Lao People's Democratic Republic

Strategic Support for Food Security and Nutrition Project - GAFSP funds

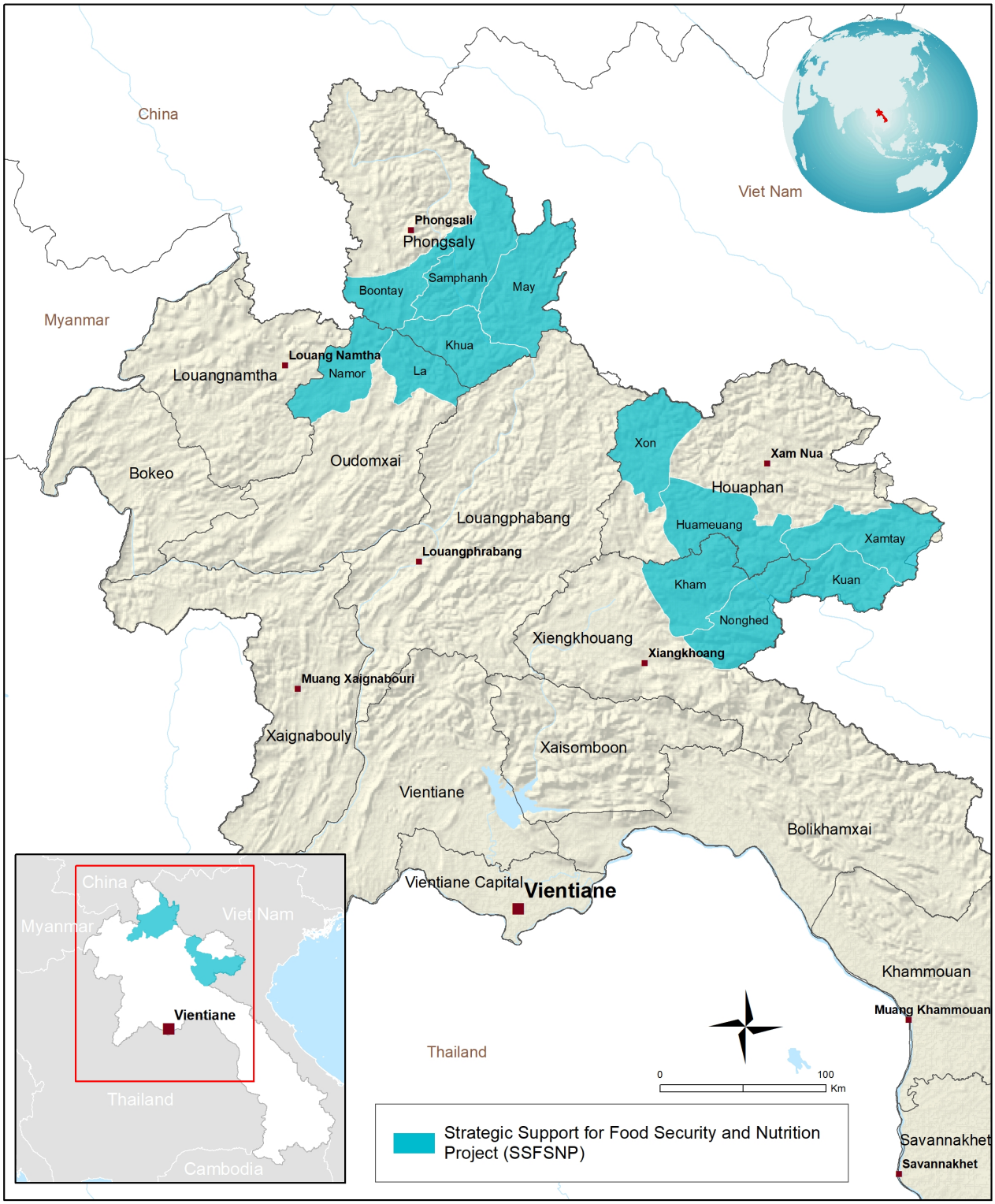
Project Completion Report

Main report and appendices

Mission Dates:	27 March - 11 April 2023
Document Date:	27/06/2023
Project No.	2000001131
Report No.	6522-LA

Asia and the Pacific Division
Programme Management Department

Map of the Project Area



IFAD

The designations employed and the presentation of the material in this map do not imply the expression of any opinion whatsoever on the part of IFAD concerning the delimitation of the frontiers or boundaries, or the authorities thereof.

Map compiled by IFAD | 19-06-2023

Currency Equivalents

Currency Unit	=	Lao Kip (LAK)
US$1.0	=	17,184 (on 11/04/2023)

Weights and measures

1 kilogram	=	1000 g
1 000 kg	=	2.204 lb.
1 kilometre (km)	=	0.62 mile
1 metre	=	1.09 yards
1 square metre	=	10.76 square feet
1 acre	=	0.405 hectare
1 hectare	=	2.47 acres

Abbreviations and Acronyms

ADB	Asian Development Bank
ADS	Agriculture Development Strategy
AF	Additional Financing
AFN	Agriculture for Nutrition Project
AOS	Annual Outcome Survey
APG	Agriculture Production Group
AWPB	Annual Work Plan and Budget
CCA	Climate Change Adaptation
CD	Country Director
DAFO	District Agriculture and Forestry Office
DEAC	Department of Agriculture Extension and Cooperatives
DNC	District Nutrition Committee
DNP	District Nutrition Plan
DoPC	Department of Planning and Cooperation (of MAF)
DSEDC	District Socio-Economic Development Committee
DTEAP	Department of Technical Extension and Agro-Processing (official name of DEAC during part of the implementation period)
EU	European Union
F2F	Farmer-to-Farmer Extension
FAO	UN- Food and Agriculture Organisation
FNS	Farmer Nutrition Schools
GAFSP	Global Agriculture and Food Security Programme
GDP	Gross Domestic Product
GIS	Geographic Information System
GoL	Government of Lao People's Democratic Republic
GST	Group Support Team
HDI	Human Development Index
HFIAS	Household Food Insecurity Access Scale
HH	Household
IFAD	International Fund for Agricultural Development
ISM	Implementation Support Mission
KM	Knowledge Management
LAK	Lao Kip
LF	Lead Farmer
LWU	Lao Women Union
M&E	Monitoring and Evaluation
MAF	Ministry of Agriculture and Forestry
MDD-W	Minimum Dietary Diversity for Women
MTR	Mid Term Review
NAFRI	National Agriculture and Forestry Research Institute
NNC	National Nutrition Committee
NNSPA	National Nutrition Strategy to 2025 and Plan of Action 2016 – 2020
NOTUS	IFAD No Objection Tracking System
NPC	National Project Coordinator
NPCO	National Project Coordination Office
NTFP	Non-Timber Forest Products

