Climate Change, Financing, Climate Change Mitigation, Agriculture, Forestry, and Other Land Use, Climate Change Adaptation, Climate resilience, Climate finance, Stakeholders, Indigenous Peoples, Civil Society, Private Sector, Type of Engagement, Participation, Consultation, Gender Equality, Gender Mainstreaming, Capacity, Knowledge and Research, Capacity Development, Learning, Knowledge Generation, Enabling Activities

Rio Markers

Climate Change Mitigation

Significant Objective 1

Climate Change Adaptation

No Contribution 0

Biodiversity

No Contribution 0

Land Degradation

Principal Objective 2

Submission Date

12/10/2022

Expected Implementation Start

11/30/2023

Expected Completion Date

12/1/2028

Duration

60In Months

Agency Fee($)

675,000.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount($)	Co-Fin Amount($)
CW-1-2	Strengthen the sound management of agricultural chemicals and their wastes, through better control, and reduction and/or eliminations.	GET	7,500,000.00	124,260,000.00
		Total Project Cost($)	**7,500,000.00**	**124,260,000.00**

B. Project description summary

Project Objective

To promote financing for improved agrochemical and agricultural plastic management in agri-food value chains.

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Policy and regulatory frameworks for agrochemical management	Technical Assistance	1. Policy and regulatory coherence and capacity to manage and finance agrochemicals reduction strengthened	1.1 Regulatory / legal and capacity gap analysis conducted at central/provincial level with respect to ?green? finance linked to agrochemicals lifecycle management	GET	400,000.00	
			1.2 Regulatory enforcement guidance / models for pesticide and agricultural plastics management developed and delivered at national and provincial levels			

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Reducing on-farm pollution from agrochemical and agricultural plastics use	Technical Assistance	2. Agrochemical reduction and management improved through enabling and catalysing finance and investments	2.1 ?Green finance framework? for agri-foods industry in Viet Nam created, to include options and modalities for sustainable finance and investment, including ?eco-compensation?	GET	5,506,000.00	120,000,000.00
			2.2 Agrochemical container management program strengthened /established through phased actions and associated policy development			
			2.3 Scientific and technical capacity of key food safety organizations reinforced - to support pesticide residue analysis and promote Hazard Analysis Critical Control Point			

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
			(HACCP) protocols			
			2.4 Pollution from agricultural field plastics in project areas reduced through re-use, recycling and alternative approaches			

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
Knowledge and learning systems	Technical Assistance	3. Management and monitoring system, capacity development and knowledge / learning enhanced	3.1 Agriculture product monitoring and management systems to support supply chain traceability and site level performance developed and implemented	GET	1,016,346.00	
			3.2 Targeted behavior change and technical advisory campaigns designed and implemented			
			3.3 Natural Capital Accounting and Assessment Capacity Strengthened			
Monitoring and Evaluation	Technical Assistance	Monitoring and Evaluation	Baseline Survey, Mid-term and terminal evaluations & results shared with stakeholders	GET	250,000.00	
				Sub Total ($)	**7,172,346.00**	**120,000,000.00**

Project Management Cost (PMC)		
GET	327,654.00	4,260,000.00
Sub Total($)	**327,654.00**	**4,260,000.00**
Total Project Cost($)	**7,500,000.00**	**124,260,000.00**

Please provide justification

C. Sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
GEF Agency	Asian Development Bank	Loans	Investment mobilized	101,050,000.00
Recipient Country Government	Ministry of Agriculture and Rural Development (MARD)	In-kind	Recurrent expenditures	23,210,000.00
		Total Co-Financing($)		**124,260,000.00**

Describe how any "Investment Mobilized" was identified

The investment was identified through ADB?s Country Partnership Strategy (CPS), and Country Operations Business Plan (COBP) processes with Government of Viet Nam. The ADB baseline loan "?Water Efficiency Improvement in Drought-Affected Provinces Project? will provide co-financing. This loan consists of $101,050,00 in ADB leveraged resources and $23.210,000 in Government contribution. The loan outputs and links with the GEF-financing are elaborated in the CER narrative on 'associated baseline'. It should also be noted that another loan project "Climate-Smart Agricultural Value Chain Infrastructure Project" is currently under discussion between ADB and Government of Viet Nam with MARD as Executing Agency. It is likely that this project, which will work directly in concert with the GEF financing, will add considerable co-financing during implementation.

D. Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
ADB	GET	Viet Nam	Chemicals and Waste	POPs	7,500,000	675,000	8,175,000.00
			Total Grant Resources($)		**7,500,000.00**	**675,000.00**	**8,175,000.00**

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)

PPG Required **true**

PPG Amount ($)

200,000

PPG Agency Fee ($)

18,000

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
ADB	GET	Viet Nam	Chemicals and Waste	POPs	200,000	18,000	**218,000.00**
				Total Project Costs($)	**200,000.00**	**18,000.00**	**218,000.00**

Core Indicators

Indicator 4 Area of landscapes under improved practices (hectares; excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
0.00	1085841.00	0.00	0.00

Indicator 4.1 Area of landscapes under improved management to benefit biodiversity (hectares, qualitative assessment, non-certified)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4.2 Area of landscapes under third-party certification incorporating biodiversity considerations

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Type/Name of Third Party Certification

Indicator 4.3 Area of landscapes under sustainable land management in production systems

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
	1,085,841.00		

Indicator 4.4 Area of High Conservation Value or other forest loss avoided

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4.5 Terrestrial OECMs supported

Name of the OECMs	WDPA-ID	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)

Documents (Please upload document(s) that justifies the HCVF)

Title	Submitted

Indicator 5 Area of marine habitat under improved practices to benefit biodiversity (excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
	2,132.15		

Indicator 5.1 Fisheries under third-party certification incorporating biodiversity considerations

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Type/name of the third-party certification

Indicator 5.2 Large Marine Ecosystems with reduced pollution and hypoxia

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (achieved at MTR)	Number (achieved at TE)
0	0	0	0

LME at PIF	LME at CEO Endorsement	LME at MTR	LME at TE

Indicator 5.3 Marine OECMs supported

Name of the OECMs	WDPA-ID	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (direct)	0	11591	0	0

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (indirect)	0	0	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (direct)		11,591		
Expected metric tons of CO?e (indirect)				
Anticipated start year of accounting		2025		
Duration of accounting		10		

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (direct)				
Expected metric tons of CO?e (indirect)				
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)				

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)

Indicator 9 Chemicals of global concern and their waste reduced

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
0.00	3,861.95	0.00	0.00

Indicator 9.1 Solid and liquid Persistent Organic Pollutants (POPs) removed or disposed (POPs type)

POPs type	Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
Aldrin		5.61		
Chlordane		2.81		
DDT		165.57		
Dieldrin		5.61		
Endrin		2.81		
Heptachlor		2.81		
Hexachlorobenzene (HCB)		2.81		
Lindane		84.20		
Pentachlorophenol and its salts and esters		2.81		

Indicator 9.2 Quantity of mercury reduced (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.3 Hydrochloroflurocarbons (HCFC) Reduced/Phased out (metric tons)

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.4 Number of countries with legislation and policy implemented to control chemicals and waste (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 9.5 Number of low-chemical/non-chemical systems implemented, particularly in food production, manufacturing and cities (Use this sub-indicator in addition to one of the sub-indicators 9.1, 9.2 and 9.3 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 9.6 POPs/Mercury containing materials and products directly avoided

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 9.7 Highly Hazardous Pesticides eliminated

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
	3,586.91		

Indicator 9.8 Avoided residual plastic waste

Metric Tons (Expected at PIF)	Metric Tons (Expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
	2,132.15		

Indicator 10 Persistent organic pollutants to air reduced

Grams of toxic equivalent gTEQ (Expected at PIF)	Grams of toxic equivalent gTEQ (Expected at CEO Endorsement)	Grams of toxic equivalent gTEQ (Achieved at MTR)	Grams of toxic equivalent gTEQ (Achieved at TE)
	1.68		

Indicator 10.1 Number of countries with legislation and policy implemented to control emissions of POPs to air (Use this sub-indicator in addition to Core Indicator 10 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
	1		

Indicator 10.2 Number of emission control technologies/practices implemented (Use this sub-indicator in addition to Core Indicator 10 if applicable)

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Indicator 11 People benefiting from GEF-financed investments

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female		196,034		
Male		190,345		
Total	0	386379	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

Part II. Project Justification

1a. Project Description

1a. *Project description*

1) Global environmental problems, root causes and barriers

Global environmental problems

Viet Nam has transformed remarkably from being a nation witnessing considerable food shortage to one of the world?s leading producers and exporters of many agricultural products including coffee, rice and pepper since the implementation of the *Doi Moi* economic reforms in the 1980?s. Despite the country?s recent shift towards a service economy and the resultant declining GDP share of the agriculture sector, the GDP value of the sector has been growing steadily at around 2.7% per annum. Agriculture contributes 14.85% of GDP and has consistently been the largest employer across economic sectors in Viet Nam, employing over 18.8 million Vietnamese in 2019 with an additional 10 million people employed in the wider agri-food industry. The Covid-19 pandemic has had significant impacts. A survey conducted by the Institute of Policy and Strategies for Agriculture and Rural Development (IPSARD), Ministry of Agriculture and Rural Development (MARD) reported half of the rural households saw an average income fall of 38.3 per cent.[1][1]

Agriculture accounts for 39% of land use in Viet Nam with rice being the main crop producing 42.69 million tonnes in 2020. The secondary and tertiary crops of cassava and maize respectively continue the theme of focus on traditional crops with proven methods of production. There is a preponderance of smallholder farmers in the country. The average farm size in Viet Nam is around 0.57 ha with very little consolidation of farms seen over the last decade. This large number of smallholder farmers results in economies of scale, innovation and investment being extremely difficult to achieve.

In recent years, increased climate change impacts and reduced agri-food industry profit margins have placed farmers under pressure to increase yields and reduce costs in order to keep farming enterprise viable. Among several options available to address these issues, farmers, in particular smallholders resort to increased use of inputs, mainly agrochemicals ? pesticides and fertilizers, and agricultural plastics as a quick fix. Pollutions caused by excessive use of agrochemicals are further exacerbated particularly by the use low-cost adulterated pesticides. In the face of rising production cost, the availability of low cost off branded products of unknown origin combined with lack of risk awareness prompts farmers to select the cheapest options regardless of origin and content. This can be a deliberate decision or result from misinformation and ?fake? products where cost factor plays a decisive role.

Growing high value crops is another strategy farmers use to further increase farm income. While high value crops offer higher ex-farm prices, they require higher level of inputs, particularly agrochemicals, skills, husbandry practices and post-harvest processing. All these are part of agricultural intensification that contributed towards sector achievements over the last two decades but comes at a cost. The intensification of Vietnam agricultural during the past decade for economic gains has resulted in

serious soil, water and air pollution as well as biodiversity reduction. Since 2015, while the government has started putting in place various policies and strategies namely the Agricultural Restructuring Plan (ARP) to increase agricultural value addition, focusing more on quality than quantity and getting more from less, good agricultural practice (GAP), organic agriculture and climate-smart agriculture, excessive use of chemical fertilizers and pesticides still exists. The combined stressors of increasing climate volatility, absence of stable contract pricing and underinvestment in infrastructure create a challenging environment for farmers where production and profits outweigh environmental sustainability and food safety concerns.

Agrochemicals use and impacts

While Persistent Organic Pollutants (POPs) are no longer used in Vietnam as confirmed by both the Plant Protection Department (PPD) of Ministry of Agriculture and Rural Development (MARD) at central level and respective agencies at local level, there are concerns regarding the use of highly hazardous pesticides (HHPs). The PPD?s list of banned pesticides containing 31 active ingredients vide the Circular 19/2021/TT-BNNPTNT does not include those pesticides that appear to cause severe or irreversible harm to human and environmental health under conditions of use in a country as defined by The International Code of Conduct on Pesticide Management and very likely to fall under highly hazardous type given common practices of pesticide mixing by farmers. In addition, the trend of using obsolete, less expensive, non-patented pesticides manufactured and/or blended locally happen to be more toxic and persistent than others.[2][2] The European Union (EU) has reported the presence of banned substances or chemical residues exceeding the allowable threshold in some food shipments from Viet Nam to the EU, Japan and China over the past years. Specifically, substances detected by the EU in the country?s shipments in September and October 2021 included those containing propargite, fenobucarb, tricyclazole, chlorpyrifos ethyl, and profenofos in vegetables, rice and seafood. Notably, chlorpyrifos ethyl has been banned for use by MARD since February 2019 with a clause that would allow farmers to use this pesticide until January 2021. However, the Dutch Healthcare Authority detected this substance in bitter melon from Vietnam in September 2021.[3][3]

Low-grade and low-cost pesticides are widely produced and sold on the market. Viet Nam belongs to the group of countries with the most diverse list of pesticides in the world. Moreover, the actual number of pesticide products available in the market is estimated at 3 to 10 times higher than number registered with the authority because counterfeiting, copying, information fraud, and labelling are pervasive.[4][4] Paradoxically, more hazardous alternatives are cheaper for farmers in the absence of the full accounting for externalities, such as cost recovery mechanisms for regulators, health and social costs associated with poisonings. In early 2022, the Extended Producer Responsibility (EPR) that has become effective and compulsory as regulated in the Law on Environmental Protection 2020 and Decree 08/2022/ND-CP, will require agrochemical and agricultural plastic producers to bear the direct end-of-life costs of their products and improve their circularity.

New companies, albeit small in number with limited capacity, are joining force in developing bio substances as alternative to pesticides. The country?s agrochemical sector that worth over $1 billion in 2017 offers opportunities for private sector actors to enter in R&D ventures to develop alternatives to pesticides and seize a share of the market.

The collection and disposal of pesticide containers at farm level present another set of challenges. Improper and harmful post pesticide use field practices including (i) open burning of pesticide container/plastic packaging wastes and burial, (ii) dumping in downgraded pesticide bins/tanks and open sites near fields/streams/ponds; and (iii) abandoning in the field due to delayed transportation of

pesticide containers to treatment areas are common. At district level, a certified environmental waste treatment company is contracted to collect and take pesticide containers to the designated treatment site, which is often far away from the collection point, just once or twice a year due to lack of budget at local level.

According to the Vietnam Environment Administration (VEA) of MONRE, agricultural production in Vietnam generates about 9,000 tonnes of hazardous agricultural wastes each year, mainly pesticides with a high content of toxic chemicals. Around another 50 tonnes of residual plant protection substances are being stored in warehouses across the country and 37,000 tonnes of confiscated agricultural chemicals are kept pending on decision.

Further, there has been little or no incentives for recycling industry to enter into pesticide containers and agriculture plastic recycling business by bringing in innovations. Thus, the number of recycling units is limited across Vietnam, and so put more pressure on the environmental pollution.

The country has witnessed over the last four years a significant increase in the use of bio/organic fertilizers, with more products being launched to the market, as well as less pesticide products being used by farmers. This could be attributed to Viet Nam?s international commitments or free trade agreements such as the European-Viet Nam Free Trade Agreement (EVFTA), Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), UK-Viet Nam Free Trade Agreement (UKVFTA), Regional Comprehensive Economic Partnership (RCEP), etc. that pave the way for Vietnamese entrepreneurs and farmers to go greener ensuring product quality, food safety and taking into consideration social and environmental perspectives.[5][5] The significant agrochemicals price rise due to the recent supply chain disruptions and other Covid-19 pandemic associated factors, climate change, unstable market prices, pest and plant diseases have prompted some farmers to move to bio/organics products. The county is still to embrace the agrochemicals reduction and management good practices for health and food safety and environmental sustainability.

Agricultural plastics use and impacts

Although the agriculture sector is not the largest user of plastics, their rapid appearance on farms and across the agri-food value chains has become a cause for great concern. Asia is considered to be the largest user of plastics in agricultural production.

Plastic waste is considered as a global environmental problem and Vietnam is not immune to it. The country is among the ones hit hardest by plastics in the world.[6][6] According to a MONRE estimate, Vietnam discharges more than 1.8 million tonnes of plastic waste each year and only 27 percent of which is recycled. In the Mekong Delta, the rice bowl of Vietnam, a lot of toxic plastic wastes from bottles of pesticides, herbicides, and chemical fertilizers packaging poison food systems and the environment.

In July 2022, MARD signed the Decision 2711/QD-BNN-KHCN on promulgating an action plan to reduce, collect, classify and reuse plastic wastes in the agricultural sector. This is part of the National Action Plan on ocean plastic waste management by 2030 under the direction of the Prime Minister.

Agriculture plastic wastes in Viet Nam include anti-weed cover film, rat trap, irrigation pipe system, greenhouse, fruit packaging, insect repellent, fertilizer packaging and most importantly, pesticide containers (hazardous solid waste with a lot of persistent residues at the bottom) that require

incineration at a high temperature of 1200ºC-1500ºC. The extent of use of agricultural plastics in the target provinces vary from selected crop to crop.

Plastic wastes from different farm inputs and practices are collected in a place and burnt on farms, put into bins for hazardous waste/household wastes placed in public space, piled up with other types of waste and left next to the fields, or in some cases, left scattered in the farms. Statistics from the Plant Protection Department (PPD) of MARD shows that in Vietnam, each province generates about 50-100 tons of pesticide containers on an annual basis. On an average, for each hectare of rice crop, the amount of waste ranges from 1 to 1.5kg of packaging, bottles and cans. This amount is 2 to 3 times for vegetables and industrial crops.

The Central Highland region is seeing a boom in plastic greenhouses in a bid to become erratic weather and climate change proof by using ?high-tech agriculture? without realising the long-term environmental impacts. The landfill is the final destination for bulk of the plastics used in agriculture. Heavy rains generate heavy trash, sending plastic sheets from greenhouses and untreated agrochemical packages and bottles downstream. As a result, following rainfalls, lowland farms receive tonnes of unwanted wastes.

Root causes and barriers that need to be addressed

Weak policy and enforcement, and coordination

The relevant policies and regulatory frameworks are enforced differently for different crops based on their destination. The crops grown for export markets adhere to more rigid regulatory protocols than their counterparts destined for domestic consumption. This ?dual? standards result in poor quality produce with higher chemical residues heading to local markets with health implications for domestic consumers. A dozen of extreme cases of residual chemical poisoning annually are reported. The current penalty provision is not a strong deterrent to stop using highly toxic/banned agrochemicals, or the potentially hazardous overuse (or misuse) of agrochemicals.

A lack of clarity and coordination of roles and responsibilities contribute to weak enforcement of laws and regulations impacting the system?s effectiveness. Agro-environmental roles and responsibilities are assigned to a range of departments under MARD and MONRE. It appears, there exists an inter-ministerial coordination gap.

Agrochemical management is split into three focus areas: (i) pesticide management, with a reference to synthetic fertiliser given its considerable impact on soil, water and air; (ii) management of used pesticide containers ? which are considered as hazardous waste and requires proper disposal; and (iii) agricultural plastics management with recycling potential.

(i) Pesticides management

The Government?s capacity to monitor and enforce the quality of agrochemicals remains limited. Pesticide monitoring is the responsibility of MARD with two main components: Registration - for pesticide companies, active ingredients (AIs), and tradenames, and Inspection. Inspections take place at three different levels: company, import, and trader level. Inspection of companies and imports is the responsibility of the PPD reporting to MARD. Import inspections check whether the products meet legal standards on ingredient contents and quality. Trader inspections are conducted by provincial PPDs.

The Joint Circular No. 05/2016/TTLT-BNNPTNT-BTNMT deals with transportation and treatment of pesticide containers. However, due to resource constraints, field level implementation remains poor. At provincial level, there is a lack of coordination between DARDs and DONREs.

Although Vietnamese consumers rate food safety as one of their primary concerns, this is not reflected in the product sold in local markets. Both wholesalers and retailers do not have any quality assurance system in place. At the central level, within MARD, there is an overlap between the PPD and the National Agro-forestry-Fisheries Quality Assurance Department (NAFIQAD), with both entities being in charge of testing pesticides, microbiology indicators and assurance of agroforestry/crop quality.

To date, 45 organizations/units in the country have received Viet Nam Good Agricultural Practices (VietGAP) certification. In the first three quarters of 2022, more than 8,300 farming units have applied for VietGAP, VietGAHP and equivalent standards covering a total area of 480,000 hectares. However, in the absence of one focal agency in charge of overseeing/coordinating cross-cutting issues, successful implementation of these schemes will present sizable challenges.

The PPD and Crop Production Department (CPD) deal with traceability. While the former manages internationally harmonized traceability system (HS1) by issuing production unit code and packaging unit code to exporters/importers of selected export crops, the latter is in charge of managing a broader traceability system (to be developed and piloted) according to the new law on cultivation (previously planning law) following the whole supply chain approach from production to consumption. At provincial level, traceability system has been applied for mainly coffee in Dak Lak, 90% of which is exported, given there is a broad network of international and private sector roasters at field level. Eighty percent of farmers engaged in Vietnam Sustainable Agriculture Transformation (VNSAT) Project uses farm diaries. Streamlining and integration of the two traceability systems would make the process more comprehensive, seamless and efficient at different levels. However, this entails capacity strengthening support.

(ii) Management of used pesticide containers:

Agricultural practices undertaken in small and dispersed farms as well as improper use of pesticides by farmers pose challenges for field level authorities to manage pesticide containers after use. Finding available and accurate data on pesticide containers remains a challenge. There is no official data on MONRE website on this. Data obtained from articles, books, internet and studies are not consistent. Only data available is on annual pesticide container collection and disposal. In 2019, pesticide containers collection and disposal figures were 438,032 kg and 346,014 kg respectively, accounting for 79% disposal. This is against 66.1 thousands tonnes of pesticides used. [7][7]

The joint circular 05/2016, does not clearly delineate the responsibility MARD, MONRE and related agencies for pesticide container management at provincial/district/commune level. There is no regular budget allocated for pesticide containers disposal as hazardous wastes, rather it is done on ad-hoc basis depending on the district authority allocating funds from their environmental administration budget. The Circular also elaborated the tank design/construction, and the distribution of trash bins by types of annual/industrial crops that people at the field level are facing certain challenges to implement. There are not sufficient bins fit for purpose in project provinces. There is no clear assignment to the local communities/local authorities in management of these bins/storage. Furthermore, there is a perceived need to revisit the specifications of the collection bins to ensure they are user friendly and environment positive.

(iii) Agricultural plastics waste management

Agricultural plastics waste management also has some constraints due to lack of financial resources and lack of coordination among key agencies. Directive No. 7804/CT-BNN-KHCN dated November 10, 2020, on strengthening the management, reuse, recycling, treatment and reduction of plastic waste in the agricultural industry and recent Decision No. 2711/QD-BNN-KHCN dated July 18, 2022 promulgating a plan to reduce, collect, classify and reuse plastic waste in the agricultural sector specifically highlight the involvement of relevant departments and New Rural Coordination Office under MARD, provincial DARDs and mass organisations. It, however, does not mention the role of MONRE and provincial DONRE as key players. This has implications for field level implementation.

Following the National Action Plan for plastic management in agricultural sector, Gia Lai and Dak Lak provinces have recently developed their own action plan to reduce plastic use in agriculture. However, nothing has happened at the field level to date, owing to lack of budget and clear timelines. The Women?s Union and DONRE at district level have jointly conducted some awareness raising on plastic reduction, reuse, reduce and recycle for domestic waste, not specifically highlighting agricultural plastics which are considered as more hazardous to ground water, surface water, soil and micro-plastic pollution.

Similar to the case of pesticide container management, agricultural plastics waste management is also facing constraints, both in on-farm and off-farm activities. While hazardous waste disposal facilities are managed and approved by MONRE, there has been an increase in the number of recycling facilities in Vietnam over the past years, but has not been updated by MONRE. An estimate from a large-scale recycling facility in Dak Nong indicated that there are currently about 50-70 recycling facilities of all scales across Vietnam, which seems to be quite consistent with about 35 stakeholders listed in a World Bank study on plastics circularity. [8][8]

Lack of sustained local demand for recycled plastics, gaps in domestic recycling capacities, and lack of waste management system that prioritizes collection and disposal over recycling have impeded the development of the recycling sector in Vietnam.

Lack of financial support for alternatives

Plastics used in agriculture is often difficult and expensive to recycle because of many impurities such as soil, pesticides and fertilizers. As farmers use thin mulching films on farms that last for two crops of vegetables only, it is difficult to clean up and collect from the environment, leaving microplastics in the soil for decades, negatively impacting soil quality, soil microorganisms, and agricultural products and ultimately having long-term adverse effects on human health. The current tax mechanism on the single-use and low--quality plastics disincentivises farmers and recycling units to move towards greener/alternative materials.

A recent study of the Institute of Agro-Environment in 6 provinces across Vietnam including one project province suggests to use straw as an easy alternative to nylon to reduce weeds, while increasing the amount of organic matter in the soil and reduce labor costs. In the absence/lack of straw in the project areas as well as its increased prices of by-products, farmers are not yet ready to adopt this practice without financial support from the government and businesses.

Limited capacity and knowledge

Vietnam is a net importer of agrochemicals. Around 1100 companies produce agrochemicals for export to neighbouring countries.[9][9] The limited domestic production capacity makes it more difficult for the country to manage, regulate and monitor the agrochemical sector. At the same time, given the vast majority of about 10 million farmers as being smallholder farmers, makes it even more challenging for PPD with limited human resources to monitor and control agrochemicals use/classification/collection/disposal. Limited financial resources and technical expertise also make it harder for regulating large networks of 200 agrochemical producers and 30,000 retailers/wholesalers with frequent addition of new products.

The middlemen in the agrochemicals supply chain (retailers/wholesalers) have little or no technical expertise or background. While some of them have good technical knowledge given their long term accumulated industry experience, most of them possess limited understanding of agrochemicals types, and their correct applications. Equally, farmers lack financial capacity, land, and skills and expertise required to adopt certain technologies or practices and meet the standards. The authorities find them in a precarious position to enforce environmental laws and regulations to farmers who are often seen as vulnerable, especially smallholders with limited resource endowments.

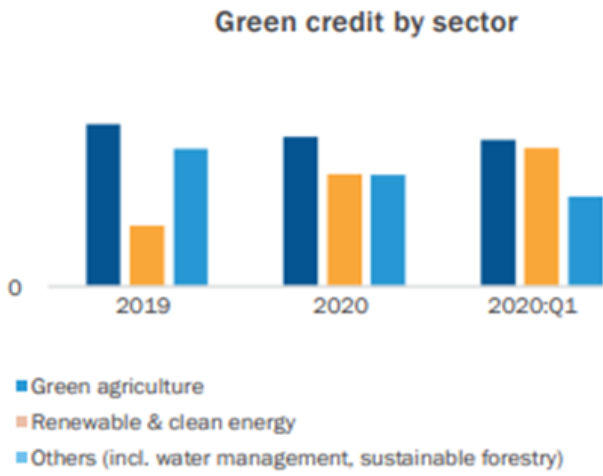
Green finance

Green finance is still in its infancy in Vietnam**.** While the State Bank of Viet Nam (SBV) in 2018 approved a program on green bank development and an action plan to realize Vietnam?s sustainable development goals by 2030, climate financing was only about five percent of total financing provided by Vietnamese banks (or about 0.2 percent of GDP) in 2020. Domestic financial institutions are in the early stages of their understanding of green bonds and other capital market instruments. This implies that there is significant potential to increase green finance and use the financial sector as a lever to help reallocate capital to more sustainable investments. Building on the SBV guidance on sectors that qualify for green loans, green credit has almost quintupled since 2015, increasing 2.5 times faster than the average credit growth during this period (Figure 1). The main beneficiaries have been agriculture, renewable energy, sustainable water management, and sustainable forestry.

The lack of internal procedures for and expertise on green finance assessment is a key challenge for many banks**.** Of 85 credit institutions reporting to the SBV, 72 lack a dedicated business unit for green finance, and 74 lack a specific procedure on green credit appraisal. Other credit institutions have substantial challenges to develop green finance expertise and integrate the green finance procedures into their existing operations.

Another bottleneck has been the mismatch between the short terms of most deposits and the longer terms typically required by green projects. This mismatch increases the funding liquidity risks for commercial banks, undermining their risk appetite and motivation to finance green projects. Financial institutions also need clearer information about the requirements for incorporating environmental and social risk assessment into credit underwriting policies and operations.

Figure 1. Private Climate and Green Outstanding Loans from 2016 to 2021 ($ billion)



Sources: FiinResearch and SBV.

Source: https://openknowledge.worldbank.org/bitstream/handle/10986/37618/Vietnam%20REVISED.pdf?sequence=18

Public policy must play a role in helping the financial sector move past these barriers and develop a strong green financial lending market. The bottlenecks must be tackled through a combination of regulatory reforms and incentives to both credit providers and borrowers. The SBV has issued a framework on greening the banking sector to promote green finance and encourage all credit institutions to incorporate environmental and social risks into their credit decision-making processes. However, further initiatives and improvements are needed to increase green financial flows:

? Vietnam should adopt international best practices to identify green projects, helping banks to track their green credit growth consistently and transparently against their targets, and to apply eligibility criteria to a relatively broad range of sectors or projects.

? The government can incentivize green credit supply by providing long-term seed funding to supplement banks? finances for green projects. Given the importance and urgency of the agrochemical sector, agrochemical management should be categorized as a priority sector. Borrowers for agrochemical management project should be supported through grants, tax rebates, subsidized interest rates, and comprehensive knowledge.

There is also substantial scope for leveraging blended finance**.** Blended finance has emerged as a valuable tool for de-risking climate-related investments, especially in developing countries. It is important for Vietnam to make the most of this tool to maximize financing from other sources. The optimal approach may be to blend concessional financing with commercial financing to ensure that investments are deemed feasible from a private sector perspective.[10][10]

2) Baseline scenario and any associated baseline programs/projects

ADB Baseline Loan ?Water Efficiency Improvement in Drought-Affected Provinces Project?

The ADB baseline loan project will have the following outcome: climate-resilient and modernized irrigation systems in five provinces established.

Output 1: Irrigation management services strengthened. This output will support policy and institutional development measures to improve climate resilience of agriculture by strengthening irrigation management while taking social and gender dimensions in all relevant activities into consideration. Specifically, the project will (i) install irrigation water allocation and delivery services, including (a) surface and groundwater assessments, (b) an irrigation water-sharing and allocation framework, and (c) a real-time decision support system for farmers to optimize crop water application; and (ii) improve maintenance of irrigation systems, including (a) developing an asset inventory and management database for each irrigation system supported by the project, (b) developing a systematic asset maintenance schedule with a rigorous approach to funding based on asset condition assessments, (c) developing a water charge pricing framework, and (d) assessing options for engaging third parties in irrigation systems O&M.

Output 2: Modern irrigation infrastructure developed. This output will modernize eight irrigation subprojects in the five provinces to provide water on-demand to farmers cultivating HVCs, reducing their vulnerability to climate change. The underlying principle of all systems is to provide a higher level of service?more flexible, reliable, and accessible supply of water?to farmers than they currently receive. The infrastructure works include three broad categories: (i) pressurized pipe systems that connect canals or reservoirs with supply hydrants located in reasonable proximity to farmers? fields (enabling direct connection with a hose), with basic supervisory control and data acquisition systems to facilitate operations and monitoring of system flows (consultations with male and female farmers will inform the design and implementation of activities); (ii) main system modernization, including canal lining, control structures, storage, and installation of flow control and measurement devices with remote monitoring; and (iii) new and improved weirs to replace temporary weirs constructed by farmers to provide storage from which farmers can pump to irrigate HVCs. Other works include upgrading culverts and farm roads to improve management of irrigation systems.

Output 3: Efficient on-farm water management practices adopted. This output will focus on improving on-farm water productivity in the subproject command areas to improve climate change resilience. Water productivity assessments conducted under output 1 will help determine suitable norms for different crops under different agroecological conditions. Based on this information, farmers will receive training and advisory services to improve on-farm water management to cope with climate variability. The service providers will consult with and provide technical advice to male and female farmers to identify and develop appropriate micro-irrigation systems that meet their individual requirements. Farmers will also be linked with private sector suppliers and provided O&M training on micro-irrigation systems.

How will the GEF-financed initiative align with the ADB baseline loan? The loan will work in 5 provinces, 2 of which are also covered under the GEF funding, namely Dak Lak and Dak Nong. The loan will focus on water use efficiency for the same non-rice High Value Crops as the GEF funded works. The GEF work will inform the ADB loan with respect to water quality issues particularly

through reduction of agro-chemical pollution in waterways. There will be opportunities for capacity development and knowledge sharing explored.

It should be noted that another loan **? ?Climate-Smart Agricultural Value Chains Infrastructure Development Project?** is currently under development between ADB and Government of Viet Nam, with MARD as Executing Agency. This loan would provide additional and direct co-financing for the GEF project once it comes on line, as it will work in the same provinces and cover the same HVCs.

Key Conventions, Legislation and Policies

Vietnam signed the Stockholm Convention on 23 May 2001 and ratified it on 22 July 2002, officially becoming the 14th member to the Stockholm Convention. The Government of Vietnam has developed policies and implemented some specific actions, aimed at sound management of POPs.

The Government developed and issued the Vietnam National Implementation Plan (NIP) for the Stockholm Convention on POPs by Decision No. 184/2006/QD-TTg dated 10 August 2006. The Vietnam National Implementation Plan for the Stockholm Convention demonstrated a strong commitment of the Government on the sound management of POPs as posing long-term potential hazards to human health and the environment, with a core approach of ?pollution prevention?. NIP objectives include:

? Develop and finalize policy, legislative and institutional frameworks for effective management of POPs in order to reduce and finally eliminate POPs;

? Strengthen technological and financial capacity and information management for the prevention, control and safe disposal of POPs;

? Control, treat and finally eliminate stockpiles of POP pesticides;

The National Implementation Plan for the Stockholm Convention has proposed 15 prioritized programs for implementation of the Convention. In order to focus resources in line with prioritized objectives, the implementation of activities in Decision No. 184 on management, reduction and final elimination of POPs is classified in phases, including 2006-2010, 2010-2015 and 2015-2020. The implementation process for each stage is regularly monitored and sensibly adjusted by the national focal agency, based on the conditions and resources at that time.

The activities of the NIP shall be feasible and in line with the objectives of the Vietnam National Strategy for Environmental Protection as well as the requirements of the Stockholm Convention, which include:

? Finalize the organizational mechanism, policy and legislation to effectively manage, reduce and treat POPs;

? Strengthen the POP management capacity;

? Promote the survey, research and application of advanced and modern technological solutions for the sound management, reduction, disposal and elimination of POPs;
? Raise the awareness, roles and responsibilities of the Government at all levels and among the public on the sound management, reduction and elimination of POPs;
? Diversify investment sources;
? Enhance international cooperation for the implementation of the Stockholm Convention.

National Strategy for Environmental Protection

The National Strategy on Environment Protection (NSEP) to 2020, with vision to 2030 was developed by The Ministry of Natural Resources and Environment (MONRE) in 2012 as indicated in Decision 1216-Q?-TTg. The latest development is the new Decision No. 450/QD-TTg of the Prime Minister on approving the National Environmental Protection Strategy to 2030, with a vision to 2050 issued on April 13, 2022. The overall objective of the Strategy is to prevent the trend of increasing pollution and environmental degradation; solve urgent environmental problems; step by step improve and restore environmental quality; prevent the loss of biodiversity; contribute to improving capacity to actively respond to climate change; ensuring environmental security, building and developing models of circular economy, green economy, low carbon, striving to achieve the country's 2030 sustainable development goals.

The strategy highlights that economic development must be in harmony with nature, respect natural laws, and do not trade off the environment for economic growth. Protecting the environment must take the protection of people?s health as a top goal.

The NSEP recognizes the importance of environmental protection as an integral part of the country?s socio-economic development towards a green economy, joint and inter-generational responsibilities and opportunities, and the polluter-pays principle.

In terms of agriculture, it encourages sustainable land use and cultivation, minimizing the use of chemicals and fertilizers, and preventing deforestation, forest degradation, land erosion and deterioration. On water management, it proposes solutions to address the inefficient use of water and to overcome seasonal water scarcity: integrated river basin planning, better management of surface and groundwater resources, particularly in dry season, control of water pollution, adjustments of crop systems to less water-intensive ones, modernization of irrigation systems, and payment for forest ecosystem services schemes. Other sectors included in the NSEP are forestry, protected areas, coastal ecosystems, fisheries and biodiversity.

Agrochemicals and agricultural plastics use and impacts

Since 2015, the Government has introduced a number of Resolutions and Decisions to strengthen the policy and institutional framework to enable a transition from agrochemical-based agriculture to safer forms of agriculture, such as IPM, with more targeted use of pesticide and increased control of other hazardous chemicals. New farming models of Global GAP, VietGAP, 1M5R (1 must do, 5 reductions), organic farming and other greenhouse farming practices have been introduced. HHP inventories have been developed and supported by registration processes, and the main manufacturers, importers, packagers and distributors of pesticides have been identified.

MARD has taken steps to manage HHPs. This requires adherence to the FAO International Code of Conduct on Pesticides Management for HHPs, and requires a combination of risk assessment, risk mitigation and/or good marketing practices to ensure safety to humans and the environment. VietGAP standards have been put in place to mirror international standards for good agricultural practices. Efforts to educate consumers have been facilitated by increased access to information through smartphones and other means. Seven industrial zones have been created, each focusing on different types of crops and production technologies. Safe and organic agriculture has been taken up by a number of key corporations, including the VinGroup, which manages huge farming areas across the country. The Green Swiftlet Campaign jointly organized by the Center for Social Initiatives Promotion (CSIP), United Nations Development Programs (UNDP), Vietnam Chamber of Commerce and

Industry (VCCI), and Vietnam Union of Science and Technology Associations (VUSTA), has helped advance knowledge of environmental management among others.

In November 2020, the Vietnamese Government adopted the amended Law on Environmental Protection (72/2020/QH14). In its articles 54 and 55, the law gives a legal framework on the Extended Producer Responsibility (EPR). EPR is a chapter in the Law on Environmental Protection 2020 - provision for company?s responsibility of financial contribution to the Vietnam EPR?s committee to support product and packaging recycling (CP Product Container is included in the list of packing). The law became effective since Jan 2022, with sector-specific guidance and pilots up to 2025. Together with Decree 08/2022/ND-CP, it details basic adjustments to the EPR policy. The voluntary EPR model has changed to the mandatory EPR model with specific regulations on recycling rates and mandatory recycling standards for each product.

Vietnam transitioned from excessive usage period to usage crisis period, with the country using around 100,000 tons of pesticide a year, an increase of tenfold from 2000 to 2015. Before 2000, the number of registered active ingredients was 77, corresponding to 96 commercial products. In 2000, it increased to 197 active ingredients, equivalent to 722 products. In 2011, this number increased to 1,202 active ingredients, corresponding to 3,108 commercial products. Since 2015 until 2021, the number of registered pesticides has ranged from 1,500 to almost 1,700 active ingredients with over 4,000 trade names, of which 104 active ingredients are HHPs.