ODA	Official Development Assistance
PAFO	Province Agriculture and Forestry Office
PAR	Participatory Action Research
PCR	Project Completion Review
PIM	Project Implementation Manual
PPCP	Public-private Community Partnership
ProMIS	Project Monitoring and Information System
PSC	Project Steering Committee
SIP	Strategic Investment Plans
SM	Supervision Mission
ToC	Theory of Change
TSC	Technical Service Centre
USD	United States Dollar
VDC	Village Development Committee
VDP	Village Development Plan
VDP	Village Development Plan
VNC	Village Nutrition Center
VNF	Village Nutrition Facilitator
VNP	Village Nutrition Plan
VVW	Village Veterinary Worker
WASH	Water, sanitation, and health
WFP	UN-World Food Programme

Project at a glance

Region Asia and the Pacific Division	**Project at Risk Status** Not at risk
Country Lao People's Democratic Republic	**Environmental and Social Category** Moderate
Project Name Strategic Support for Food Security and Nutrition Project - GAFSP funds	**Climate Risk Classification** Moderate
Project ID 2000001131	
Project Sector Storage, processing and marketing	
CPM Ambrosio Barros	
Project Area 12 districts and approx. 400 villages in Oudomxai, Phongsaly, Xieng Khouang and Houaphan provinces in Northern Laos	

Key Dates

IFAD Approval	**Signing**	**Entry into Force**	**Mid-Term Review**	**Original Completion**	**Actual Completion**
13/04/2016	14/05/2016	28/04/2016	18/02/2020	30/06/2022	31/12/2022
		Original Financial Closure	**Actual Financial Closure**		
		30/06/2023	not available yet		
Date of Last SIS Mission	**Number of SIS Missions**	**Number of extensions**	**Effectiveness lag**		
30/10/2022	9	1	0 months		

IFAD Financing
as at the time of PCR submission

Actual Costs and Financing (USD '000)
as at the time of PCR submission

Component	IFAD	Cofinancing	Domestic	Total
	Actual	Actual	Actual	Actual
Table 1: GAFSP Response to COVID Additional Funding (Investment)		1 400		1 400
Project management		4 988	4 357	9 345
Community-driven, nutrition sensitive agriculture interventions established		6 000	0	6 000
Strengthened public services		4 234	64	4 299
Sustainable and inclusive market-driven partnerships established		15 260	4 600	19 860
Total	0	31 884	9 022	40 906
Remarks				

Outreach

Direct Beneficiaries	
Number of HH members	Number of persons receiving services
Estimated total: **210 684**	Total: **210 684**
	Males: **90 434**
	Females: **120 250**
	Young: **0**

	Indigenous people: **147 940**

Project Objectives

Agri. Tech. and Prod. Services

The Goal of the Project is: Contribute to reduced extreme poverty and malnutrition. The Development Objective is: Improved and diversified agricultural production and mother and child nutrition enhance life prospects.

Country Partners

Executing Institution	Ministry of Agriculture and Forestry
Implementing Institutions	Ministry of Agriculture and Forestry

Project Completion Ratings Matrix

COUNTRY: Lao People's Democratic Republic	
PROJECT NAME: Strategic Support for Food Security and Nutrition Project - GAFSP funds	
PROJECT ID: 2000001131	
BOARD APPROVAL DATE: 13/04/2016	
ENTRY INTO FORCE: 28/04/2016	
PROJECT COMPLETION DATE: 31/12/2022	
LOAN CLOSING DATE: 30/06/2023	
IFAD LOAN AND GRANT (USD MILLION): $0	
TOTAL PROJECT FINANCING: $40,295,000	
IMPLEMENTING AGENCY: Ministry of Agriculture and Forestry	
Criterion	**PCR Rating**
Project performance	
- Relevance	5
- Effectiveness	5
- Efficiency	5
- Sustainability	4
Rural poverty impact	**5**
- Households' incomes and assets	5
- Human and social capital	5
- Food security	5
- Agricultural productivity	5
- Institutions and policies	4
Additional evaluation criteria	
- Gender equality and women's empowerment	5
- Innovation	5
- Scaling up	5
- Environment and natural resource management	3
- Adaptation to climate change	4
- Targeting and outreach	4
- Access to markets	4
Partners performance	
- IFAD's performance	5
- Government performance	5
Overall project achievement	**5**

Executive Summary

The Agriculture for Nutrition (AFN) Project[1] was financed by the Global Agriculture & Food Security Program (GAFSP) through an Investment Grant of USD 24 million administered by the International Fund for Agricultural Development (IFAD) and implemented by the Ministry of Agriculture and Forestry (MAF) of the Government of Lao People's Democratic Republic (GoL) through its Department of Planning and Cooperation (DoPC) and a Technical Assistance Grant of USD 6 million administered and implemented by the World Food Programme (WFP). GoL contributed about USD 5.4 million, with beneficiary and private sector contributions amounting to USD 3.3 million. Additional Financing of USD 3.8 million was provided by GAFSP in response to the COVID-19 emergency, of which USD 1.5 million was administered by IFAD and implemented by MAF and USD 2.3 million was administered and implemented by WFP. The project became effective in April 2016 and completed in December 2022. The Project Completion Review (PCR) mission was undertaken jointly by MAF, IFAD and WFP from 27th March to 11th April 2023 in line with the methodological framework set out in the IFAD Guidelines for PCR (2019) and the GAFSP-funded project processing guidance for Supervising Entities (2022).

The Goal of AFN was to contribute to reduced extreme poverty and malnutrition. The Objective was improved and diversified climate resilient agricultural production and household nutrition enhance life prospects to be achieved through Outcome 1: Strengthened Public Services; Outcome 2: Community-driven agriculture-based nutrition interventions established; and Outcome 3: Sustainable and inclusive market-driven partnerships. The project was designed in the context of persistent poverty and lagging nutrition indicators in remote, poor, upland villages of northern Lao PDR with mainly non-Lao ethnic populations, against a backdrop of impressive economic growth and poverty reduction nationwide in the 2000 – 2015 period. Low productivity of the agriculture sector and vulnerability to global climate change were also key concerns at design. AFN design aligned with and supported the GoL's National Nutrition Strategy and Plan of Action (NNSPA) including its four priority agriculture interventions.

AFN targeted the populations of 400 villages, chosen based on nutrition and poverty criteria, in 12 Districts of 4 provinces in northern Lao PDR (i.e., Oudomxay, Phongsaly, Xiengkhouang and Houaphan). The 12 Districts were identified as priority "convergence districts" in the NNSPA. The planned project outreach was 34,000 poor smallholder households (HH) or around 227,000 people, around 80% non-Lao. Women of reproductive age and with childcare responsibilities were a specific target group.

The AFN investment project (IFAD-administered GAFSP grant) was implemented by MAF through a National Project Coordination Office (NPCO) and, following the decentralisation strategy of GoL, through the Provincial and District Agriculture and Forestry Offices (PAFO and DAFO). WFP implemented nutrition interventions under Component 2 and mobilised expert technical assistance. The project was overseen at national, Provincial and District levels by Project Steering Committees with representation from the "convergence agencies" of the NNSPA, thus ensuring cross-sectoral coordination and direct participation of relevant agencies including District Health Office (DHO) and Lao Women's Union (LWU) in implementation.

AFN has succeeded in reaching or surpassing its most important outreach and physical output targets (which were modified at Mid-Term Review, MTR). The project reports 210,684 beneficiaries (92.5% of the target) of whom 57% were women.