There are not many companies producing active ingredients for pesticides in Viet Nam. Agrochemical import is very high (99% chemicals and 100% pesticides) mostly from China (70%), including 100% of active ingredients, 90% additives and 50% pesticides in finished products, while national production capacity is limited. According to General Customs of Vietnam, the import value of pesticides was as high as more than $1 billion in 2017 and $939 million in 2018.[11][11] In the first 9 months of 2021, Vietnam spent approximately $650 million to import pesticides and raw materials, up 22% over the same period in 2020. Among the approved pesticide products, only 15-20 percent are biological/organic while the rest are chemical.

There are 200 manufacturers of pesticides, 100 enterprises that focus solely on importing raw materials (chemicals), mixing them, and packaging finished products, and 30,000 wholesalers and retailers of pesticides throughout the country.[12][12] About 50% of pesticides produced are used domestically and equivalent to 30,000-40,000 tonnes per year. Leading companies in the pesticide market of Vietnam, with large market share values include Loc Troi Group Joint ? Stock Company, Vietnam Fumigation Joint Stock Company, Can Tho Techno-Agricultural Supply Joint Stock Company, etc.

Research shows that a dozen of big companies account for 45% of the import volume. Import of pesticide at 0% tax and gross profit margin of this industry are attractive for businesses to enter the sector, increase sales and expand market share. Many companies in Viet Nam are keen to import active ingredients and additives at low costs and of sub-standard quality to produce pesticides for higher profits. This, along with low levels of risk awareness and entrenched attitudes leads farmers to select the cheapest options regardless of origin and content or non-authentic products.

Hazardous waste bins/tanks: initiated by PPD, MARD since 2013, the program has been implemented in 22 provinces and cities in the Southern part of the country as of November 2019, focusing on farms of key export products such as rice, dragon fruit, grapefruit, mango, star apple and longan. However, the programme itself encountered multiple difficulties in treating the waste. In Mekong River Delta, the bins are deep into the fields, which makes it hard for specialized truck to collect. Therefore, farmers have to take them out by motorbikes regardless how that might spread the toxic substance. There is no other choice, and that transportation also violates safety regulation. It is suggested that only in those large production areas the situation is properly managed. In Central Highlands, hazardous waste bins

are always full, with lots of hazardous waste coming out of bins and covers being missed. The number of these community trash bins is also limited especially in the case of Dak Lak and Dak Nong provinces, with few cases of voluntary contribution for building bins for storing hazardous waste without knowing how to treat properly after collection.[13][13]

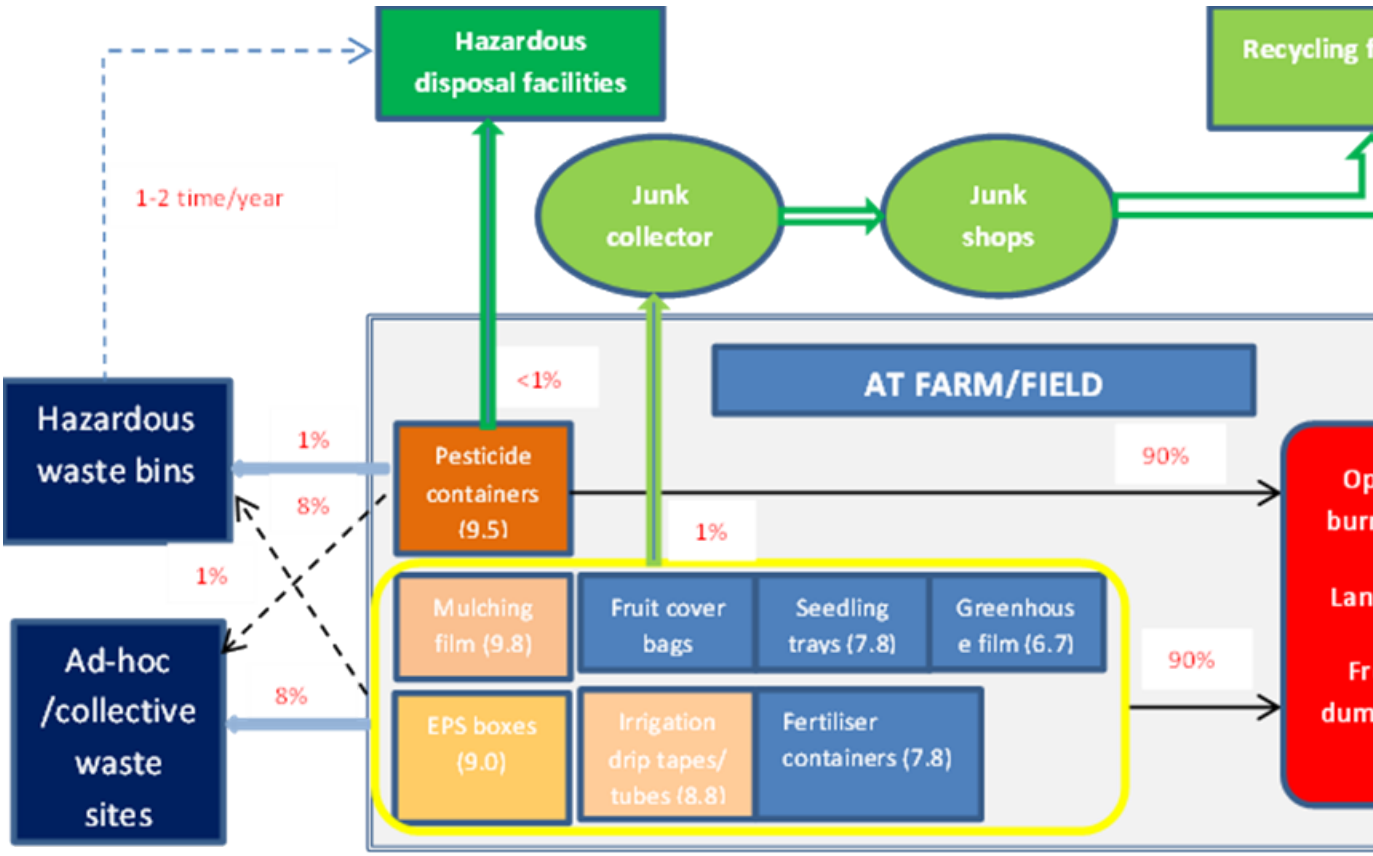
Agrochemical containers and different types of agricultural plastics that travel along the agricultural plastics valus chain pathway carry different ralative risk scores as shown in Figure 2. Most of the plastic disposals take place on farm (open burning, often landfill with 90% of pesticide containers of hazardous substances and other plastc materials) or are left freely on and around the field. It is estimated that only 1% of pesticide containers is collected and put into hazardous bins, which often are full with different other materials. Most of the time the bins overflow without covers. In case of a few organic farming (less than 1%), agrochemical wastes are stored in covered tanks after use and transported directly to hazardous disposal facilities located in a far distance in other provinces (Quang Nam, Quy Nhon/Binh Dinh). While three hazard waste disposal facilities are currently operating in Tay Ninh province (number 17, 75 and 95 under MONRE?s approved list), there are no facilities in the four Central Highland project provinces.[14][14] . About 8% of pesticide containers are dumped at ad-hoc/collective waste sites, which are often mixed with other types of waste including household wastes, and eventually either left there or collected by services providers.

The carting of other agricultural plastic materials (mulching films, fruit cover bags, seedling trays, etc.) to their final treatment/recycling facilities, involves different informal actors such as junk buyers and junk shops, which only accounts for about 1% agriculture plastics. Similar to pesticide containers, about 8% of agriculture plastic materials go to ad-hoc/collective waste sites and 1% to hazardous bins, suggesting an urgent need for waste classification at the disposal facilities.

Low- / no-chemical alternatives

Integrated Pest Management (IPM): In 1992, FAO introduced IPM in Vietnam, supporting the training of IPM trainers (TOT) and farmers through farmer field schools (FFS). MARD issued the Decision No. 2027/QD-BNN-BVTV dated June 2, 2015 approving the Program on accelerating the application of IPM on crops for 2015-2020. The measures applied under IPM are also the basis for the development of technical advances such as ?3 reductions, 3 increases?, ?1 must 5 reductions?, System of Rice Intensification (SRI), sowing, and ecological technologies. All these are the basis for orienting the use of probiotics in the management of harmful organisms and organic farming.

Figure 2. Agricultural plastics value chain in Central Highland region



Source: PPG?s rough estimations based on in-depth interviews with relavant stakeholders in Gia Lai, Dak Lak and Dak Nong Provinces.

On the basis of Decision 2027, many localities have developed and implemented IPM programs for a number of major crops. So far, MARD has organized training of basic TOT - IPM trainers (resource trainers) for staff of the provincial sub-departments of crop production and plant protection, and Regional Plant Protection Center. Provinces also organized TOT - IPM practical trainings, and short-term training courses for their staff and farmers on IPM for rice, cotton, vegetables, fruit trees, with 1,200 IPM models developed with an average area of over 2 million ha / year as of November 2020.[15][15]

The IPM program has contributed to 10-30% increase in the use of organic fertilizers, 10-20% reduction in inorganic fertilizers use; 10-30% increase in the use of biological pesticides, 15-30% reduction in the use of chemical pesticides; 15-30% reduction in seed quantity; 15-20% saving of irrigation water; and 5-15% increase in productivity. The IPM coverage area also increased by 10-15% and contributed to improving the knowledge and application of IPM by 40-70%.[16][16]

Production approach of "plant health": MARD-FAO Technical Assistance Project - "Strengthening the capacity of the plant protection system to reduce the risk of plant pests" from 2021-2022 focuses on building strategies and action plans in the direction of a new approach towards integrated crop health management; development of training programs and manuals for trainers and farmers. The PPD presides over and coordinates with the National Agricultural Extension Center to continue organizing training courses for IPM trainers for localities; coordinates and supports localities to organize training classes for IPM trainers from local budgets. At the same time, PPD also coordinates with FAO,

research institutes, universities, colleges, and training institutions and agricultural professionals to continue reviewing, evaluating and updating the IPM program consistent with the new economic development and climate change adaptation policies and strategies.

Integrated Plant Health Management (IPHM)

IPHM draws upon the IPM program. MARD recently issued IPHM Action Plan to promote the application of IPHM on key crops in Vietnam during the period of 2022?2030, setting the main goal of promoting the application of IPHM to proactively prevent plant pests, reduce input costs, reduce harmful chemicals use, reduce greenhouse gas emissions, increase productivity, quality and production efficiency, ensure food safety, protect the environment and adapt to climate change. The IPHM Action Plan to promote application of IPHM for key crops in Vietnam plays a very important role, serving as a risk factor foundation for the organization of production, towards a ecological agriculture. This is also one of the key aspects highlighted in the Strategy for Sustainable Agriculture and Rural Development for the period 2021 - 2030, with a vision to 2050.

Specifically, the newly issued Action Plan aims to target more than 80% of communes to have a core group of farmers with knowledge, skills and effective application of IPHM, and these farmers being capable of guiding other farmers to apply IPHM, evaluating effectiveness and disseminating results of IPHM interventions to the community. The Action Plan is expected to have at least 5 national IPHM trainers and 20 provincial IPHM trainers in each province, and each commune is set to have at least 2 community IPHM guide persons.

Under the Action Plan IPHM will cover 90% of the area under rice, vegetables, fruit trees, flowers, and ornamental plants; 70% of maize area; and 70% of industrial crop area in each province, thus reducing pesticides and chemical fertilizers use by 30% .. Over 90% of communes is expected to collect pesticide packaging after use.

In order to promote the application of IPHM effectively, the Action Plan has proposed 8 groups of tasks and solutions. These include communication to raise awareness about IPHM; development of IPHM guidelines; develop and complete technical standards, economic and technical norms in the field of IPHM; training, coaching and developing human resources in the field of IPHM; building and replicating IPHM application models in production; research and transfer science and technology; review and finalize mechanisms and policies to promote IPHM application; and promote international cooperation in the field of IPHM.

Good agricultural practices (Viet GAP, Global GAP)

VietGAP, which stands for Vietnamese Good Agricultural Practices is promulgated by the Ministry of Agriculture and Rural Development for each product group of aquatic cultivation and animal husbandry products. VietGAP offers the principles, order and procedures to guide organizations and individuals in production, harvesting and post-harvest handling in order to ensure safety, product quality, and ocial welfare and healthof producers and consumers, while protecting the environment and maintaining traceability of production.

VietGAP standards are based on 4 criteria:
? Standards on production techniques: specific regulations on production techniques from the selection of soil, varieties, fertilizers to harvesting in accordance with specific regulations for each field of cultivation, animal husbandry and aquaculture.

? Food safety: Includes measures used to ensure that food is free from chemical contamination or physical contamination when harvested, and is absolutely safe when it reaches consumers.

? Working environment: good arable land, adequate water source, and to ensure standards to prevent the abuse of labor force by farmers.

? Product Traceability: This standard enables consumers to easily identify products through the process from seed to finished product and to marketThrough traceability, users can also learn about accurate information about the manufacturing enterprise.

Products that meet VietGAP standards are good quality products, ensure food safety and hygiene, do not use chemicals and substances which are harmful to human health as well as the environment. Products are produced and harvested following the correct process and guidelines, with clear source traceability.

However, due the limited capacity of state management in VietGAP standards certification, quality of VietGAP products including those sold in supermarkets and convenient stores in several cases are not Viet GAP compliant.

Global GAP: While VietGAP standard is quite popular among low-cost producers since its level of safety and product quality inspection is not too strict, the Global GAP is an international standard, thus there are more stringent requirements and testing for food safety along with the roles and responsibilities of the producers for their products. In Vietnam, products with Global GAP certifications are often export-oriented.

Organic farming

Following Decree No. 109/2018/ND-CP dated August 29, 2018 on organic agriculture and Organic Agricultural Development Scheme in the period of 2020-2030, 57 out of 63 provinces in Vietnam have adopted this model to date. In 2021, over 174,000 hectares of land was under organic agriculture, recording a 47% area increase in the last 5 years. and ranking 9th largest organic agricultural land area in Asia. This includes more than 63,000 hectares for organic crop production, more than 100,000 hectares for organic aquaculture, and more than 12,000 hectares for natural harvesting of organic agriculture products. There are more than 17,000 manufacturers, 555 processors, and 60 exporters engaged in the organic agri-food value chains.

One Commune One Product (OCOP)

The OCOP program is an economic development program in rural areas aiming at developing internal resources and adding value, towards implementing the national program on building new rural areas. The focus of the OCOP program is to develop both agricultural and non-agricultural products and services that each locality has advantages along the value chains, driven and implemented by private sector (enterprises, production households) and collective actors.

The State plays an enabling role, promulgating legal framework and policies for implementation; planning orientations for production areas of goods and services; manage and monitor product quality standards; and support training, coaching, technical guidance, application of science and technology, branding, trade promotion, product promotion and credit. Cooperatives have been actively participating in the OCOP program in many provinces across the country.

Private sector engagement for sound management of chemicals and alternatives

A number of private sector actors have joined force to reduce and manage the use of agrochemicals in Vietnam. In December 2021, Loc Troi Group Joint Stock Company and PPD/MARD signed the "Pledge to guide the safe and effective use of pesticides; and development, production and use of biological pesticides? to support farmers and improve the quality of agricultural products in Vietnam. This commitment will be implemented from 2022 - 2025 with a total estimated budget of more than 180 billion VND.Loc Troi Group plans to provide training and update knowledge and guide the responsible, safe and effective use of pesticides for farmers and its agro-chemical agents and associated cooperatives in 2022. In addition to training activities, Loc Troi Group will support localities to build storage tanks, collect and dispose pesticide containers after use in 13 provinces of Mekong River Delta, Southeast provinces and Central Highlands provinces based on pilot clusters of 100 hectares of crop production. Loc Troi also supports the development of production models according to the value chain, promoting linkage with cooperatives.

Some foreign businesses piloted ?pesticide container pay-back program?. Through their agents, farmers were supported 10,000 VND for three containers to be collected after use (half paid by the businesses and half by the agents). However the program failed to attract interest of farmers, given their limited awareness and obstacles in container collection and delivery from source to agents.

CropLifeInternational is an association of agrochemical businesses at global and national level. Since 2005, CropLife International (CLI) has monitored the development and performance of container management systems (CMS) by collecting and assessing on an annual basis a series of performance data from CMS around the world. The industry continuously looks at improving the performance of these CMS program and has set a goal to collect 50 percent of all primary packaging containers shipped globally by 2020. In Vietnam, Croplife in collaboration with PPD has actively operated its activities in the Mekong River Delta region and Son La with a range of programs to help farmers properly use and collect pesticide containers, with positive results. CropLife Vietnam has a strong web-based communication strategy in addition to other activities geared towards agrochemical management currently being piloted in Dong Thap provice.

Plastics People Vietnam is a social enterprise and start-up that provides educational workshops and actionable solutions to corporations, local businesses, manufacturers, schools aind wider communities. This enterprise upcycles different types of plastic waste into useful, safe and beautiful products following circular economy approach. They have developed a circular solution to clean up the environment, while creating meaningful jobs for community members. However, they havent put any particular focus on agricultural pastics management as yet.

Food safety systems in Vietnam

Although Vietnamese consumers rate food safety as one of their primary concerns, this is not reflected in the product offering in local market, or even supermarkets and restaurants. Even wholesalers and retailers who require certain production standards often do not have an adequate quality assurance system in place to make sure these standards are met.

Part of the lack of downstream requirements can be explained by the way food safety is regulated. While in many countries food safety enforcement is the responsibility of a single government agency related to the Department of Public Health, in Vietnam this responsibility is split up between the Ministry of Agriculture and Rural Development (on farm), Ministry of Industry and Trade (in the market/transportation) and Ministry of Health (on table). Although a special task force has been created, its responsibility and executive authority are unclear.

Within MARD, there are 8 units at central level assigned to manage the quality and food safety of agro-forestry-fishery products. These include the Agro-Forestry-Fisheries Quality Management Department

(NAFIQAD) as the focal point, 2 general departments (Fisheries and Forestry) and 5 specialized departments (Veterinary Medicine, Plant Protection, Cultivation, Livestock, Cooperative Economy and Rural Development working on quality management, and food safety along the agri-food chains.

At the sub-national level, sub-department for quality management of agricultural, forestry and fishery products is responsible for food safety. However, because of the Resolution 18-NQ/TW, it varies from province to province. In certain provinces, the sub-department became a division within DARD, and in others the food quality management function is assigned to other department. This has reduced the efficiency and effectiveness of quality management and food safety for agri-food products in some localities.

The application of the Hazard Analysis and Critical Control Point (HACCP) program to ensure food safety according to international standards at the food processing and trading stages has been strongly deployed. Currently, Vietnam has 1436 enterprises allowed to export food under the management of USFDA to this market.[17][17] In the seafood sector, as of end of 2020, 8256 seafood processing factories have put in a HACCP system in place and met the conditions for export to markets with strict food safety requirements such as the United States and the EU. Japan, Australia, Korea, and China. Over 30% of the total number of agro-forestry-fishery food processing enterprises have applied the HACCP program in food production and processing.

The food safety monitoring programs in agro-forestry-fishery production and business are designed and operated in accordance with international standards and practices to analyze risks, promptly warn and implement measures to handle violations and prevent recidivism according to regulations. The results of 806,987 samples taken from agricultural, forestry and fishery products for large-scale monitoring from 2017 to 2020 show that there has been a significant change in food safety of key product groups compared to the period from 2013 to 2016.[18][18] From 2017 to 2020, the banned substance Salbutamol had not been detected in nearly 9,398 urine samples, 2,947 meat samples at slaughter and trading establishments (compared to 0.4% of meat samples violating the banned substance Salbutamol and1.7% of meat samples detected ith chemicals and antibiotic in 2016) The percentage of samples of vegetables, tubers and fruits violating the norms on pesticide residues decreased by 2.05% in 2016 to 1.1% in 2020.

The maintenance of food safety monitoring programs has also been recognized Viet Namas a precondition from importing countries such as the EU, the United States, Japan, and China to export agricultural, forestry and fishery products to these markets. The verification and certification of food safety conditions help production and business establishments to promptly identify, correct errors, and upgrade production and business conditions to ensure food safety. Ninety-eight percent of agro-forestry-fishery production and business establishments have been inspected and certified to meet food safety conditions in 2020 comparing to 60% and 82% inspection and certifiation in 2011 and 2016 respectively

The planned inspection and inspection activities have recently been strongly shifted to spot inspection and inspection of establishments showing signs of violations. Over the 2017-2020 period, only 9.4% businesses producing and trading agricultural materials and agro-forestry-fishery products were sanctioned against 15.7% during 2012-2016 period. MARD has also coordinated closely with Ministry of Public Security, Ministry of Industry and Trade, Ministry of Health, Ministry of National Defense, and Department of Customs to investigate, inspect and completely dismantle the smuggling lines and establishments that store, distribute, and trade banned substances, plant protection chemicals and veterinary drugs outside the list of those permitted for use in cultivation, animal husbandry and aquaculture.

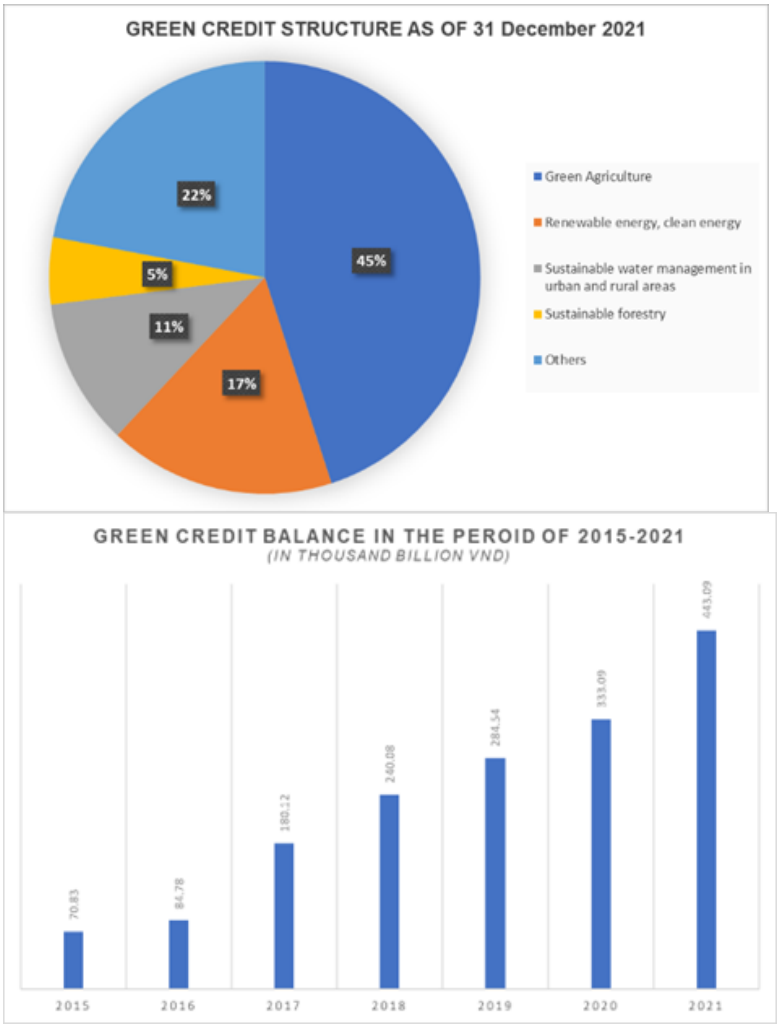
However, the proportion of key agricultural, forestry and fishery products and local specialities that are checked for quality and food safety at each stage and throughout the value chain according to international standards is still low. According to statistics, only about 10-15% of key products and specialties maintain quality control and food safety at each stage and throughout the chain. While the number of violations, incidents of quality and food safety matter has decreased Still there have been incidents of many export orders return due to residue levels of banned chemicals and antibiotics exceeding the threshold and presence of substances outside the list that are not allowed to be used in the production, processing, and distribution processes.

The facilities in some Sub-departments are inadequate and outdated, which significantly affects their ability to provide services at a required level. This is further componded by the lack of financial resources and human resource capacity. As a result, food producers send their food samples far away for residue analysis that takes about 2-3 weeks to get results. Therefore, there is urgent need to improve testing facilities in strategic locations for food producers to get real-time services on pesticde residue analysis.

Green Finance/Credit Balance and the Trend in Vietnam

According to the SBV?s regulations, green finances/credits are capital-financed projects that meet specific criteria for the following fields: green agriculture, sustainable forestry, green industry, renewable energy, clean energy, recycling, use of resources, waste treatment and pollution prevention, natural environment protection, green building/infrastructure, and sustainable transportation. SBV?s data after more than 6 years of Directive No. 03 (2015) implementation shows a positive green credit growth rate in Vietnam year by year (Figure 3). Outstanding balance of green finance in Vietnam has increased from nearly VND 71 trillion by the end of 2015, to more than VND 443 trillion by the end of 2021, an increase of 33.02% compared to 2020, and 6.26 times higher than 2015. In the past 6 years, the growth rate of green finance has reached 525.58%, an average increase of 87.6%/year, 3-4 times higher than the average credit growth in this period.[19][19]

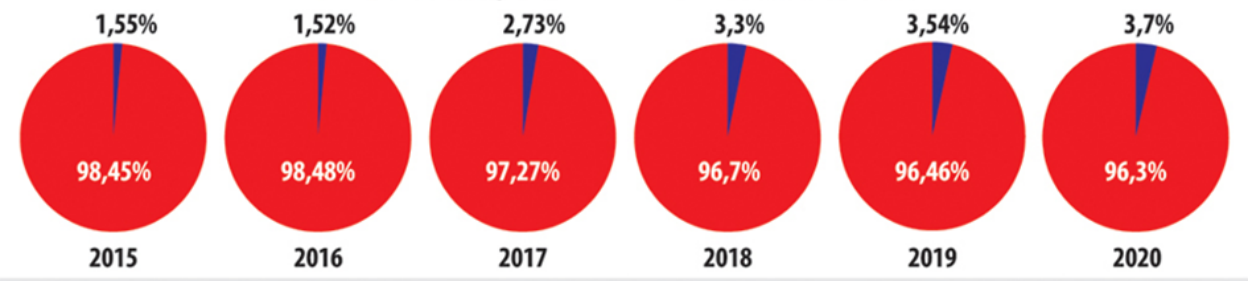
Figure 3. Green Credit Balance and Structure in Vietnam



Source: SBV, 2022

Although outstanding loans of green finance in Vietnam tend to increase rapidly year by year, the size of outstanding loans is still relatively small compared to total credit. The proportion of outstanding loans of green finance increased respectively from 1.55% in 2015 to 3.69% in 2020. In which, outstanding loans of green finance mainly focus on green agriculture, accounting for 45%, renewable energy and clean energy account for more than 17%, sustainable water management in urban and rural areas accounts for 11 % and sustainable forestry 5%. The structure of outstanding loans by medium- and long-term terms accounts for 76% of green finance outstanding balance. Interest rates for short-term green loans range from 5-8%/year, medium and long-term from 9-12%/year.

Figure 4. Green Credit Balance against Total Credit Balance of the Banking System in the period of 2015-2020



Source: SBV

According to a report of the Department of Credit for Economic Sectors (SBV) on the implementation of green banking development by 2020[20][20], green credit at commercial banks is implemented in many forms. Most banks (approximately 80% of FIs) report that they integrated regulations and guiding documents in banking activities. About 50% of banks reported that they had studied and developed regulations to guide environmental and social risk assessment. Currently, a number of joint stock banks have basically completed the environmental and social risk management system with the support from IFC such as Orient Commercial Joint Stock Bank (OCB), Nam A Joint Stock Commercial Bank (Nam A Bank).

Vietnam has an economy where banks play a central role with about 70% of capital needs in the economy financed by the banking system. Therefore, the local banking system plays an important role in the growth of the Vietnam green finance market. Currently, green finance is mainly provided by large FIs. Not many small FIs are interested in this portfolio. The reason is that the long-term and large capital sources of small FIs are uneven and stable to serve such renewable energy, and clean energy projects. Besides, these are all large and complex projects, requiring a complicated guarantee process that small banks have not been able to participate in. Small FIs also do not have support from international funds to provide preferential interest rates to their green customers like large FIs. In Vietnam green credit market, the leading banks are Vietcombank, BIDV and Agribank, and the newcomer is VPBank.

Large FIs have their advantages in green financing. BIDV received a long-term loan of $100 million from the French Development Agency (AFD) from May 2021 to re-lend energy projects. Before BIDV, VPBank also received a loan of $212.5 million from the International Finance Corporation (IFC), a member of the World Bank Group, to lend to SME customers from August 2020. Also in 2020, Proparco, a finance company under AFD, also sponsored VPBank an amount of $15 million to lend SMEs. In mid-2019, Vietcombank was funded by the Japan Bank for International Cooperation (JBIC) with an amount of $200 million for renewable energy projects. Vietcombank and BIDV are also partners of the Project on Energy Efficiency for Industrial Enterprises in Vietnam - VEEIE, providing an amount of $158 million for businesses in the field of energy efficient technology. The Vietnam Bank for Agriculture and Rural Development (Agribank) has also participated in many projects related to environmental protection sponsored by the World Bank (WB) and FIs such as: Quality and Safety Enhancement of Agriculture Products and Biogas Development Project (QSEAP, ADB, 2009-2015); Coastal Resources for Sustainable Development Project (CRSD, WB, 2012-2017); Disaster Risk Management Project (WB); Low Carbon Agriculture Support Project (LCASP, ADB, 2013-2020); Rural Clean Water Supply and Sanitation Project in the Red River Delta (WB).

In addition to banks with a long tradition in green finance growth such as Agribank, Vietcombank, etc., there are also more participants in this field such as HDBank, Nam A Bank, OCB, SHB, Bac A Bank.

? **HDBank**: HDBank?s number of energy saving and renewable energy projects increased from 22 in 2018 to 82 in in 2019. The corresponding period saw an increase in the outstanding loan from more

than 1,800 billion VND to VND 7,900 billion. HDBank also signed cooperation agreements with foreign partners including DEG (Germany), Proparco (France), Affinity International Investment Fund and brought more than $700 million to invest in renewable energy sector. HDBank also identifies one of its key development goals as green finance. Currently, HDBank has dedicated an amount of VND 10,000 billion for high-tech and clean agriculture to promote agriculture in the direction of the 4.0 revolution, contributing to creating a healthier and more integrated country. HDBank was the first member of the Asian Development Bank (ADB) to receive the Green Deal Award, a recognition for its notable achievements in green finance while participating in the ADB Trade Finance Program.

? **Nam A Bank**: It is the first joint-stock commercial bank to sign a cooperation agreement with GCPF - Global Climate Cooperation Fund to deploy the "Green Credit" program, providing loans for projects related to environmental protection and energy saving with interest rates from 7%/year.

? **OCB:** The International Finance Corporation (IFC) has also provided a long-term loan of $100 million to OCB to promote the private sector to contribute more to green growth and sustainability in Vietnam.

? **SHB**: In December 2021, within the framework of Promoting Energy Saving in Industries of Vietnam Project (VSUEE) funded by the Green Climate Fund (GCF) through WB, WB and SHB signed GCF guarantee contract with a total value of $75 million.

? **TPBank** has signed a long-term contract for a green credit of $20 million from the Global Climate Partnership Fund (GCPF). The signing of the cooperation agreement will open more opportunities to access capital at attractive interest rates for projects and production and business plans with elements of saving energy, reducing CO_2 emissions and being friendly to the environment and society.

? **Vietnam Development Bank (VDB)** is a government financial institution, established for nearly 15 years, with an extensive experience in lending and project management. For the green sectors in particular, VDB is currently managing 367 projects which are equivalent to 24% of VDB outstanding loan in two areas of state investment credit and on-lending foreign capital. In addition, there are currently 103 projects in the ?green? field with the need to access to VDB loans with a loan demand of VND 59.548 billion. VDB has also been recently accredited to GCF, becoming the first Direct Access Entity (DAE) in Viet Nam.

Not only domestic banks, foreign banks are also interested in green finance. HSBC Vietnam has announced its commitment to arrange up to $12 billion in direct and indirect funding for sustainable projects and businesses in Vietnam until 2030. Standard Chartered Bank (UK) has also made a commitment to invest $8.5 billion to support sustainable development projects for three Vietnamese businesses: T&T Group; Geleximco Group and Van Lang Education Investment and Management Company with a project to build a green standard university.

A report by the Climate Bonds Initiative and HSBC in June 2022 shows that in Vietnam, the total market value of green credits and green bonds in 2021 reached $1.5 billion, nearly 5 times higher than the amount of $0.3 billion in 2020 and maintain stable growth for three consecutive years. The majority of green credits and green bonds in Vietnam in 2021 came from transportation and energy sectors. Vietnam is the second largest source of green bond issuance in ASEAN, reaching $1 billion, after Singapore.

However, there are many joint stock commercial banks that do not have a strategic orientation on green finance development or becoming a "green" bank. Most of these banks are just at the stage of researching to develop future strategies. Outstanding green loans at these banks accounted for a relatively modest proportion of total outstanding loans. Specifically, 41.67% of commercial banks have a green credit ratio of less than 1%; 20.83% of commercial banks have this ratio from 1-3%. The

reason for the "not interested" is primarily because the nature of the regulations on green credit that encourage FIs to participate in the green credit without making it compulsory.; many banks have not yet developed internal regulations on environmental and social risk management; mechanism of mobilization to create fund for green credit is still limited; and access to preferential capital for green credit from international financial institutions still faces many difficulties. In addition, many industries related to "green" growth are still quite new in Vietnam, the experience of both investors and commercial banks in this field is limited, leading to apprehension from both borrowers and borrowers. In particular, there are almost no incentive mechanisms and policies for FIs to promote green credits.

Table 1. Examples of Green Credit Programs in Vietnam[21][21]

Proponents	Amount	Intended customers	Participants	Results
SBV	Approximately USD100m	SMEs with green projects	Vietcombank, BIDV, Agribank and Sacombank	26 projects: renewable energy, waste management and organic agriculture. The interest rates applicable to SMEs is 1-3% lower than the market interest rates. Banks participating in the program are refinanced from SBV at interest rates 1% lower than usual.
Agribank and Vietnam Development Bank	60% of the required capital (about USD18m)	Solar Power Plant TTC Phong Dien in Hue province	Agribank and Vietnam Development Bank	Construction was from 2017 to 2018. Agribank Thua Thien-Hue and Agribank Gia Lai branches will finance 30% of the total investment, while VDB Thua Thien-Hue and VDB Quang Tri will cover the rest.
Vietcombank and Japan International Cooperation Bank	USD200m	Solar and Wind power projects in Vietnam	Vietcombank and Japan International Cooperation Bank	Limited results so far, as the cooperation agreement between VCB and JICB was signed in May 2019.
Agribank and Central Power Corporation (EVNCPC)	VND735bn	Central Power Solar Project in Khanh Hoa province	Agribank	The power plant was completed and put into operation in late May 2019.
TPBank and the Global Climate Partnership Fund (GCPF)	USD20m	Green projects in ?Vietnam:	TPBank and the Global Climate Partnership Fund (GCPF)	Limited results so far, as the cooperation agreement between VCB and JICB was signed in May 2019.

Source: Vietnam Green Infrastructure Investment Opportunities (GIIO.

According to estimates by the German Agency for International Cooperation (GIZ), Vietnam needs about $20-30 billion for the period of 2021-2030 to promote economic growth in a sustainable way. According to preliminary calculations by the Ministry of Planning and Investment (MPI) and the World

Bank, Vietnam needs about $30 billion to implement the Green Growth Strategy until 2030. The state budget can only afford about 30% of resources and needs the participation and contribution mainly from the private sector, which is the FDI community, including many corporations, and large enterprises in Vietnam.

According to WB?s estimates in the Vietnam Country Climate and Development Report (CCDR) published in July 2022, in order to implement the road-map of green growth, climate adaptation and net zero emissions, it is expected that Vietnam will need to mobilize financial resources by about 6.8% of annual GDP, equivalent to about $368 billion from now to 2040, of which it is needed to mobilize about 50% from the private sector. According to WB, strong efforts can help mobilize private capital equivalent to about 3.4% of GDP per year. This can be achieved by mobilizing green finance from banks, developing market-based instruments such as green stocks and green bonds, and applying risk mitigation tools. In addition, the CCDR also shows that about 2.4% of GDP per year can be financed by additional revenue from carbon taxes (1.4-1.5% of GDP per year) and borrowing on domestic market. In addition, foreign capital can come from institutional investors or multilateral and bilateral donors, besides exploiting foreign direct investment and remittances.

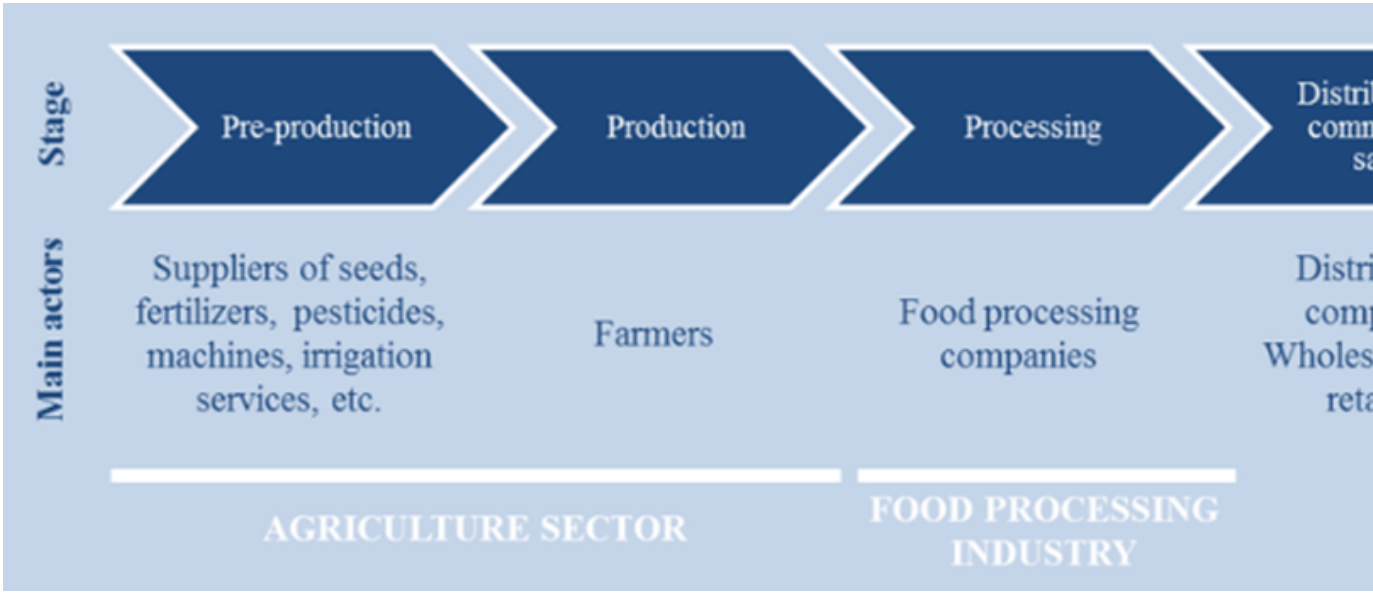
Green Finance in Argi-Food Sector in Vietnam

The green credit growth trend usually points to energy saving, renewable energy and clean technology projects aiming at the "dual" goal of economic growth associated with environmental protection. However, in recent years, green and clean agricultural production models have attracted more attention from banks with many preferential credit packages. Currently, lending activities for businesses applying green technology, and clean agricultural production enterprises/units is one of the lending areas that enjoy priority programs on interest rates from banks. The 4.0 technology revolution is one of the great opportunities to change Vietnam's agricultural economy, as well as a necessary condition for the agricultural sector to realize the goal of bringing Vietnam's agriculture into the group of 15 most developed countries in the world. Besides the necessary conditions, with the effort of applying high technologies that the 4.0 era brings to enterprises in the agricultural and agricultural products industry, the sufficient conditions must also be to have credit - capital - leverage for production and businesses. This is especially important in an economy where about 70% of SMEs still rely on bank loans.