Key achievements under Component 1 (strengthened public services) included upgrading of 14 Technical Service Centres (TSC) under DAFO, development and documentation of 29 Participatory Action Research (PAR) agriculture models in total, of which, 19 PARs, actively promoted within AFN, for climate-resilient and sustainable smallholder production; selection, training and certification of 884 Lead Farmers (LF); support to 769 Village Veterinary Workers (VVW) 900 on-farm demonstrations in 285 villages; forage production activities established in 196 villages; and development of a Project Monitoring Information System (ProMIS) for MAF.

Key achievements under Component 2 (Community-driven agriculture-based nutrition interventions) included support to 12 District Nutrition Committees (DNC) coordinating convergence activities under the NNSPA; 400 villages with participatory development plans and 365 villages with village nutrition plans[2] (122%); 400 Farmer Nutrition Schools (FNS) established with 386 having Nutrition Learning Centre (NLC) buildings; training of 1,217 Village Nutrition Facilitators (79% women); and 22,970 HH (109%) provided with targeted support to improve their nutrition including Garden Grants to women participants in the FNS of USD 120 per household, used to develop homestead garden and small livestock activities and accompanied by agriculture training.

Key achievements under Component 3 (Sustainable and Inclusive Market-Driven Partnerships) were preparation of 12 commodity-specific Strategic Investment Plans (SIPs); implementation of 465 village infrastructure schemes, mainly in farm access roads and bridges, small-scale irrigation and domestic water supplies; formation of 872 Agriculture Production Groups (APGs) of which 802 received grants for investment in community or on-farm productive assets; and seven Public-Private-Community Partnerships (PPCP) with locally based agri-enterprises which received matching grants for investments, reached buyer agreements / contracts with APG member farmers and provided farmers with extension support for production.

Project relevance is rated as satisfactory (5). The overall design was consistent with the needs of the target groups and to key GoL policies and programmes for nutrition and smallholder agriculture development, and remained so throughout the project period. The overall internal logic of the project design is coherent and sound at the strategic level. Design changes made at MTR and for Additional Financing were limited and appropriate.

Project effectiveness is rated as Satisfactory (5). The Objective indicator target of *21,000 HH out of poverty by increasing per capita income from the current level to more than $270/yr. by Project-end* was 85% achieved, which is a good performance particularly in view of the impacts of COVID-19 and the war in the Ukraine. The second Objective indicator target, *at least 21,000 HH with improved food security* has been exceeded, with a cumulative result of 31,663 HH being reported by the endline survey.

The Outcome 1 indicator target of 14 TSC upgraded was achieved, while an estimated 20,630 HH reported adoption of new/improved inputs, technologies or practices (target 10,000). Nineteen of the 29 PAR models, actively implemented, were well received by trainers and farmers and are being replicated outside AFN project areas. For Outcome 2, the indicator target of 300 Village Development Committees with basic convergence plans on food and nutrition was exceeded (365 achieved) and 34,750 women were estimated to have achieved minimum dietary diversity for women (MDD-W, target 28,000). The FNS and Garden Grants under

Component 2 established a best-practice model for nutrition action in poor, remote communities. For Outcome 3, the target of 10,000 HH increasing income by 30% was exceeded (estimated achievement 19,506). The combination of infrastructure investments, APGs and production grants significantly increased farm productivity and incomes. However, the SIPs did not match the needs of APGs and PPCP entrepreneurs. The PPCPs were successful in themselves, but activity proved challenging and the scale achieved (7 PPCPs) was well below what was envisaged at design.

Project efficiency is rated as satisfactory (5). Project implementation was efficient despite some challenges, including staff and consultant recruitment, COVID-19 and additional financing, that caused slow progress and disbursement in 2017-2019 and 2021. Project management performance was satisfactory and improved over the project implementation period, as did financial management after some initial challenges. Procurement was generally satisfactory although procedures for community procurement were over-complex and could have been simplified. The project established an effective monitoring and evaluation (M&E) system though some deficiencies in collection and aggregation of data were noted.

Actual project costs stand at 101% of appraisal. The economic internal rate of return (EIRR) at completion is estimated to be 16.9% compared with its the design estimate value of 8.65% at design. Actual costs per beneficiary and management costs were higher than their respective design estimates, reflecting the high costs of working in the remote target villages.

Project Sustainability is rated as moderately satisfactory (4). The most important project benefit streams are expected to continue after project completion. Capacity to implement the NNSPA has been significantly enhanced. The project has prepared an thorough exit strategy including hand-over of support responsibilities for FNS, APG and infrastructure maintenance committees. The strongest FNS and APG are able to continue independently but allocation of budget resources for ongoing support from District convergence agencies will be important for the majority. Gains in nutrition knowledge and in farm productivity will provide ongoing benefits even if group activities cease.

The project target areas are experiencing environmentally unsustainable expansion of agriculture land by clearing of forested slopes and watershed areas, leading to stress on water resources, siltation of watercourses, soil erosion and risk of landslides. Burning of cut vegetation was contributing to serious and prolonged air pollution at a regional scale during the mission period. AFN agriculture activities are not a major contributor but the positive measures for environmental sustainability adopted by the project were not sufficient in view of the scale of the problem.

Overall project performance is rated as Satisfactory (5) based on the analysis summarized above. Collaboration between the Investment Project and the TA project was satisfactory and productive, and GoL expressed its satisfaction with the role and performance of WFP. GAFSP financing significantly enhanced the ability of the project to address issues of lagging food security and nutrition in poor and remote communities with mainly non-Lao ethnic populations.

The following recommendations are presented based on lessons learned from implementation of AFN:

- Allocate sufficient State budget resources to ensure ongoing support to key institutions established / strengthened by AFN (see Section G above for details);
- Promote the successful FNS model for replication as an effective tool to address nutrition challenges in poorer and more remote villages;
- Strengthen demand-led extension services to smallholder farmers, with an emphasis on climate resilience and environmental sustainability of production techniques;
- Develop appropriate tools to link smallholder farmers, including those in remote areas to markets by facilitating networks of farmers, local agri-entrepreneurs and other value chain actors;
- Strengthen environmental protection including preventing clearing of forest on steep slopes and watershed areas; and integrate location specific analysis of climate-change vulnerabilities with appropriate adaptive measures in future projects.

Specific recommendations for implementation of the successor project AFN-II are presented in the final Section I4 of the report.

A. Introduction

The report is following PCR 2019 methodology.

1. The Agriculture for Nutrition Project (AFN)[3] was financed by Global Agriculture and Food Security Programme (GAFSP) and implemented by the Ministry of Agriculture and Forestry (MAF) through its Department of Planning and Cooperation (DoPC). The project became effective on 28 April 2016, the revised completion date was 31 December 2022, and the closing date is 30 June 2023. The estimated cost at design was US$ 38.8 million, to be financed by a GAFSP investment grant of USD 24 million administered by IFAD; a GAFSP TA grant of USD 6 million managed by the World Food Programme (WFP); Government of Lao PDR (GoL) contribution of about USD 5.4 million and contributions from beneficiary groups and local private sector estimated at USD 3.3 million. Additional Financing of USD 3.8 million (GAFSP grant of USD 1.5 million administered by IFAD and GAFSP Grant of USD 2.3 million administered by WFP) was approved in 2020.