According to WB, private sector investments in agriculture remain low in Vietnam, especially compared to other sectors.[22][22] Private sector investments in agriculture, fisheries, and forestry sectors account for only 1.3 percent of total registered businesses in Vietnam, and over 95 percent are small and medium enterprises, and half are microenterprises (with less than 10 employees). Enterprises cite several challenges - the relatively high cost of starting and running a business, bureaucratic red tape, unfair competition with state-owned enterprises (SOEs), limitations and administrative procedures required to access land, and the reluctance of banks to lend to agri-food businesses. There is a strong need to create a better enabling environment and facilitate conditions for greater private sector entry. Key activities for fostering greater smallholder inclusion in value chains include (a) supporting development of digital platforms and service providers who can help connect producers and service providers with final customers, reducing intermediaries and transaction costs; (b) leveraging digital technologies for improving traceability (for example, sensors, e-platforms, and blockchain) to facilitate end-to-end traceability in the supply chain, increase consumer trust, and facilitate the development of niche markets with favorable price premiums; (c) establishing technology funds and associated protocols to support green entrepreneurs, especially among the younger (millennial) and more tech-savvy farmers; (d) reducing the digital divide between rural and urban areas by working with the private sector and other stakeholders; (e) supporting farm clusters and ?horizontal? integration to enhance coordination and resource sharing among farmers because rice growing is particularly well suited for collective action; (f) promoting farmer links with sustainable productive alliances, such as

the SRP. Overall, there is a need to rethink the relative roles of the public and private sectors to spearhead green, low-carbon agricultural transformation in Vietnam.

Figure 5. Agri-food value chain



Since green finance statistics of the SBV and FIs just stop at green agriculture, it is not possible to analyze the structure of green finance in depth for the smaller group of industries related to production-post-harvest preservation-processing- agri-food consumption. From the perspective of the **agri-food value chain**, investment activities using green credits can come at all stages in the chain, for example:

? **Pre-production:** (i) Projects related to seed/fertilizer/pesticide production to reduce emissions and adapt to climate change; (ii) Projects related to investment in upgrading smart value chain infrastructure to adapt to climate change;

? **Production:** (i) Projects related to sustainable agricultural production/transformation; (ii) Projects related to green growth and low carbon production; (iii) Projects related to reducing the use of agrochemicals; and (iv) Projects related to the treatment/recycling of agricultural plastics waste;

? **Preservation-Processing:** Projects related to improving the efficiency of post-harvest preservation and processing of agricultural products.

Therefore, it is essential to design a green finance Framework for investment projects along the agri-food value chain. The FARM Vietnam project is implemented with the goal of realizing the green finance Framework in general and for the agri-food sector in particular.

In order to support the provision of credit for projects in agriculture, many policies on the basis of identifying high-tech agriculture as one of the five priority areas of the economy have been approved by the Government and the State Bank of Vietnam. From the perspective of the agricultural management agency, following the direction of the Government's Resolution No. 30/NQ-CP dated 7 March 2017 on the implementation of a credit package to encourage the development of high-tech

agriculture, and clean agriculture, MARD has issued Decision No. 738/QD-BNN-KHCN dated 14 March 2017 stipulating **criteria for determining agricultural programs/projects with high technology and clean agriculture, a list of high-tech application in agriculture.** The SBV issued Decision No. 813/QD-NHNN on 24 April 2017, directing commercial banks to implement **a lending program to encourage the development of high-tech and clean agriculture.** Credit package for high-tech agriculture with the participation of 8 banks, of which big banks such as Agribank (deploying a loan package of VND 50,000 billion), Vietcombank (VND 10,000 billion) and a number of other banks have initially realized priority guidelines and policies.

According to SBV, agricultural loan outstanding has reached close to 2.8 quadrillion VND (119.44 billion USD), accounting for roughly 25% of total loan outstanding. There were more than 14.3 million borrowers in agriculture nationwide, Credit growth in agriculture has been higher than the average pace. Over VND 111.64 trillion ($4.76 billion) in soft loans have been provided to develop clean and hi-tech agriculture since 2017, 11.6% higher than the goal set by the Government.

Table 2. Some Typical Credit Packages for Green Agriculture Sector

Bank	**Typical Credit Packages**
Agribank, Vietcombank, VietinBank, HDBank, Bac A Bank, Sacombank, ACB	On 24 April 2017, the State Bank of Vietnam (SBV) issued Decision 813/QD-NHNN to direct commercial banks to implement loan programs to encourage the development of high-tech agriculture. Thus, a credit package of VND 135,000 billion for high-tech agriculture of 8 banks was born. The total capital invested by Agribank for this package is VND 50,000 billion. Vietcombank, Vietinbank and HDBank each signed a credit of VND 10,000 billion. Bac A Bank, Sacombank, ACB,... registered a total of VND 55,000 billion.
Agribank	Reducing loan interest rates from 0.5%/year to 1.5%/year for customers to participate in the clean agricultural production chain, depending on different stages of the hi-tech agricultural production process: supply of inputs, production or selling products. Customers who borrow money under the hi-tech agricultural development program can have free money transfer in the Agribank system, a 50% reduction according to Agribank's current fee for money transfer outside the Agribank system.
HDBank	Implement a program of hi-tech agricultural loans with a limit of VND 10,000 billion VND according to the requirements of the Government and the State Bank. Therefore, in this program, HDBank applies an interest rate 1% lower than the normal interest rate. Loan limit can be up to 80% and enterprises can mortgage assets formed from loan capital. The maximum loan term is up to 10 years.

Source: Financial and Monetary Market Magazine No. 9/2021[23][23]

The National Strategy on Green Growth in the period of 2021-2030 sets a target of GDP growth in the agricultural sector from 2.5-3% per year; improve the efficiency of use and protection of land, water, aquatic resources, forests, and biodiversity conservation; towards the ratio of organic fertilizer products in the total fertilizer products produced and consumed to reach over 30%. To achieve this goal, MARD advocates restructuring of crops and livestock in line with market advantages and demands; ***reduce the use of fertilizers and pesticides of chemical origin, reduce greenhouse gas emissions.*** At the same time, develop fishery resources in accordance with international standards and practices, adjust the intensity and structure of effective exploitation in association with biodiversity

conservation. MARD's undertakings/policy efforts need to be accompanied by implementation resources from the state budget, resources mobilized from FIs and international donors. In particular, green finance is one of the tools to help promote investment and green growth for the agricultural sector.

Green Finance at Global Level and International Experiences

There is a strong green finance momentum globally and substantial further growth potential. Green labelled fixed income instruments have become globally recognized as an effective means of directing investment capital towards climate change mitigation and climate change resilience and adaptation projects, including green infrastructure. The growing level of interest from investors in green projects has resulted in the development and growth of innovative financial products including green, social, ESG and sustainability bonds and loans; and green index products.

Green bonds are currently the most developed segment of thematic instruments, carrying greater recognition from the investor base. To combat the effects of climate change, it is estimated that green bond issuance needs to reach USD1tn per annum by the early 2020s. A substantial amount is expected to finance green infrastructure and assets in emerging markets.

Development Finance Institutions (DFIs) have a mandate to support developing countries and can achieve this through blended finance and credit enhancement mechanisms, reducing risk exposure and enhancing market incentives for investors to mobilize private capital. This is particularly relevant for large-scale projects such as infrastructure development, where the blended finance approach can generate more bankable project pipelines by providing technical support and facilitating access to funding.

DFIs can act as market facilitators, which is beneficial to increasing liquidity and issuance in local economies. For example, the IFC issued a green bond in June 2018 in Philippine peso (a Mabuhay bond) and one in Indonesian rupiah (a Komodo bond) in October 2018. Through deals like these, DFIs can support ?market creation? by participating in first-time issuances and helping new issuers get their names out to investors. Effectively, this establishes pricing points, the idea being that issuers return to market publicly. So, the deals also act as demonstration issuance to spur market growth and can showcase how climate solutions can be funded with green bonds.

DFIs in ASEAN, such as the International Finance Corporation (IFC), Asian Development Bank (ADB), Asian Infrastructure Investment Bank (AIIB) and the World Bank, can also subscribe to private placements or be anchor investors in debt issuance and IPOs to help the company seeking funding to build investor confidence and catalyze investments from a wider pool of private actors. So, they provide direct green financing, as anchor investors in debt issuance or in IPOs, DFIs can leverage their support to attract other investors.

They can help a company seeking funding to build investor confidence and catalyze investments from a wider pool of private actors (both international and domestic). For example, in early 2019, the ADB and other development financiers launched the ?ASEAN Catalytic Green Finance Facility?, an initiative to mobilize USD1bn for green infrastructure in Southeast Asia. The facility will provide loans and technical assistance for sovereign green infrastructure projects such as sustainable transport, clean energy, and resilient water systems, which aims to catalyze private capital by mitigating risks through innovative finance structures. Through these modes of support, DFI?s could be key partners in Vietnam issuing a sovereign green bond.

There are more than 900 public banks in the world with total assets of more than $49 trillion, pioneering in green transition and policy equity. The characteristic of these public banks is to establish a number of green foundations, attaching importance to environmental factors and sustainability.

? The Central Bank of Bangladesh has focused on directing FIs to concentrate capital for green credit growth, with a minimum of 5% of total outstanding credit. In addition, FIs must establish climate risk funds to be used to finance green projects, in which credit is in the form of grants or loans with preferential interest rates. Since 2011, the Central Bank of Bangladesh has issued a Directive on Environmental Risk Management, which requires banks to integrate environmental risk management into their credit risk management system, issue guidance on implementing green bank.

? The Central Bank of India has required FIs to dedicate 40% of their credit capital to lending to priority sectors regulated by the Government, including agriculture, small and medium enterprises, social infrastructure and small renewable energy projects (the Central Bank of India added small renewable energy projects to the list of priority sectors in 2015).

? Central Bank of China, mandated that banks classify green, brown and neutral loans in investment portfolios. It also allows for low-risk weighting for green assets based on evidence of their lower risk.

One key aspect of attracting global flows of green capital is the acceptability and credibility of the ?green? label on such investment opportunities. Globally aligned green frameworks with sector taxonomies and eligibility principles will be key to this, so as to avoid projects, companies, or countries being seen as greenwashing or purpose-washing. Significant progress has been made globally in developing such green frameworks and standards and include the following:
? The Green Bond Principles and recently the Social Bond Principles and Sustainability Bond Principles have become the leading global framework for the issuance of green, social and sustainability bonds for which the International Capital Market Association (ICMA) serves as secretariat.[24][24]

? The ASEAN Green Bond Standards and recently the ASEAN Social Bond Standards and the ASEAN Sustainability Bond Standards were developed to align with ICMA?s Green and Social Bond Principles, and Sustainability Bond Guidelines.[25][25]

? In the loan market space, the Loan Market Association (LMA) and the Asia Pacific Loan Market Association have issued the Green Loan Principles as a benchmark for the wholesale green loan market, and also the Sustainability Linked Loan Principles.[26][26]

ASEAN Catalytic Green Finance (ACGF) Facility. The ACGF, managed by ADB, has also developed a set of Investment Principles and Eligibility Criteria for selecting projects for financing.[27][27] The principles include a taxonomy of eligible sectors and green indicators for setting targets, which include both a reduction in GHG emissions and other environmental indicators. The ACGF principles were aligned with the Joint MDBs-International Development Finance Club Common Principles for Climate Mitigation Finance Tracking and can provide a framework for identifying green recovery investments. Eligible sectors in the taxonomy include renewable energy; lower carbon and efficient energy generation; energy efficiency; agriculture, forestry and land use; non-energy GHG reductions; waste and wastewater; and transport.

Relevant programs and projects

This section focuses on the programs and projects that aim to strengthen environmental protection by addressing the main pesticide container and agricultural plastics pollution risks in the five project provinces. To a lesser extent, this section also refers to those with implications of food safety, value chain development and sustainable agriculture/green growth/climate resilience given their close relevance

? During 2014 and 2019, MARD implemented the project ?*Productive Rural Infrastructure Sector Project in the Central Highlands*? in all five Central Highlands provinces, through a US$ 80 million loan from the ADB Asian Development Fund. The objective is to increase rural and agricultural productivity, increase rural incomes and sustain livelihoods through regenerating and upgrading underdeveloped or outdated productive rural infrastructure, targeting areas with good potential for agricultural production with existing irrigation schemes. It hereby directly supports the implementation of the National Target Program on New Rural Development.

? Started in 2017, MARD implemented the project ?*Enhancing Agricultural Competitiveness in Viet Nam?* in Khanh Hoa, Can Tho and Thai Binh, with a US$ 1.8 million grant from the Japan Fund for Poverty Reduction, administered by ADB. Supporting the implementation of the GoV ARP, the project aims to establish public-private collaboration arrangements in agriculture value chains and strengthen public investment planning and expenditure management for agriculture commercialization. Activities include: value chain assessments, climate-responsive financing for agribusiness development and investment, public-private partnership establishment, policy and institutional analysis, provincial agribusiness value chain strategies and plans, and capacity building.

? From 2015 to 2022, MARD implemented the ?*Vietnam Sustainable Agriculture Transformation Project?* or VnSAT project, mainly funded through a US$ 238million loan from the World Bank. The aim is to improve farming practices and value chains and promote institutional strengthening for the effective implementation of the Agricultural Restructuring Plan. For the Central Highlands, the project focuses on an intensive coffee rejuvenation, replanting and sustainable production program, and capacity building of national and local Government and value chain partners to support agricultural transformation. The beneficiary target is 62,000 coffee producing households. Activities include: training programs, farmer field schools, demonstration models, farmer group establishment, preferential loans for coffee replanting and rejuvenation, loans for farmers to invest in water efficiency technologies such as drip irrigation and roots watering, technical support on coffee certification, a virtual call center linked to mobile applications etc.

? In 2015, as part of the regional ?*Grow Asia?* Initiative, over 60 partners from global and local companies, provincial governments, national research institutes, international organizations and NGOs established the ?*Partnership for Sustainable Agriculture in Vietnam*?.[28][28] The multi-stakeholder platform aims to support agricultural transformation by scaling solutions and supporting knowledge management ? including through its ?*Grow Asia Exchange?* online portal - on inclusive finance, digital solutions and farmer aggregation. It focuses on six crops (coffee, tea, rice, corn, pepper and potatoes) and the cross-cutting issue of agrochemicals. Activities so far have included: farmer training on agrochemical use, development of national curricula on sustainable agriculture, pilots on improved on-farm management of agrochemicals, farmer group and cooperative establishment, demonstration farms, introduction of water-efficiency technology, certification of farms and rural enterprise, and support to sectoral coordination.

? Since 2015, the Ministry of Science and Technology is managing the *?Vietnam Climate Innovation Center*?, with technical and funding support from the World Bank, UKAid and the Australian Department of Foreign Affairs and Trade.[29][29] The Center promoted private sector engagement in green growth by helping local small and medium enterprises commercialize and scale the most

innovative private sector solutions to climate change. The center provides financing and a suite of targeted services to local innovators, including business advisory services and training to build local capacity, financing to bridge funding gaps, and policy support to promote more effective policies and sector regulations. Since its establishment, innovations as follows have been supported, among other: micro-organic composting, organic fertilizer, precision agriculture, energy saving clean cookstoves, bamboo flooring and furniture, adobe brick molding, water filters, and renewable energy solutions.

? Since 2014 and until 2019, the International Water Management Institute and E.D.E. Consulting, with US$ 2.2million funding from the multinational Nestl? and the Swiss Agency for Development and Cooperation, partnered with the Hanoi University of Science and the local DARDs for the program ?*More coffee with less water ? towards a reduction of the blue water footprint in coffee production?*. The program targeted 50,000 coffee farmers in all the Central Highlands provinces and includes a large training program on irrigation management and application of good agricultural practices, an online and SMS based weather information system and policy support on water management.

? Since 2016 and until 2018, Atlantic Commodities Vietnam Ltd. or ACOM, a Vietnamese coffee and cocoa exporter, with funding from the multinational Jacobs Douwe Egberts/Mondelez International, and in partnership with DARD, implemented the ?*Cultivation Soil Management and Water Conservation project?* in Dak Lak and Lam Dong. Through demonstration farms and farmer groups, the project aims to promote the adoption of agroforestry farming, improved soil and nutrient management, terrace farming, water conservation, coffee rejuvenation and certified coffee production, targeting over 2,000 farmers and 3,500ha. The above project builds on a previous project implemented by ACOM in 2013-2015 in Lam Dong, with co-funding from the Sustainable Trade Initiative or IDH and Mondelez International through their ?*Coffee Made Happy?* program. The project provided trainings to 1,500 farmers on good agricultural practices, record keeping and business planning; seedlings, shade trees and other inputs; soil testing and fertilizer recommendations; and support on obtaining and sustaining coffee certification.[30][30]

? From 2016 to 2018, SIMEXCO, a large state-owned coffee bean exporter, in partnership with UTZ, E.D.E. Consulting and the Western Highlands Agriculture and Forestry Science Institute, implemented the ?*Sustainable Coffee Landscape?* project in Dak Lak. The project aims to raise awareness of 5,362 farmers (with 7,604ha of farm land) about; climate change impacts on coffee production and possible adaptation options, the need to reduce water consumption through more efficient technologies, improve the use of fertilizers without harming the environment, and the advantages of farmer groups. The project will conduct Farmer Field Schools, demonstration plots and extensive data gathering through Farmer Field Books.

? All the above public-private partnerships are closely linked to the IDH flagship programs - the ?*Initiative for Sustainable Landscapes?* and the ?*Sustainable Coffee Program?*. The landscape initiative aims to bring the public, private and civil society sector together to co-invest in farm landscape improvement and sustainable production, for example through inter-cropping, agroforestry, improved fertilizer and water management etc. The Coffee Program operates more at the national level by providing a platform for dialogue between public, private and civil society partners. In Viet Nam, the platform is called the Vietnam Coffee Coordination Board, chaired by MARD.[31][31] the Board approved a coffee sustainability curriculum to be used as training material by extension services, businesses and other partners.

? Since 2016, and until 2019, the NGO ICCO, in partnership with MARD and a number of private sector organizations, implemented the ?*Information services for coffee farmers in Vietnam?* or GREENcoffee project, in Dak Lak, Gia Lai, Kon Tum and Lam Dong provinces. It is funded through the ?*Geodata for Agriculture and Water?* or G4AW Program from the Netherlands Government. Targeting more than 100,000 coffee farmers, the project is providing an SMS and mobile app-based

information system that delivers information on daily weather and weather forecasts, extreme weather conditions, daily prices and price forecasts for coffee, basic advice on farming techniques, pests and diseases etc. The system integrates a question-and-answer hotline manned by technical experts. It was launched in August 2017.

? During 2019-2021 period, FAO Vietnam implemented its project ?Accessing Adaptation Fund and Assessing Plastic Pollution in Agriculture Sector. The project?s impact is improved resilience of food security, agriculture and ecosystems towards negative impacts from climate change on agriculture sector, and reduction of environmental pollution from plastic use; and with outcome of facilitated access to the Adaptation Fund and improved understanding of and capacities in addressing plastic pollution in agriculture, fisheries and aquaculture sector. There are two key outputs including (i) Development of concept note and full project proposal for Adaptation Fund and (ii) Assessment of plastic pollution in agriculture, aquaculture and fisheries in Viet Nam.

? Since May 2021, MARD in collaboration with UNDP has implemented ?Strengthening the resilience of smallholder agriculture to climate change-induced water insecurity in the Central Highlands and south-central coast regions of Vietnam? (SACCR) during 6 years, benefiting 222,400 residents, or 10 percent of the population in the provinces of Dak Lak, Dak Nong, Binh Thuan, Ninh Thuan and Khanh Hoa with a target especially on women and ethnic people. The non-refundable aid aims to supplement and foster ADB loan project in modern irrigational systems in drought-hit provinces in Vietnam, in order to modernise irrigational systems, improve water security and livelihoods, provide knowledge in climate risk and climate resilience agriculture, and strengthen access to agro-climate information, credit and markets.

? Since July 2021, the PPD under MARD (PPD) and FAO in Vietnam started the project "Building a strategy and action plan for Integrated Plant Health Management (IPHM) from 2021-2023. The project is expected to comprehensively and systematically manage transboundary pests, respond to pest risks in the context of climate change and global economic integration. It is expected that by 2030, more than 70% of the area/crop will be applied IPHM in each province and at least 10% of the area to be used biological control agents. The project has developed a national action plan on IPHM and MARD has recently issued, serving as a basis for localities to develop plans to transform from IPM to IPHM.

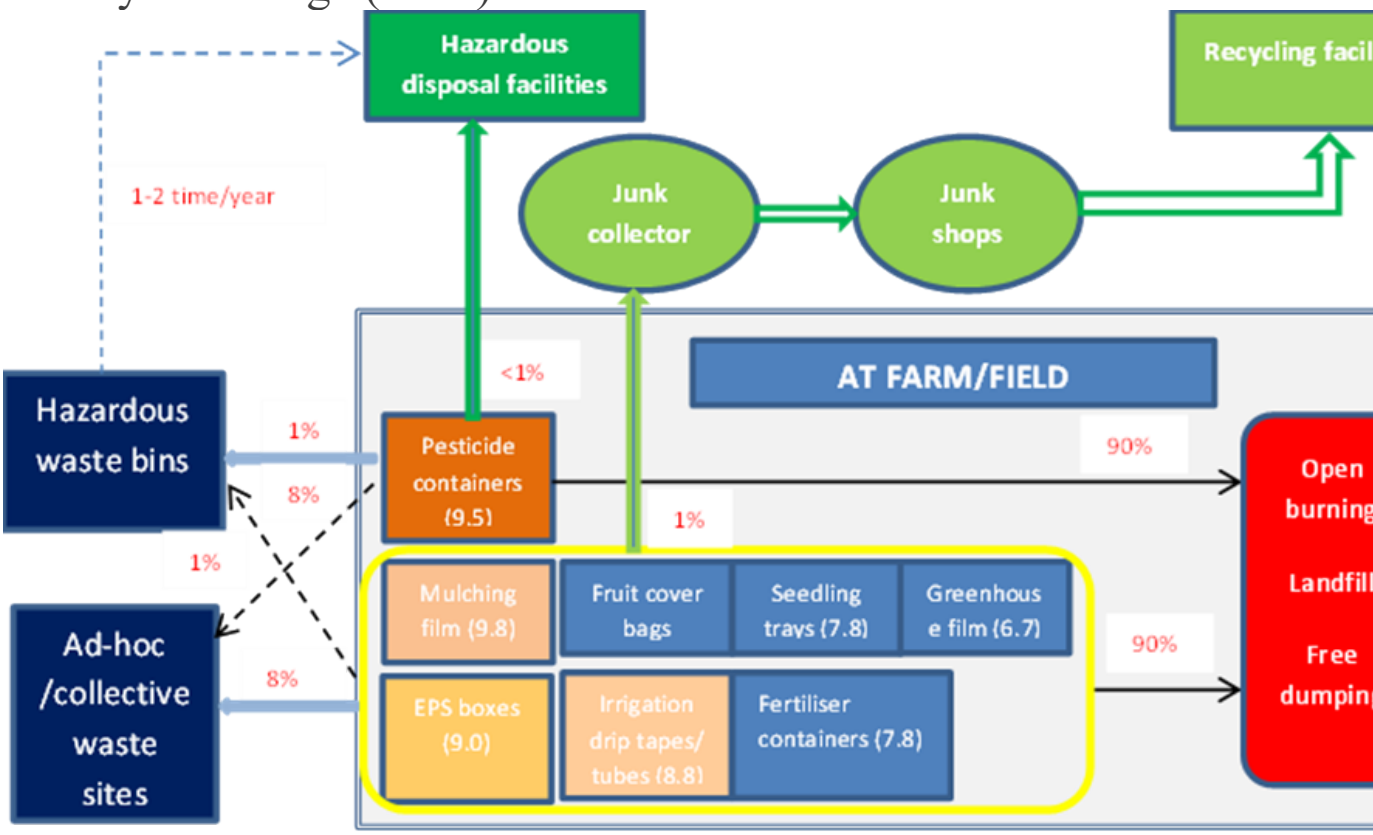
? The 5-cities project ?Scaling Up a Socialised Model of Domestic Waste and Plastic Management? was implemented by UNDP Vietnam over three years (2019-2022) funded by Norway with objective to develop and scale up integrated, green and equitable community-based models of domestic solid waste and plastic management in 5 cities of Ha Long, Da Nang, Quy Nhon, Phan Thiet and Di An. Key achievements include the development of 5 effective small-scale models of domestic waste management in the five 5 cities, enhanced institutional capacity of local authorities and stakeholders through the introduction of the circular economy approach, 40% increase in citizen?s awareness and participation of stakeholders in reducing single-use plastic and improving waste management; and improved engagement of informal waste worker groups in the local waste management system with the participation of 1,789 people; and nation-wide Vietnam Circular Economy Hub was co-designed and implemented by UNDP and Institute of Strategy and Policy for Natural Resources and Environment (ISPONRE). Second phase of the project has recently started, with some infrastructure support in Binh Dinh and continued propaganda and replication in other provinces.

3) Proposed alternative scenario

Proposed Project Areas

The proposed GEF project will cover 17 districts of five provinces: of which, 4 Central Highlands provinces of Kon Tum, Gia Lai, Dak Lak and Dak Nong are home of many high-valued crops including coffee, pepper, fruits (durian, avocado, mango, passion fruit, etc.) and medicinal plants (Kon Tum and part of Gia Lai). At the same time, Tay Ninh province is a supplier of a large amount of vegetable types to its neighboring industrial provinces in the Southeast region (Ho Chi Minh city, Dong Nai, Binh Duong, etc.) together with its high-valued export-oriented specialty of custard apple.

Theory of Change (TOC)



The GEF project objective is to promote financing for improved agrochemical and agricultural plastic management in agri-food value chains.

Sound management of agrochemicals through strengthening the capacity of farmers, subnational, national and regional institutions/stakeholders and strengthening the enabling policy and regulators framework on green finance for agri-foods industry and agrochemicals management in Vietnam by 2028

Proposed outcomes, outputs and activities

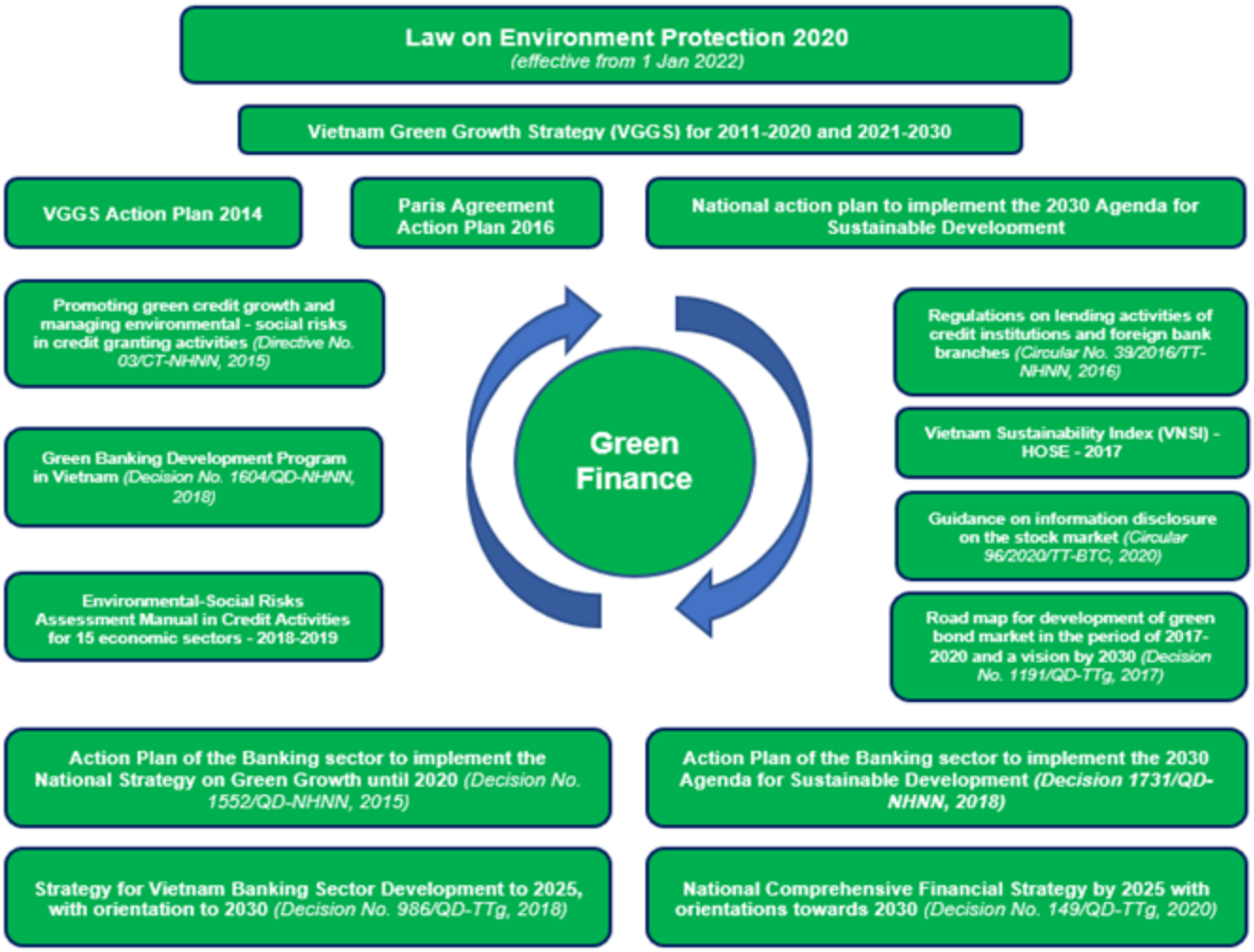
Outcome 1. Policy and regulatory coherence and capacity to manage and finance agrochemicals reduction strengthened.

Output 1.1. Regulatory/legal and capacity gap analysis conducted at central/provincial level with respect to ?green? finance linked to agrochemicals life-cycle management

Activity 1.1.1. *Study the current policy and regulatory framework for "Green" finance implementation mechanisms for agrochemicals and plastic waste management in the agri-food sector in Vietnam.*

Although the Government of Vietnam (GoV) has formed a Legal Framework on green finance in recent years (see Figure 6), the legal document system still needs continually improving. First of all, because the basic regulations on green finance are only instructional (encouraging financial institutions (FIs) to implement, but not mandatory, many commercial banks have not yet developed internal regulations on social and environmental risk management to secure their green financing. The mechanism of mobilizing funds for green finance is still limited. Access to preferential capital for green finance from international financial institutions still faces many difficulties. In addition, many industries related to "green" growth are still quite new in Vietnam, the experience of both investors and commercial banks in this field is limited, leading to cautiousness from both lenders and borrowers. In particular, there are almost no incentive mechanisms and policies for FIs to promote green finance. According to the Law on Environment Protection 2020 (LEP 2020), Ministries under the Government are requested to continue institutionalizing regulations related on green finance and green bond. The Ministry of Natural Resources and Environment (MONRE) takes its leading role and coordinates with Ministries and Ministerial-level agencies to develop a draft PM?s Decision on the promulgation of regulations on environmental criteria and certification for the project granted with green finance and issued green bond.[32][32] The State Bank of Vietnam (SBV) has drafted a Circular guiding the implementation of environmental risk management in credit granting activities of FIs and foreign bank branches[33][33] to create an overall legal framework and mandatory requirements for FIs to manage environmental risks in credit granting activities. These activities will keep forming a common legal framework for green finance in Viet Nam.

Figure 6. Green Finance Legal Framework

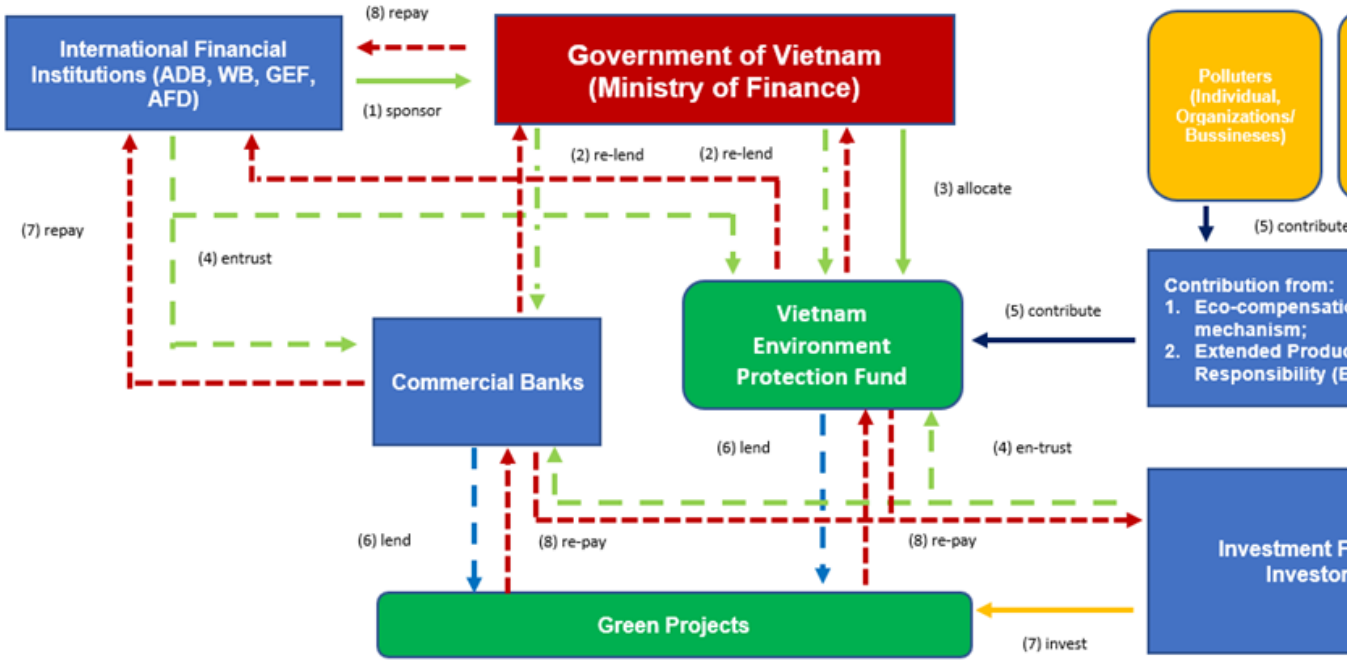


However, even after GbV and SBV issue the above-mentioned decree and circular, the new regulations stop at a general level, not specifically in the agri-food sector linked with agrochemicals management as expectation of FARM Viet Nam. Therefore, to strengthen the legal basis to propose specific policies related to the agri-food sector associated with agrochemicals management and to promote green finance, the FARM Viet Nam project will assist in conducting a capacity gap analysis on legal regulations and enforcement capacity at central/local level related to ?green finance? and focusing on the agri-food sector linked with agrochemicals management.

During the preparation of this CER, the PPG team proposed a green finance mechanism illustrated in Figure 6 below with the participation of both the commercial banking system and the Viet Nam Environmental Protection Fund (VEPF). In particular, the VEPF is proposed to be the focal point in green finance activities under FARM Viet Nam and under the proposed green finance mechanism. The VEPF is a state-owned investment fund operating on the principle of capital preservation, not for profit, and has full functions of mobilizing and lending capital like a normal commercial bank. In the coming time, the VEPF will continue to increase its charter capital and be assigned new tasks such as managing the contribution from extended producer responsibility (EPR) and financing environment protection projects.

Further studies will be conducted during the FARM Viet Nam implementation to validate and institutionalize a suitable green finance mechanism with fund mobilization mechanism, lending mechanism under a clear green criteria and risk management mechanism.

Figure 7. Proposed Green Finance Mechanism for Viet Nam



Notes:

*(1) International Financial Institutions (IFIs) **sponsor** the Government of Viet Nam (GoV) for green credit activities.*

(2) GoV through the Ministry of Finance (MoF) re-lend to Commercial Banks (CBs) and Viet Nam Environment Protection Fund (VEPF) to give loans to green projects

*(3) GoV **allocates** charter capital/fund for VEPF.*

(4)

(5) IFIs/Investment Funds, Investors entrust CBs and VEPF to give loans to green projects

(6) The polluters contribute under the Eco-compensation mechanism and the producers/importers contribute their Extended Producer Responsibility (EPR). This contribution will be transferred to VEPF to be used for the purposes of environmental protection, agrochemicals reduction, agricultural plastics collection/recycling/treatment.

*(7) CBs or VEPF **lend** eligible green projects.*

(8) Investment Funds and Investors invest in green projects.

(9) Borrowers repay the lender/entruster.

The above proposed green finance model applies a combination of financing and capital mobilization methods for FIs/CBs/investment funds in lending green projects.

? **Entrusting mechanism.** This mechanism is that International Financial Institutions - IFIs (e.g., ADB, WB, GEF, GCF, AFD), investment funds and investors entrust capital sources to commercial banks and/or the VEPF to lend green projects. The entrusting mechanism could be considered a kind of foreign loans without government guarantee regulated under Decree No. 219/2013/ND-CP dated 26 December 2013 (Article 1, 2, 3). [34][34]

? **Re-lending mechanism.** This mechanism is that IFIs provide loans under programs/projects to the Government, then the Government, through the Ministry of Finance (MoF), will re-lend the capital to commercial banks and/or the VEPF. Then, commercial banks and/or the VEPF lend green projects. The re-lending mechanism is regulated under Law on Public Debt Management 2017 (Article 33, 34, 35). MoF will be in charge of re-lending or authorized a financial institution to re-lend. Three eligible borrowers are local governments, public non-business units and enterprises. Thus, if the borrower is an enterprise, there will be number of conditions to meet, which is regulated under Article 36, Item 3. [35][35]

? **Funding mechanism.** This mechanism is that the Government funds the VEPF to perform the tasks of financing/lending green projects.

? **Co-financing mechanism.** This mechanism is that investors can use a combination of their own capital and borrow money to implement green projects from commercial banks and/or the VEPF.