2. AFN was implemented in 12 Districts in the four northern Provinces of Oudomxay, Phongsaly, Xiengkhouang and Houaphanh.

3. The IFAD, WFP and the MAF conducted a joint Project Completion Review (PCR) Mission[4] of AFN from 27th March to 11th April 2023. The main purpose of the mission was to report on the results achieved through project interventions for accountability and learning purposes. The PCR was also intended to help reflect on performance, elicit lessons learned and define an appropriate hand-over or post-project strategy. A second phase, AFN-II, is due to become effective shortly after the mission and so the PCR mission was tasked to develop specific recommendations for implementation of AFN-II.

4. The mission kick-off meeting was organized on 27th March 2023 and was chaired by Dr. Thatsaka Saphanthong, Director-General of DoPC, and was joined by project implementing partners at national, Province and District levels as well as external stakeholders. The mission conducted in-depth discussions with the National Project Coordination Office (NPCO), World Food Programme (WFP) and United Nations Food and Agriculture Organization (FAO). Field visits were conducted in all four target Provinces from 29th March to 7th April 2023. The mission presented initial findings to stakeholders at a workshop in Vientiane on 10th April 2023. The wrap-up meeting on 11th April 2023 was also chaired by Dr. Thatsaka Saphanthong.

5. AFN was designed to respond to the problem of persistently high under-nutrition and food insecurity in upland areas of Lao PDR, and specifically to support the GoL's National Nutrition Strategy to 2025 and Plan of Action 2016-2020 (NNSPA). The NNSPA takes a "convergence" approach combining 22 priority interventions from the agricultural, health, educational and WASH sectors. AFN was designed to address the four agricultural interventions of the NNSPA which are (i) expanding and intensifying the production of nutritionally-rich plant-based foods; (ii) production and promotion of animal-based protein for household consumption; (iii) improved post-harvest handling and food processing to strengthen year-round food security; and (iv) promotion of income generating activities, with a focus on women.

6. The policy environment has remained stable throughout the project implementation period, with GoL and a number of development partners continuing to commit resources to the NNSPA. However, during the latter part of the project period the target areas have been negatively impacted by the COVID-19 pandemic and by increases in agricultural input prices and disruption to product markets due to the war in Ukraine, which has also contributed to a difficult period for the economy of Lao PDR. AFN target areas are increasingly affected by global climate change including less predictable seasonal weather, increased temperatures, droughts and floods associated with extreme rainfall.

7. IFAD conducted the first Supervision Mission (SM) in March 2017 and the Mid-Term Review (MTR) was in March 2020. The final SM was in June 2022 and the final Implementation Support Mission (ISM) in October 2022.

B. Project Description

B.1. Project context

8. In the two decades leading up to the time of project design the Lao PDR economy achieved average annual GDP growth of 7% per annum, sustained by macroeconomic liberalization, market-based reforms and large flows of foreign direct investment, mainly into natural resource-based industries (mining and hydroelectricity) and agriculture. High growth resulted in a steady decline of the national poverty index, from 46% of the population in the mid-90s to 23.2% in 2012. UNDP estimated that 36.8% of the population were multi-dimensionally poor in 2011-2012, while an additional 18.5% were near multidimensional poverty. The Lao PDR's Human Development Index (HDI) value for 2013 was 0.569 which is in the medium human development category with a ranking of positioning 139 out of 187. These achievements happened against a challenging background comprising a multi-ethnic population scattered over a vast, often difficult to access terrain, and with a multitude of cultures and languages. Progress has, however, unevenly benefitted the population across the country. Poverty and extreme poverty were most common in mountainous regions, where the majority of the non-Lao ethnic population lives. At the time of design, the national poverty rate was as high as 43% in upland areas compared with about 28% in the lowlands.

9. At the time of project design, under-nutrition and food insecurity remained stubbornly high in upland areas targeted by the NNSPA. As many as 61% of children under five years old suffered from stunting. Under-nutrition blights lives and undercuts social and economic development. Children who are chronically malnourished in the critical first thousand days, beginning at conception, can suffer irreversible damage to their physical and mental development. Improving children's and women's nutrition is critical to breaking the intergenerational cycle of under-nutrition and, given the negative impact that chronic under nutrition has on health, productivity, educational attainment, and income-earning, its redress is essential to sustained national economic growth. Meanwhile the dominant household economic activities of these communities – agriculture and non-timber forest product (NTFP) extraction – were increasingly constrained by unsustainable farming practices and natural resource use, large-scale land concessions, and limited adaptation to climate change.

10. The share of agriculture in GDP had declined from 53% in 2000 to 27.5% in 2014, but growth did not create large numbers of manufacturing or service jobs and agriculture still provided around 70% of employment. Despite Lao PDR achieving self-sufficiency in rice production, agriculture sector growth lagged behind, resulting in low productivity and low incomes for the agriculture workforce. The project design report identified factors driving low productivity as "low access to inputs, lack of appropriate technologies, limited access to finance and other support services including extension, limited access to markets, climate risks, as well as farmer's risk aversion and coping strategies."

11. Seventy percent (70%) of the workforce of Lao PDR is engaged in agriculture, making the sector important to the national development strategy. Boosting agricultural productivity was a top priority to raise farm incomes, lower the need for labour in the agricultural sector, and eventually free agricultural workers to move out of farming into more productive, higher-paying sectors with more growth prospects. Improving agriculture sector productivity, reducing its vulnerability to climate change, expanding private sector investment, and better targeting of public investment, particularly for irrigation and technical support services, are central to improved agricultural productivity and growth. The Agriculture Development Strategy (ADS) and the NNSPA provided the strategic framework, while the "Sam Sang" decentralization policy provided the institutional framework for accelerating sector growth. The GoL was also addressing weaknesses in development and planning and coordination, particularly concerning Official Development Assistance (ODA) resources, applying various mechanisms including sector working groups and a roundtable process to remove implementation bottlenecks, bring complementarities to the work of differing agencies and ensure efficient implementation.

12. AFN target area consisted of twelve Districts which were identified as priority “convergence Districts” under the NNSPA. These Districts are located in the northern Provinces of Oudomxay, Phongsaly, Xieng Khouang and Houaphan and are primarily upland areas facing the challenges of difficult transport and communications and high costs of delivering public services. The population of the upland villages are largely members of non-Lao ethnic groups.

B.2. Project objectives

13. The Goal of AFN was to contribute to reduced poverty and malnutrition with the Goal level indicator being a 10% reduction in child malnutrition. The project design report states that the Goal indicator is to be measured amongst two-year-old children in the project target villages, using “RIMS surveys, UNICEF [and] Multiple Indicator Cluster Surveys (MICS)”. At MTR, the Goal indicator was revised to target a reduction in malnutrition (height for age) in two-year-old children from 60% to 50%, to be measured by the Laos Social Indicator Survey (LSIS). The revised indicator does not specify that the statistic is to be based on target villages only (and this would likely not be possible with data from a national sample survey).