Main sub-activities include:

? APMB recruits 01 consulting firm to research/review the policy framework for implementing green finance linked with the management of agrochemicals and plastic waste in the agri-food sector. The consultant will: (i) review current regulations on green finance, (ii) examine the gap of policy and legal framework for green finance supporting the whole of agrochemicals lifecycles in the agri-food sector, (iii) study and propose mechanism(s) to mobilize fund for green finance, criteria for eligible green projects using green finance sources; green metrics, implementation guidelines. The capacity gap analysis is expected to be carried out in 6 months.

? The consultant will present the capacity gap analysis report and coordinate with APMB to consult with relevant stakeholders such as MONRE to receive their comments.

? The consultant will also consult with commercial banks or its association to assess legal, regulatory and policy gaps to promote green financing.

? The consultant finalizes the capacity gap analysis and provide policy proposals on green finance supporting the whole of agrochemicals lifecycles in the agri-food sector.

Activity 1.1.2. Assess the existing mechanisms and implementation capacity for 'Green" finance including green metrics and 'eco-compensation' for reduction and management of agrochemicals in the agri-food system at national and provincial level.

The task in this activity is linked with activity 1.1.1. To ensure the ability of implementing the green finance mechanism, it is necessary to have a proper capacity assessment on the implementing bodies and the mechanism to mobilize fund for the green finance. In addition to traditional sources such as funding from the state budget, mobilizing capital from international and domestic financial institutions, investment funds, and investors, this activity will study and propose implementable mechanisms to raise capital from voluntary or compulsory contributions of individuals/organizations that pollute the environment. The Law on Environmental Protection 2020 (LEP 2020) has brought significant changes when it mentions on the formulation of a Biodiversity Offset plan (Article 32), study and application of the Payment for Natural Ecosystem Services (Article 138), organization and development of the Carbon Market (Article 139) and Natural Capital (Article 147).

Within the framework of the FARM Viet Nam, to generate more financial resources for green finance and mobilize the participation of the private sector in financing green projects, The FARM Viet Nam will support the study/assessment of the capacity to manage, implement and mobilize fund for the green finance mechanism based on international best practices such as ?Eco-compensation? mechanism.

Box 1. Eco-compensation in China

The term Ecological compensation (Eco-compensation) is specific to the People?s Republic of China (PRC) and broadly refers to a range of potential policy directions and approaches to environmental management with the goal of improving outcomes by taking into account the costs and benefits of environmental goods and services in economic activities.

Eco-compensation is a package of different mechanisms (including financial subsidies, project assistance, constructive policies, and other measures), which the PRC, at all levels of government, employs to compensate those who invest money or suffer economic losses to protect ecosystems by transferring resources from those who benefit from or damage them. Market-based mechanisms and the role of the private sector in eco-compensation is still somewhat limited. The PRC intends to use the new national regulation to introduce market-based mechanisms in this transaction.

To explain eco-compensation another way, it is mainly a public mechanism for adjusting benefit-based relationships involved in environmental protection and restoration. Eco-compensation creates both incentives and disincentives. The goal is to protect the natural environment and promote harmonious relationships between human beings and nature, taking into account ecosystem values, environmental protection costs, and development opportunity costs, and using administrative and market measures to accomplish this.

The PRC tends to use the term ?eco-compensation,? rather than payment for ecosystem services (PES), which is the predominant term used internationally. The real issue, however, is the many interpretations within the PRC over the use of its own term, ?eco-compensation.? The various definitions are topic in academic and policy discourse in the country and in provincial case studies presented at the conference. While the Chinese term ?eco-compensation mechanisms? has often been paired or used interchangeably with the term PES?especially in comparisons between the PRC and the rest of world- these two concepts are very different.

Source: https://www.adb.org/sites/default/files/publication/212726/eco-compensation-regulation-prc.pdf

Main sub-activities include:
? APMB recruits 01 consulting firm to assess the capacity of management, implementation and fund mobilization for the green finance mechanism in association with considering and applying the "Eco-compensation" mechanism in Viet Nam. The consultant will: (i) identify green criteria for green projects funded under agri-food sector to reduce agrochemicals and agricultural plastic waste; (ii) assess the management and implementation capacity of the relevant parties involved in the proposed green finance mechanism; (iii) assess the possibility of fund mobilization for the proposed green finance mechanism; (iv) study the theoretical basis and road-map for the institutionalization of the ?Eco-compensation? mechanism, propose mechanisms to ensure contributions from polluters and manage/use the contribution from the eco-compensation mechanism for environmental protection activities and other actors involved in environmental protection; (v) recommend capacity building activities at the national and local levels. The capacity assessment is expected to be implemented from 06 to 12 months.

? APMB coordinates with ADB/GEF to organize a study tour in an appropriate country to observe the ?Eco-compensation? mechanism. This activity helps Viet Nam?s stakeholders observe the "Eco-compensation" model being implemented in the selected country and how it works. Through this activity, the Vietnamese decision makers can draw lessons as well as evaluate the applicability of this mechanism in Vietnam. In fact, legal documents and regulations in Vietnam have mentioned and applied a number of concepts with similar nature as "Eco-compensation" such as: (i) **Natural capital** accounting and assessment; (ii) **Payment for Ecosystem Services** and requested the formulation of the Provincial Ecosystem Services Payment Scheme (for provincial environmental protection agencies) and the Grassroots Ecosystem Services Payment Scheme (for organizations/individuals providing natural ecosystem services); (ii) **Biodiversity Offset Option** when programs/projects causing impacts on biodiversity and it should be prepared in the Environmental Impact Assessment Report. And under

the FARM Vietnam, there will be a study topic on the ?Eco-compensation? mechanism, a broader concept than Payment for Ecosystem Services and Biodiversity Offset.

? The consultant cooperates with APMB and VEPF to develop a draft capacity assessment report on green finance management and implementation and consult with stakeholders. To ensure the proposed green finance mechanism can be implemented, the consultant needs to work closely with APMB and VEPF to identify and propose an appropriate financial mechanism for mobilizing fund from stakeholders, including the ?Eco-compensation? mechanism, the roadmap to institutionalize this mechanism and how to use the funds through the VEPF. After the draft capacity assessment report is available, the consultant will coordinate with APMB to consult with stakeholders.

? The consultant completes the capacity assessment report on management and implementation of the green finance mechanism and proposes relevant policy proposals.

Output 1.2. Regulatory enforcement guidance/ for pesticide and agricultural plastics management developed and delivered at national and provincial levels

Activity 1.2.1. Develop an agrochemicals and agricultural plastic management guidance and implement at central and local levels.

Currently, regulations on management of pesticide, collection and treatment of pesticide container as well as agricultural plastic waste have been promulgated by MoNRE, MARD and Provincial People's Committees. At the central level, it is the Circular No. 21/2015/TT-BNNPTNT dated 6 June 2015 on managing pesticide, Joint Circular No. 05/2016/TTLT-BNNPTNT-BTNMT dated 16 May 2016 guiding the collection, transportation and treatment of used pesticide containers. In the provinces, these are the guidelines/implementation plans for plastic waste management and reduction issued by the PPCs or the DARDs to meet the requirements of the Prime Minister and the MARD under Decision No. 1746/QD-TTg dated 4 December 2019 (promulgation of the National Action Plan on ocean plastic waste management to 2030)[36][36] and Directive No. 33/CT-TTg dated 20 August 2020 (strengthening management, reuse, recycling, treatment and reduction of plastic waste)[37][37], Directive No. 7804/CT-BNN-KHCN dated 10 November 2020 (strengthening management, reuse, recycling, treatment and reduction of plastic waste in agriculture) and Decision No. 2771/QD-BNN-KHCN dated 18 July 2022 (Plan to reduce, collect, classify and reuse plastic waste in agriculture). However, the actual implementation of these regulations is still limited due to lack of resources for implementation.

Regulations on collection of used pesticide containers are assessed as being adequate by local government authorities. However, the standards and specifications of the brick collection tanks are assessed causing difficulties for local government authorities to meet in practice. Joint Circular No. 05/2016/TTLT-BNNPTNT-BTNMT clearly states that the funding sources for the construction of brick collection tanks and expenditures for waste collection and treatment activities come from the provincial state budget and are provided by the Provincial People's Committee annually per request of the District/Commune People's Committees. However, all local governments have difficulty in allocating funds to build collection tanks and carry out waste collection/treatment activities. Therefore, continuing to review and propose improved policies should solve the problem of systematic collection (funding for building of collection tanks, organization of collection) and treatment (cost for the treatment unit to transport to the place of waste treatment and treatment costs). According to local authorities, due to lack of funding for collection and treatment, after collecting pesticide containers in these tanks, they

have no financial resources to properly manage the collected pesticide containers. As the EPR mechanism is being gradually put into effect, local authorities as well as collection/treatment units are expected to have the opportunity to access and receive financial support from this mechanism from 2023 onward. Besides, technical guidelines to provide process of collection, transportation and disposal of empty pesticide container currently not specified in Decree No. 08/2022/ND-CP During its lifetime, FARM Vietnam will support the review and endorse practical policies on management of agrochemicals and collection/recycling/treatment of agricultural plastic waste at the central and local levels.

Main sub-activities include:

? APMB recruits 01 consulting firm to research/review and draft guidelines for management of pesticide containers and collection/recycling/treatment of agricultural plastic waste at central and local levels. The consultant will: (i) systematically review laws, regulations, and policies related to the management of agrochemicals (pesticides and fertilizers) and agricultural plastic materials/plastic waste in agricultural sector (e.g.,: Circular No. 21/2015/TT-BNNPTNT[38][38]; Joint Circular No. 05/2016/TTLT-BNNPTNT-BTNMT[39][39]), (ii) consult with relevant units at MARD and MONRE on adjustment needs; (iii) propose amendments, adjustments and supplements in accordance with the actual situation. The consultant can use the survey data on plastic waste in agriculture conducted the Department of Science, Technology and Environment in the period 2020-2022 and combine it with baseline survey data of the Baseline survey consultant recruited by APMB to obtain data on the volume of pesticide containers and agricultural plastic waste in the project area to estimate the volume in the whole country as a basis for policy development. In order to implement an effective and sustainable EPR scheme, the clear and functioning guidelines to collect, transport, handle, manage and dispose of these containers safely and responsibly is needed to protect the health of farmers and their communities as well as the environment.

? APMB coordinates with ADB/GEF to organize a study tour in an appropriate country such as Taiwan or South Korea on pesticide containers management and collection/recycling/treatment of agricultural plastic waste, especially the implementation of EPR mechanism to draw lessons for Vietnam.

? The consultant drafts guidelines on the management of agrochemicals and agricultural plastic waste in the agri-food value chain and coordinated with APMB to organize a consultation workshop with stakeholders.

? The consultant completes the guidance on the management of agrochemicals and agricultural plastic waste in the agri-food value chains for APMB to report to MARD for consideration and promulgation if eligible.

Outcome 2. Agrochemicals reduction and agricultural plastics management improved through enabling and catalyzing finance and investments

Output 2.1. ?Green finance framework? for agri-food value chains in Viet Nam created, to include options and modalities for sustainable finance and investment.

Activity 2.1.1. Support project provinces to access the EPR fund under Vietnam Environmental Protection Fund (VEPF) as a financing scheme for collection, transportation and recycling/treatment/disposal of agricultural plastic waste and collection/treatment of pesticide container.

By the time the FARM Vietnam is approved, it is likely that the Government will have approved the regulation on the use of contributions from extended producer responsibility (EPR). According to the draft mechanism for EPR utilization, local authorities and units/organizations that collect/dispose of pesticide containers and collect/recycle/dispose in general may submit a request for assistance to the Vietnam EPR Office for consideration. The National EPR Council will review and approve these proposals and request MONRE to issue a decision to provide support. After the MONRE issues the decision on providing support, the VEPF will sign a contract with the EPR recipient (local authorities/organizations) and disburse the amount based on the implementation schedule set out in the contract. The FARM Vietnam will provide advisory services to assist the project provinces in preparing and submitting proposals to apply for this EPR fund. In addition, the on-farm support activities under the FARM Vietnam will help create good practices in the collection/treatment of pesticide containers and the collection/recycling/treatment of agricultural plastic waste.
Main sub-activities include:

? APMB collaborates with a communication firm to carry out communication on the mass media about the FARM Vietnam and its supporting activities.

? APMB collaborates with relevant private sector actor(s) to propagate the project's support activities to local authorities and units that collect/ recycle and treat pesticide container/agricultural plastics in the project area.

? APMB recruits a consulting firm to assist in the preparation of proposals to receive EPR fund from the VEPF. The consultant will closely work with the VEPF and assist the local government in assessing the need for funding for the collection, transportation and treatment of pesticide containers/agricultural plastic waste in the project area and support local authorities prepare proposals/projects in the formats as per MONREs? Circular on EPR.

? APMB cooperates with the consultant to support local authorities to sign contracts with the VEPF to support collecting, transporting and treating pesticide containers/agricultural plastics from EPR.

? After these contracts are signed, APMB coordinates with CropLife Vietnam to monitor the implementation of the contracts during FARM Vietnam implementation. The monitoring and evaluation will require to collect data on the volume of pesticide containers collected/treated, the volume of agricultural plastics collected/recycled/processed and related information in order to calculate the generated global environmental benefits (GEBs).

Activity 2.1.2. Pilot a matching grant scheme to promote private sector investment in collection/recycling/treatment of pesticide containers and agricultural plastic wastes.

One important goal of the FARM Vietnam is to support the establishment of a green finance mechanism to mobilize the participation of domestic/foreign financial institutions and the private sector to participate in financing green projects, especially in the agri-food sector, to reduce the use of agrochemicals and to manage/dispose of agricultural plastic waste. Therefore, in parallel with supporting local authorities to access EPR fund as mentioned above, the FARM Vietnam will also provide matching-grants to support businesses having demands on borrowing capital for

implementation of new investment projects or to expand the scale of existing waste collection/recycling/treatment. They are eligible for green projects under the green finance mechanism proposed by the FARM Vietnam. The credits will be provided for eligible projects through the VEPF and/or commercial banks. The green finance Mechanism proposed by FARM Vietnam puts commercial banks as an important green financing channel in the future. Under the FARM Vietnam, number of activities will be provided to support access to capital and funding through the VEPF.

The proposed support mechanism is as follows: (i) Enterprises with eligible projects that need to borrow capital approach the VEPF and submit a loan application dossier; (ii) The VEPF appraises and issues a decision to approve or disapprove the loan; (iii) In case the project is approved for a loan, FARM Vietnam will provide a grant directly to support the enterprise. This grant accounts for about 30% of the total project investment capital, but does not exceed $100,000. In addition to the loan from the VEPF, enterprise needs to have its reciprocal share of at a minimum of 10% of the total project investment capital. Specific requirements for using the grant will be detailed out in the Inception Phase (for examples: whether the grant will finance part of equipment investment or soft component like capacity building or consulting services etc.).

Eligible projects to be considered for loans under the proposed green finance mechanism during the implementation of the FARM Vietnam include:
? Projects to collect and/or treat used pesticide containers.

? Projects to collect and recycle agricultural plastics wastes.

? Project applying good agricultural practices/standards into production to reduce the agrochemicals use and agricultural plastics emissions.

? Project applying alternative solutions to reduce the agrochemicals use and agricultural plastics emissions.

Main sub-activities include:

? APMB cooperates with communication firm to carry out communication on the mass media about the FARM Vietnam and its supporting activities.

? APMB cooperates with relevant stakeholders to propagate the project's support activities to local authorities and units that collect, recycle and treat pesticide container/agricultural plastics in the project area.

? APMB cooperates with relevant stakeholders and its consultants to assist in the review and preparation of loan proposals for enterprises wishing to borrow capital for development investment, expansion of production facilities to collect/recycle agricultural plastics in the project area. The consultant performing this task can also be the one assisting the local authorities in preparing proposals to receive EPR fund from the VEPF in Activity 2.1.1.

? APMB together with the consultant support the enterprise to sign a loan agreement with the VEPF. After the loan agreement is signed, APMB disburses the grant according to the mechanism mentioned above.

? APMB coordinates with the VEPF to monitor and evaluate the effectiveness and impact of the loan. The monitoring and evaluation will require to collect date on the volume of pesticide containers collected/treated, the volume of agricultural plastics collected/ recycled/ processed in order to calculate the generated global environmental benefits (GEBs).

Activity 2.1.3. Promote private sector investment in green projects in the agri-food sector under the proposed ?green finance? mechanism.

To seek more funding for green projects, the green finance mechanism needs the participation of domestic and foreign financial institutions, domestic and foreign investment funds as well as the private sector. Therefore, during its implementation, the FARM Vietnam will make efforts to seek the commitments and sponsorships of financial institutions/private sector to obtain sustainable financial resources funding green projects. APMB and VEPF will coordinate to organize conferences to disseminate information and promote funding for green projects in agri-food sector. It is expected to have at least one green project in the agri-food sector receiving loans from the VEPF or domestic/foreign financial institutions.

Main sub-activities include:
? APMB coordinates with VEPF to organize a series of workshops and seminars with participation of private companies and institutions to provide information package on green financing and support the private companies and institutions in applying the green projects. APMB cooperates with VEPF and communication firm to organize conferences/ workshops calling for funding and investing in green projects along the agri-food value chain towards reducing the use of agrochemicals and agricultural plastic waste.

? APMB coordinates with VEPF to monitor and make statistics of loans in the agri-food sector in accordance with the green finance criteria of the FARM Vietnam. APMB may seek ADB?s support in working with SBV to obtain data on green projects under banking system matching with the FARM Vietnam criteria to have overall picture of green financing by the end of the project.

Output 2.2. Pesticide container management programs strengthened /established and food safety technical guidelines developed for at least five high value crops

In order to reduce the pesticide use and manage pesticide containers better in the field, the project will work directly with the PPD in coordination with the CPD, DST, NEC, and provincial DARDs to implement 4 inter-related activities as outlined below.

Activity 2.2.1. Study and identify, based on environmental and socio-economic factors, (i) suitable container bins/tanks for pesticide container collection and (ii) strategic locations to install them.

Together with the activity 1.2.1 above, the project, with support from a national consultant, will review existing pesticide container management practices used by project provinces and local organizations for key high value crops. The review will include good practices promoted by public and private sector, e.g. CropLife Vietnam, Rainforest Alliance, and lessons learned in terms of bin location, materials, capacity, shape, labelling, distance between pesticide bins/tanks as well as collection, classification, and transportation and treatment of pesticide containers. At the same time, the project will assess capacity of different container bins/tanks manufacturers/suppliers in the region/market. Based on environmental and socio-economic considerations, suitable container bins/tanks will be identified along with strategic locations where bins will be installed properly.

A total of 6,000 suitable bins/tanks will be provided by the project for installation in close collaboration with different civil society organization (CSOs) e.g., Women Union and Farmer Association,

cooperatives, and SME to be selected in the 5 project provinces for pesticide container collection and management. This activity will be implemented together with other activities for increased synergies.

Activity 2.2.2 Pilot two community-based pesticide container management models

To ensure that the pesticide containers reach their last mile ? disposal/treatment facilities, the project will encourage farmers to return used pesticide containers to designated bins through an incentive scheme to reduce on-farm pollution from pesticide containers and help achieve the target set by MARD?s IPHM Action Plan, 2022-2030, of at least 90% of communes collect pesticide containers after use in the target communes and districts under selected value chains. The project will address the current budget constraint knowledge and skills gap for proper collection and management of pesticide containers, and help support relevant agencies enforce the Government regulations (i.e. inter-ministerial circular number 05/2016/TTLT-BNNPTNT-BTNMT and ERP financial mechanism) and implement the IPHM Action Plan. As part of this activity, the project will pilot the following 2 models.

In order to ensure proper use and management of the 6000 container bins/tanks to be provided by the project, the farmers will receive technical support and financial incentives in the target provinces. The project will pilot 2 models of incentives for the farming communities ? model 1 - through vouchers/token redeemable at agricultural inputs store and model 2 ? through vouchers/token redeemable at supermarkets for daily essentials, preferably healthy and nutritious food. The incentive rate, frequency and voucher distribution mechanisms will be workout during the inception phase after thorough consultations with key stakeholders. Under both these models, farmers will receive training on handling and collection of pesticide containers and will participate in behaviour change communication offered by the project.

Activity 2.2.3. Develop, implement and scale up five low- or non-chemical pesticide use food production systems

To advance the transition towards sustainable and regenerative agriculture, it is crucial to increase the adoption of more environmentally friendly agricultural practices. The original Integrated Pest Management (IPM) or recent Integrated Plant Health Management (IPHM) and different good agricultural practices (GAP) are alternatives of a regenerative agricultural sector, and part of a climate-smart and a holistic approach to ecosystem management. The project IPHM/GAP strategy aims to help farms develop robust plans to control pests by balancing the functions of the agroecosystem, improving ecosystem resilience, and by doing so, reducing dependence on pesticides.

The project approach centers around the principles of IPHM, and based on context-specific and farmer-driven interventions. It focuses on harnessing the inherent strengths within agroecosystems to bring pest populations down to acceptable levels, rather than trying to eradicate them. The project will choose control methods that bear in mind costs and benefits and drive social and ecological sustainability. The approach is based on adoption of IPM/IPHM practices, where pesticides are used only as a last resort and reduction in pesticide use is demonstrated. When pesticides are used, all pesticide management safety measures and occupational health requirements are implemented. Only registered products are used and prohibited or obsolete pesticides are not used. If pesticides from the risk mitigation list are used, additional risk mitigation measures are implemented.

To support this approach, the project will select key value chains with market potential in the target provinces (e.g., coffee, pepper, fruits[40], rice and vegetables) and identify relevant low and non-pesticide use farming practices including IPHM/and good agriculture practices (GAP) and

sustainability standards such as VietGAP, GlobalGAP, RFA[41][41], 4C[42][42], , organic farming, etc., to focus on, key value chain actors and development partners, as well as the barriers to the IPHM/GAP adoption, solutions and incentives for producers and other chain actors to overcome them. Based on which an IPHM/GAP strategy, plan, and technical guidelines will be developed to support the target provinces in implementation, in particular, the MARD?s action plan on IPHM in main commodities, 2022-2030.

In order to incentivize farmers to adopt the identified practices and sustain these in the future, the project will identify opportunity to support agribusiness companies (value chain lead firms) and farmer organizations (cooperatives and collaborative groups) to register and comply with relevant sustainability certification standards demanded by the target markets as mentioned above. Within these, specific minimum residue levels (MRL) in the final agricultural products will be carefully inspected (see activities under output 2.3). By adopting the IPHM/GAP, the farmers can improve their income by reducing production cost from agrochemicals (both pesticides and chemical fertilizers) used, and selling their products at secure and higher price thanks to high quality products and premium price.

A long the course of the project implementation, the project will support MARD agencies and its research institutions, e.g., Western Agriculture Science Institute (WASI), Southern Fruit Research Institute (SOFRI), Institute of Agriculture Science for Southern Vietnam (IAS), VAAS (Vietnam Academy of Agricultural Science), etc. to work with DARDs to test and finalize at least 5 technical guideline packages respectively for coffee, pepper, vegetables, and 2 selected fruits (to be defined during implementation). Unlike the past, the guidelines will be comprehensive covering techniques from the farming to harvesting, semi-processing, storing and packaging along the selected value chains, in which agrochemical use, pesticide container management and also agricultural plastic management will be fully taken into consideration. These guidelines, after approval by MARD, will be used for replication in the project provinces and scaling up to other provinces in the future.

Activity 2.2.4 Conduct capacity development on the identified low and non-chemical pesticide use and container management models for at least five target crops.

This capacity development intervention supports MARD to meet its set target (Decision 3592/QD-BNN-BVTV on IPHM action plan on September 2022) of having at least 20 provincial IPHM trainers, and 2 community IPHM trainers and 5 key farmer-trainers per commune, as well as to reduce pesticide use by 30% (FARM project aims to reduce pesticide use by 50% over the project period) and more than 90% communes collecting pesticide containers. This activity includes:

Development of gender-sensitive, customized learning modules and materials on IPHM/GAP and pesticide container management for at least 7 crops (coffee, pepper, vegetables, passion fruit, mango, durian, custard apple). The training materials will cover, among other, sustainable certification standards, knowledge and skills for application of IPHM, MRL and HACCP protocols and how to improve current farming practices to meet the MRL and other food safety requirements required by the export and domestic markets, to change farmer?s behavior to properly handle and collect pesticide containers for container disposal. Consultants to be mobilized from the project will work with PPD and DARDs in developing gender-sensitive and tailored-made learning models and training materials building on existing and relevant ones from different sources (e.g., RFA and CLI) and develop models to meet local needs from agribusiness companies, SME, cooperatives and crop farmers. After field testing on certain crops, the consultants will help to convert these training materials into different formats such as video clips, animation clips, brochures, infographics, etc. which will be used for FFS training with crop farmers, retailers and local extension workers.

Training of trainers (TOT): The project, with support from consultants and in close collaboration with PPD and DARD, will organize 3 TOT courses on IPHM/GAP and pesticide container management for about 90-100 provincial trainers from 5 provinces using the training modules and materials developed under the project framework. The provincial DARDs will help in selecting trainees ensuring participation of women and EPs participation in the ToTs. The graduated trainers will in turn conduct FFS training courses for the next tier of target participants in the project provinces In addition to key staff from the GOV?s agricultural extension system in the target provinces, relevant staff from agribusiness companies, small and medium enterprises, cooperatives, and key farmers who will be directly engaged in implementation of the pilot and replication models will also be selected for the ToTs in target provinces. The project will collaborate with FAO and other related stakeholders such as CropLife International and Rainforest Alliance to deliver the planned TOT courses.

IPHM/GAP and pesticide container management training: In order to ensure practical and wider application of the training, the project will employ FFS (Farmer Field School) season-long training approach of FAO where the FFS participants will have time to learn and practice their learning directly in the field throughout a crop season. The project will ensure that FFS participants are the persons who actually do the IPHM/GAP and container management work. The trained trainers from the provincial TOT courses with support from PPD, DARDs and other relevant agencies e.g., CLV conduct FFS training activities for crop farmers and retailers. Local agriculture extension workers will receive training from their departmental trainers. The project will ensure the participation of women and members of EM. A total of about 25 FFS will be organized targeting more than 1000 participants from 5 provinces. Participants will receive hands on training on farmer-to-farmers (F2F), enterprise-to-farmers (E2F) and extension workers-to-farmers (WTF) for increased project outreach and success.

Exposure visits and workshops: Along the course of project implementation, a number of exposures visits and learning workshops at national and sub-national levels will be conducted by the project to promote cross learning among different stakeholders in order to enhance their capacity to achieve the project results. For these, the project management, with support from consultants, will identify issues for discussion and relevant best models of IPHM/GAP and container management in selected value chains in the target/neighbouring provinces or other places, then design and facilitate the events in participatory and interactive manners. Women and ethnic farmers from the target communes and districts will be prioritized to attend these events. Workshop reports, participants feedback and lessons learned will be documented and shared as part of the project knowledge management.

Application of artificial intelligence (AI) in insect pest monitoring and IPHM performance: In order to help the target crop farmers to manage insect population through Artificial Intelligence (AI), insect image capturing, collection and analysis of field data with machine learning will be carried out to develop and maintain an automated insect pest monitoring system. Relevant uses will be able to access this information remotely on mobile app and management software as part of early warning of insects and pests for early action. This system is a useful tool for PPD and DARD for directing timely control measures for insect pests of economic importance. The same software can be expanded to report on performance of IPHM implementation in the target provinces through a number of defined output and outcome indicators.

Output 2.3. Scientific and technical capacity of three government?s food safety testing centers for pesticide residue analysis and Hazard Analysis Critical Control Point (HACCP) protocols strengthened

The project will help local food producers (SMEs and cooperatives) in the target provinces to get necessary tests done to meet food safety requirements (especially the MRLs) set by importing countries for their export products. There is a need to facilitate their access to improved quality services for pesticide residue analysis and to promote HACCP protocols. The project will support to strengthen three government food safety centers, namely the Northern and Southern pesticide control and testing

centers under PPD and Quality Center for Agriculture, Forestry and Fisheries - Region 3 under NAFIQAD. These centers are among 28 food testing laboratories officially designated by Government to assure safety of agri-food products. Activities under this output are as follows.

Activity 2.3.1. Enhance capacity of the Northern and Southern Pesticide Control and Testing Centers for providing on-demand services of pesticide residue analysis and promote HACCP protocols.

In order to upgrade this center, the project will provide: (i) services of qualified international consultants to review current laboratory facilities and operation, train local staff and advise the center to meet international standards; (ii) international experts with experience in capacity development (records, human resources) on verification laboratories (ISO 17043) in food safety testing activities; (iii) international experts to help harmonize testing methods with international organizations so that the center can register for accreditation of food safety laboratories by international organizations; and (iv) training on food safety equipment maintenance and calibration capabilities for laboratory staff on GC-FID, GC-NPD, HPLC-UV, GC-MS /MS, LC-MS/MS, AAS, ICP-MS, etc. to obtain certification and be able to maintain and run the food safety testing laboratories on their own.

This project intervention will enhance the capacity of local testing laboratories in the provinces through training and technical support activities by the center. In addition, the target provinces will be provided with high quality food safety testing services, ensuring the requirements of the importing countries through building a network of controlled service providers with quality assurance by laboratory activities and inter-laboratory comparisons within the system.

Activity 2.3.2. Upgrade facilities and enhance capacity for providing on-demand services of pesticide residue analysis and promote HACCP protocols of the Quality Center for Agriculture, Forestry and Fisheries - Region 3

This selected center is currently providing services to 6 provinces in the South Central and South-Central Highlands, including Khanh Hoa, Phu Yen, Ninh Thuan, Dak Lak, Lam Dong and Dak Nong and other provinces upon request.

In order to meet growing demands from agro-producers and growers in the region, the project will help upgrade laboratory facilities of the center to strengthen the scientific and technical capacity of the center for analysis of pesticide residues in packaging, agricultural inputs and agricultural products as well as to improve HACCP protocols so that the center can participate actively in the agri-food safety chain. By having the required facilities, the center expects to improve its capacity to analyze relatively complete and diverse criteria of antibiotics, pesticide residues, and heavy metals used in the production and processing of agro-forestry-fishery products, contributing to good quality control of agricultural, forestry and fishery products in the Central Highland region.

Through this project support, the center will be able to (i) shorten the analysis time, thereby promptly handling problems or incidents related to quality and food safety of raw materials, fruit and vegetable products; and (ii) reduce the price of pesticide testing by 15%-30% due to the multi-residue analysis, which produces multiple results at the same time. These will substantially help the agro-producers in the Southern Central provinces and the Central Highlands to access timely and quality services needed for their business.

Output 2.4. Pollution from agricultural field plastics in project areas reduced through re-use, recycling and alternative approaches

This output aims to address pollution from agricultural field plastics, through 3R+ solution and non/low alternatives (agricultural by-products) following Circular Economy approach. The output will support MARD to implement its Action Plan as indicated in Decision 2711/QD-BNN-KHCN to reduce, collect, classify and reuse plastic waste in the agricultural sector as well as provincial Action Plans (PAPs).

Vietnam has significant potential to make use of agricultural by-products that is now largely being left over, bringing both economic and environmental benefits. It is estimated that Vietnam has about 45 million tons of dry straw, 8 million tons of rice husks, 30-50 million wastes of other plants (peanut, corn, soybean, cassava, sugarcane, coffee, fruit cover, etc.) annually, of which 61% are organic and can be recycled. In addition, more than 100 million tonnes of annual crop residues are organic carcasses such as stems, leaves, seeds, coats, cores containing a very high amount of nutrients for soil rehabilitation.[43]43 On the other hand, agricultural by-products are one of the causes of environmental pollution (soil, air and water) due to common practices of burying, indiscriminate discharging and burning around the year.

Recent PAPs indicate strong commitment towards sustainable plastic management. The PAP sets out solutions to reduce plastic waste generation in agriculture by prioritizing the use of biodegradable materials; applying farming processes with measures such as reducing the use of plastic materials, increasing re-use of agricultural by-products. The PAP also proposes to apply and implement ecological/green/organic/circular agricultural models in order to reduce plastic waste and replace with environmentally-friendly materials. It also highlights the collection, classification and re-use of plastic waste in agriculture in parallel with propagation, awareness raising and responsibilities of organizations and individuals in the management, production, trading and use of plastic materials for agriculture. A total of 178 models and clubs such as ?Women say no to plastic waste?, ?Say no to nylon bags?, ?Reducing plastic waste?, etc. with 5,420 participants, has been established by Women?s Union in collaboration with relevant government departments at all levels in 5 project provinces. In line with this the following activities will be implemented under this output.

Activity 2.4.1. Pilot and scale up of adoption plastic alternatives (non- and low-plastic) for on- and off-farm activities in selected agri-food value chains

This activity aims to apply plastics alternatives in a range of on-farm and off-farm practices in support of PAP implementation. Accordingly, the project will organize Farmer Field Schools (FFS) on agricultural by-product processing technologies, solutions of low plastics alternatives like thicker mulching films, degradable plastics, fruit cover, etc. that can be applied/last for longer to reduce the volume of one-use plastics. The project will develop 20 pilot models across 5 provinces to apply sustainable/eco-farming using agricultural by-products/low plastic alternatives to replace plastic materials.

The project will establish or re-activate FFS groups, and improve existing agricultural extension training materials and tools by incorporating topics on appropriate agricultural by-products and low plastics alternatives ensuring women and EM inclusion. In each province, 30 participants including 13 core facilitators (AEC, ASC, WU, FU) and 17 lead farmers will be engaged and trained on technical and also facilitation skills by a consultant. This activity will engage private sector for greater effectiveness. Lead farmers selected from different communes will learn simple technologies of using agricultural by-products using traditional knowledge and scientific information, evaluate, refine and adapt models for their local farm-level application. They also learn methods and practices of managing soil, water resources at their localities, learn and adapt low-plastics alternatives that are suitable and affordable for their crop production. After graduating from FFS, these farmers will upscale this

approach by returning to their communities and training their neighboring farmers with supervision and support from local government agencies and NGOs.

These trainers will teach 30 participants as farmers and other market actors along selected value chains (inputs providers, processors, packagers, wholesalers/retailers, shops, consumers, etc.) in district-based FFS about relevant topics regarding low plastics alternatives. Minimum one core facilitator and one lead farmers per FFS should facilitate the learning sessions for other farmers/market actors. To ensure the FFS are delivered effectively and timely, facilitators and lead farmers should sign a performance-based contract with FFS participants, including a simple work plan and scaling up plan. The FFS will receive participatory monitoring, and results would be documented for discussion and scaling up. Core facilitators and lead farmers will receive continuous technical and mentoring support from the implementing partner throughout the project cycle, and one refresher/additional training for FFS participants, core facilitators and lead farmers will be conducted during the project life. By utilizing existing farmer extension services and strengthening their outreach, materials and farmer-to-farmer learning systems, the project will reach:
? 30 trainers per province, including 13 core facilitators and 17 lead farmers. There will be a total of 10 trainings of trainers, one in year 1 and one refresher in year 3, across 5 provinces. The total number of trainers is estimated at 150.

? 30 farmers and market actors per district-based FFS will be selected, at least 50% of whom are women and 30% ethnic people in ethnic-concentrated areas. There will be a total of 34 FFS along the project cycle, one in year 1 and one refresher one in year 3, across 17 target districts of 5 provinces, with a total of 510 direct beneficiaries.

The FFS will be demand-driven, practical and specific per agro-climate zone. Specific attention should be paid to reach women farmers and ethnic minorities, for example by setting up women-only classes, engaging women lead farmers and trainers, using local languages, applying flexible time and location of trainings and using visual materials and interactive formats.

This activity will be implemented in close collaboration with the DARD Agricultural Extension Center (AEC) and its respective unit under the district-level Agricultural Services Center (ASC) will lead the implementation of the FFS in project provinces. Technical support for the design, content, training and organization of the FFS will be provided by the implementing agency and private sector partners will be engaged close in this activity. Local Farmers? Union (FU) and the Women?s Union (WU) will provide organizational support, use their wide networks to ensure outreach. Adequate women and EM people will be engaged in this activity to make it inclusive.

It is expected that 20 pilot models on low-plastic alternatives for selected agri-food value chains will be developed and implemented across 5 provinces, closely engaging market actors particularly private sector. Results from these 20 models will be documented and disseminated widely towards the end of the project. The project should consolidate all the evidence and disseminate the learning and good practices information through workshops, meetings and other channels where suitable for scaling purposes. In main, this activity will include:
? Carry out 10 Training of Trainers for provincial DARD AEC, district ASC personnel, Farmers and Women?s Unions and lead farmers to build a cadre of farmer champions to promote adoption and application of plastic alternative solutions integrated in agricultural extension training materials [5 workshops in 5 provinces - 30 trainers with workshops conducted in two times: 1st in year 1 and 2nd in year 3]

? Organize 34 Training of farmers and value chain actors ? particularly private sector input providers, processors, wholesalers/retailers, transporters, shops and consumers - through FFS on scaling up of non/low plastics alternative systems and practices. [30 participants/FFS/district * 17 districts, conducted in two times: 1st in year 1 and 2nd in year 3)

? Develop 20 pilot models across 5 provinces on low-plastic alternatives for selected sustainable and high-value agri-business chains

Activity 2.4.2. Pilot and scale up circular economy models for agricultural plastic management (reduce, re-use, recycle, remake and properly dispose) to achieve zero plastic waste target

To address environmental pollution and the increasing agricultural input prices, the project will employ agricultural plastic management models to reduce, re-use, recycle, remake and properly dispose agricultural plastic waste. Innovative agricultural plastic management models in the production, processing, trading and consumption of agricultural products will be piloted and scaled up. The integration of these models will be maximized across stages of the production cycle that could harmonize between sustainable development and environment preservation, via minimizing waste to the natural environment. It will also help generate technological innovations, improving product qualities, bringing employment opportunities and developing highly-skilled human resources.

There are several best practices of these models in Vietnam to learn from and replicate. For example, coffee by-products from a production stage become materials for subsequent stages, creating an ecosystem of high-quality products that benefits general health and welfare (Mitix Group).

Central Highland region is a big agricultural production hub, with large area of coffee, pepper, high-value fruit crops, medicinal plants, etc. and a rich soil nutrition and favorable climate condition, it has high potential to utilize a variety of by-products and develop diverse ecosystems. This will have implications for pollution reduction given relatively high network of hazardous waste disposal facilities and recycling facilities in nearby regions such as South Central/Southern provinces (where more than one third of hazardous waste disposal facilities are located).

This project will develop models for selected agricultural service cooperatives and SMEs, who works closely with farmers along agri-food value chains. Specifically, the project will provide capacity building workshops on the models developed and piloted, after which selected cooperatives/SMEs are expected to scale up models adapting to their contexts using ?Green Financing Package? with technical guidance and assistance from hired consultants. To get this project funding, cooperatives/SMEs will submit their proposal for screening, and are committed to be providers of ?bulk services? of traditional 3R model, or engaged in other segments (redesign/remake/recover) of a model.

? Purchasing seeds/seedlings/agro-chemicals/low plastic alternatives (multiple use plastics, agricultural by-products) each batch to reduce the use of non-eco-friendly products, make the best use of equipment and products; increase efficiency in product manufacture and efficiently use natural resources and raw materials; then allocating and delivering these inputs to their farmer members with less costs. Farmers don?t have to buy inputs with small amount each time from agents, to avoid unnecessary waste. Currently many agricultural service cooperatives in Vietnam have such operations.

? Managing and supervising services of pesticide container use, collection and classification at source, arrangement of transportation of agricultural plastics waste to recycling and disposal facilities on regularly basis. Accordingly, farmer members will be provided with three types of trash bins/tanks for organic waste, hazardous waste and recyclable waste so that they can classify waste at their source. The project will organize capacity building workshops for cooperative members/SMEs, with topics of affordable technologies on organic waste how to make composting/new products and utilization of energy recovery from waste for biogas. Regarding hazardous waste like pesticide containers, farmers will learn on how to properly use, collect, handle as well as select storage tanks in close collaboration with relevant stakeholder(s) such as CropLife, who has considerable experience in working on this activity in Mekong River Delta and Son La province.

? Recycling waste (mulching film, fruit cover bags, seeding trays, greenhouse film, Expanded Polystyrene EPS boxes, irrigation drip tapes, fertilizer containers) will be properly collected and managed by farmers, with supervision of assigned lead farmers in collaboration with district agricultural services center/commune agricultural extension staff and engagement of FU and WU. Delivery will be arranged by cooperatives/SMEs and recycling facilities, and partially funded under the ?Green Financing Package? as an incentive for both. During the implementation timeframe, the project is expected to catalyze other incentives to recycling facilities for their possible operational expansion via access to bank loans under ?green finance Framework? designed, as well as access to VEPF resources for financial support.

? Disposal: Delivery and transportation of hazardous waste to disposal facilities is supposed to be funded by VEPF as regulated in Environmental Protection Law 2020, with effective date of 1 January 2022. The project will provide information and support disposal facilities in terms of proposal preparation and submission to VEPF to access financial resources for their operation. Currently more than 100 producers/importers have made their financial contribution to VEPF, whose resources will be used to support disposal activities.

? Other ?re?-segments/activities: Cooperatives/SMEs who are engaged in remaking/redesigning/recovering activities, with on-farm and off-farm innovative solutions in any step of agri-food value chains [harvesting, (semi-)processing, packaging, storing, layout design, transportation, etc.] will also be considered.

By applying financial instruments for developing innovative models, there will be reduced plastics waste along all stages of the whole value chains. Training should be designed specifically for each group of beneficiaries including women and ethnic minorities, focusing on the technical aspect with hands-on support rather than just awareness raising. Along the project timeline, it is crucial to have close coordination between MARD/APMB and DARD/DoNRE's district authorities for effective implementation at the field level. Similarly, coordination between Agriculture and Environment agencies at central, provincial and district level with full engagement of mass organisations, CSOs and private sector should be strengthened.

All these will contribute to the implementation of the Environmental Protection Law 2020 - EPR regulation for manufacturers/importers regarding disposal has been effective since January 1, 2022, while EPR recycling will start in about one year from now (January 1, 2024). This activity will include:

? Organize 5 capacity building workshops on agriculture plastic management model with tailor-made program for selected agricultural cooperatives/ SMEs.

? Each 2-day workshop per province will have 25-30 selected participants as representatives of cooperatives/SMEs, together with relevant stakeholders (DARD, WU/FU). Once coming back from workshop, participants will submit their own proposal for funding. A Committee of the FARM project will be set up to assess proposals and select 20 best participants who will be provided with technical and financial assistance to develop their models.

? Provide financial and technical assistance to the design, development and operationalization of 20 models of selected agricultural service cooperatives/ SMEs across 5 provinces ? Re-use/Reduce plastics

? Provide 3R tanks for cooperatives/SMEs (1 mil VND per tank * 2 tanks * 20 households/cooperative * 20 cooperative/SMEs = 800 million VND = $33,333 (in combination with tank provided in Activity 2.2.1)

? Provide financial support to delivery/transportation of recyclable waste to 5 recycling facilities (100VND/kg*8,000,000 kg/month*4 months*1 facility per 5 provinces = 16 billion VND = $666,666)

? Provide financial support to delivery/transportation of hazardous waste to 5 disposal facilities (100VND/kg*1,000,000 kg/time, 1 time/year*1 facility per 5 province, 5 provinces = 500 mil VND = $20,833)

? Provide technical assistance through consulting services to design and develop 20 circular economy models (200 person-days). $200*$200=$40,000

? Provide financial support for these 20 models (from Green Finance Package), with an amount of $50,000 per model for services of pesticide container use, collection and classification at source, arrangement of transportation of agricultural plastics waste to recycling and disposal facilities on regularly basis along the project timeline, making/remaking/recovery of new products. 20*$50,000 = $1 million

Regular monitoring and scaling up by FU/WU at all levels needs to be ensured for both activities.

? Catalyse and pilot 10 R&D models for zero-waste solutions among the agri-food value chain actors ? Rethink/redesign/recover

? The 10 pilot R&D models are those technically and economically feasible ($5,000 per model), selected by FARM project committee.

? Facilitate loan access/grant from VEPF or commercial banks for recycling/disposal facilities

? Delivery and manufacturing of recycled products will be partially funded under the ?Green Financing Package? based on number of tonnes produced per year.

? This will also support recycling facilities to adopt appropriate technologies and upgrade/expand their operations, via grant/loan access to VEPF and commercial banks ? Recycling

This activity will be done with full engagement of DARD, district Agricultural Service Centre and FU/WU, cooperatives, SMEs, social enterprises, start-ups businesses and commercial banks.

Outcome 3: Agricultural management and monitoring system, and knowledge and capacity for agrochemicals management, and natural capital accounting and assessment enhanced

Output 3.1 Agriculture product monitoring and management systems to support supply chain traceability and site level performance developed and implemented

Activity 3.1.1. Support development of database of Production Unit Codes of target high value crops - coffee, pepper, avocado, mango, custard apple in relation to agrochemical use.

Establishment and issuance of codes for production units and packing facilities of agricultural products is a mandatory requirement of some of the major importing countries such as the United States, Australia, Japan, South Korea and People?s Republic of China to comply with their regulations on phytosanitary, food safety and traceability. This, in particular, gives reference to the level of agrochemical use during crop production and post-harvest processing. While there have been positive results with 14 types of fresh fruit crops (e.g. durian, mango, litchi, longan, etc.) to be issued with production unit codes (PUC), production areas that have been granted with PUC is still limited at 300,000 ha, with more than 4,000 PUCs and 1,894 packaging facility code issued as of June 2022[44][44]. In addition, the monitoring of growing areas and packing facilities after being granted codes in some localities is still limited, and only applied to a few key fruit crops (e.g. durian) and does not fully maintain food safety requirements of the importing countries. Several cases of impersonating codes and violating regulations on phytosanitary and food safety of production units and packing facilities has led to warning or suspension of import from importing countries such as China.

In order to make the establishment and management of PUC and export packing facilities more practical and effective, while improving the responsibility of relevant organizations and individuals there is a need to build a fully integrated and modern agriculture towards digital transformation. Directive No. 1838 issued by MARD on 28 March 2022 highlights enhanced management of PUC and packaging facilities for agricultural export, via increased information technology application for managing PUC and packing facilities on the National Database Platform developed and operated by PPD/MARD.

In 2021 Ministry of Science and Technology issued two national standards on traceability codes and data carriers (TCVN 13274:2020 and TCVN 13275:2020), which is basis for standardizing the traceability. While several agricultural enterprises have applied agricultural supply chain traceability systems, most of them only apply it internally, which make it difficult to interact, link and share data. The reason is that these systems use its own identifiers and traceability codes, which are not. acknowledged and connected to each other. The lack of a complete database on international standards, regional standards, national standards makes it difficult for businesses and people to search and apply standards. In order to obtain information about standards for products, goods, processes, etc. as desired, businesses, organizations and individuals often have to contact state agencies on standards.

Currently there are more than 13,000 Vietnamese standards, of which only more than 60% in harmony with international and regional standards.[45][45] . In the context of international economic integration and expansion of international transactions in goods and services, the use of international standards (ISO, IEC) to remove technical barriers to international trade is of special interest of the WTO, and is the minimum requirement for countries' goods when entering the global market. This intervention includes:
? Study international standards and regulations to develop and complete a system of national standards and technical regulations and general guidelines on traceability systems for selected agri-food value chains; and

? Develop and digitalize the database of PUC in 15 concentrated planting areas of export-oriented crops across 5 provinces to be in line with international standards and regulations.

Activity 3.1.2. Expand and upgrade high-value agri-food value chain traceability system run by PPD (database and capacity building) for key crops (durian, pepper, coffee, passion fruit, mango, etc.) to support food safety management

This activity is designed to support PPD?s ongoing activity on its traceability system, which is now only for durian export to China, so that it can be expanded to other key high-value crops. In the first phase, mango and passion fruit will be integrated and followed by other crops (pepper, coffee) to apply farm diary software on regular basis. This is a solid basis for implementing the traceability of many other remaining crops for domestic consumption too.
This activity will include 5 capacity building workshops on traceability software for technical staff, farmers and market actors along the value chain (producers, packagers, processors, exporters, etc. (one workshop per province). The number of field monitors/supervisors vary. It will also support the development of an application on smart phone, which is more user-friendly as opposed to the currently available web-based system.

Output 3.2. Targeted behavior change and technical advisory campaigns designed and implemented

Activity 3.2.1. Design evidence-based Knowledge Management and Project Behavior Change Communications (BCC) Strategy in five target provinces during 2023-2025

Consultation with various national and subnational stakeholders has showed that there are needs from provinces on communications materials and technical support in implementing communications intervention for FARM such as media engagement, community mobilization and capacity building in communications etc. For example, from the meetings with the PPD, DONRE at three consulted provinces, and CropLife in Viet Nam, these agencies expressed that they have implemented different communications activities and use various channels such as website, television, and sometimes social media channels including YouTube and Zalo[46][46]. However, none of these agencies have provided an evidence-based communication strategy developed from audience research, comprehensive implementation plans with clear objectives, outcomes, activities and impact evaluation.

The Green Growth Knowledge Partnership (GGKP) defines key terms under the Knowledge Management Strategy to be developed under the GEF FARM Global Child Project as follows: **Knowledge** is defined as the understanding of a subject, or in GEF, the experience and lessons learned related to GEF projects and programs. According to this definition, in the FARM programme, knowledge is taken to cover (1) **knowledge products** which are outputs such as databases, publications (e.g., technical reports, brochures, guidance documents, guidelines, case studies, research, training manuals, etc.), visual material (e.g., videos, media cards, graphical supports, etc.), tools and maps, and (2) knowledge services which are outcomes such as awareness raising, information sharing, communications, and capacity building efforts. In the context of this FARM Child Project in Viet Nam, according the needs and demands from national and sub-national stakeholders, knowledge services will be packaging in the form of BCC strategy and activities.

Moreover, development and implementation of a comprehensive BCC strategy will be crucial to ensure effectiveness and sustainability for FARM in the country. An effective and effective BCC strategy can help influencing FARM policy, promote positive measurable behaviour change for farmers to adapt good FARM practices. Communication should be intrinsically linked to all phases of the project and it uses consultation and community participation process suitable to the local contexts while applying a mix of communication tools, channels and approaches. The BCC strategy is also in line with the ADB public communication policy issued in 2019.[47][47] The policy states that communication efforts should aim to facilitate dialogue with affected people and other interested stakeholders (women, the poor, and vulnerable ethnic minority groups). Information about FARM project should be made available to key

beneficiaries, especially poor and vulnerable male and female farmers them in ways, forms, and language understandable to them via suitable places and platforms.

The main sub activities are:

? APMB will work with the KM-BCC consultant, relevant departments under MARD, MONRE, and other stakeholders in targeted provinces including Women Unions, Farmer Unions, and Agricultural Promotion Centers to conduct formative research to understand the audience profiles, information channels, gaps in knowledge, communications approaches, budget availability, and roles of participants and mechanism for implementation and monitoring

? The BCC consultant will develop a KM and BCC strategy based on result of the formative research and annual workplan plans for each province with budget allocation and description of activities with clear roles of line departments (DARD, DONRE), local government (Provincial, District, and Commune People Committees).

Activity 3.2.2. Adapt the Global FARM logo and brand identity for the project to reflect Vietnamese context, develop and disseminate a package of knowledge products and communications materials. Develop and implement BCC campaigns to raise public awareness and mobilize community participation in implementing recommended FARM practices in Viet Nam.

It is to disseminate FARM knowledge, recommendations, guidelines and know how to relevant stakeholders, including women, poor and vulnerable groups of farmers living in 5 target provinces. The materials should be simple and attractive, so that farmers living at the target provinces can understand and follow the desired FARM practices (e.g., produce, use and market safer alternatives to pesticides and agro-plastics).

The global child project identified knowledge needs especially around key knowledge products and services to be generated while implementing components under the FARM child projects. Prioritize knowledge areas for the FARM project in Viet Nam are management of agrochemicals, reduction of harmful chemical use including highly hazardous pesticides (HHPs), alternatives of agri-plastics, biopesticide registration processes, integrated pesticide management (IPM), sustainable agriculture practices and agroecological production, financial mechanism for sustainable agriculture, government subsidy design to promote the use of alternative pest control measures.[48][48]

To implement BCC strategy and annual workplans developed under the activity 3.3.1 above, a package of communications materials should be developed, tested, produces and disseminated timely and effectively to relevant stakeholders, including the government officials, members of local NGOs and media reporters. The knowledge products and/or BCC materials can be materialized in a form of technical reports, economic valuation studies, normative documents on guidelines on registration and enforcement and legislative framework training manuals, project reports, project communication materials such as press release, news article, factsheets, infographics, video productions. Equally, these knowledge products will be disseminated by training, awareness raising, information sharing and capacity building activities.[49][49]
The main sub-activities are:

? APMB will work with the creative communications consultant/firm and CropLife in Viet Nam, and other beneficiaries in targeted provinces to develop the concept, test the key messages and design a package of BCC materials including brochures, leaflets, factsheets, Q&A and video clips to help disseminate FARM key messages and advices to female and male farmers living in the targeted provinces. The package may include but not limited to:

- ? A FARM communications manual for project collaborators
- ? 5 factsheets and leaflets
- ? A package of 10-15 radio spots in ethnic minority languages
- ? A package of 5 -10 short educational videos to show farmers on how to perform desired FARM practices.

? APMB will coordinate with DARD and/or PPC in 5 targeted provinces to adapt and produce the communications package developed under the sub-activity 3.2.2.1 above and disseminate to all beneficiaries from the five selected provinces.

The BCC campaigns will apply suitable communications approaches and channels including social media, mass media, knowledge sharing workshop for national and local governments, and media reporters.

The findings from the field visits conducted by the project preparation consultants presented some harmful practices conducted by farmers: (i) open burning of pesticide container/plastics wastes, burial, (ii) over dumping into collective sites or some downgraded bins/tanks near the fields/streams/ponds; (iii) slow disposal of pesticide containers. In all provinces visited, a certified environmental treatment and construction company, which is normally signed a contract with district agency in charge, comes to deliver pesticide containers and dispose at their location often far away from the original sites, but often just 1-2 times per year.

Experiences gained from many development projects showed that BCC campaigns are necessary because they are typically the most effective way to communicate key message to target audiences in a period of time. In this FARM project, the key messages and knowledge disseminated to farmers are important and ethical.

The main sub-activities are:

? APMB will work with the creative communications consultant/firm and partner agency (agencies), DARD and mass organizations (Farmer Union, Youth Union, Women Union) to develop training program and materials that suitable for farmers, including women and people from vulnerable groups for each of five targeted provinces of the project.

? APMB will coordinate with DARD and relevant mass organizations in 5 targeted provinces to implement TOT training for representatives of farmers (ensure the balance of women, men and ethnic minority groups)

? APMB will coordinate with DOC in 5 targeted provinces to implement media training for reporters and journalists on FARM issues and recommendations. DOC develop guidelines for provincial media on how to disseminate FARM information to public and ensure the key message will reach the most vulnerable groups

Activity 3.2.3. Design, host and administer a web-based knowledge platform as a knowledge management system (KMS) for Viet Nam FARM child project (using both English and Vietnamese languages)

It is for a wider audience - including development partners, government officials, academia, international donors, NGOs, CSOs, CBOs, experts and members of the public. All knowledge sharing products, including technical reports, training materials, and BCC materials will be timely uploaded on the website. The website link can also be shared and integrated in some government agencies? website such as MARD?APMB, MONRE and DARDs in target provinces. Moreover, articles and technical reports, communications materials posted on the Vietnam FARM website can be further disseminated via Global FARM website.

In line with the GEF definition[50][50], a **knowledge management system (KMS)** for FARM Child Project is defined as any kind of IT/online system that stores and retrieves knowledge in a user-friendly manner, improves collaboration and knowledge exchanges, locates knowledge sources, captures and uses knowledge, or in some other way that enhances the KM process. The KMS is designed for both internal project use and external public use.
Knowledge generated from each child project country in general, and in Viet Nam in particular can provide learning opportunities to other countries under the FARM program as well as neighboring countries in each region. With consistent knowledge collected and curated, child projects can compare and synthesize their knowledge with other countries and can quickly learn from each other. This learning process and knowledge application by wider stakeholder group at the global level also help ensure achieving the goals of the FARM program.

The main sub activities are:

? APMB will work with the website development consultant/firm and FARM consultants in consultation with GEF to develop the concept and design the website for FARM in Viet Nam which is in line with GGKP guidelines.

? APMB will manage the website and regular produce the content and upload the technical reports and communications materials to the website using both English and Vietnamese. The contents can be shared by other relevant departments and FARM stakeholders.

Output 3.3. Natural Capital Accounting and Assessment Capacity Strengthened

Activity 3.3.1. Conduct capacity building on Natural Capital Assessment and Accounting at central and provincial levels

Natural capital accounting (NCA) is currently being applied in many countries around the world for all areas of natural resources - environment, including: land resources, water resources, forest resources, biodiversity resources... serve development needs in the context of each separate region, country and territory. Currently, in Vietnam, the socio-economic development also puts great pressure on the environment; natural resources management is still weak, and natural resources using is inefficient, especially land and water resources; some resources are abused, over-exploited leading to degradation and depletion. Therefore, to keep pace with the general trend, Vietnam also needs to account and build

national accounts of natural capital, in order to use natural resources sustainably. The FARM Vietnam will support these efforts on natural capital accounting.

According to the United Nations Environment Program (UNEP), **natural capital** is the assets of nature used for production and consumption, including living organisms and the physical components of nature, such as soil, water, minerals and fossil materials. Goods and services provided from natural capital are of important value to human life and development, such as food, water, air, cultural and spiritual services, and support for regulating biogeochemical cycle. Natural capital and ecosystem services provide significant economic benefits. Therefore, natural capital has always been the foundation for countries to develop its socio-economy and ensure ecological security in order to achieve the goal of sustainable development.

In Viet Nam, the Law on Environmental Protection 2020 (LEP 2020) had mentioned the concept of **Natural Capital** and **Payment for Natural Ecosystem Services**:

? **Article 147 (LEP 2020): ?Natural capital?** means natural resources, including land, water, forests, fisheries, minerals, fossil fuels, natural energy sources and natural ecosystem services. The exploitation, use and development of natural capital shall comply with the following principles: (i) Natural capital shall be inventoried and assessed for socio-economic development in accordance with law; (ii) The State gives priority to investment in maintaining and developing renewable natural capital and providing natural ecosystem services; and (iii) Revenues from natural capital shall be prioritized for reinvestment, maintenance and development of natural capital.

? **Article 138 (LEP 2020): ?Payment for natural ecosystem services?** means the organizations/individuals using natural ecosystem services to pay organizations/individuals providing environmental and landscape values originated from natural ecosystems in order to protect, maintain and develop natural ecosystems. Natural ecosystem services are paid including: (i) Forest environmental services of forest ecosystems in accordance with the law on forestry; (ii) Wetland ecosystem services for tourism, entertainment and aquaculture business purposes; (iii) Marine ecosystem services for tourism, entertainment and aquaculture business purposes; (iv) Services of rocky mountain ecosystems, caves and geo-parks for tourism and entertainment business purposes; (v) Natural ecosystem services for the purpose of carbon sequestration and storage, except for the case specified in item (i).

In Vietnam, priorities on effective use and conservation of natural capital have been mentioned in Decision No. 1658/QD-TTg approving ?National strategy on green growth 2021-2030, with vision to 2050? promulgated by the Prime Minister on 1 January 2021. Accordingly, the Strategy clearly defines "Green growth is based on increased investment in conservation, development and efficient use of natural capital resources, reduction of greenhouse gas emissions, improvement and improvement of environmental quality, thereby stimulating economic growth?. At the same time, natural capital is also mentioned as one of the solutions to implement the Strategy.

Vietnam is a member of the Wealth Accounting and the Valuation of Ecosystem Services (WAVES) initiated by the World Bank since 2010.[51][51] Through cooperation programs with many international partners, such as UNEP, Asian Development Bank (ADB), German Development Cooperation Agency (GIZ), and Winrock International, Vietnam initially implemented capacity building in natural capital assessment, ecosystem services, payment for ecosystem services, study on the development of forest accounts and a roadmap to develop other natural capital accounts, such as water, land, energy, etc. Program on Reducing Emissions from Deforestation and Forest Degradation (REDD), sustainable

forest management, combined with livelihood diversification for local people has been implemented in Vietnam.

Back to the concept of NCA, this is the process of incorporating environmental and resource considerations into economic analysis. NCA applies the laws of economic development to the economical and efficient use of resources, protecting the environment from degradation. NCA can help achieve the Sustainable Development Goals (SDGs) as well as help assess the balance between individual SDGs and the natural capital accounting of developing practices in many countries around the world. Currently, Vietnam has many advantages as well as difficulties to be able to build national accounts of natural capital through NCA. Natural capital accounts in Vietnam that need to be accounted including: Land, water, forest, sea, minerals and energy as well as biodiversity and environmental pollution. All such natural capital needs to be accounted under 3 angles: in terms of physical, environmental and spatial costs and benefits. Based on that NCA to calculate the cost of environmental restoration that businesses and people must reimburse if they do not comply with the circular model; or have preferential policies and regimes so that enterprises using clean technology have a competitive advantage over those using polluting technologies.

In accordance with the LEP 2020, in order to make payment for natural ecosystem services, the Government of Vietnam issued Decree No. 08/2022/ND-CP dated 10 January 2022 guiding provincial-level led environmental agencies coordinating with relevant agencies in formulating the **provincial-level scheme on payment for natural ecosystem services** and organizations/individuals providing natural ecosystem services formulating a **payment scheme for natural ecosystem services** for the area applying payment for natural ecosystem services in accordance with the provincial scheme on payment for natural ecosystem services (Article 124) . Regarding the form of payment, the Decree guides organizations/individuals using natural ecosystem services to pay directly to organizations and individuals providing natural ecosystem services through an agreement between both sides. In case of indirect payment, organizations/individuals using natural ecosystem services shall pay to organizations/individuals providing natural ecosystem services in the form of entrustment through the provincial environmental protection fund or the Vietnam Environmental Protection Fund (VEPF) in case the local authorities do not have a provincial environmental protection fund. The MONRE had promulgated a set of contract forms for payment for natural ecosystem services; sample payment schedule for natural ecosystem services payment; form of payment statement for natural ecosystem services under Circular No. 02/2022/TT-BTNMT dated 10 January 2022.

Because the above contents are new and while working in the local authorities, the PPG team realized the need to strengthen the capacity of implementing agencies in the provinces (DONRE, DARD, Department of Finance) and organizations/individuals providing natural ecosystem services?). Therefore, the FARM Vietnam will provide technical support and capacity building for local governments or organizations/individuals providing natural ecosystem services to provide the definition on natural capital, natural capital accounting and assessment, assessment of natural ecosystem values as a basis to prepare **Payment for Natural Ecosystem Services Scheme** at provincial or/and grassroots level. To carry out this activity, APMB will recruit a consulting firm to conduct capacity building training courses for local authorities and related organizations/individuals.

Main sub-activities include:

? APMB hires 01 consulting firm to conduct capacity building training on natural capital accounting and assessment, assessment of ecosystem value in 5 project provinces and guide the formulation of provincial -level scheme on payment for natural ecosystem services.

? The consulting firm develops the lecture content and APMB will give approval before implementation.

? The consulting firm conducts training courses in the Central Highlands for stakeholders (DONRE, DARD, Department of Finance, representatives of organizations/individuals providing natural ecosystem services...).

? The consulting firm evaluates the training results and submits the training report to APMB.

Activity 3.3 2. Pilot Natural Capital Assessment and Accounting in two selected provinces and disseminate results to help make relevant policy decisions

Following the above activity 3.3.1, FARM Vietnam will support 02 project provinces to carry out natural capital accounting and assessment and prepare 02 provincial-level scheme on payment for natural ecosystem services. Natural capital accounting and assessment (including reserves and ecosystem services) done properly and reflected that value into a natural capital accounting framework can provide necessary data/information for planners/decision makers about the trade-offs when making development decisions. As such, they will be more aware of the socio-economic consequences of their local/national use of natural capital and be able to make better decisions about the use of natural capital - who uses it, where and to what extent.

In addition to supporting the 02 project provinces to prepare the Provincial-level Scheme on Natural Ecosystem Service Payment, the FARM Vietnam will support to formulate a web-based reporting platform that allows data entry on natural capital accounts at the provincial level and produce reports on natural capital at the provincial level. The level of system details will be clarified during project implementation and at the request of the local authorities at the time of implementation when the mechanisms/policies become clearer.

Main sub-activities include:

- ? APMB mobilized the consulting firm recruited under activity 3.3.1 to conduct natural capital assessment in 02 project provinces (i.e. Tay Ninh and Dak Lak).
- ? The consultant builds a web-based database that allows data entry of natural capital accounts identified at the provincial level (land, water, forest, aquatic resources, minerals, fossil fuels, natural energy resources, and natural ecosystem services) and produce the required reports for each natural capital source. Data entry will be applied for the 02 project provinces.
- ? The consultant supports 02 provinces to formulate the Provincial-level Scheme on Payment for Natural Ecosystem Services.
- ? The local government will consider and approve the Provincial Natural Ecosystem Service Payment Scheme for application.

Activity 3.3.3. Design and implement advocacy campaigns for increased public-private partnership and participation to help maintain natural capital accounts.

The National Strategy on Green Growth for 2021-2030, with vision to 2050, and the Socio-Economic Development Strategy 2021-2030 set priorities for the efficient use and conservation of natural capital. Accordingly, the Strategy requires studying and promulgating economic and financial mechanisms and policies on recovery and development of natural capital, encouraging the participation of all economic sectors to invest in ecosystem restoration.

Within its scope, the FARM Vietnam will support the communication responsibility within the mandates of MARD and MONRE to contribute to changing awareness of all levels, sectors, businesses and people on the value of natural capital in building a green economy and the importance of conservation and

sustainable use of natural capital. The green finance activities under FARM Vietnam contribute to reducing the use of agrochemicals and plastic waste in agriculture will bring about long-term impacts on the environment, thereby helping to strengthen and develop natural capital relating to land, water and ecosystems.

However, in the long run, the Government needs to continue: (i) develop favorable mechanisms and policies to promote investment and loan activities for development programs and projects, improve natural resource using efficiency and minimize negative impacts to natural capital; (ii) develop a roadmap for implementing natural capital accounting in national accounts, focusing on the value of ecosystem services in the formulation and implementation of development plans and projects, as well as the implementation of investment projects, it is necessary to consider the efficiency of exploitation and use of natural capital; (iii) survey, assess and inventory the current state of natural capital (including forest, marine, wetland ecosystems, renewable and non-renewable energy resources) to obtain appropriate planning and management plans, creating a basis for the balance in the achievement of the objectives of conservation and socio-economic development.

Main sub-activities include:

? APMB works with media consultant/firm and coordinate with DARD and Department of Communications (DOC) in each province to develop media partnership plans and conduct media training for television reporters and journalists on FARM advocacy messages and how to disseminate these messages effectively.

? APMB manages and coordinates with the communications/media consultant/firm to conduct field visits for media reporters and journalists in 5 target-provinces to develop media articles and documentary films on FARM good practices.

4) Alignment with GEF focal area

The FARM Viet Nam child project design is in alignment with the GEF-7 Focal Area ? Chemicals and Waste Programming Directions and Strategies to generate Global Environmental Benefits under related core indicators. The project aims to develop and promote innovative financing mechanisms for reduction and elimination of harmful agricultural chemicals as outlined under Program 2 ? Agricultural Chemicals Program strategy under the Chemicals and Waste Focal Area. The project will target the agricultural chemicals that are listed as persistent organic pollutants (POPs) under the Stockholm Convention, Endosulphan, Lindane and highly hazardous pesticides (HHPs) that enter the global food supply chain causing serious human health consequence contributing towards GEF-7 **Food Systems, Land Use, and Restoration Impact Program**. The project will employ a whole of agricultural chemical lifecycle management approach to tackle end of life, waste and obsolete POPs and management and safe disposal of agricultural plastics contaminated by POPs and HHPs.

The project will develop appropriate alternatives to harmful agricultural chemicals and agricultural plastics, and accelerate their uptake by different actors across the agri-food value chains to halt and revert the ecosystem degradation, and ensure food safety and human health security through green financing schemes.

The suggested change process will be spearheaded by the private sector investments backed by the government policy and regulatory support. The project will put a strong focus on environment positive knowledge management and behavior change communication strategy for extended outreach and greater uptake of alternatives of agricultural chemicals and plastics with a view to attaining low to zero use of agricultural chemicals in the agri-food value chains in the country. This will further reinforce the project impact and sustainability in line with the Chemicals and Waste Focal Area programming direction and strategy. The FARM Viet Nam child project knowledge products will be shared within FARM project countries and beyond, and will contribute to global public goods.

5) Incremental/additional cost reasoning

In recent years, Viet Nam has seen a substantial intensification of agriculture with an aim to become one of the top 15 agricultural developed countries and rank 10th in agricultural processing technology by 2030. This ambition has been driven by increasing market demand, particularly export market, and enabling policy regime including agricultural financing. While the country has put considerable emphasis on sustainable agricultural development and environmental protection initiatives, under the business-as-usual scenario, the current agricultural financing continues to support increased use of highly hazardous pesticides and environment negative agricultural plastics. As mentioned in the aforementioned sections, the private sector led green financing portfolio has experienced significant growth in recent years without any distinct focus on agricultural chemical and agricultural plastic reduction and management, which is a key to attaining environment positive agricultural development and globally accepted ?clean and green? branding of the country?s agri-food value chains. With GEF funding, a range of interlinked and targeted interventions will be developed and delivered through demonstration models; knowledge products and financial services which will help accelerate the transformation of agricultural production systems towards a greener, low-pesticide and low-plastic path of development in Viet Nam.

ADB?s co-financing to the FARM Viet Nam child project through its loan projects is geared towards climate smart agriculture with a focus on irrigation technologies addressing water scarcity which will help attain water security and maintain the country?s natural capital accounts. The GEF grant will address the pesticides and plastics implications for environmental and human health, and thereby deliver the planned global environmental benefits.

Component 1:

The agriculture sector in Vietnam attracts much less funding from commercial banks in general. Currently the available commercial banks financing goes to agricultural projects in general with no specific targeting for green projects on agrochemical reduction and management. GEF investment will fill in the policy gaps and coherence with a view to streamline policies and strategies and develop and implement a policy and regulatory framework for innovative green financing mechanisms for environment positive agri-food value chains. The implementation of the project generated policy framework and green financing mechanisms will benefit project provinces initially and expected to upscale countrywide resulting in a high rate of return

Component 2:

Under the business-as-usual scenario, the number of private sector entities investing in agricultural plastics collection and recycling continue to remain limited given little incentives in the market. The planned project pilot matching grants using GEF fund will incentivize private companies to expand their investments in agrochemical and agricultural plastic reduction and management benefiting the provincial landscape and natural environment, and thereby the agri-food value chains in the country.

The support from GEF fund will also pioneer candidate provinces to complete their dossier to apply for fundings from the National EPR fund which has in-flow money from pesticide producers and importers, but provinces have limited capacity to apply for financial supports from the Fund. The efforts to attract public and private financial institutions to come on board to support green finance projects will help towards attaining global environmental benefits. The project will assist financial institutions to expand green finance programs on agrochemical reduction and agricultural plastics management initiatives.

The project will address the current budget constraints for knowledge and skills development for proper collection and management of pesticide containers and relevant agency capacity to enforce government regulations and implement plan at the same time. Through demonstration models using Farmer Field School approach, farmers will have opportunities to learn methods and practices of manage soil, water resources at their localities, learn and adopt low-plastics alternatives that are suitable and affordable for local food production systems.

With GEF funding, a series of activities are proposed to provide technical guidelines and models, which will pave the way to low- / no-pesticides and plastic agri-food value chains.

Component 3:

The project will fund a series of capacity strengthening activities that otherwise would not have been implemented. Good practices and knowledge products on management of agrochemicals, reduction of harmful chemical use including highly hazardous pesticides (HHPs), alternatives of agri-plastics, biopesticide registration processes, integrated plant health management (IPHM), sustainable agriculture practices through green financing mechanisms will be developed and disseminated employing behavior change communication strategies to attain project outputs and outcomes.

A key intervention under this project is central and provincial level capacity strengthening for natural capital assessment and accounting with the aim to develop eco-compensation mechanisms for the project province for future uptake by VEPF.

The good practices and lessons learned will be feed into the Global FARM knowledge management platform for outreach at global level. The project will design, host and administer a web-based knowledge platform both in Vietnamese and English as a knowledge management system (KMS) with the GEF grant.

6) Global Environmental Benefits

Project Core Indicators		Expected at CEO Endorsement
4	Area of **landscapes under improved practices** (excluding protected areas) (Hectares)	1,085,841 ha
5	*Area of **marine habitat under improved practices** (excluding protected areas) (Hectares) Marine litter avoided*	2,132.15 MT
6	***Greenhouse Gas Emissions Mitigated** (metric tons of CO2e)*	11,591 MT CO2e

9	**Reduction**, disposal/destruction, phase out, **elimination** and avoidance of **chemicals of global concern** and their waste in the environment and in processes, materials and products (metric tons of toxic chemicals reduced)	280.65 MT POPs 3586.91 MT HHPs 9.5: Five low chemical/no chemical food production system implemented
10	Reduction, avoidance of emissions of **POPs to air** from point and non-point sources (grams of toxic equivalent gTEQ)	*1.68 gTEQ*
11	Number of **direct beneficiaries disaggregated by gender** as co-benefit of GEF investment	386,379 Female - 196,034 Male 190,345

Co-benefits

The core indicators 5 and 6 are co-benefits of this project. Other co-benefits include:

? Increased soil health and productivity, and

? Increased farmers? incomes.

These to be determined during the project inception phase.

Assumptions and methods of GEBs calculations are presented in Annex H.

7) Innovativeness, sustainability and potential for scaling up

Innovation

The following innovations will be tested through the FARM implementation in selected 5 provinces.

? **Financing mechanism for pesticide container and agri-plastic management**: The extended producer responsibility (EPR) which is part of the Vietnam Environmental Protection Fund (VEPF) is an innovative and completely new concept in Vietnam. The ERP at the moment yet to disburse the fund received from pesticides producers and importers, while financial mechanism for its utilization is being developed. Through the FARM project, local authorities PPC, and DPC, CSOs and private enterprises will be supported to access the EPR fund for different projects on collection, transportation and treatment of pesticide containers, as well as classification, collection, transportation, and recycling of agricultural plastics. Learning from the pilot will inform the GOV agencies to improve the relevant regulations

? **Community-based pesticide container management models**: Two innovative models of incentives for the farming communities for pesticide container management will be piloted by the FARM project including: (i) model 1 - through vouchers/token redeemable at agricultural inputs store and (ii) model 2 ? through vouchers/token redeemable at super markets for daily essentials, preferably healthy and nutritious food. Detailed guidelines for implementation of these models will be finalized during the inception phase after thorough consultations with key stakeholders. In addition, the project will support DARDs and its extension system to test and promote innovative training modalities such as farmers-to-farmers training and enterprise-to-farmers training in FFS?s season-training courses in order to adopt four systems of low or non-chemical pesticide use systems for selected crops of high economic values.

? **Low-plastic and no- plastic alternatives**: To reduce pollution from agri-plastics, the project will support local enterprises and agencies to develop different low /no plastic alternatives and technologies along the agri-food value chains to replace high polluting plastics. The Central Highland region has high potential to utilize a variety of agricultural by-products and develop diverse ecosystems, e.g. using coffee by-products from a production stage as materials for subsequent stages, creating an ecosystem of high-quality products less dependent on agri-plastics that benefits general health and welfare. Similarly, financial and knowledge management incentives for technological innovations in clarification, collection, recycling, and re-use of agri-plastics will be encouraged by the project.

? **Promotion of ICT in agriculture product monitoring and management systems**: The digitalization of technologies in agricultural supply chain traceability systems is a new trend in Vietnam. However, its application is still limited to certain crops and mainly for internal use by certain enterprises. The FARM will support PPD to upgrade and standardize its current traceability system (mainly codes for production units and packaging facilities) to international standards for different commodities being demanded by international markets. By supporting these, PPD can help enterprises to ensure compliance with the importing country's regulations on phytosanitary, food safety and traceability.

Sustainability

Reducing on-farm pollution from agrochemical and agricultural plastics use are important issues for the Government. Hence, sustainability of project results and activities will be high as these are designed based on perceived needs of local communities, districts, provinces and MARD agencies, CSOs and agri-food chain actors. During the project implementation, local ownership from these agencies will be strengthened through project operation and management and capacity building in order to integrate these activities into the GOV?s program action plans (such as IPHM and agricultural plastics Action Plans) at national and sub-national levels. Throughout the project implementation process, knowledge, lessons and recommendations generated from different activities, especially from policy research and piloting of innovation will inform MARD and MONRE policy makers in order to revise and update relevant regulations and policies which in turn will enhance the project sustainability. Furthermore, beside matching grant mechanism from the project, cost-recovery mechanism through ERP and VEPF, and private sector investment in recycled plastics value chains will be promoted. Importantly, all technologies and techniques to be introduced by the project will be simple, readily available on local markets and environmentally friendly. Hence, these will be sustained by local users, especially the crop farmers and their organizations as well as relevant value chain actors.

Potential for scaling up

After its mid-life, the project will review all innovative models introduced by the FARM. Based on which best practices and models with high potential for replication and scaling up will be documented

and shared widely. The replication of these to other districts, and communes will be done mainly through the GOV?s own programs/projects or action plans (e.g. IPHM and agricultural plastics action plans), cost-recovery mechanism (e.g. ERP/VEPF) and engagement and investment of private sector into viable agri-food and agri-plastics value chains. For these, apart from finalization of relevant technical guidelines for selected crops, extensive communication for behavior change and capacity building activities through FFS training using the TOT trainers and exposure visits to the successful piloting areas will be supported by the FARM project. Scaling up of the project successful models to other provinces will be considered by MARD agencies in the future through the GOV?s own programs/projects, policies, regulations and partnership development for resource mobilization.