14. The Objective was Improved and diversified climate resilient agricultural production and household nutrition enhance life prospects (inflation adjusted and disaggregated by gender and ethnicity). Two objective level indicators were selected: 21,000 HH to be lifted out of poverty by achieving a household income above USD 270 per annum, and 21,000 HH with improved food security, measured as a Human Food Insecurity Access Scale (HFIAS[5]) score of 7.0 or lower, disaggregated by gender and ethnicity.

15. The logical framework (logframe) at design defined three Outcomes which are associated with three Project Components.

16. Outcome 1, Strengthened Public Services, was to be achieved through the strategic Output 1, defined as “Build government staff capacities and procedures and technical packages to support and converge community implementation of selected National Nutrition Strategy interventions.” Activities (which in practice are more in the nature of deliverable outputs) defined in the project design report text were (i) a tiered Project planning, supervision, monitoring, knowledge management and learning system within MAF supporting nutrition investment convergence strategies in target districts; (ii) Department of Agriculture Extension and Cooperatives (DAEC)[6], with Technical Service Centres (TSCs) and National Agriculture and Forestry Research Institute (NAFRI) support, to conduct Participatory Action Research (PAR), develop forage as seed crops, support outcome-based contracts between TSCs and farmer groups and support farmer-to-farmer (F2F) technology transfer. Investments in the TSC facilities was to be provided on a “case-by-case basis.”

17. Outcome 2, Community-driven agriculture-based nutrition interventions established, was associated with Output 2: Planning for Improved Nutritional Outcomes (District multi-sectoral convergence planning and Village Development Plans) and Output 3: Women-led improvement in household nutrition (farmer nutrition schools (FNS) and support to village women’s homestead production of fresh produce, small livestock and aquaculture. The production activities were to be supported by a conditional cash grant of USD 120, later termed a “garden grant.”. The cash grant activity is described in the project design report under Component 2 (implemented by WFP) but financed mainly under Component 3 (implemented by MAF) (i.e., under C2 there is the planning, under C3 the disbursement of the grant.)

18. Outcome 3, Sustainable and Inclusive Market-Driven Partnerships Established, was to be achieved through Output 4, Profitable investment in nutrition-sensitive, climate adapted agriculture and Output 5, Linking Farmers to Markets. Key activities (outputs, in the conventional sense) envisaged under Output 4 were preparation of District level Strategic Investment Plans (SIPs) for the agriculture sector and a “Village Development Fund” financing the Garden Grants (above); formation and financing of Agriculture Production Groups (APG) of farmers. Output 5 comprised two Activities: a “contract farming review” and the formation of Public-Private-Community Partnerships (PPCP) with local entrepreneurs supporting value chain activities benefiting target farmers.

19. The project design report identifies health, education, nutrition and access, compounded by limited availability of agricultural inputs, productive land, water and technical services, as constraints to improved nutrition and livelihoods in the project target communities. The design intention was to address these constraints in an integrated manner which was expected to produce more sustainable results than a narrow focus on “stand-alone interventions”. The scope of the project was aligned with the four priority agriculture sector interventions of the NNSPA and key elements of the project strategy are defined in the PDR as “(i) strengthening [poor upland communities’] capacities to take active ownership of the development process in their communities and to collaborate, plan, and act effectively; (ii) availing them the resources to undertake holistic action to address perceived constraints; and (iii) ensuring a convergence approach and policy framework amongst supporting institutions at state, provincial and district levels.

20. The logframe presented in the Project Implementation Manual (PIM) dated May 2017 is essentially the same as that in the design report, though there were some minor modifications to the wording of indicators.

21. The design logframe results scheme was not altered during the course of the project. However significant changes to indicators and targets at the Outcome and Output levels were agreed at MTR.

22. The project logframe and design description of outputs is somewhat confusing and does not give a clear and accessible description of the deliverable outputs of the project, which has to be assembled from information placed under Outcome and Output indicator descriptions in the logframe and from a close reading of the text.

23. In addition, the project reported periodically to GAFSP against a set of physical output targets Table 1Table 1presents these targets which reflect modifications agreed at MTR.

Table 1: Physical Output Targets Reported to GAFSP

Main indicators / activities for successful project implementation	**Indicator**	**Target**	
		After MTR	*With AF*
Agriculture Production Groups (APG) formed	# of APGs	800	800
Number of members of Agriculture Production Groups (APG) - up to 20 members/APG	# of APG member	12,000	14,000
Lead Farmers selected and trained - crop and livestock	# of lead farmers	800	800
APG grants disbursed	# of APG grants	800	800
Number of on-farm demonstrations (villages and number of demos)	# of villages	200	200
	# of demos	500	600
Garden Grants disbursed	# of grants	15,000	25,000
Participants of Farmer Nutrition School	# of participants	28,000	30,000
Number of Village Nutrition Facilitators trained and active	# of VNF	1,200	1,200
Number of Village Nutrition Centers constructed / rehabilitated / upgraded and cooking utensils distributed	# of VNCs	400	400
Number of Technical Service Centers (TSC) supported / rehabilitated and operating sustainable	# of TSC	14	14
Tons of forage seed produced and disseminated - 15 tons per year	tons of seed	120	90
Number of beneficiary households participating in VDP preparation	# of households	34,000	28,000
Number of simple Village Plans developed	# of plans	300	300
Number of Small Village Infrastructures constructed	# of sub projects	400	424
Number of beneficiary households of Small Village Infrastructure activities	# of beneficiaries	30,000	30,000
Area and beneficiaries of irrigated land established (new and rehabilitated irrigation schemes)	# of ha	300	450
	# of HHs	3,000	6,500
Kilometre of rural road constructed / rehabilitated	km of road	400	400

Main indicators / activities for successful project implementation	Indicator	Target	
		After MTR	*With AF*
Number of Water Supply beneficiaries	# of HH	7,500	7,500
Number of PPCP established and farmers benefitting	# of PPCP	7	7
	# of beneficiaries	2,000	2,000

B.3. Implementation modalities

24. AFN Components 1 and 3 were implemented through the existing GoL structures from central to local levels. MAF delegated implementing responsibilities to district administrations and to the NCPO in Vientiane. The NPCO was led by a National Project Coordinator (NPC) and includes Project-financed financial and procurement management and monitoring and evaluation/knowledge management (M&E and KM) staff. Technical support was provided by the DAEC and NAFRI, strengthened by a Chief Technical Advisor (CTA) who was recruited by WFP and national experts in gender, nutrition, and agribusiness development. The project implementation was closely monitored and supervised by Project Steering Committees (PSC) at national, provincial and district levels.

25. Provincial implementing partners were Provincial Agriculture and Forestry Office (PAFO), Provincial Health Office (PHO), Lao Women's Union (LWU), and Provincial Office of Natural Resources and Environment (PoNRE). At the district level, the Project applies a multi-sectoral approach. District teams with staff from District Agriculture and Forestry Office (DAFO), District Health Office (DHO), LWU, District Office of Planning and Investment (DPI), the District Education and Sports Office (DESO) and the District Information and Culture Office (DINCO) support implementation. The District Socio-Economic Development Committee (DSEDC) coordinated project activities in the district. At village level, committees were established to manage the Village Development Fund, and Village Nutrition Facilitators (VNF) were recruited to facilitate the activities of the FNS. APGs were mobilized and strengthened with help from the district Group Support Teams (GST) under DAFO.