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[1] Thang, et.al. 2022. *Impacts of Covid-19 Pandemic on Smallholder Farmers and Vulnerable Rural People in Vietnam*, FFTC Agricultural Policy Platform. https://ap.fftc.org.tw/article/2676

[2] Hong. 2017. *An Overview of Agricultural Pollution in Vietnam: The Crops Sector*. https://documents1.worldbank.org/curated/ru/988621516787454307/pdf/122934-WP-P153343-PUBLIC-Vietnam-crops-ENG.pdf

[3] Tuoi Tre. 2021. *EU recalls, warns against Vietnamese agro-fishery products for food safety violations.* https://tuoitrenews.vn/news/business/20211020/eu-recalls-warns-against-vietnamese-agrofishery-products-for-food-safety-violations/63687.html

[4] Ditto

[5] Dutch Ministry of Agriculture, Nature and Food Quality. 2021. *Fertilizers and Agro-chemicals use in Viet Nam*. https://www.agroberichtenbuitenland.nl/actueel/nieuws/2021/09/07/fertilizers-and-agro-chemicals-use-in-viet-nam

[6] Tuyen. 2019. *Plastic Wastes Pose Threats on Vietnam?s Environment*. https://th.boell.org/en/2019/11/06/plastic-wastes-pose-threats-vietnams-environment

[7] Ministry of Industry and Trade. 2021. *Application of Green Chemistry in Vietnam to support green growth and reduction in the use and release of POPs and other harmful chemicals ? Sharing Results*. https://www.sparkblue.org/system/files/2021-03/master%20deck%20session%201%20final%205%20March%202021.pdf

[8] World Bank. 2021. Market Study for Vietnam: *Plastics Circularity Opportunities and Barriers.* https://openknowledge.worldbank.org/handle/10986/36313

[9] Dutch Ministry of Agriculture, Nature and Food Quality. 2021. *Fertilizers and Agro-chemicals use in Viet Nam*. https://www.agroberichtenbuitenland.nl/actueel/nieuws/2021/09/07/fertilizers-and-agro-chemicals-use-in-viet-nam.

[10] World Bank Group. 2018. ?Vietnam: Maximizing Finance for Development in the Energy Sector.? Washington, DC: World Bank. doi:10.1596/31246.

[11] Dutch Ministry of Agriculture, Nature and Food Quality. 2021. *Fertilizers and Agro-chemicals use in Viet Nam*. https://www.agroberichtenbuitenland.nl/actueel/nieuws/2021/09/07/fertilizers-and-agro-chemicals-use-in-viet-nam

[12] VietnamCredit. 2022. *Overview of Vietnam?s Pesticides Market*. https://vietnamcredit.com.vn/news/overview-of-vietnams-pesticides-market_14646

[13] Farmer?s Union, 2022. *Hazardous waste collection in Central Highlands*. Personal communication. Dak Lak.

[14] Vietnam Administration Authority, MONRE, 2020. *List of hazardous waste treatment facilities.* http://vea.gov.vn/detail?$id=910

[15] See details in: https://psav-mard.org.vn/new-impetus-to-spread-the-ipm-program.html

[16] Ditto

[17] USFDA. 2022. *Food Facility Registration ? Foreign*. https://www.fda.gov/food/registration-food-facilities-and-other-submissions/food-facility-registration-statistics #foreign

[18] MARD, 2021, *Proposal on improvement of food safety and quality of agriculture, forestry and fishery products, 2021-2030 period*. Hanoi

[19] According to SBV, as of 30 June 2022, outstanding balance of green finance reached more than VND 474,000 billion, an increase of 7.08% compared with 2021, mainly focusing on renewable energy, clean energy (47%), green agriculture (32%). Outstanding loans being assessed on environmental and social risks reached more than VND 2,283 trillion, accounting for nearly 20% of the economy's outstanding loans, with more than 1.1 million loans.

[20] State Bank of Vietnam. 2020. *Green Banking Development Report.* Hanoi.

[21] Climate Bonds Initiative. 2019. *Green Infrastructure Investment Opportunities Vietnam 2019 Report* https://www.climatebonds.net/files/reports/final_english_giio_vietnam_report.pdf

[22] World Bank. 2022. *Spearheading Vietnam?s Green Agricultural Transformation: Moving to Low-Carbon Rice*. Washington, DC: World Bank.

[23] https://bit.ly/3UYknhY

[24] International Capital Market Association. Green, Social, and Sustainability Bonds

[25] ASEAN Capital Markets Forum. Initiatives. Sustainable Finance. Development of a Sustainable Asset Class in ASEAN.

[26] LMA. 2018. Green Loan Principles. United Kingdom. December; and LMA. 2019. Sustainability Linked Loan Principles. United Kingdom. March.

[27] ACGF. 2020. Investment Principles and Eligibility Criteria. April.

[28] Including, among others: MARD (Crop and Plant Protection Department, National Agriculture Extension Center, Western Highlands Agriculture and Forestry Science Institute, Northern Mountainous Agriculture & Forestry Science Institute, Institute of Policy and Strategy for Agriculture and Rural development, Directorate of Fisheries, Department of Planning, Vietnam Academy of Agricultural Sciences), Viet Nam Tea Association, GIZ, SNV, WWF, IDH?s Sustainable Trade Initiative, Nestle, Jacobs Douwe Egberts, Olam, ACOM, Unilever, PepsiCo, Bayer, Syngenta, DuPont, Dow AgroSciences, Monsanto, Cargill, Metro Cash Carry, Intimex, Vina Fruit, EDE Consulting, Rainforest Alliance, 4C/Global Coffee Platform ea. See: https://www.growasia.org/vietnam.

[29] The network builds on the World Bank?s *Climate Technology Program*, a US$ 70 million initiative that catalyzes the growth of climate technology sectors in developing countries through small and growing businesses. It has launched seven Climate Innovation Centers, including in Viet Nam, supporting more than 300 firms in these countries. See: http://www.vietnamcic.org

[30] For more details, see https://www.idhsustainabletrade.com/uploaded/2016/10/151209-6-pager-ACOM.pdf

[31] Members include the Vietnam Coffee and Cacao Association (VICOFA), the organization with the largest number of producers and traders in the coffee sector, with the large majority being Vietnamese producers and traders. The Board also receives support through the Grow Asia Initiative?s Partnership for Sustainable Agriculture in Vietnam.

[32] MONRE. 2022. Draft Decision of the Prime Minister on the promulgation of regulations on environmental criteria and certification for projects that are granted green credits and issued green bonds. https://bit.ly/3XTMVL1

[33] SBV. 2021. Draft Circular guiding the implementation of environmental risk management in credit extension activities of credit institutions and foreign bank branches September 10. https://bit.ly/3E9ElAa.

[34] The Agence Fran?aise de D?veloppement (AFD) granted a US$100-million concessional credit line to the Bank for Investment and Development of Vietnam (BIDV) in 2021 with an aim of encouraging green investments in renewable energy and energy efficiency areas. This credit line to BIDV is the first AFD?s SUNREF fund in Vietnam, in the form of a non-sovereign concessional loan. SUNREF is a green finance label deployed by AFD with 70 partner banks in 30 countries.

[35] Enterprises must fully satisfy the following conditions: (i) Having legal status, being legally established in Vietnam and operating for at least 03 years; (ii) Having an investment project approved by a competent authority to use loan capital, and having completed investment procedures as prescribed by law; (iii) Having a feasible financial plan appraised by a competent authority as prescribed in Article 38 of this Law; (iv) Having a debt-to-equity ratio not exceeding 03 times according to the financial statement of the latest year compared with the year of appraisal; (v) No loss in the last 3 consecutive years according to the audit report, except for losses due to implementation of State policies approved by competent authorities; (vi) There is no overdue debt at the time of applying for a loan; (vii) Provide loan security as prescribed by law.

[36] https://thuvienphapluat.vn/van-ban/tai-nguyen-moi-truong/quyet-dinh-1746-qd-ttg-2019-ke-hoach-hanh-dong-quoc-gia-ve-quan-ly-rac-thai-nhua-dai-duong-430378.aspx

[37] https://thuvienphapluat.vn/van-ban/Tai-nguyen-Moi-truong/Chi-thi-33-CT-TTg-2020-tang-cuong-quan-ly-tai-su-dung-tai-che-xu-ly-va-giam-thieu-chat-thai-nhua-450760.aspx

[38] https://thuvienphapluat.vn/van-ban/The-thao-Y-te/Thong-tu-21-2015-TT-BNNPTNT-quan-ly-thuoc-bao-ve-thuc-vat-277987.aspx

[39] https://thuvienphapluat.vn/van-ban/Tai-nguyen-Moi-truong/Thong-tu-lien-tich-05-2016-TTLT-BNNPTNT-BTNMT-thu-gom-van-chuyen-bao-goi-thuoc-bao-ve-thuc-vat-313510.aspx

[40] Different kind of fruits to be considered during inception and implementation phases include: passion fruit, mango, durian, and custard apple.

[41] The Rainforest Alliance certification process involves strict environmental, social and economic criteria, known as the Rainforest Alliance Sustainable Agriculture Standard. This guideline measures a farmer?s performance against clear criteria that encourage continuous improvement to promote sustainability on farms worldwide

[42] The 4C Certification System (**The Common Code for the Coffee Community**) is an independent, stakeholder-driven, internationally recognized sustainability standard for the entire coffee sector, aiming at anchoring sustainability in coffee supply chains

[43] Crop Production Department, MARD, 2022 cited in hands-out ppt of *MARD-SwitchAsia International Workshop on ?Agricultural By-products ? Renewable Resources?*

[44] Plant Protection Department, 2022. See details here: https://danviet.vn/300000ha-cay-trai-duoc-cap-ma-so-vung-trong-14-loai-qua-tuoi-rong-cua-xuat-khau-20220603074709793.htm

[45] Ministry of Science and Technology, 2022. Vietnam has published more than 13,000 Vietnamese

standards. https://tapchitaichinh.vn/viet-nam-da-cong-bo-hon-13-000-tcvn.html

[46] A popular social media channel for 80% smartphone users in Vietnam (source: https://expandedramblings.com/index.php/zalo-statistics-and-facts/)

[47] https://www.adb.org/documents/stakeholder-communication-strategies-projects-guidance-note

[48] Draft FARM Global Child Project Knowledge Management Strategy and verification during the stakeholder consultations in 3 provinces.

[49] Draft FARM Global Child Project Knowledge Management Strategy.

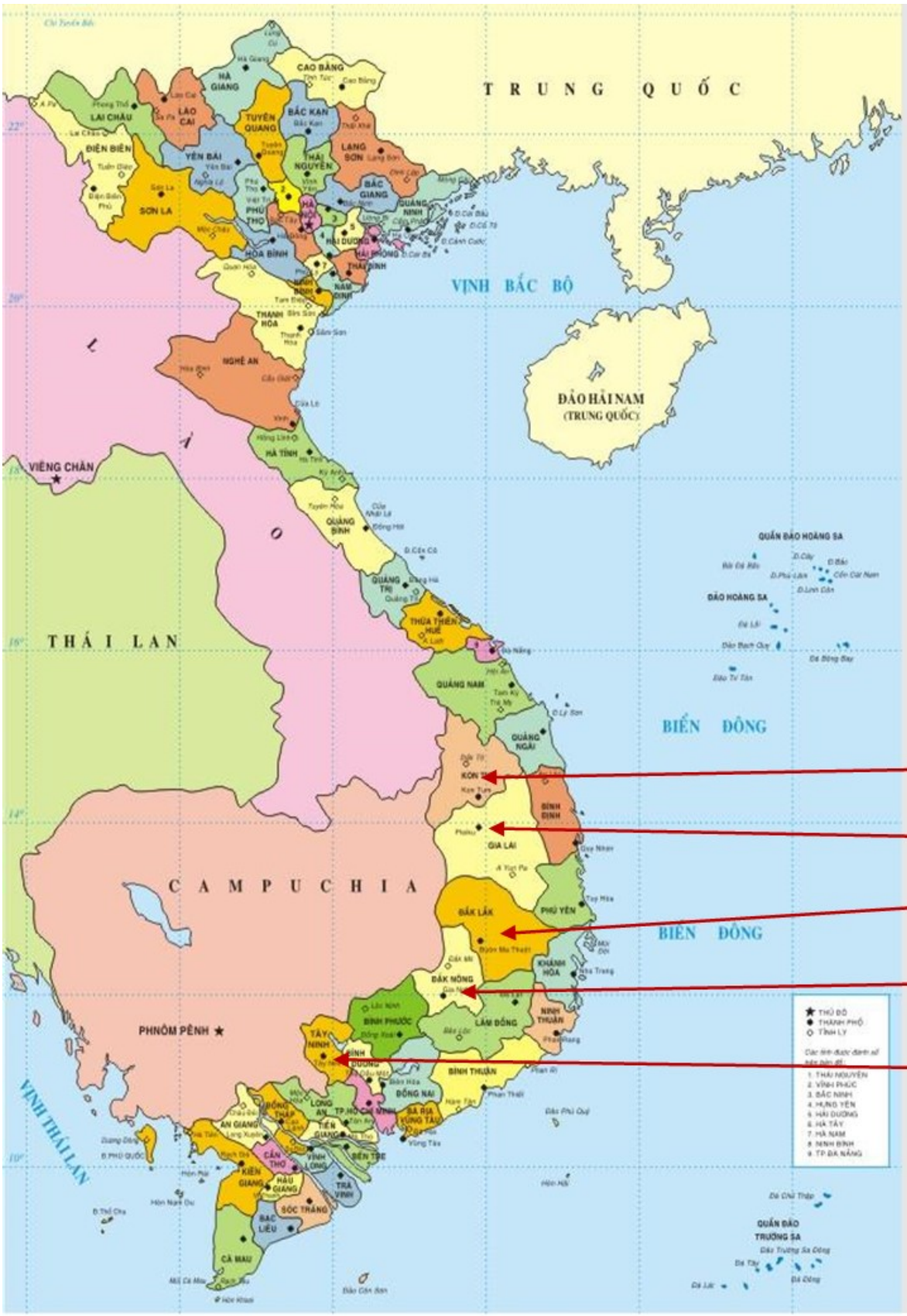
[50] GEF Knowledge Management Approach Paper, GEF/C.48/07/Rev.01, May 11, 2015. https://www.thegef.org/sites/default/files/council-meeting-documents/EN_GEF.C.48.07.Rev_.01_KM_Approach_Paper.pdf

[51] WAVES is a World Bank-led global partnership that aims to promote sustainable development by ensuring that natural resources are mainstreamed in development planning and national economic accounts. WAVES is now part of the broader World Bank umbrella initiative, the Global Program for Sustainability (GPS). More information is available at: https://www.wavespartnership.org/

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

The proposed GEF FARM project will be implemented in 5 provinces covering 17 districts. The four Central Highlands target provinces of Kon Tum, Gia Lai, Dak Lak and Dak Nong are home of many high-valued crops including coffee, pepper, fruits (durian, avocado, mango, passion fruit, etc.) and medicinal plants (Kon Tum and part of Gia Lai). The target province of Tay Ninh is a lead vegetable growing belt together with its high-valued export-oriented specialty of custard apple.



Kon Tur

Gia Lai

Dak Lak

Dak No

Tay Nin

GEF FARM Viet Nam

Geolocation of Project Provinces

Kon Tum province	**Latitude** From: 13?55'32.15"N To: 15?24'59.82"N Longitude From: 107?27'37.95"E To: 108?33'1.45"E **Kon Tum city** 14?21'9.48"N 108? 0'53.28"E

Gia Lai Province	**Latitude** From: 12?59'46.04"N To: 14?35'44.58"N Longitude From: 107?27'31.44"E To: 108?51'27.55"E **Pleiku city** 13?58'30.78"N 108? 1'52.90"E
Dak Lak Province	**Latitude** From: 12? 9'35.81"N To: 13?24'45.95"N Longitude From: 107?29'3.85"E To: 108?59'51.05"E **Buon Ma Thuot city** 12?40'18.83"N 108? 3'2.38"E

Dak Nong Province	**Latitude** From: 11?45'2.72"N To: 12?48'45.25"N Longitude From: 107?12'33.56"E To: 108? 7'4.03"E **Gia Nghia city** 12? 0'25.81"N 107?41'45.94"E
Tay Ninh Province	**Latitude** From: 10?58'39.92"N To: 11?46'39.80"N Longitude From: 105?48'35.21"E To: 106?29'28.58"E **Tay Ninh city** 11?20'17.99"N 106? 7'20.32"E

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

This is a child project under the global program GEF ID 10872 led by UNEP. The CER has been prepared in close consultation with the global coordination group. This includes participation in various GEF C&W coordination meetings, as well as those organized by the GGKP which focussed on joint preparation across Agencies to ensure uniformity.

This project in Viet Nam is aligned with the global program in a number of ways. First it addresses all three components of the global program results framework. More specifically it has emphasis on "finance and investment" - which aims to increase availability and incentives for farmers to adopt alternative crop management approaches.

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Civil Society Organizations Yes

Indigenous Peoples and Local Communities Yes

Private Sector Entities Yes

If none of the above, please explain why:

Please provide the Stakeholder Engagement Plan or equivalent assessment.

The FARM Viet Nam project plans to engage all relevant stakeholders throughout the project cycle ? from design, implementation, coordination through to monitoring and evaluation to make the project participatory and inclusive.

The project has consulted with a wide range of stakeholders along the agri-food value chains during the PPG and CER stage. The stakeholder consultations with local communities, indigenous people, CSOs, NGOs, private sector, and relevant government agencies at central, provincial and local levels were mostly in person through semi-structured interviews/focus group discussion to get in-depth insights. The project has put a particular emphasis on field level in person consultations in target provinces. The planned project interventions and overall project design were presented at a validation workshop for key stakeholders? feedback and revision. A list of stakeholders consulted during the PPG and CER phase is provided in the table below.

Individual /Organisation / Location
Agricultural Projects Management Board (APMB), Ministry of Agriculture and Rural Development (MARD), Hanoi Mr. Ton That Son Phong, APMB, MARD, Hanoi Ms. Dang Anh Thu, APMB, MARD, Hanoi Mr. Nguyen Quang Bac, APMB, MARD, Hanoi Mr. Tran Tien Hung, APMB, MARD, Hanoi Ms. Hoang Thu Ha, APMB, MARD, Hanoi Mr. Nguyen Viet Cuong, APMB, MARD, Hanoi Ms. Do Thi Quy, APMB, MARD, Hanoi Mr. Nguyen Van Son, APMB, MARD, Hanoi Mr. Nguyen Van An, APMB, MARD, Hanoi Mr. Hoang Minh Thi, APMB, MARD, Hanoi
International Cooperation Department (ICD), MARD, Hanoi Mr. Do Nguyen Anh Tuan, ICD, MARD, Hanoi Ms. Vu Thanh Ha, ICD, MARD, Hanoi
Department of Science, Technology and Environment, MARD, Hanoi Mr. Hoang Duc Trong, Department of Science, Technology and Environment, MARD, Hanoi Ms. Nguyen Thi Hong Thanh, Department of Science, Technology and Environment, MARD, Hanoi
Plant Protection Department (PPD), MARD, Hanoi Mr. Nguyen Hong Khanh, PPD, MARD, Hanoi Mr. Hoang Anh Duc, PPD, MARD, Hanoi Mr. Nguyen Hai Son, PPD, MARD, Hanoi
Crop Production Department (CPD), MARD, Hanoi
National Agro-Forestry-Fisheries Quality Assurance Department (NAFIQAD), MARD, Hanoi Ms. Ngo Phuong Hoa, NAFIQAD, MARD, Hanoi
Mr. Thuan Duc Nguyen, GEF Office Vietnam / Vietnam Environmental Protection Fund, Ministry of Natural Resources and Environment (MONRE), Hanoi
Vietnam Environmental Authority, MONRE, Hanoi
Legal Affairs Department, MONRE, Hanoi

Individual /Organisation / Location
Department of Agriculture and Rural Development (DARD) Mr. Tran Anh Tam, DARD, Tay Ninh Mr. Nguyen Duc Con, DARD, Dak Lak Mr. Pham Hung Vy, DARD, Dak Nong DARD, Kon Tum DARD, Gia Lai Agricultural Extension Center, DARD, Gia Lai Farmer Association of Gia Lai province
Department of Natural Resources and Environment (DONRE), Pleiku city, Gia Lai province
Banks, Pleiku city, Gia Lai province
Women?s Union, Pleiku city, Gia Lai province
Ms Hien ? agrochemical agent level 1, Pleiku city, Gia Lai province
Vegetable farmers, An Phu commune, Pleiku city, Gia Lai province
Mr Nguyen Ngoc Hoang ? Director of Huong Dat An Phu commune, Pleiku city, Gia Lai province.
Doveco Gia Lai office, Mang Yang district, Gia Lai province.
Mr Chau ? Director of Linh Nham Agricultural & Services Cooperative, Dak Djrang commune, Mangyang district, Gia Lai province
DARD, Buon Me Thuot city, Dak Lak province
DONRE, Buon Me Thuot city, Dak Lak province
Agribank- Dak Lak branch
Banks, Buon Me Thuot city, Dak Lak province
Women?s Union, Buon Me Thuot city, Dak Lak province
Head of district DARD
Chairman of communal People?s Committee, Ea H?leo commune, Ea H?leo district, Dak Lak province
Ms Tran Ngoc Thuy ? durian farmer cum trader, Ea H?leo commune, Ea H?leo district, Dak Lak
Dak Di Lang Commune People Committee
Agriculture Extension Centre, DARD, Dak Nong province
DARD, Gia Nghia city, Dak Nong province
DONRE, Gia Nghia city, Dak Nong province
Banks, Gia Nghia city, Dak Nong province
Women?s Union, Gia Nghia city, Dak Nong province
Mr Vu Dinh Cuong ? technical director, Tran Chau corporation group, Thuan Hanh commune, Dak Song district, Dak Nong province

Individual /Organisation / Location
Mr Pham Xuan Tung ? Tung Anh Dak Nong Packaging Co. Ltd, Nam Binh commune, Dak Song district, Dak Nong province
Deputy Chairman of district PPC, Dak Gan commune, Dak Mil district, Dak Nong province Chairman of commune PPC Women?s Union Farmer?s Union Director of Dak Gan mango cooperative
Mr Nguyen Van Hung ? Hung Anh agrochemical agent director, Dak Gan commune, Dak Mil district, Dak Nong province
Farmer model of Dak Gan mango club, Dak Gan commune, Dak Mil district, Dak Nong province
Strengthening the climate resilience of small-scale farmers in Highland and South-Central Viet Nam (SACCR) PMU, Dak Nong
Mr. Nguyen Thanh Phuong, UNEP
Ms Delisa Jiang, Director, Sustainability and Advocacy, CropLife Asia, Singapore Mr Andrew Ward, Director of Stewardship, CropLife International Mr Cristoph Neumann, Director of International Regulatory Affairs, CropLife International
Ms Dao Thu Vinh, Coordinator, CropLife Vietnam, Hanoi
Mr Nick Johnson, Rainforest Alliance Mr Thiet Nguyen, Rainforest Alliance

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement

The table below presents the project engagement plan showing the role and stage of engagement of different stakeholders during the project implementation. The project will put in place an effective engagement plan ensuring participation of all relevant stakeholders from the field level up to central policy making level to reinforce the success and impacts of the project. Pertinent strategies and activities to engage stakeholders will be developed during the project inception phase under the global and annual project work plan. This engagement plan will be reviewed throughout the project life. In other words, due to adaptive management of the project, the role of the stakeholders may change to respond to emerging changes in contexts under which the project will operate.

Stakeholder	Roles	Engagement plan

GEF	Financing Focal Area guidance Project approval	FARM Vietnam CEO Endorsement Review project proposal Project progress tracking
ADB	Co-financing, Coordination, Implementation support, Technical oversight/ backstopping, Reporting	Member of the FARM Global Child Project Steering Committee, Participate in Global FARM Coordination meetings, Member of the FARM Vietnam Project Steering Committee, an apex project body to review project progress, suggest corrective measures in the event the project encounters problems impeding implementation and make strategic decisions, Support in financing for country-wide upscaling
MARD	Co-financing, Coordination, Implementation support, Technical oversight Reporting	Member of the FARM Global Child Project Steering Committee, Participate in Global FARM Coordination meetings, Chair of the FARM Vietnam Project Steering Committee, an apex project body to review project progress, suggest corrective measures in the event the project encounters problems impeding implementation and make strategic decisions, Support in financing for country-wide upscaling
MARD ? ICD APMB NAFIQAD PPD CPD	Implementation coordination Technical support Monitoring Reporting	ICD ? external liaison and coordination APMB ? Project Management (Housing PMU) ? Implementation, coordination, monitoring and reporting MARD agencies ? NAFIQAD, PPD, CPD implementing different project interventions under respective outcomes and outputs.
MoNRE ? VEPF EPR	Implementing Partner Implementation coordination Technical support Monitoring Reporting	Provide support at central level in policy review and guidance development and at field level implementation support VEPF ? green financing EPR ? support agrochemical waste collection/disposal/recycling

Provincial Department of Agriculture and Rural Development DARD Kon Tum DARD Gia Lai DARD Dak Lak DARD Dak Nong DARD Tay Ninh	Implementing Partner Filed level implementation Coordination Monitoring Reporting	Coordinate with provincial government agencies Implement field activities
UNEP FAO UNDP	Coordination Collaboration Technical support	Close coordination during the project field implementation Sharing lessons learned and best practices Support in guidance development and implementation of field intervention
CropLife Vietnam Rainforest Alliance	Potential Implementing Partner Coordination Collaboration Coordination Collaboration	Close coordination during the project field implementation Sharing lessons learned and best practices CropLife International is a potential implementing partner considering their strong presence in the country, ongoing partnership with MARD and experience in pesticide container management in Vietnam and abroad.
Women Union Farmer Association	Field implementation vehicle Community mobilization Awareness	These CSOs/CBOs will support in farm level project delivery
Public and Private Sector Financial Institutes, Investment Funds	Collaboration	Facilitate development of green financing mechanism and promote green financing at all levels
Private Sector -Agrochemical wholesalers and retailers, Agrochemical waste ? pesticide containers and agricultural plastic, transportation/disposal/treatment/recycling service providers	Collaboration	Support project implementation Uptake and promote green financing

Print, Electronic and Online Media Houses	Collaboration	Disseminate and promote project objectives and field interventions and their benefits to wider audience Project visibility Help attain planned behavioral change through communication campaigns.

Select what role civil society will play in the project:

Consulted only; No

Member of Advisory Body; Contractor; Yes

Co-financier;

Member of project steering committee or equivalent decision-making body;

Executor or co-executor;

Other (Please explain)

CSOs will be engaged as stakeholders during field level implementation. Selected CSOs may be considered as contractors and will need to follow ADB's procurement processes.

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

Gender Review

The GEF FARM Viet Nam Project covers five provinces of Kon Tum, Gia Lai, Dak Lak and Dak Nong of Central Highlands and Tay Ninh province, with a total of 5,714,940 people, including 2,83,261 women, and 1,885,892 ethnic minorities people. Out of these, 4,337,785 people live in rural areas and 2,144,266 are women.

Accounting for 50% of the population, Vietnamese women play an important role in the fields of socio-economic development of the country in general, and in new rural development (NRD) in particular. Women are key players in the development process and the beneficiaries of the Program's achievements. The Vietnam Women Unions present at Central, provincial, district, commune and village levels play a core role in advocating, guiding and supporting women to participate in rural development.

In spite of these great results of NRD program, UN Women in the report on ?Promoting gender mainstreaming in the National Target Program on New Rural DEVELOPMENT and the National Target Program on Sustainable Poverty Reduction in the 2021-2025 period?[1] emphasized that gender inequality is still persistent in rural areas, especially in poor districts and poor communes. The gender gaps in rural areas, poor districts, and poor communes are still significant in terms of labor, employment, property ownership, and access to essential services. The burden of household chores and unpaid care work hinders women?s equal access to opportunities brought about by socio-economic development in rural areas, poor districts, and poor communes.

According to the Country Gender Assessment of Agriculture and the Rural Sector in Vietnam (FAO, 2019)[2], women represent close to half of agriculture workers (49%). In total, 63% of rural women in the labor force are engaged in agriculture compared to 57% men.

Women face more barriers than male workers in participating in the non-agricultural labor market due to barriers stemming from stereotypes about gender roles in the family and community. Women and ethnic minority groups are particularly disadvantaged by the limited earnings and fewer worker protections in agriculture sector employment. Despite their labor contribution, women are less involved in major production decisions or equipment purchases on family farms, in particular in ethnic minority communities. Due to traditional gender roles to take care of housework and responsibilities for caring of children and elderly people, women are more likely to bear the increased workload and pressures around household food security caused by the COVID-19 pandemic. The ADB agriculture sector assessment[3] suggests that although women have a key role in agriculture, policies to restructure and modernize the sector do not integrate gender considerations such as enhancing women?s knowledge and access to time-saving equipment to upgrade their positioning in agriculture value chains.

Table 7. Population of the five provinces (2019)

Province	Population	Female	Ethnic Minorities	Rural population	Rural female	Poverty %	Natural Area	Population Density persons/km2
Dak Nong	622168	301455	202360	525398	254776	11	650.927	96
Gia Lai	1513847	755258	699791	1075571	534419	12	1,5510.13	97
Dak Lak	1869322	926744	667328	1407204	694604	7	1,3030.5	143
Kon Tum	540438	268819	296866	367633	181810	10	967.414	54
Tay Ninh	1169165	584985	19547	961979	478657	1.8	404.125	289
Total	**5714940**	**2837261**	**1885892**	**4337785**	**2144266**			

Source: GSO (https://www.gso.gov.vn/wp-content/uploads/2019/12/Ket-qua-toan-bo-Tong-dieu-tra-dan-so-va-nha-o-2019.pdf)

Gender and Agrochemicals

Women in the project areas generally have less environmental awareness and understanding of markets. For example, women think pesticides and fertilizers are safe as the shop having licence to sell to the farmers. This limited agricultural technical knowledge and understanding results in relatively high use of chemicals, with adverse impact on the environment.

Women working in agriculture often have lower levels of income and lack decision-making power. There is an urgent need for gender equality to achieve food security and protection from pesticide exposure[4]. Due to traditional gender roles, women are more exposed to pesticides as they are involved in activities such as washing spraying equipment or their husbands? pesticide-soaked clothes, storing pesticides, or disposing pesticide containers. In Viet Nam, a study found that more girls reported exposure to pesticides from washing spraying tanks compared to boys (lang-Ilang Quijano, 2022).

The project province Gia Lai is among the first to start its own program to collect and dispose of the used pesticide containers, in accordance with the Joint Circular 05 between MARD and MONRE in 2016. Tanks were built for storage of the used pesticide containers, due to the high cost for this hazardous waste disposal by specialized companies, which are not present in the Central Highlands. Women and children may get exposed to the environmental risk of the used pesticide containers tanks affecting their health and the surrounding environment.

Gender and agricultural field plastics

Men and women can be equally at risk from hazardous chemicals during plastic production, usage and disposal. In waste management, women play a very important role in minimizing environmental costs. They are a key force in almost all stages of the waste value chain. According to the CECR early study[5], about 90% of women participate in separating waste at source; 80-90% of female informal sector waste collectors (ISWC) are involved in waste collection and 50% of owners of recycling businesses are female. However, their contributions are not currently fully recognized.

Plastics, which form part of the municipal solid waste, are most commonly managed through landfilling. Viet Nam has rolled out multiple programmes to tackle plastic waste in the context of the region emerging as a ?hot spot? for plastic pollution. The 2020 Law on Environmental Protection officially came into force in 2022, with the supplement of regulations on plastic waste reduction, recycling, reuse and treatment while the national action plan on marine plastic waste management also aims to cut half of plastic debris in the ocean by 2025, and 75% by 2030. The Ministry of Agriculture and Rural Development recently approved the Action Plan on reduction of agricultural plastic in July

2022. Database on plastic waste from agriculture value chain is at the stage of inventory and would be available for the project during its implementation phase.

Women and children are commonly active in waste picking and/or collecting, trading the plastic waste (waste vender- Ve Chai, Dong Nat) and the junk shop owners are women, and hence subject to increased exposure. Recycling of plastics does take place in Viet Nam mainly in the industrial provinces such as Binh Duong, Dong Nai, Hai Phong, and Hanoi. In many parts of the country plastic scraps are recycled in small family-owned workshops or so called ?craft villages?. Safety equipment is not commonly used, and pollution controls are weak. The water and chemicals used to cleanse the plastic run directly into local rivers. These types of recycling business are more likely to be led by men, although women are commonly engaged in collection efforts. In the Central Highlands, the plastic recycling is not active. There are few enterprises working with plastic recycling as the business is not profitable enough while the cost for collection and transportation is high.

Project Impacts on Women

As women play a significant role in the ecological environment and agriculture, the GEF project needs to account for the needs of women in the implementation process and ensure equitable benefits for women and men. An early assessment of the different effects on women, brings forward the following points:

Reduce highly hazardous pesticides and inorganic fertilizer consumption. The GEF co-financing will continue to strengthen the capacity of women to understand and adopt good agricultural and ecological practices. These will be built into the design of the green financing schemes.

Capacity building: Offering training on low/no chemical crop cultivation systems to reduce the use of pesticides and inorganic fertilizers, environmental protection, water and soil conservation, marketing, cooperative operation, etc. to local residents and cooperative leaders, including women, will improve women?s cultivation skills, strengthen market and environmental awareness, and improve the operations of cooperatives.

Gender Assessment

A gender assessment has been conducted during project preparation. The project will promote Effective Gender Mainstreaming (EGM) according to the Guidelines of Gender Mainstreaming Categories of ADB and GEF. The main assessment findings are summarized below.

It is estimated that 196,034 women (51% of population in the project areas) will directly benefit from the Project; Most women beneficiaries are living in rural areas working in the farm.

Women are the primary agricultural plastic users and domestic waste disposers, and Women Union at provincial level have experience in awareness raising and behaviour change. Women Union at all

levels are active in mobilizing women in keeping clean, green and beautiful neighbourhood, achieving environmental and sanitation criteria of the New Rural Commune.

Women in the Central Highlands recognize that they have more exposure to the hazardous chemical plastics and the need to reduce the hazards caused by the inappropriate treatment of agricultural plastic and field film and need for environmental protection.

In Gia Lai province, women?s union coordinates with DONRE in strengthening the management, reuse, recycling, treatment and reduction of plastic waste in the province. During the three years of implementation of the movement, the Natural Resources and Environment sector has coordinated with the Women's Unions at all levels in the province to organize 430 environmental campaigns to disseminate the Party's guidelines and the State's laws and policies on the environment to raise awareness of responsibility for environmental protection of each civil servant, public employee, and female member. The Women's Unions at all levels organized 45 communication campaigns on the risk of plastic pollution; and 854 communication campaigns, mobilizing businesses, cooperatives, and production and business establishments to use environmentally friendly products for packaging; guide people to collect, classify and properly dispose of used products made from hard-to-decompose plastic, packaging and plastic bags. The Women's Unions at all levels in the province have established 178 models and clubs: Women Say no to plastic bags?, ?Reducing plastic waste? with 5,420 participants. Due to the COVID-19 pandemic that impacted on social and economic development, the campaign just focused on household plastic waste, but not yet addressed the agricultural plastic waste which are still abandoned on the farm, just buried, burned or left out to leak to the environment.

The Gender Action Plan

The Gender Action Plan aims to integrate gender equality aspects within the innovations of the green financing mechanism on low chemical agricultural farming system, collection and disposal of used pesticide containers; reduce, reuse, collection and recycling of agricultural plastic waste. Targets for participation of women are included in awareness raising for reduction of agrochemicals, collection and disposal of used pesticide containers, agricultural plastic recycling skill training, and institutional capacity building of women staff. The project will explore to better understand gender specific drivers and barriers to the adoption of eco-compensation and the health needs of women and girls. Sex-disaggregated data and information will be collected and compiled during project implementation.

Gender Action Plan-Key Features:

? Gender considerations in project design - encouragement of gender inclusive design features in the agricultural plastics reduction, collection, treatment, disposal and recycling. Close coordination with Women?s Union as a key stakeholder in consultations during framework preparation; and sharing of draft mechanism and framework for their comments.

? Sex disaggregated data will be collected, collated, stored and reported.

? Women participation in awareness raising activities.

? Gender considerations in Information, Education and Communication materials

? Developing skills of women - the project will conduct skills training for women for potential employment opportunities in the sector.

? Strengthening technical capacities of women project staff - the project will encourage participation of women project staff, and MARD PPD and NAFIQAD staff to be involved in the project activities.

? Building gender capacities of project staff.

? Monitoring and Reporting on gender activities

[1] https://asiapacific.unwomen.org/sites/default/files/Field%20Office%20ESEAsia/Docs/Publications/2021/12/vn-PROMOTING-GENDER-MAINSTREAMING-ENG-s.pdf
[2] https://www.fao.org/publications/card/en/c/CA6503EN/

[3] https://www.adb.org/documents/viet-nam-2021-2025-agriculture-sector-assessment-strategy-road-map

[4] https://eu.boell.org/en/PesticideAtlas-gender

[5] CECR, 2019. *Women Empowerment in Plastic Waste Value Chain***.** Project Report. CECR. Hanoi

See Gender Action Plan

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?

Yes
Closing gender gaps in access to and control over natural resources; Yes

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

Does the project?s results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Elaborate on the private sector's engagement in the project, if any.

Financial resources for a green economy development would be sustained either through both public and private sector engagement via PPP mechanism or through private sector itself. A good partnership mechanism would allow the efforts/contributions of the private sector recognized and best utilized. Under green finance mechanism proposed by FARM Vietnam, it is expected to mobilize the public and private financial institutions to participate in financing the green projects in the agri-food sector, especially in agrochemicals and agricultural plastics reduction and management. On the other hand, it also offers the opportunity to engage private enterprises working along the agri-food value chain to use the green finance mechanism proposed under FARM Vietnam in short-term and Vietnam green finance mechanism in long-term together with their own resources. Through effective communications, it is expected that the FARM?s objectives will be delivered to both public and private sectors and attracted their attention both in financing and investing in the green projects along the agri-food value chain.

Besides cooperatives, private sector in general and SMEs in particular are also direct beneficiaries of this FARM project. Sustaining access by cooperatives to markets is enabled or facilitated through partnerships with private sector entities. These partnerships will be crop-specific and require coordination up and down the value chain to ensure timely, quality and quantity production. The value chain actors including producers/cooperatives, input suppliers, processors, packagers, traders/exporters, credit providers, supermarkets and retail shops, each has a vested interest in ensuring the successful development and ongoing function of the value chain. This project will bring value chain actors together and establish partnerships to facilitate production and marketing of clean green crops with sustainable pesticide container and plastic waste management. The partnerships generated around value chain development will be self-sustaining as they evolve towards stronger contractual relationships with successful marketing and revenue generation.

The partnerships will be facilitated by provincial DARD and linked directly to the Farmer Field Schools to closely coordinate training needs with value chain development objectives. DARDs will continue to host and facilitate this partnership beyond the project life.

Private sector entities will sustain their effective participation in low- / no- pesticide and non/low plastic agricultural production beyond the life of the project if the financial risks associated with pesticide residues continue to remain low and the benefits remain proportionally higher. The primary financial risk to farmers/cooperatives will need to be minimized first and foremost by a reliable supply of no/less hazardous pesticides and introduction of plastics waste management solutions, as well as by their increased capacities to manage crop resilience to climate risk, and generate sufficient revenues from commercialization of environment friendly agricultural products. This will allow them to continue to invest in the necessary production and management innovations over time to continually enhance crop resilience and productivity via agro-ecosystem management skills, including soil, water and crop practices; improve their abilities to access and manage green finance; and develop their access to reliable markets for export-oriented products.

Besides those working in traditional production and trading segment, this project will also incentivize and engage social enterprises, start-ups businesses and commercial banks by motivating technological innovation, improving product qualities, creating employment opportunities and developing highly-skilled human resources. Ten pilot R&D models for zero-waste solutions within and outside value chain t actors will be selected for small grants under FARM project, with high potential for scale up, replication and investment by funds/big enterprises.

Private sector actors, particularly IT firms will be closely engaged in this project as service providers, via developing agriculture product monitoring and management systems to support supply chain traceability and site level performance. Specifically, they will develop and digitalize the database of Production Unit Codes in 15 concentrated planting areas of export-oriented crops across 5 provinces to be in line with international standards and regulations, as well as expand and upgrade supply chain traceability system currently run by PPD (database and capacity building) to support food safety management.

In the short and medium term, private sector has high potential to be engaged more intensively, either via developing a new mobile app at national scale specifically for agricultural plastics waste management, or upgrading on already set-up mobile app ?Trash Hunt?[1] or any other apps already in place. The future app should be designed to map out all waste hotspots, junk collectors and shops of all scales until disposal/recycling facilities at the end of the plastics pathway.

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[1] *UNDP project: ?Scale up a socialized model of domestic waste and plastic management in 5 cities? funded by Government of Norway, covering Ha Long, Da Nang, Quy Nhon, Di An and Phan Thiet (2019-2022). The appl was downloaded by more than 15,300 people. Over 220 waste hotspots were reported, and some were cleaned by appl users*

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

COVID-19

Direct risks from the COVID-19 pandemic to the project include travel restrictions and the generation of additional single use plastic waste. The COVID-19 situation has brought some challenges to the initial design of the FARM Vietnam project and its related ADB Loan financing Climate-Smart Agriculture Value Chain Infrastructure Project. In view of this, and other potential threats to human health, the project will follow international and national guidance in its approach to managing risk and exposure to the health hazards posed by the virus, as well as future pandemics.

Indirect risks and decreased resilience from the COVID-19 pandemic include decreased local support due to shifted priorities and impacts to the country?s economy. The government and local authorities have had to prioritise their COVID-19 response over other management issues, including waste management. Tourism-dependent countries in particular are facing significant decreases in GDP and sharp increases in state debt. The increases of pesticides and fertilizers price, fuels are also indirectly impact on the agriculture production. The agriculture, forestry and fishery sector has low growth (+1.04%) in the third quarter of 2021 due to the prolonged social distancing, which has greatly affected the production, harvesting and consumption of agricultural products.[1] In 2022, the situation has been improved, that in the area of agriculture, forestry and fishery, the livestock industry has developed stably, the timber output and timber exports have prospered; aquaculture production has increased quite to meet the demand for domestic consumption and export. In which, the agricultural sector in the first 6 months of 2022 increased

by 2.31% over the same period last year, contributing 0.21 percentage points to the increase in total added value of the whole economy[2].

In the event of any future COVID-19 pandemic, the project will switch to COVID safe mode adhering to international best practices to combat the pandemic. During the project inception phase the project may consider putting in place a contingency plan.

Climate change

Vietnam is among the highly vulnerable country to climate change, facing increased natural disasters and rising sea levels in the present and future.

Viet Nam faces high disaster risk level, ranked 91 out of 191 countries by the 2019 INFORM Risk Index[3]. Vietnam also ranked 6th among countries worldwide in its climate risk exposure, in accordance with the Germanwatch Global Climate Risk Iindex[4] in 2019.

The Central Highlands is forecasted that will be increasingly affected by extreme weather causing prolong drought and floods, and landslides, causing serious damage to farming activities, aquaculture and forestry production. Climate change negatively affects the harvesting, preservation and rotation of agricultural products, heavily affects the agricultural sector and vulnerable farmers. Climate change also somehow impact on pests and diseases of the crops, so that the farmers have to use more fertilizers and pesticides. In accordance with the Country Climate Profile of Vietnam[5] by the WB and ADB, climate change will influence food production via direct and indirect effects on crop growth processes. Direct effects include alterations to carbon dioxide availability, precipitation and temperatures. Indirect effects include through impacts on water resource availability and seasonality, soil organic matter transformation, soil erosion, changes in pest and disease profiles, the arrival of invasive species, and decline in arable areas due to the submergence of coastal lands and desertification.

Vulnerability to extreme climatic events poses risks to project activities. Consideration must be given to storage sites for plastic wastes, the tank for used pesticide containers, need for climate-proofing equipment, and practice water saving irrigation for cash crops in the pilot areas. Without such consideration, project gains in waste management improvements

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[1] https://www.gso.gov.vn/en/data-and-statistics/2021/12/impact-of-the-covid-19-epidemic-on-the-growth-of-economic-sectors-third-quarter-of-2021/

[2] https://www.gso.gov.vn/en/data-and-statistics/2022/07/socio-economic-situation-report-in-the-second-quarter-and-six-months-of-2022/

[3] https://drmkc.jrc.ec.europa.eu/inform-index

[4] https://www.germanwatch.org/sites/germanwatch.org/files/Global Climate Risk Index 2019_2.pdf

[5] https://www.adb.org/sites/default/files/publication/653596/climate-risk-country-profile-viet-nam.pdf

6. Institutional Arrangement and Coordination

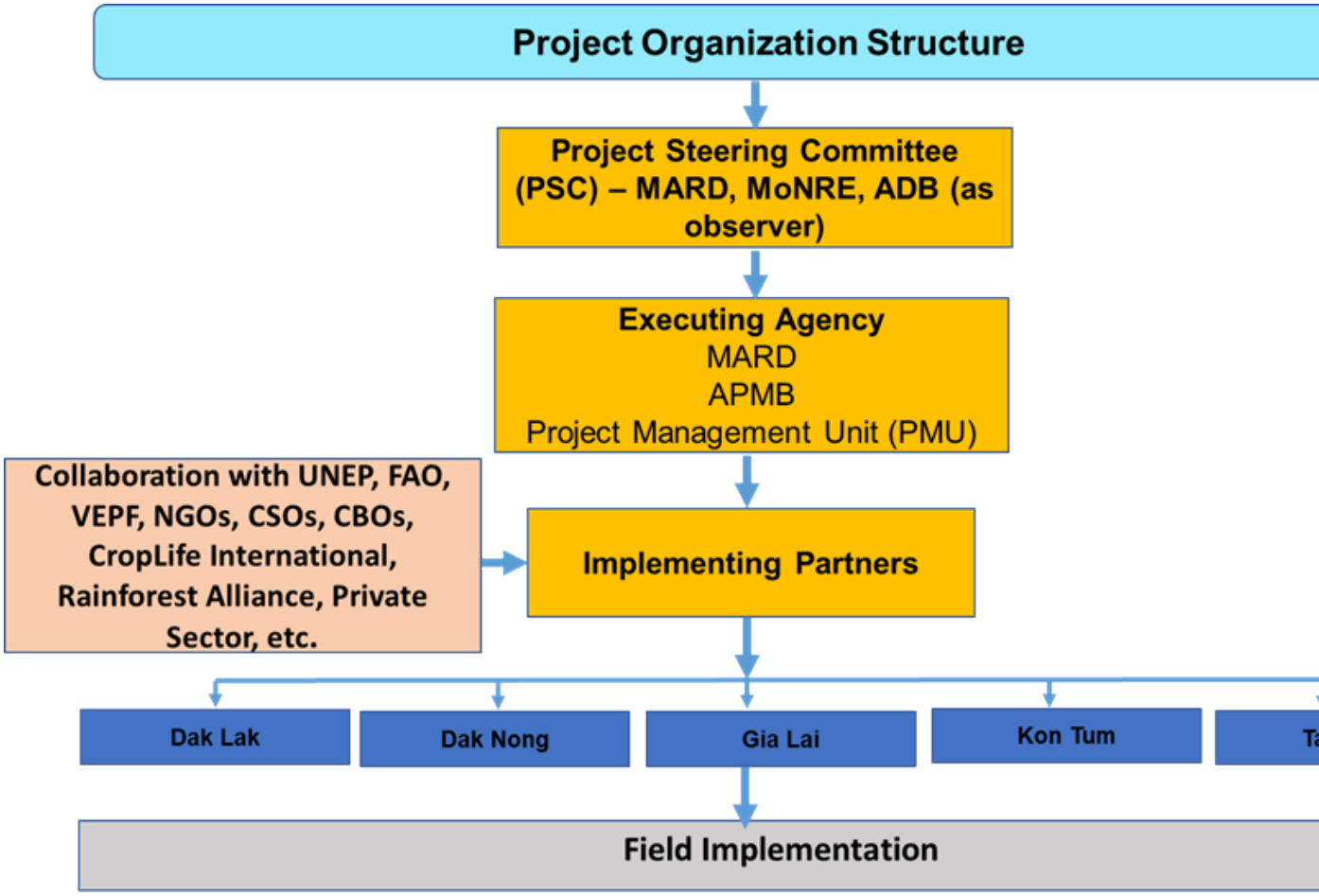
Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

According to Decree No. 114/2021/ND-CP dated 16 December 2021 of the Government on the management and use of official development assistance (ODA) capital and concessional loans of foreign donors, MARD will assign APMB to be the project owner and establish a PMU under APMB based in the national capital. APMB will coordinate with ADB, while the PMU will coordinate with implementing partners during the project implementation at the central and provincial level. At provincial level, DRAD and its agencies will implement project interventions under an agreement with MARD. This will put in place arrangements for ownership and greater participation of provincial level entities in field level implementation for successful project implementation. Considering the size and complexity of the project, an implementing partner with considerable experience in agrochemical management, particularly pesticide containers and agricultural plastic management will be engaged. The project will also use CSOs (Women Unions, Farmers? Unions as project delivery vehicles under an agreement. In addition, the project will recruit contractors to carry out the consulting services designed under FARM Vietnam to achieve the desired outputs and outcomes.

The project will form a Project Steering Committee (PSC) comprising representatives of MARD Departments, ADB, and MonNRE. MARD will chair the PSC, an apex project body to review project progress, make strategic decisions and recommend corrective measures to address any problems that hinder project implementation. The committee will meet at least once a year.

The organizational structure of the project implementation is shown below (Figure 7).

Figure 7. Project Organization Structure



The implementing partners of the project will provide services, among others, in the following areas:

(i) review and propose ?green finance? mechanism for the agri-food sector to reduce and manage the use of agrochemicals and agricultural plastics;

(ii) review and propose guidance on management of used pesticide containers and agricultural plastics;

(iii) prepare proposals to use EPR fund managed by the Vietnam Environmental Protection Fund;

(iv) provide matching-grants to support businesses investing in new facility or expand collection/recycling/disposal of agricultural plastic waste;

(v) encourage the private sector to participate in green finance activities proposed by the FARM Vietnam;

(vi) demonstrate models and train on management of used pesticide containers, applying advanced good agricultural practices to reduce pesticides, using alternative materials towards a circular economy;

(vii) pilot some financial incentives to raise awareness for farmers in collecting used pesticide containers and agricultural plastic waste;

(viii) support training and equipment for a number of public service centers under MARD (Plant Protection Department and National Agro-Forestry-Fisheries Quality Assurance Department);

(ix) design and conduct behavior change communication and promote project visibility in the project provinces as well as propagate the project's supporting activities;

(x) support project provinces to strengthen their capacity in natural capital accounting, prepare payment schemes for natural ecosystem services at provincial and grassroots levels, and establish a platform for natural capital assessment and accounting in the project provinces;

(xi) conduct baseline surveys at the beginning and end of project survey to assess project impacts.

(xii) conduct project management, monitoring and evaluation.

7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assesments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

Since 2015, the Government has introduced a number of Resolutions and Decisions to strengthen the policy and institutional framework to enable a transition from agrochemical-based agriculture to safer forms of agriculture, such as IPM, with more targeted use of pesticide and increased control of other hazardous chemicals. A report in 2016 showed that improved rice production has also included increasing cost of agrochemicals (accounting for 48.9% the total production cost), in which 21.2% was spent on pesticides and 27.7% on fertilizers. As a result, newer farming models such as Global Good Agricultural Practices (Global GAP), Vietnamese Good Agricultural Practices (VietGAP), SRP (Sustainable Rice Platform), IPM, eco-engineering model, 1M5R (1 must do, 5 reductions), organic farming and other greenhouse farming practices have been introduced. HHP inventories have been developed and supported by registration processes, and the main manufacturers, importers, packagers and distributors of pesticides have been identified.

The MARD has taken steps to manage HHPs. This requires adherence to the FAO International Code of Conduct on Pesticides Management for HHPs, and requires a combination of risk assessment, risk mitigation and/or good marketing practices to ensure safety to humans and the environment. VietGAP standards have been put in place to mirror international standards for good agricultural practices. Efforts to educate consumers have been facilitated by increased access to information through smartphones and other means. Seven industrial zones have been created, each focusing on different types of crops and production technologies.

Organic agriculture has been taken up by a number of key corporations, including the VinGroup, which manages huge farming areas across the country. The Green Swiftlet Campaign jointly organized by the Center for Social Initiatives Promotion (CSIP), United Nations Development Programs (UNDP), Vietnam Chamber of Commerce and Industry (VCCI), and Vietnam Union of Science and Technology Associations (VUSTA), has helped advanced knowledge of environmental management among others.[1]

In November 2020, the Vietnamese Government adopted the amended Law on Environmental Protection (72/2020/QH14). In its articles 54 and 55, the law gives a legal framework on the Extended Producer Responsibility (EPR). EPR is a chapter in the Law on Environmental Protection - provision for company?s responsibility of financial contribution to the Vietnam EPR?s committee to support product and packaging recycling (CP Product Container is included in the list of packing).

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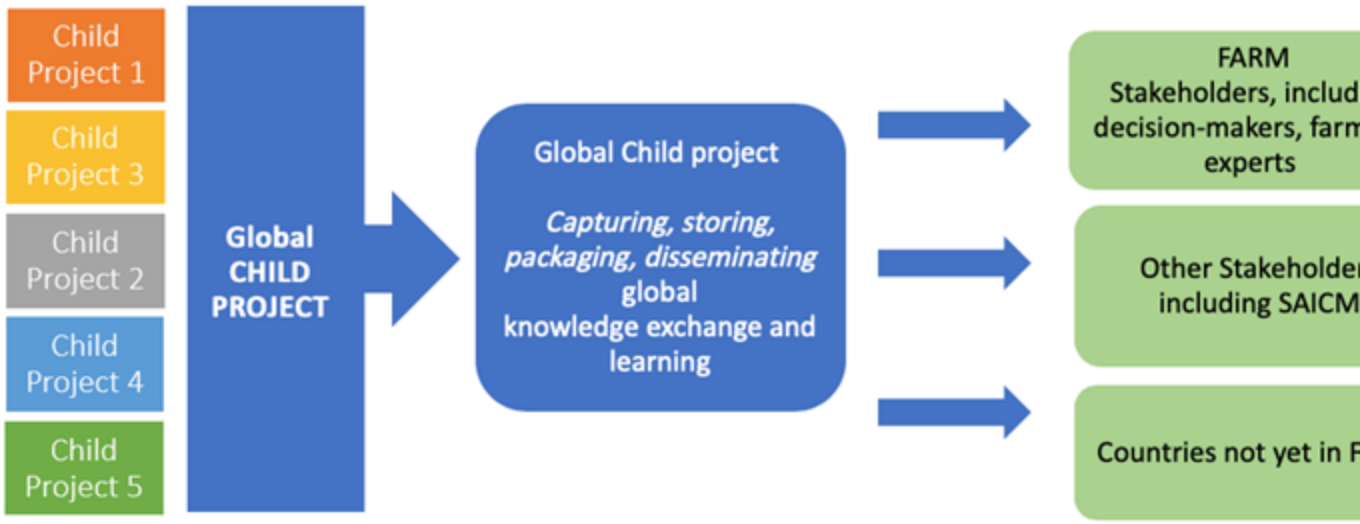
[1] Phong and Thong. 2020. *Highly Hazardous Pesticides in Viet Nam: A Situation Analysis*. International Pollutants Elimination Network. Hanoi.

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

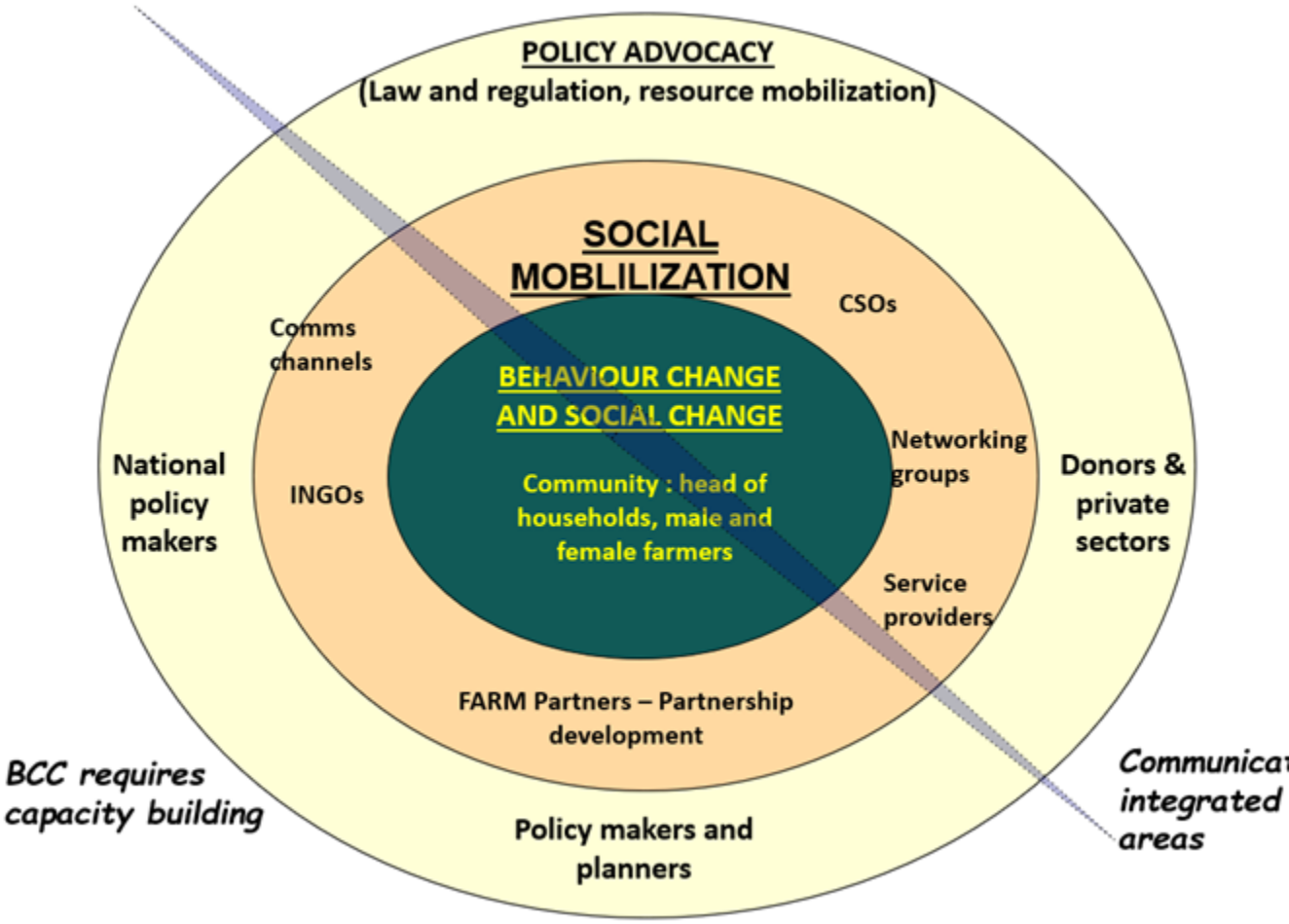
The knowledge management (KM) of the FARM child project in Viet Nam will be developed in line with the vision, goals, method, and actions of FARM KM strategy to be developed and executed by the Green Growth Knowledge Partnership (GGKP)[1]. Knowledge management approach applied in this project will support knowledge sharing and upscaling of FARM best practices, in line with the GGKP?s requirements, and three project outcomes to ensure that relevant stakeholders at the national and subnational levels at five target provinces[2] are fully engaged to ensure that the impacts of all project?s interventions will contribute to the project goals, help upscale the best practices and be sustainable.

Figure 8. The FARM Knowledge Management Approach**[3]**



From the consultations with relevant stakeholders at national and three target provinces[4], there demands and needs from all consulted agencies, officials, and NGOs for capacity development, and communication products on the areas of agrochemicals management, reduction of harmful chemical use including highly hazardous pesticides (HHPs), alternatives of agri-plastics, biopesticide registration processes, integrated pesticide management (IPM), sustainable agriculture practices and agroecological production, financial mechanism for sustainable agriculture, and government subsidy designed to promote the use of alternative pest control measures were registered. In addition, the consulted stakeholders also expressed demands on knowledge products such as project communications materials (brochures, videos, training materials) to be disseminated via capacity building, awareness raising via various information sharing channels, including but not limited to trainings, meetings, mass media (national and provincial television and radio), websites, and social media[5].

Provision of knowledge and awareness raising for relevant stakeholders on above FARM issues are not enough to achieve the long-term sustainability and achievements of the project?s outcomes. There are requirements to integrate Behaviour Change Communication (BCC) elements in the KM workstreams for this child project. BCC encourages individual and community to change their behavior through providing consistent FARM messages via interactive process with communities and suitable communications channels as mentioned above between the policy makers, service providers and farmers. Through strategic BCC interventions, the project will help create positive practices; advance and support individual, network and cultural conduct change; and keep up suitable practices. For example, the project will raise awareness for farmers on the benefit of using alternative pest control measures and at the same time, advice on how to connect the service providers that can provide these measures with reasonable prices. The Strategic BCC model below show that communications have to be implemented at all levels: individuals, communities, organizations and institutions. To achieve and sustain behaviour change, communications should go in line with services, policies, and capacity development as well as other interventions at all levels.



Thus, a KM and Behaviour Change Communication (BCC) Strategy is developed for this child project in consultation with relevant stakeholders at national and targeted provinces. The KM and BCC strategy and its designed workstream will help disseminate relevant knowledge and guide of good practices for key stakeholders including farmers, regulators, policy makers, NGOs, development partners, researchers, value chain companies[6], private sector associations and financial practitioners[7] have easy access to best practices and knowledge generated from the FARM project, as well as from other similar project implemented by other donors and the government at national and sub-national levels.

The Table below presents the implementation timeline for the key Knowledge Management and Communication activities/deliverables of the project.

Key Knowledge Management and Communication Activities/Deliverables Implementation Timeline

Activities/Deliverables	Timeline
1. Design an evidence-based Knowledge Management (KM) and Behaviour Change Communications (BCC) Strategy with implementation plan.	Quarter 2, 2024
2. Implement the KM and BCC strategy as per annual workplans in five target provinces.	Quarter 3, 2024 ? Quarter 3, 2028
3. Adapt the Global FARM logo and brand identity for the project to reflect Vietnamese context, and design, test, develop and disseminate a suite of knowledge products and communications materials.	Quarter 3, 2024 ? Quarter 3, 2028
4. Develop and implement BCC campaigns using different communication channels to raise public awareness and mobilize community participation in implementing recommended FARM practices in the project provinces in Viet Nam	Quarter 3, 2024 ? Quarter 3, 2028
5. Design, host and administer a web-based user-friendly knowledge platform as a knowledge management system (KMS) for Viet Nam FARM child project (using both English and Vietnamese languages)	Quarter 3 2024 - Quarter 4. 2028

[1] Appendix G: FARM Global Child Project Knowledge Management Strategy

[2] Five target provinces include: Kon Tum, Gia Lai, Dak Nong, Dak Lak, and Tay Ninh

[3] FARM Global Child Project Knowledge Management Strategy - ? Draft of Sept 2022

[4] List of stakeholders consulted in the field visit presented in II.2. Stakeholder Engagement

[5] Viet Nam?s Digital Profile: There were 72.10 million (more than 80% population) internet users and 76.95 million social media users in Vietnam in January 2022.

[6] Including, amongst others, chemical, pesticides and plastic manufacturers, food processors and retailers.

[7] Microfinance organizations, public and commercial banks

9. Monitoring and Evaluation

Describe the budgeted M and E plan

The project results as outlined in the project results framework will be monitored annually and evaluated periodically during project implementation to ensure the project effectively achieves these results.

Project-level monitoring and evaluation will be undertaken in compliance with GEF/ADB requirements. The GEF/ADB will work with the relevant project stakeholders to ensure M&E requirements are met in a timely fashion and to high quality standards. Additional mandatory GEF-specific M&E requirements (as outlined below) will be undertaken in accordance with the GEF M&E policy[1] and other relevant GEF policies[2].

In addition to these mandatory ADB and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Report.

M&E Oversight and monitoring responsibilities:

-
Project Management Unit (PMU): The PMU is responsible for day-to-day project management and regular monitoring of project results and risks, including social and environmental risks. The PMU will ensure that all project staff maintain a high level of transparency, responsibility and accountability in M&E and reporting of project results. The PMU will inform the Project Steering Committee (PSC), GEF/ADB of any delays or difficulties as they arise during implementation so that appropriate support and corrective measures can be adopted.

The PMU will develop annual work plans, including annual output targets to support the efficient implementation of the project. The PMU will ensure that the standard ADB and GEF M&E requirements are fulfilled to the highest quality. This includes, but is not limited to, ensuring the results framework indicators are monitored annually in time for evidence-based reporting in the GEF PIR, and that the monitoring of risks and the various plans/strategies developed to support project implementation (e.g., ESMP, gender action plan, stakeholder engagement plan etc.) occur on a regular basis.

Project Steering Committee: The PSC will take corrective action as needed to ensure the project achieves the desired results. The PSC will hold project reviews to assess the performance of the project and appraise the Annual Work Plan for the following year. In the project?s final year, the PSC will hold an end-of-project review to capture lessons learned and discuss opportunities for scaling up and to highlight project results and lessons learned with relevant audiences. This final review meeting will also discuss the findings outlined in the project terminal evaluation report and the management response.

Project Implementing Partner: The Implementing Partner is responsible for providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes, and is aligned with national systems so that the data used and generated by the project supports national systems.

Asian Development Bank (ADB): The ADB will support the PMU as needed, including through 2 semi-annual review missions. The semi-annual review mission will take place according to the schedule outlined in the annual work plan. Review mission reports will be circulated to the project team and stakeholders to consider and take actions. The ADB will initiate and organize key GEF M&E activities including the annual GEF PIR, the *independent mid-term review* and the independent terminal evaluation. The ADB will also ensure that the standard ADB and GEF M&E requirements are fulfilled to the highest quality.

Additional GEF monitoring and reporting requirements:

Inception Workshop and Report: A project inception workshop will be held within two months after the project document has been signed by all relevant parties to, amongst others:
? Re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project strategy and implementation;

? Discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms;

? Review the results framework and finalize the indicators, means of verification and monitoring plan;

? Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E; discuss the role of the GEF OFP in M&E;

? Update and review responsibilities for monitoring the various project plans and strategies, including the risk log; SESP, Environmental and Social Management Plan and other safeguard requirements; project grievance mechanisms; the gender strategy; the knowledge management strategy, and other relevant strategies;

? Review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit; and

? Plan and schedule PSC meetings and finalize the first year annual work plan.

The PMU will prepare the inception report no later than one month after the inception workshop. The inception report will be cleared by the GEF/ADB.

GEF Project Implementation Report (PIR): The PMU and the GEF/ADB will provide objective input to the annual GEF PIR covering the reporting period July (previous year) to June (current year) for each year of project implementation. The PMU will ensure that the indicators included in the project results framework are monitored annually in advance of the PIR submission deadline so that progress can be reported in the PIR. Any environmental and social risks and related management plans will be monitored regularly, and progress will be reported in the PIR. The PIR submitted to the GEF will be shared with the PSC. The quality rating of the previous year?s PIR will be used to inform the preparation of the subsequent PIR.

Lessons learned and knowledge generation: Results from the project will be disseminated within and beyond the project intervention area through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to the project. The project will identify, analyze and share lessons learned that might be beneficial to the design and implementation of similar projects and disseminate these lessons widely. There will be continuous information exchange between this project and other projects of similar focus in the same country, region and globally.

Independent Mid-term Review (MTR): An independent mid-term review process will begin after the second PIR has been submitted to the GEF, and the MTR report will be submitted to the GEF in the same year as the 3rd PIR. The MTR findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project?s duration. The terms of reference, the review process and the MTR report will follow the standard templates for GEF-financed projects. As noted in this guidance, the evaluation will be ?independent, impartial and rigorous?. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. Project stakeholders will be involved and consulted during the terminal evaluation process. The final MTR report will be available in English and Vietnamese and will be cleared by the GEF/ADB.

Terminal Evaluation (TE): An independent terminal evaluation (TE) will take place upon completion of all major project outputs and activities. The terminal evaluation process will begin three months before operational closure of the project allowing the evaluation mission to proceed while the project team is still in place, yet ensuring the project is close enough to completion for the evaluation team to reach conclusions on key aspects such as project sustainability. The PMU will remain on contract until the TE report and management response have been finalized. The terms of reference, the evaluation process and the final TE report will follow the standard templates for GEF-financed projects. As noted in this guidance, the evaluation will be ?independent, impartial and rigorous?. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The final TE report will be cleared by the GEF/ADB. The TE report will be made available in English and Vietnamese.

Final Report: The project?s terminal PIR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the PMU during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

Table 9. Mandatory GEF M&E Requirements and M&E Budget

GEF M&E requirements	Primary responsibility	Indicative costs to be charged to the Project Budget[3] (US$)	Time frame
		GEF grant	
Inception Workshop	APMB, PMU, DARDs	5,000	Within two months of project document signature 1 National Inception Workshop
Inception Report	APMB, PMU	-	Within two weeks of inception workshop
Standard GEF/ADB monitoring and reporting requirements	APMB, PMU	-	Quarterly, annually
Risk management	APMB, PMU	-	Quarterly, annually
Monitoring of indicators in project results framework	GEF, ADB, APMB, PMU	-	Quarterly, annually
GEF Project Implementation Report (PIR)	GEF, ADB, APMB, PMU	-	Annually *(reporting period - July (previous year) to June (current year)*
Lessons learned and knowledge generation	GEF, ADB, APMB	-	Annually
Monitoring of environmental and social risks	APMB, PMU	-	On-going
Stakeholder Engagement Plan	APMB, PMU	-	On-going
Gender Action Plan	ADB, APMB	-	On-going
Addressing environmental and social grievances	ADB, APMB	-	On-going
PSC meetings	MARD, APMB, DARD	10,000 (5 in total, 2,000/ meeting)	One per year
Review missions	GEF, ADB	-	Semi-annually
Oversight missions	GEF, ADB	-	Troubleshooting as needed
Independent Mid-term Review (MTR)	APMB, PMU, Contractor	50,000	Between 2nd and 3rd PIR.
Independent Terminal Evaluation (TE)	APMB, PMU, Contractor	50,000	At least three months before operational closure
Final Report	APMB, PMU	-	
TOTAL indicative COST Excluding project team staff time, and GEF/ADB staff and travel expenses		**115,000**	

[1] See Project Monitoring | GEF (thegef.org)

[2] See Policies and Guidelines | GEF (thegef.org)

[3] Excluding project team staff time and GEF/ADB staff time and travel expenses.

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

Considerable benefits are expected thanks to this project, especially including more sustainable/green jobs created for local farmers and market actors along the value chain. It is remarkable that junk collectors and junk shops (those who are currently in the informal sector and not fully recognized by the society) will be considered to work in a formal sector, being provided with full social protection schemes. Junk collectors are mainly women and so it is important to receive support so that they can have decent jobs. At the end of the plastics pathway there are recycling facilities, who are currently quite limited in terms of quantity and receive almost no support from authorities. It is expected that the project will help them access loan for their operational expansion in planned areas (industrial zones for example) located far away from the residential areas, and promote incentives to expand the eco-systems of clean lifestyle in Vietnam. Consumers of clean products with clear traceability information are key beneficiaries, covering both those in domestic markets.

Regarding economic aspect, farmers no longer have to rely on synthetic pesticides/fertilizers. They can save costs especially in the medium and longer term thanks to their use of bio/organics substances, as well as alternatives towards agricultural by-products. In Central Highland region, income and livelihoods of coffee farmers of which many are ethnic people are totally dependent on the profitability of their plantations. Therefore, reducing production costs while maintaining or improving yields are very important. In addition, improved income from coffee production would allow households to spend more on nutritious food and education of adults and children thus eventually create positive social impacts. Environmental costs regarding collecting and treating plastic waste and pesticide packaging will be reduced. The success of this project also implies environmental benefits via soil/water/air improvement and plant resistance to pests. Other market actors also benefit thanks to sustainable supply chains to be set up and sustained and their accessibility to export markets.

Apart from direct benefits, this GEF is expected to have spill-over positive impact on the area of landscape under provinces and districts located within about 200 km distance away from recycling facilities, with recyclable waste being delivered and recycled at facilities where project interventions are undertaken. It is expected that three large scale recycling facilities and about a dozen of small-scale recycling ones in Dak Lak, Dak Nong and Gia Lai will benefit from this project. Besides, landscapes under provinces and districts located 300 kilometres away from hazardous waste disposal facilities are expected to be cleaned up, with hazardous waste being delivered and disposed there. It is estimated that 37 out of a total of 119 hazardous waste disposal facilities which are located in South Central and Southeast region within affordable distance from project provinces will also get indirect support via access to loan and grant from VEPF, commercial banks and other sources.

Greenhouse gas emissions are expected to cut down given direct support to 20 pilot models on no/low plastics alternatives, together with 20 circular economy models for cooperatives/ SMEs, with indirect impact from scaling-up activities.

Similarly impacts from reduction, disposal/destruction, phase out, elimination and avoidance of chemicals of global concern and their waste in the environment and in processes, materials and products are also taken into account covering nearby districts and provinces. The number of direct beneficiaries therefore covers also farmers and other relevant actors in the districts and provinces within the distance away from the recycling and disposal facilities as highlighted earlier.

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF	CEO Endorsement/Approval	MTR	TE
	Medium/Moderate		

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

Environmental risks

? Risk of accidental release of hazardous substances during handling, storage of used pesticide containers

? Risk of leakage of hazardous substances during handling, storage of used pesticide containers during the extreme weather events (storm, heavy rain, flood)

? Health and safety risk for the farmer involved in the activities of handling, transport and storage of used pesticide containers

? Risk of environmental pollution from storage and transport plastic wastes for disposal, treatment or/and recycling

Table 8. Specific mitigation measures are needed to adequately address specific regional vulnerabilities

No.	Risk	?Impact level	Livelihood	?Proposed mitigation measures	Linked to outputs
COVID-19 risks					
1	?Restricted travel	Medium	Low	Though the country has reopened since the COVID-19 pandemic first hit, lockdowns and restricted travel measures may continue. Meetings, workshops, and consultations will be held virtually as much as possible.	3.2; 3.3
2	?Decreased local support to environmental management due to shifted priorities	?Medium	Medium	?Due to the impact of the COVID-19 pandemic on economy, it is expected political priorities may shift to recovery from the pandemic. Project activities will be validated with national stakeholders before finalisation to ensure continued support	1.1, 1.2, 2.1. 2.2, 2.4
3	?Impacts to Economy (especially due to reduction of agricultural products export to China and other countries)	?Medium	Low	?Discussions have been held with all relevant stakeholders to ensure COVID-19 impacts are not exacerbated by the programme and new economic opportunities are supported. Development of in-country capacity will help to mitigate impacts. The country?s export promotion and support the agricultural sector with cooperation policies such as PUC ? Production Unit Code, PHC-Packing House Code)	2.2
Climate change risks					
4	?Infrastructure damage due to increased typhoon and extreme weather frequency in Vietnam	?Medium	Medium	?The impacts of climate change will be considered in the development and implementation of project infrastructure and strategies for sustainable chemicals and waste management	2.2, 2.4

No.	Risk	?Impact level	Livelihood	?Proposed mitigation measures	Linked to outputs
5	?Increase in flooding due to increased typhoon frequency, La Nina and unevenly distribution of precipitation	Medium	Medium	?The impacts of climate change will be considered in the development and implementation of project activities and strategies for sustainable chemicals and plastic waste management	2.2, 2.4
6	?The impact of climate change on water resources and hence, to crop production, may lead to change of agriculture production scale, so as to reduce the positive impact of the project	Medium	Low-Medium	?The ADB loan Project related to this project will enhance the adaptability of agricultural production to climate change in the project area through a series of measures such as the construction of modern agricultural production system, rural environmental quality improvement and capacity-building, and promote the successful experience. The proposed GEF project activities to improve the agrochemical management and agriculture plastic pollution management capacity will be implemented based on the continuous efforts of relevant agricultural departments and research institutions to promote the agricultural production to adapt to climate change.	2.1, 2.2. 2.4
	?Increased agrochemical, pesticide, fertilizers and agriplastic use due to warmer weather leading to a rise of weeds and insect pests and diseases	Medium	Low-Medium	?As climate change may increase the use of pesticides and agriplastics (irrigation and mulching), the project will support farmers through regulations, finance, and capacity in the transition to no/low-chemical pesticides and alternatives to agriplastics or their sustainable use. Furthermore, the overall programme will promote sustainable agriculture practices that generate resilience.	