26. AFN was one of the first development projects in Lao PDR to comprehensively address the agricultural constraints to good nutrition within the framework of the convergence approach under development through the NNSPA. The Project adopted GoL's "Sam sang" development approach, wherein the province is the strategic unit, the district the planning and budgetary unit, and the village the implementing unit. Within this framework, the project also applied a bottom-up participatory planning approach, which IFAD and other donor supported projects in Lao PDR have identified as being both sustainable and scalable.

27. WFP as administrating agency of the GAFSP TA grant implemented Component 2 directly and mobilized technical assistance to support all three components. The respective outcomes were fully aligned and implemented in a complementary manner consistent with the overall sequencing of Project activities and implementation timetable. Nutrition was mainstreamed into all three AFN project components, so that each activity would contribute to improved nutrition and the sum effect would be greater than each individual part.

28. As per design, the participating DAFOs and TSCs, with NAFRI support, were empowered to assess and address issues related to the sustainable upland production of nutrient rich food in a changing climate environment. This included establishing a sustainable business plan for participating TSCs. A range of innovative approaches were proposed by the design for capacity building of AFN stakeholders. These included: (i) regular support to and coaching of farmers' organizations, based on annual assessment of their performance and on the skills required for improvement, with a longer term view to cooperative formation; (ii) implementation of the Lao Extension Approach and development of F2F learning and exchanges; (iii) annual capacity development plans to raise the abilities of district departments to meet "Sam sang" based institutional and development expectation and a fund for districts and provinces to "pull-down" experienced staff from higher levels for defined short- to medium-term assignments that will sustainably build local capacity; and (iv) knowledge management and dissemination through MAF and National Nutrition Committee (NNC) Knowledge Platforms.

B.4. Target groups

29. AFN was designed to target approximately 34,000 poor smallholder households in 400 villages in the 12 convergence Districts (see above). The Districts were pre-identified at design and the villages were to be selected based on (i) poverty data, especially poverty and stunting incidence and access to a road and WASH facilities; (ii) potential for agriculture-led growth; (iii) commitment of local authorities; (iv) climate change vulnerability; (v) opportunity for convergence through on-going or planned support projects; and (vi) villages that had been relocated in the past four years or were planned for relocation in the next four years were excluded.

30. The project targeted mainly upland villages where agriculture is the main source of livelihoods, though out-migration for work is significant in some villages. The majority of the population (estimated 80%) are members of non-Lao ethnic groups. The total

population of the villages is estimated as 33,924 households, or around 227,000 people, based on the 2017 census, so in effect the project targeted the entire population of these villages. The AFN target represented about 53.6% of the population of the target Districts.

31. Specific project activities were targeted to different groups. The project design report identifies the target membership of the FNS as women of reproductive age but also older women who influence cultural beliefs (and in fact also play an important direct role in childcare), while nutrition messaging was to reach men through village meetings. In implementation, the FNS initially targeted pregnant and breastfeeding women only, though this was broadened after MTR[7]. Garden Grants were targeted to selected members of the FNS beneficiary group. Membership of APGs was to be 50% women (aggregated at Kum Ban level) with 30% of members in each group to be from poor households.

32. The project design report also describes an "age-stratified" targeting approach "providing better nutrition for under-5 year old, behaviour changing life knowledge for primary school children, employment for rural youth through rural infrastructure development under force account, the opportunity for farmers, particularly poor and women-headed households, to associate to produce and market nutrient-rich food, and the opportunity for others in this category to engage profitably in agri-business relationships, including contract farming." All community members were expected to benefit from sustainable utilisation of natural resources and nutrition behaviour change.

C. Assessment of project relevance

33. **Project relevance is rated as satisfactory (5).** The overall design was consistent with the needs of the target groups and to key GoL policies and programmes for nutrition and smallholder agriculture development, and remained so throughout the project period. The overall internal logic of the project design is coherent and sound at the strategic level. Project interventions as experienced by direct beneficiaries (farmer nutrition schools, support for production of nutritious foods for home consumption and the market, public infrastructure, grassroots farmer organizations) were highly relevant to their needs. Less relevant activities (e.g. land use planning) were scaled down or dropped after MTR. Elements oriented to value chain development (SIPs and PPCPs) were relevant to the needs of the target groups but proved less relevant to the overall focus of the project activities. TSCs with their current form, staffing and mandate do not have the potential to perform the outreach role that was envisaged in the project design. A more demand-led approach to agriculture extension could have been adopted at the design stage. There was insufficient differentiation between the purpose and eligible expenditures of the Garden Grants and the APG grants.

34. AFN was aligned with the Country Strategic Opportunities Programme (COSOP) 2011-2015 which was current at the time of project design.

C.1. Relevance vis-à-vis the external context

35. As described in Section B above, AFN was designed to address the problem that, despite impressive achievements in GDP growth and poverty reduction nationally, poverty and indicators of poor nutrition remained persistently high in remote, upland communities, mainly non-Lao ethnic populations and livelihoods based on smallholder agriculture. Vulnerability factors for food and nutrition included declining access to natural resources, climate change, declining soil fertility and instability of food prices.

36. AFN was designed in response to GoL's NNSPA. AFN provided direct support to NNSPA institutions including the District Nutrition Committees (DNC) and District Nutrition Plans (DNP); through the convergence approach and through specific support to the priority agriculture sector interventions of the NNSPA.

37. Given these circumstances, the design of AFN identified key challenges in poverty and rural development and addressed these challenges through an approach that aligned with GoL policies and strategies. The specific interventions of the project were (with few exceptions) highly relevant to the needs and priorities of the identified target groups (as attested to the PCR mission team by the project beneficiaries).

38. During the implementation of AFN, the external context has changed in significant ways. COVID-19 had serious impacts on the rural economy including loss of employment of migrant workers, particularly in Thailand, with the consequent loss of remission income, and temporary loss of access to some export markets. The Ukraine war has led to increased prices of agricultural inputs. As a result of these and other factors the economy of Lao PDR is facing serious challenges, including high inflation (around 39% in 2022[8]), reduced growth (estimated at 2.5% in 2022 but rebounding to 4.0% for 2023[9]) and difficulties in servicing sovereign debt. The Lao currency lost 68% of its value against the US dollar in the year to October 2022[10], resulting in high prices particularly for imported foodstuffs but also creating opportunities for exporters. However, these changes have not substantially affected the strategic relevance of the AFN design, or resulted in a change in the relevant policy framework of GoL.