No.	Risk	?Impact level	Livelihood	?Proposed mitigation measures	Linked to outputs
7	?Delays in project outputs	Medium	Medium	?Considerations will be made for changes in the project execution timeline to minimise the probability of natural disasters affecting the project areas and crops with non/low chemical cultivation pilot, thereby delaying project outputs	2.1, 2.2, 2.4
Environmental risks					
8	Leakage of hazardous substances during handling, storage of used pesticide containers during the extreme weather events	High	Medium	Clear guidance and support to local communities and farmers in handling and storage of used pesticide containers with weather proof tanks	2.2

No.	Risk	?Impact level	Livelihood	?Proposed mitigation measures	Linked to outputs
9	Environmental pollution from storage and transport plastic wastes for disposal, treatment or/and recycling	Medium	Medium	?One of the FARM project objective is to prevent the release of pollutants to air, water and/or soil through improved pesticide management and used pesticide container management This will be achieved through, for example: preventing the generation of wastes in project site especially hazardous waste and chemical release prevention. To this end, activities in all outcomes will aim at reducing pollution and increasing resource efficiency and negative environmental impacts are unlikely. The FARM Project will not support the establishment of hazardous waste incinerator facilities or similar facilities, but assist to ensure that the used pesticide containers managed in accordance with the government policies on hazardous waste management. The benefits in pollution prevention and resource efficiency are assumed to be greater than the increase in pollution caused by storage and transport of hazardous wastes.	2.4
10	Health and safety risk for the farmer involved in the activities of handling, transport and storage of used pesticide containers	Medium	Medium	?Community health, safety and security must always be protected and, where possible, improved by the FARM project . As such, mitigation plans for risks to community health will be included in the assessment and execution of all activities that handle potentially hazardous chemicals and waste, such as 2.2 and 2.4, will also assess the vulnerability of affected communities and include risk mitigation measures.	2.2, 2.4

No.	Risk	?Impact level	Livelihood	?Proposed mitigation measures	Linked to outputs
?**Operational/delivery risks**					
11	?Political priorities, will and/or buy-in are not adequate for execution of key project activities such as new green financing instruments ? i.e. eco-compensation	Medium	Low	?Government stakeholders were engaged throughout the project development phase to ensure that national priorities were being considered and that there was political buy-in for the project activities. Continuous communication and updates will be provided to the national focal point and key agencies to ensure sustained support	1.1,1.2, 1.3
12	?Commitment of project agencies to cooperate and coordinate efforts to link environmental protection and agriculture development weakens because priorities change	Medium	Medium	?The project executing agency will need to address these kinds of concerns. At the level of project implementation, it will be incumbent on the team to reiterate and demonstrate the direct and indirect benefits from interventions and the relevance to the overarching policy objectives related to agriculture development	1.1, 1.2, 1.3, 2.1, 2.2, 2.4
13	?Weak coordination and cooperation across sectors and as little awareness and buy-in to the project	Medium	Medium	?Project information will be disseminated to as many stakeholders as possible, especially NRE and ARD sectors and financial sector, for the project will be sought.	1.1, 1.2, 1.3, 2.1, 2.2, 2.4
14	?Private sector and/or community support and behavioural change are not adequate	Medium	Medium	?The private sector and CSOs/NGOs have been engaged throughout the project preparation phase and will continue to be engaged throughout the project?s execution. Awareness raising campaigns will be developed and executed to engender additional support from these groups.	2.1, 2.2, 2.4

No.	Risk	?Impact level	Livelihood	?Proposed mitigation measures	Linked to outputs
15	?Farmers, particularly small holders, are reluctant to adopt new technologies and practices	Medium	Medium	?This could be addressed on multiple fronts: i) well designed behaviour change campaigns, ii) extension activities which clearly demonstrate benefits of adhering to good practices, and, iii) policy and regulatory interventions, including incentives and subsidies, to encourage engagement on low chemical crop production and proper waste management	2.2, 2.4
16	?High transport and treatment cost for used pesticide containers as hazardous wastes preventing local authorities properly disposal of us ed pesticide containers	High	Medium	?Financial incentives and investment opportunities will also be highlighted to support public-partner partnerships.	2.1, 2.2,
17	High transport and recycling costs and low market price of recyclable materials reduce the viability of establishing material recovery and recycling initiatives for agricultural plastic wastes	High	Medium	Financial incentives and investment opportunities will also be highlighted to support public-partner partnerships.	2.1, 2.4
Technical risks					

No.	Risk	?Impact level	Livelihood	?Proposed mitigation measures	Linked to outputs
18	?Inadequate data available to support activities and calculation of the indicators	High	Medium	?Historically, data collection on agrochemical, especially on POP and HHP pesticides is not adequate. Where required information is not available, the project executers and partners will work with stakeholders to collect raw data and develop mechanisms to ensure that sustainable data collection mechanisms are implemented. There is almost no data on agricultural plastic waste. This is a significant challenge, particularly with respect to data with respect to agriculture sector and the plastics industry. One specific challenge with respect to agricultural field plastics is that data is both fragmented across agencies, and not disaggregated by type characteristics/ use.	
Social risks					
19	?Continued disregard for the environmental and health impacts of existing agrochemical and plastic waste management activities	Low	Medium	?Awareness raising campaigns will be developed and conducted for government and private sectors as well as the public to engage key community authorities and vulnerable groups (e.g., women, farmers, youth, Indigenous communities).	2.1-2.4

No.	Risk	?Impact level	Livelihood	?Proposed mitigation measures	Linked to outputs
20	?No engagement or commitment of informal sector workers (waste collector/dong nat, junk shops, and recyclers) in the waste plastic management systems	Low	Medium	?Communities/relevant experts and the informal sector will be engaged in the execution of the project?s activities to ensure that developed and implemented strategies provide safe economic opportunities for informal waste collectors, junk shops and recyclers. These workers will also benefit from training on best environmental practices to protect them from the negative health impacts associated with improper waste management.	2.1, 2.2, 2.3, 2.4

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
22-12-05 FARM VIE Climate change risk assessment	**CEO Endorsement ESS**	
FARM VIE IR Categorization Form_Draft Final	**CEO Endorsement ESS**	
22-12-05 FARM VIE Rapid Environmental Assessment (REA)	**CEO Endorsement ESS**	
22-12-05 FARM VIE Ethnic Minority Development Plan (EMDP)	**CEO Endorsement ESS**	
22-12-05 FARM VIE Env_Cat_Form	**CEO Endorsement ESS**	
22-12-05 FARM VIE Environmental and social risk assessment	**CEO Endorsement ESS**	

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
Impacts Reduction and management of agrochemicals improved for greater competitiveness and environmental sustainability of the agri-food sector in Vietnam through innovative green financing mechanisms by 2033.	Adoption of agrochemical reduction and management good practices across the whole of agrochemical lifecycles for the agri-food sector by 2033. Implementation of green financing mechanisms at central and local levels for reduction and management of agrochemical promoting sustainable agri-food value chains by 2033.	Post-project assessment by the Ministry of Agriculture and Rural Development and project provinces	**Assumptions** . Government of Viet Nam?s continued commitment for green financing with a priority for reduction and management of agrochemicals in the agri-food sector **Risks** Low level of interest of private sector, private foundations, multilateral and bilateral agencies in channeling green financing to

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	Global Environment Benefits (GEBs) by 2033 1,085,841 ha of landscapes under improved practices 2,132.50 MT of marine litter avoided - *Emissions avoided:* - 11,591 MT CO_{2e} avoided through improved management of agrochemicals 275.04 MT POPs reduced 3586.91 MT HHPs reduced At least five low chemical / no chemical system implemented in food production 1.68 gTEQ POPa to air reduction/avoidance 386,379 (196,034 female; 190,345 Male;) direct beneficiaries from GEF investment		reduction and management of agrochemicals in the agri-food sector.

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
Outcome Financing for improved agrochemical and agricultural plastic management along the agri-food value chains promoted.	1. Policy and regulatory frameworks streamlined and in place for agrochemicals and agricultural plastic reduction and management by 2027 2. Green financing mechanisms for agrochemicals and agricultural plastic reduction and management promoted and implemented in five (5) project provinces by 2029 3. An effective capacity development, knowledge management and communication system established and running at capacity in five (5) project provinces and at central level for increased outreach and sustainability by 2029	Project progress reports Project mid-term and terminal evaluation reports	**Assumptions** Government, particularly the provincial government serves as the vanguard to create green finance positive enabling environment and expand green finance applications. **Risks** Overlapping mandates and limited coordination among central and provincial government agencies
Outputs			
Output 1. Policy and regulatory coherence and capacity to manage and finance agrochemicals reduction strengthened	By 2027: a. Gaps in the green finance policy and regulatory framework, and mechanisms and their implementation identified and remedial measures proposed.	Project progress reports	**Assumptions** Effective inter-ministerial coordination with clear roles as per mandates

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	b. Regulatory enforcement guidance notes for agrochemical and agricultural plastics management developed and implemented at national and project provincial levels.	Project progress reports	**Risks** Limited national and provincial level coordination and low degree of ownership throughout the project cycle
Output 2. Agrochemical	By 2029:		**Assumptions**

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
reduction and agricultural plastics management improved through enabling and catalyzing finance and investments	a. EPR fund accessed by five (5) project provinces for agrochemical reduction and agricultural plastic management in the agri-food value chains. b. At least three private sector investments made in collection/recycling/treatment of pesticide containers and agricultural plastic wastes.. c. Two (2) community-based pesticide container management models and food safety technical guidelines for at least five (5) high value crops developed. d. Capacity of three (3) government food safety testing centers for pesticide residue analysis strengthened and their Hazard Analysis Critical Control Point (HACCP) protocols promoted. e. Pollution from agricultural field plastics in project areas reduced by 50% reduction of plastic use through re-use, recycling and alternative approaches	Project progress reports Project progress reports Project progress report Project progress reports Project progress reports	EPR fund implementation mechanism(s) in place in time of the project implementation. Greater participation of private sector including private sector financial institutes to back the government?s green financing program. Increased participation of farming communities and other agri-food value chain actors in agrochemical reduction and management. **Risks** Reluctance in collection/recycling/treatment of pesticide containers and agricultural plastic wastes due to their potential health hazards Farmers? deeply ingrained mindset for short-term gains from ample use of agrochemicals

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
Output 3. Agricultural management and monitoring system strengthened together with the capacity and knowledge enhancement in agrochemicals management and natural capital accounting and assessment	By 2029 a. Agriculture product monitoring and management systems to support supply chain traceability and site level performance developed and implemented at three (3) government food safety testing centers. b. Targeted behavior change and technical advisory campaigns designed and implemented c. Pilot Natural Capital Assessment and Accounting completed for at least two (2) selected provinces d. Natural Capital Accounting and Assessment capacity strengthened in five (5) project provinces for at least 50 provincial government officers in charge of environmental management (at least 30% of participants are women).	Project progress reports Project progress reports Natural Capital Assessment and Accounting reports Project progress reports	**Assumptions** Private sector participation facilitated by government policy support prompt target audience to apply newly learned recommended practices

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
Key Activities **1. Policy and regulatory coherence and capacity to manage and finance agrochemicals reduction strengthened** 1.1. Assess the current policy and regulatory framework for "Green" finance implementation mechanisms for agrochemicals and plastic waste management in the agri-food sector in Vietnam. 1.2. Assess (i) existing mechanisms for 'Green" finance including green metrics and 'eco-compensation' for reduction and management of agrochemicals in the agri-food system and (ii) their implementation, including implementing and financing capacity, at national and provincial level. 1.3. Develop an agrochemical (pesticides and fertilizers) and agricultural plastic management guidance and implement it at central and local levels. **2. Agrochemicals reduction and agricultural plastics management improved through enabling and catalyzing finance and investments** 2.1. Support project provinces to access the extended producer responsibility (EPR) fund under Vietnam Environmental Protection Fund (VEPF) as a financing scheme for collection, transportation and recycling/treatment/disposal of agricultural plastic waste and collection/treatment of pesticide containers. 2.2. Pilot at least three private sector investments in collection/recycling/treatment of pesticide containers and agricultural plastic wastes through a matching-grant scheme for possible future replications. 2.3. Promote communication to attract the participation of financial institutions and the private sector to invest in Green Projects in the agri-food sector under the proposed ?Green Finance? mechanism. 2.4. Study and identify, based on environmental and socio-economic factors, (i) suitable container bins/tanks for pesticide container collection and (ii) strategic locations to install them accordingly. 2.5. Pilot two community-based pesticide container management models 2.6. Develop, implement and scale up five low or non-chemical pesticide use farming systems for high value crops 2.7. Conduct capacity building on the low and non-chemical pesticide use and container management systems for seven target crops developed under the project. 2.8. Enhance capacity of the Northern and Southern Pesticide Control and Testing Centers for providing on-demand services for food safety testing and promote HACCP protocols. 2.9. Upgrade facilities and enhance capacity for providing on-demand services of pesticide residue analysis and promote HACCP protocols of the Quality Center for Agriculture, Forestry and Fisheries - Region 3. 2.10. Pilot and scale up of adoption of on-farm and off-farm non (or low) plastics alternatives for selected agri-food value chains 2.11. Pilot and scale up agricultural plastic management (reduce, re-use, recycle, remake and properly dispose) models to achieve zero plastic waste target **3. Management and monitoring system, capacity development and knowledge / learning enhanced**			

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
3.1. Support developing of database of Production Unit Codes of target high value crops - coffee, pepper, avocado, mango, custard apple in relation to agrochemical use 3.2. Expand and upgrade high-value agri-food value chain traceability system run by PPD (database and capacity building) for key crops (durian, pepper, coffee, passion fruit, mango, etc.) to support food safety management. 3.3. Design an evidence-based Knowledge Management and Behaviour Change Communications (BCC) Strategy and implement it as per annual workplans in five target provinces during 2024-2026 3.4. Adapt the Global FARM logo and brand identity for the project to reflect Vietnamese context, develop and disseminate a package of knowledge products and communications materials. Develop and implement BCC campaigns to raise public awareness and mobilize community participation in implementing recommended FARM practices in Viet Nam 3.5. Design, host and administer a web-based knowledge platform as a knowledge management system (KMS) for Viet Nam FARM child project (using both English and Vietnamese languages) 3.6. Conduct central and provincial level capacity development on Natural Capital Assessment and Accounting. 3.7. Pilot Natural Capital Assessment and Accounting in two (2) selected provinces and make the digitalized data and information available. 3.8 Design and implement an advocacy campaign for increased participation of public and private sectors financial institutes and other private sector entities to help maintain natural capital accounts under a green financing mechanism for a green economy. **4. Monitoring and Evaluation** 4.1. Implement a midterm evaluation 4.2 Implement a terminal evaluation			

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Annex B: Response to Project Reviews if applicable

Response to GEF Council comments.

Comment	Response
Norway and Denmark	
Limited presence and capacity of UNEP in Viet Nam and challenges to regional back-up	ADB is the GEF Agency in Viet Nam and has a significant presence and experience in country. UNEP brings globally recognised expertise in environmental issues and has a lot of experience of coordinating GEF Programmes and bringing in expertise as required.
ADB?s role as implementing agency as usually perceived as investor / donor.	Please refer to Annex B in the ADB project document for response.
It is essential to coordinate with other pesticide projects by FAO AusAid etc. in Viet Nam	Please refer to Annex B in the ADB project document for response.
Sustainability needs to be more clearly spelled out with stronger ownership of government, local authorities that goes beyond the project?s life.	The project has been designed with the relevant government ministries and will be implemented jointly with the government. Operational departments within the ministries will be the primary beneficiaries of the project.
Private sector?s role and investment mobilisation in green agricultural production to be improved.	The global child project has included a private sector engagement strategy covering the role of private finance in reorienting investments to reducing and managing pesticides and agriplastics.
Implementation capacity, cross-agency cooperation gaps should be assessed and addressed properly.	The global child project will facilitate harmonised coordination across agencies through annual Programme Coordinating Group (PCG) as well as regular IA coordination meetings. This and streamlined programmatic reporting procedures will facilitate implementation for the coordinated approach.
STAP review on inclusion of fertilizers.	The FARM programme is addressing two product lines, pesticides and agricultural plastics which require different approaches. Adding fertilizer, another product line, to the programme would add further complexity and make it more difficult to achieve impact.
United Kingdom	
A transition to a low chemical agriculture makes sense, however unless the areas targeted are biodiversity hotspots, a transition to a ?no-chemical? agriculture does not make sense.	The concern has been noted and the programme objective clarified. The project will reduce the sale and use of Highly Hazardous Pesticides and promote the transition to low-chemical agriculture. The wording reflects this aim.
UNDP projects	

Projects to be circulated to Council 4 weeks prior to CEO Endorsement	This timeline had been noted. by UNDP.

Comments	Response
ADB?s role as implementing agency of this child project seems a bit challenging as they normally work as investor/donor of the project. FAO seems more relevant and experienced in this area in Vietnam.	ADB is well placed to implement the FARM project in Viet Nam. ADB?s strong presence in the country through a strong partnership with the Ministry of Agriculture and Rural Development (MARD), the implementing agency of the FARM Viet Nam child project made it a partner of choice. While agriculture is the core business of FAO, financing agrochemical management in general, and green financing in particular is much wider in scope and goes well beyond FAO?s mandate. It should also be noted that between 2017 and 2021 ADB has committed $ 8.2 billion in sovereign loans for agriculture and natural resource sector: 2017 - $ 1.37 bn 2018 -$ 2.14 bn 2019 - $ 2.3 bn 2020 - $ 1.1 bn 2021 -$ 1.3 bn Moreover around 180 professional staff are dedicated to Rural Development and Food Security, both within the HQ and across the Resident Missions.

Synergy/leverage across related projects in Vietnam as well as across child projects is important. Earlier recommendations made by a number of projects on pesticides supported by FAO, AusAid and others in Vietnam need to be followed up accordingly.	As FAO?s line Ministry, MARD works very closely with FAO. Findings of related projects supported by different development partners including AusAid (Australian Aid) and FAO have informed the FARM Viet Nam project interventions design. The project aims to develop synergies with related ongoing projects to reinforce the project impact. The project will closely coordinate/collaborate with related development partners on the ground throughout the project implementation.

Response to STAP reviews.

STAP

Outcomes	Yes ?clear metrics of GEB calculations for pesticide reduction benefits and methods are provided though it would be helpful to have some footnoting and backup of how they were calculated.	At the PFD stage the detailed field surveys and other data was not available to back up the calculations. These will be gathered during PPG and provide the full calculation justification in the CEO Endorsement Request stage. Calculation methodology has been documented and a common approach for CI?s 4, 5,9, 10 & 11 have been agreed by the EA?s in FARM

Alternative scenario	Theory of change document is provided in congruence with suggested STAP guidelines. A problem analysis diagram is also provided before the TOC, which is helpful. The theory of change can be further improved by including underlying assumptions leading to expected outcomes and impacts.	Noted. The full theory of change from the PFD was further refined by each child project in a participatory manner during PPG. Agencies and executing partners were encouraged to include assumptions. ToC?s have been revised to include key assumptions.

Risks	Risk management table is also included Climate risk screening provided. More detailed climate risk assessment is encouraged. Given that this is an agricultural project seeking to promote new practices that can be susceptible to climate change impacts, we encourage the proponent to conduct a more detailed climate risk assessment following STAP guidance on climate risk screening (https://stapgef.org/resources/advisory-documents/stap-guidance-climate-risk-screening and https://stapgef.org/resources/advisory-documents/stap-chairs-report-gef-agency-retreat-1-april-2020).	This comment had been noted. The detailed climate risk screening and assessment was part of the PPG phase, and the Agencies followed the recommended guidance to ensure a consistent approach. The UNEP/FAO child project underwent the mandatory FAO risk certification for Environmental and Social risks and the action was classified as low risk. FAO follows the Framework for Environmental and Social Management (2022). Programmes and projects

		should meet the requirements of the 9 Environmental and Social Standards (ESS) of which ESS 3 is on Climate Change and Disaster Risk Reduction. For UNDP Projects, a comprehensive and thorough risk analysis was carried out during the PPG phase, considering all the risk categories following the ?UNDP Enterprise Risk Management (ERM) Policy?. These categories include Climate Risk screening. The UNIDO Child Project has

		considered climate risks in its risk analysis. It developed the mandatory Environmental and Social Management Plan (ESMP) where associated climate risks are also taken into consideration. The ESMP will be submitted as part of the CEO Endorsement package. Please refer to Annex B in the ADB project document for the corresponding response.

	The project's title as "Agrochemical" reductions is perhaps more expansive than the core operational work presented. The term "agrochemical" encompasses fertilizers as well. However, the project is largely focused on pesticides, and there is only a passing reference to fertilizers. Perhaps the proponent may consider incorporating fertilizer management into the activities as this is a significant aspect of agroecology, which the project seeks to promote. More so, incorporating fertilizer management could deliver further GEBs related to international waters (reduced pollution and hypoxia) and land degradation (landscapes under sustainable land management in production systems). Fertilizer usage presents a separate set of ecological challenges which are more linked to energy delivery and eutrophication. Future projects in fertilizer usage reduction could also consider climate change mitigation benefits since the Haber process for nitrate production is one of the most carbon-intensive industrial processes. Refer to Rosa, L., Rulli, M. C., Ali, S., Chiarelli, D. D., Dell?Angelo, J., Mueller, N. D., Scheidel, A., Siciliano, G., & D?Odorico, P. (2021). Energy implications of the 21st-century agrarian transition. Nature Communications, 12(1), 2319. https://doi.org/10.1038/s41467-021-22581-7	The FARM Programme is working to reduce pollution from two different types of agricultural inputs, pesticides and agricultural plastics. Each require a different technical approach and are the mandates of different ministries. Pesticides generally fall under the mandate of the Ministry of Agriculture; Agricultural plastics are seen as a waste issue that falls under the Ministry of the Environment. Adding a third agricultural input, fertilizers, would add further complexity

		that would impede the Programmes ability to make an impact on the existing target products, pesticides and plastics. FARM would propose addressing the environmental impact of fertilizer use in a separate but related project.

	The PIF cited an alarming fact that a significant proportion of development disbursement and climate finance earmarked for agriculture supports projects focused on conventional agriculture. However, the project activities related to this issue mainly focus on addressing the public sector (government subsidies), private sector (chemical industry Extended Producer Responsibility, commodity certification schemes),and the financial sector (investment, banking, and insurance). We think some form of activities directly focused on addressing this concern should be included in this project. This could be stakeholder meetings to address this concern, awareness-raising campaigns, knowledge creation and dissemination efforts.	During the PPG the global child project incorporated explicit activities on influencing public finance, including via engagement with the academic networks that produced the source report. These activities include both analysis and stakeholder engagement. In the global child project, the issue of financialization of food will be addressed through Component 2.2 with a focus on financial-sector policies that modify the structure of incentives

		and impose quantity constraints for the financing of certain practices.
	We commend the proponent for including agricultural plastics (mulch film, hothouse film, seed trays, irrigation drip tape, etc.) in the project, as this is an aspect that is largely less studied or addressed but with significant impact on soil quality, food quality and safety(Steinmetz et al., 2016. Plastic mulching in agriculture. Trading short-term agronomic benefits for long-term soil degradation? https://doi.org/10.1016/j.scitotenv.2016.01.153; Grossman 2015:https://ensia.com/features/the-biggest-source-of-plastic-trash-youve-never-heard-of/; Browne,https://www.bbc.com/future/bespoke/follow-the-food/why-foods-plastic-problem-is-bigger-than-we-realise.html). We would like to refer the proponent to articles related to alternatives to agricultural plastics:?University of Minnesota Extension, 2021. Exploring alternatives to plastic mulch.https://blog-fruit-vegetable-ipm.extension.umn.edu/2021/01/exploring-alternatives-to-plastic-mulch.html?Miles et al., 2015. Alternatives to Plastic Mulch in Vegetable Production Systems.https://www.researchgate.net/publication/296111767_Alternatives_to_Plastic_Mulch_in_Vegetable_Production_Systems	The additional references are noted with thanks. They were further reviewed during PPG Component 3 of the UNEP/FAO child will develop knowledge transfer tools on alternatives and the sustainable use and management of agricultural plastic products.

Response to GEF Council Comments

Comments	Response
ADB?s role as implementing agency of this child project seems a bit challenging as they normally work as investor/donor of the project. FAO seems more relevant and experienced in this area in Vietnam.	ADB is well placed to implement the FARM project in Vietnam. ADB?s strong presence in the country through a strong partnership with the Ministry of Agriculture and Rural Development (MARD), the implementing agency of the FARM Vietnam child project made it a partner of choice. While agriculture is the core business of FAO, financing agrochemical management in general, and green financing in particular is much wider in scope and goes well beyond FAO?s mandate.
Synergy/leverage across related projects in Vietnam as well as across child projects is important. Earlier recommendations made by a number of projects on pesticides supported by FAO, AusAid and others in Vietnam need to be followed up accordingly.	As FAO?s line Ministry, MARD works very closely with FAO. Findings of related projects supported by different development partners including AusAid (Australian Aid) and FAO have informed the FARM Vietnam project interventions design. The project aims to develop synergies with related ongoing projects to reinforce the project impact. The project will closely coordinate/collaborate with related development partners on the ground throughout the project implementation.

ANNEX C: Status of Utilization of Project Preparation Grant (PPG). (Provide detailed funding amount of the PPG activities financing status in the table below:

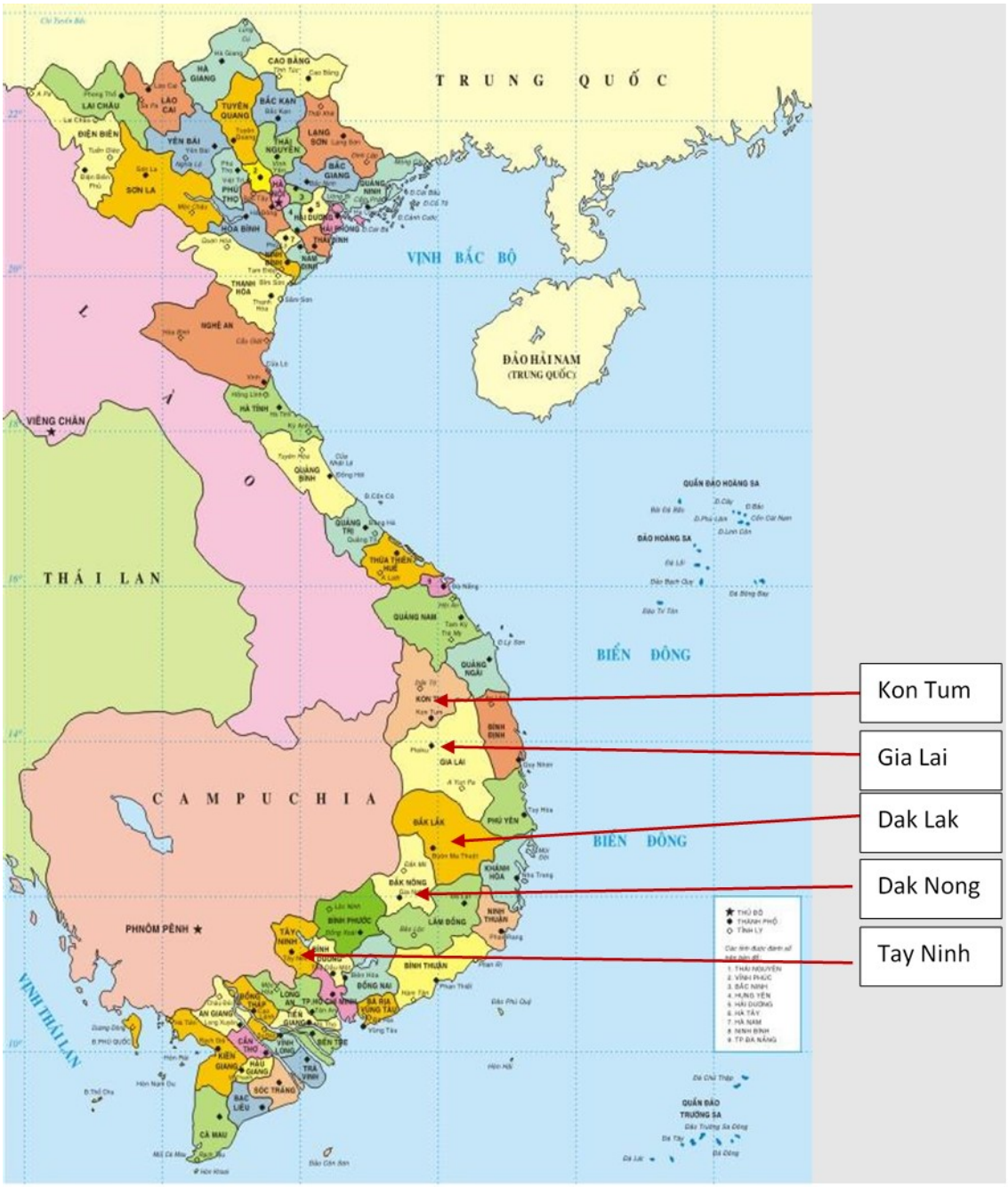
Amounting to USD200,000			
Project Preparation Activities Implemented	***GEF Amount ($)***		
	Budgeted Amount	***Amount Spent to date***	***Amount Committed***
Consultants (ADB)			
Farm Level Agrochemicals Management Expert / Team Leader	54,000	0	54,000

Project Economist/Deputy Team Leader	37,000	0	37,000
Green Finance Expert	11,000	0	11,000
Agriculture Expert	16,400	0	16,400
Communication Strategy and Behaviour Change Expert	16,500	0	16,500
Agricultural Value Chain Expert	15,300	0	15,300
Climate Smart Agriculture Specialist	5,290	0	5,290
Unallocated	44,510	0	44,510
Total	200,000	0	200,000

NOTE: Consultants invoicing is expected after first CER submission in December 2022.

ANNEX D: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.



GEF FARM Viet Nam

Geolocation of Project Provinces

Kon Tum Province	**Latitude** From: 13?55'32.15"N To: 15?24'59.82"N **Longitude** From: 107?27'37.95"E To: 108?33'1.45"E **Kon Tum city** 14?21'9.48"N 108? 0'53.28"E
Gia Lai Province	**Latitude** From: 12?59'46.04"N To: 14?35'44.58"N **Longitude** From: 107?27'31.44"E To: 108?51'27.55"E **Pleiku city** 13?58'30.78"N 108? 1'52.90"E
Dak Lak Province	**Latitude** From: 12? 9'35.81"N To: 13?24'45.95"N **Longitude** From: 107?29'3.85"E To: 108?59'51.05"E **Buon Ma Thuot city** 12?40'18.83"N 108? 3'2.38"E

Dak Nong Province	**Latitude** From: 11?45'2.72"N To: 12?48'45.25"N **Longitude** From: 107?12'33.56"E To: 108? 7'4.03"E **Gia Nghia city** 12? 0'25.81"N 107?41'45.94"E
Tay Ninh Province	**Latitude** From: 10?58'39.92"N To: 11?46'39.80"N **Longitude** From: 105?48'35.21"E To: 106?29'28.58"E **Tay Ninh city** 11?20'17.99"N 106? 7'20.32"E

ANNEX E: Project Budget Table

Please attach a project budget table.

Expenditure Category	**Detailed Description**	**Component (USD equiv.)**						**Total (USD eq.)**	**Responsible Entity**
		Component 1	Component 2	Component 3	***Sub-Total***	***M&E***	***PMC***		(Executing Entity receiving funds from the GEF Agency)[1]

Works	**?**							**-**	
Goods		-	-	-				**-**	
	Purchase of 3R tanks for cooperatives/SMEs (in combination with tank provided in Activity 2.2.1)	-	33,333	-	33,333			**33,333**	APMB
	Provide suitable container bins/tanks for pesticide container collection at strategic locations to be identified based on environmental and socio-economic factors.	-	300,000	-	300,000			**300,000**	APMB
	Specialized software for laboratory management	-	85,000	-	85,000			**85,000**	APMB
	Equipments for NAFIQAD Center 3 (see breakdown below)	-	760,000	-	760,000			**760,000**	APMB
		-	-	-				**-**	
	Provision of IPHM management app and insect pest monitoring device	-	91,000	-	91,000			**91,000**	APMB
	Web-based platform for NCA data collection	-	-	30,000	30,000			**30,000**	APMB
	Laptops and softwares				-		12,000	**12,000**	
Vehicles		-	-	-	-			**-**	
Grants/ Sub-grants		-	-	-	-			**-**	

	Support private sector to access matching-grants to enter into and/or implement projects on collection/recycling/ treatment of pesticide containers and agricultural plastic wastes under an innovative 'Green' finance model.	-	300,000	-	300,000			**300,000**	APMB
	Develop, pilot and roll out community-based pesticide container and agricultural plastics management model.	-	540,000	-	540,000			**540,000**	APMB
Grants/ Sub-grants	Financial support to delivery/transportation of recyclable waste to 5 recycling facilities	-	666,666	-	666,666			**666,666**	APMB
	Financial support to delivery/transportation of hazardous waste to 5 disposal facilities	-	21,000	-	21,000			**21,000**	APMB
	Financial support for 20 model (from Green Finance Package), for services of pesticide container use, collection and classification at source, arrangement of transportation of agricultural plastics waste to recycling and disposal facilities on regularly basis along the project timeline, making/remaking/recovery of new products.		824,000	-	824,000			**824,000**	APMB
Revolving funds/ Seed funds / Equity	?	-	-	-	-			**-**	

Sub-contract to executing partner/ entity		-	-	-	-			-	
Contractual Services ? Individual	?							-	
Contractual Services ? Company		-	-	-	-			-	
	Review the green finance policy framework linked with the management of agrochemicals and plastic waste in the agri-food sector	66,000	-	-	66,000			**66,000**	APMB
	Assess the capacity at national and provincial level to finance and manage 'Green" finance mechanisms including green metrics and 'eco-compensation' for reduction and management of agrochemicals in the agri-food system.	75,000	-	-	75,000			**75,000**	APMB
	Review and develop draft guidelines for management of agrochemicals, pesticide containers and collection/recycling/ treatment of agricultural plastic waste at central and local levels.	157,500	-	-	157,500			**157,500**	APMB
	Cross learning visits to Korea/Taiwan	50,000	-	-	50,000			**50,000**	APMB

	Assist preparing proposals to receive EPR support from the Vietnam Environmental Protection Fund (VEPF), reviewing and preparing enterprise?s loan applications for development investment, expansion of production facilities to collect/recycle agricultural plastics in the project area.		150,000	-	150,000			**150,000**	APMB
	Engage a communication firm to carry out communication on the mass media about FARM Vietnam and its supporting activities	-	30,000	-	30,000			**30,000**	APMB
	Develop 20 pilot models across 5 provinces to promote the use of plastics alternatives in on-farm and off-farm practices, in support of Provincial Action Plan implementation using FFS on agricultural by-product processing technologies, solutions of low plastics alternatives like thicker mulching films, degradable plastics, fruit cover, etc. that can be applied/last for longer to reduce one-use plastics toward sustainable/eco-farming.	-	60,000	-	60,000			**60,000**	APMB

	Develop and digitalize the database of Production Unit Codes in the concentrated planting areas of export-oriented crops (coffee, pepper, avocado, mango, custard apple) in selected provinces	-	-	88,500	88,500			**88,500**	APMB
	Design and implement an evidence-based Knowledge Management (KM) and Project Behaviour Change Communications (BCC) Strategy throughout the project implementation period.	-	-	23,250	23,250			**23,250**	APMB
	Enhance visibility of the FARM project in Viet Nam and disseminate a package of knowledge products and communications materials, develop and implement BCC campaigns to raise public awareness for greater community participation and uptaking of recommended FARM practices in Viet Nam.			100,000	100,000			**100,000**	APMB
	Production cost of IEC materials (brochures, leaflets) and development of audio-visual materials (videos and radio)	-	-	65,000	65,000			**65,000**	APMB

	Communications campaigns in 5 provinces (digital communications and direct communications)	-	-	225,000	225,000			**225,000**	APMB
	Technical guidelines for coffee, pepper, vegetables and two selected fruits	-	500,000	-	500,000			**500,000**	APMB
	Conduct capacity building on natural capital accounting and assessment, formulate the provincial-level scheme on payment for natural ecosystem services and develop a web-based database on natural capital accounting and assessment. Pilot Natural Capital Assessment and Accounting in 2 selected provinces and create a platform to collect and produce report on Natural Capital Lab.	-	-	168000	168,000			**168,000**	APMB
	Baseline and Endline Survey	-	-	-	-	135,000		**135,000**	APMB
	Mid-term Review and Termination evaluation				-	115,000		**115,000**	APMB
		-	-	-	-			**-**	
International Consultants		-	-	-	-			**-**	
	International Laboratory and Testing Specialist	-	72,000	-	72,000			**72,000**	APMB

Local Consultants		-	-	-	-			-	
	Develop 20 models of non/low plastic alternatives across 5 provinces -TOT training	-	90,000	-	90,000			**90,000**	APMB
	Develop 20 models of non/low plastic alternatives across 5 provinces -farmer training	-	150,000	-	150,000			**150,000**	APMB
	Technical Assistance Consultants to design and develop 20 circular economy models	-	40,000	-	40,000			**40,000**	APMB
	Expand and upgrade high-value supply chain traceability system run by PPD (database and capacity building) for key crops (durian, pepper, coffee, passion fruit, mango, etc.) to support food safety management	-	-	84,000	84,000			**84,000**	APMB
	Develop capacity of relevant government staff at provincial and commune levels and lead farmers for greater adoption of the recommended low and non-chemical pesticide use and container management systems	-	42,000	-	42,000			**42,000**	APMB
	Website development	-	-	25,000	25,000			**25,000**	APMB
	Knowledge Management specialist	-	-	25,000	25,000			**25,000**	APMB
	Webmaster	-	-	10,000	10,000			**10,000**	APMB
	Senior Media Specialist	-	-	25,000	25,000			**25,000**	APMB
	Digital Media Specialist	-	-	10,000	10,000			**10,000**	APMB

Salary and benefits / Staff costs		-	-	-	-				APMB
	Project Manager						144,000	**144,000**	
	Finance and Admin Asst						38,400	**38,400**	
	Procurement Assistant						38,400	**38,400**	
	Performance Monitoring						38,400	**38,400**	
	Messenger / Courier /communications						9,000	**9,000**	
Trainings, Worksh ops, Meetings	Support for capacity development workshops, seminars, conferences and meetings	25,000	672,000	48,000	745,000		50,000	**795,000**	APMB
Travel	**?**	17,000	20,000	30,250	67,250		29,800	**97,050**	APMB
Office Supplies	**?**	7,000	-	-	7,000			**7,000**	APMB
Other Operating Costs	**?**	2,500	59,001	12,000	73,501		15,000	**88,501**	APMB
Grand Total		400,000	5,506,000	969,000	6,875,000	250,000	375,000	**7,500,000**	APMB

[1] In exceptional cases where GEF Agency receives funds for execution, Terms of Reference for specific activities are reviewed by GEF Secretariat

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Breakdown of Equipment for NAFIQAD 3 (Line 12 above)

Funding items	Quantity	Value (USD)
Ultra-high pressure liquid chromatography coupled to mass spectrometry (UPLC-MS/MS) system	1	500,000
120L/min screw air compressor for nitrogen generator	1	16,000
120L/min nitrogen generator (type without compressor)	1	24,000
Analytical balance d = 0.1mg	2	8,000
Technical balance d = 1mg	2	8,000
PolyVap 96-hole drying apparatus for 15ml . tubes	1	40,000
Central reserve power system (central UPS) 100KVA with 3 batteries for Chemistry laboratory	100 KVA	55,000
Central backup power system (central UPS) 100KVA with 3 batteries for microbiology laboratory	100KVA	54,000

Real-time PCR system (minimum 6 color channels, 96 wells, standard amplification tubes)	1	55,000
TOTAL		760,000

ANNEX F: (For NGI only) Termsheet

Instructions. Please submit an finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

ANNEX G: (For NGI only) Reflows

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat or the Trustee) in the Document Section of the CEO endorsement. The Agencys is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

ANNEX H: (For NGI only) Agency Capacity to generate reflows

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies? capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).