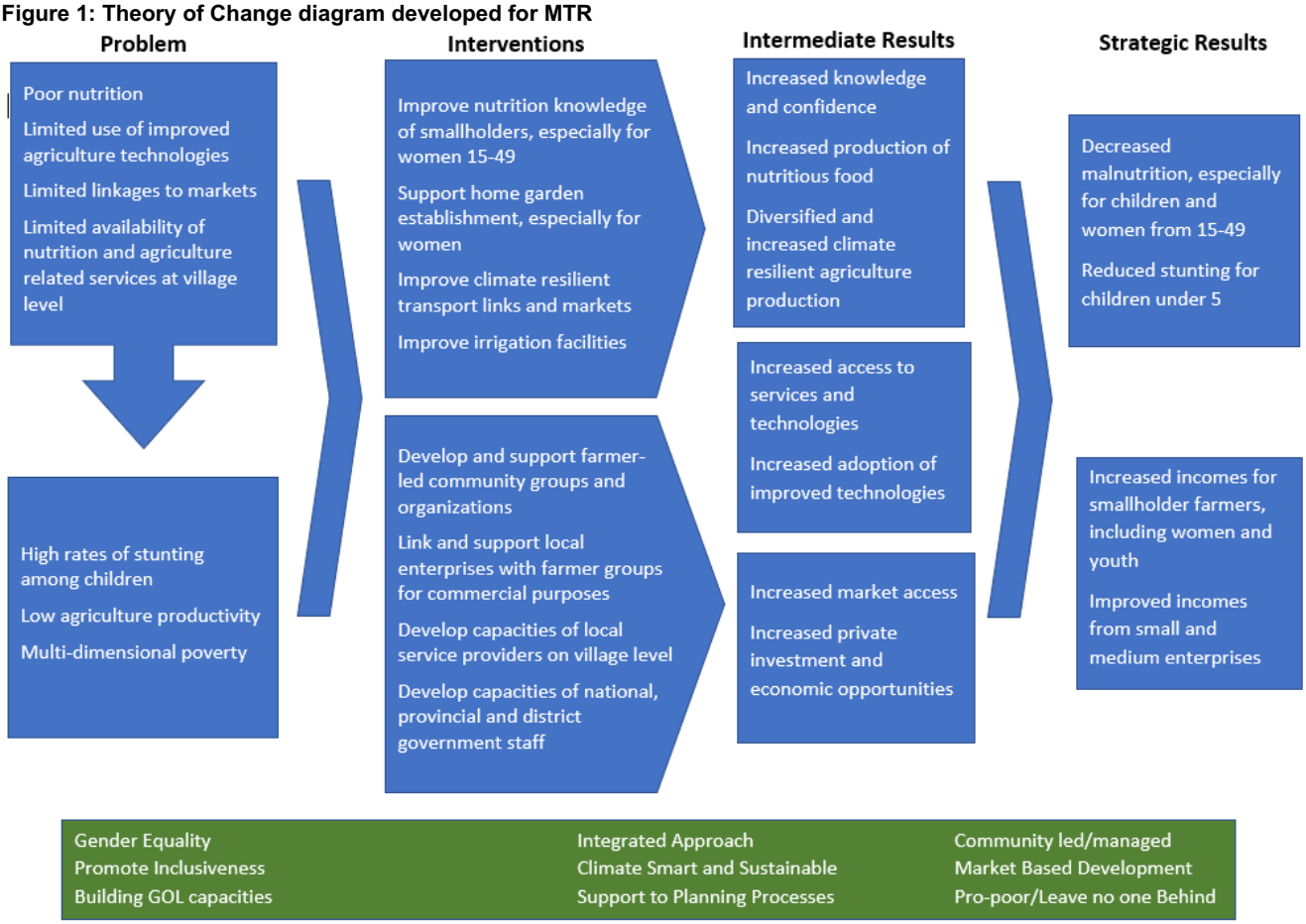
C.2. Internal Logic

39. The AFN project design report does not include an explicit Theory of Change (ToC) diagram, which was not a mandatory requirement at the time of design. Accordingly, a ToC diagram was developed in 2019, shortly before the MTR (Figure 1).

40. The ToC diagram captured the core internal logic of the project design, beginning with the analysis of the causes of poor nutrition and low agriculture productivity and illustrating the pathways by which integrated interventions in nutrition knowledge, production for consumption and market-led production were expected to lead to improved nutrition and incomes. Arguably this ToC could have shown more clearly the relevant roles of the convergence approach, climate change adaptation and improved natural

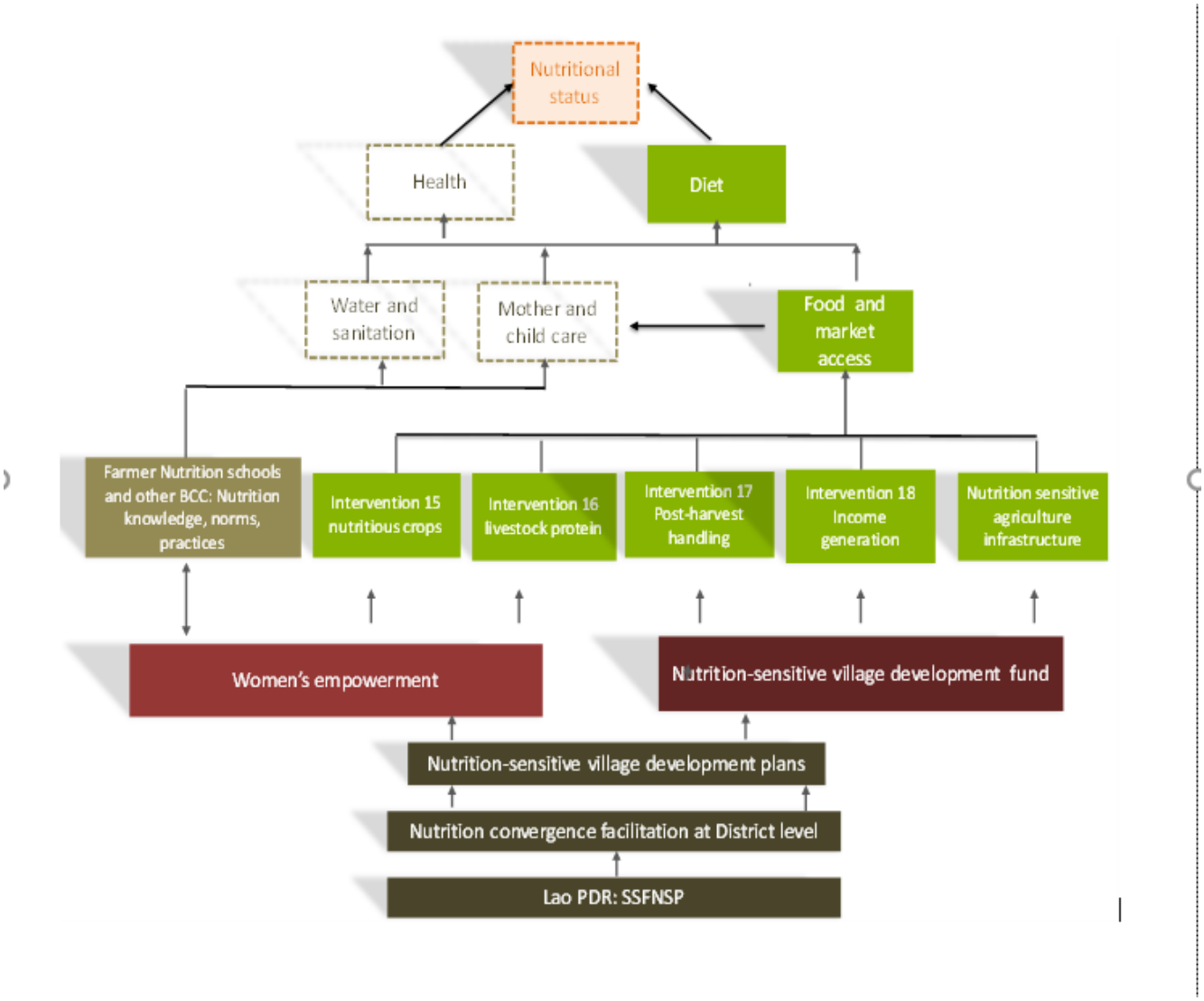
resource management, and the important relevance of domestic water supplies / WASH activities to improved nutrition outcomes.

Figure 1: Theory of Change diagram developed for MTR



41. Figure 2 appears in the design report and is in effect a ToC for Outcome 2. District and Village level nutrition planning were presented as pre-conditions for women's empowerment and for allocation of village-level project investments. Together, these would support improved nutrition knowledge, norms and practices as well as the priority agriculture interventions of the NNSPA, leading (in combination with convergence project interventions) to improved outcomes for water and sanitation, mother and child care and food and market access. Together (in the diagram) these were expected to result in improved health, diet and nutritional status, as well as (though not shown in the diagram) improved agriculture-based livelihoods.

Figure 2: Theory of Change for Outcome 2, from Project Design Report



42. The above analyses of the interrelated problems and change pathways for nutrition and agriculture livelihoods were sound and convincing, particularly in the context of remote upland villages where production is largely based around home or local consumption and sales of surplus produce, albeit with market-led production increasingly important (e.g. for cardamom and similar products in Oudomxay / Phongsaly and for larger livestock in Xieng Khouang / Houaphan).

43. The project logframe was consistent with this approach, with improved public services, nutrition interventions and investments in "nutrition sensitive, climate-adapted agriculture" driving improvements in nutrition and livelihoods. However, the definition of Outcome 3 "Sustainable and inclusive market-driven partnerships" did not reflect well the actual focus on Component 3 investments which were primarily for agriculture production (garden grants, APGs and supporting infrastructure). The more market-focused elements of the design, including SIPs, contract farming support and (to a lesser extent) the PPCPs, were the less successful activities of AFN and it is arguable that they were not well suited to the production and nutrition focus of the design overall.

44. The internal logic of the project is less compelling on climate change adaptation and on ensuring sustainability of the environment and natural resource use. The project design did not include strong climate-adaptive elements. The risk that supporting increased agriculture production might lead to non-sustainable expansion of agricultural land could have been more explicitly addressed (though see comments on land use planning in the following section).

45. The approach to agriculture extension adopted in the design relied to a considerable extent on top-down initiatives, in particular the investments in upgrading of TSCs, the forage activity, and the separation of demonstration activities (in Component 1) from the selection of activities for APGs (in Component 3). A more demand-driven approach to extension might have ensured better alignment with the needs and priorities of the beneficiaries, though this was partially addressed at MTR. There is some indication that the design team did not view investment in upgrading TSC establishments as likely to be effective, and the proposal to fund TSCs mainly through outcome-based contracts with APGs reflected this but did not prove viable. Farmers were unlikely to allocate funds to purchasing services from TSCs if they could alternatively use the funds for production inputs, and this should perhaps have been realized at the design stage.

46. Given the close interrelationship between child malnutrition and water-borne diseases, the project design could have placed a greater emphasis on WASH alongside nutrition knowledge and production of nutritious foods. The inclusion of a specific logframe

target for irrigation works (not strongly related to nutrition and not found to be highly cost-effective, see below) may have encouraged prioritization of rice irrigation over water supplies for domestic consumption and home gardens, which may have contributed more to the project purpose.

47. The project design does not make a fully adequate distinction between the purpose of the garden grants and the APGs; in fact, the design report suggests that an APG "addressing nutrition" would not require a beneficiary contribution, creating a third, intermediate, type of grant between the garden grants and APGs for market agriculture. With hindsight, greater clarity on the different purposes and implementation arrangements of these instruments would have been desirable.

C.3. Adequacy of design changes

(i) Changes Agreed at MTR

48. Significant modifications were made to the design of AFN as a result of the MTR, though these did not change the project objective, defined outcomes or outputs, though some activities were dropped and targets for others were modified. These modifications are summarized in Table 2.

Table 2: Logframe changes at MTR

Result	Original Indicator	MTR Change	Reason
Goal	incidence of child malnutrition (height for age) amongst two-year old children in Project villages, reduced from 60% at present to 50% by project completion (disaggregated by gender and ethnicity) measured by RIMS survey, UNICEF-MICS and GoL statistics	incidence malnutrition (height for age) among two-year-old children reduced from 60% at present to 50% by project completion – measured by LSIS	Not clearly stated in MTR, but no project-level baseline data were collected and use of national statistics is appropriate for a Goal level indicator.
Outcome 1 indicator	30 TSC operating sustainably using outcome-based farmer contracts	Reduced from 30 to 14	Priorities delivery of services at village level.
	10 sustainable climate-adapted and nutrition-sensitive agriculture and natural resource management technologies adopted by more than 10,000 farmers	At least 10,000 HHs have adopted at least one improved technology on production or food processing introduced by the project	Clearer definition of the indicator, and focus on number of farmers adopting rather than number of technologies.
Output 1.1	12 districts have guidelines, tools and core competencies for participatory nutrition-sensitive, climate-adapted market-led agriculture and rural development planning and implementation	At least 9 guidelines and tools developed and implemented on a project-wide level: Finance, procurement, planning M&E, PPCP, APG, Garden Grant, Infrastructure, PAR, and F2F.	More specific detail on guidelines and tools to be adopted. 12 Districts will adopt as this is the project target area.
	At least 70% rural household satisfied with farmer-level technical information services	DROPPED	Not considered as a suitable output indicator
Outcome 2 Indicator	300 participatory village investment plans show return on investment > 8%	300 Village Development Committees have a basic convergence plan on food and nutrition.	Not most suitable indicator for nutrition=-focused interventions.
	At least 21,000 households achieve a household dietary diversity score of at least 75% of the HDDS of the top income tercile in their kum ban	28,000 women in project area of 15-49 years of age, consume at least 5 out of 10 defined food groups daily.	Old indicator difficult to measure, and no available baseline. HDDS is not sensitive to interventions. New indicator is moved up from Output level

Result	Original Indicator	MTR Change	Reason
Output 2.1 Indicator		NEW: 12 District Nutrition Committees hold at least two meetings per year to develop, coordinate and implement a convergence plan on food and nutrition.	Need to focus on improved coordination and convergence in nutrition programme at District level.
	34,000 beneficiary households participate in VDP preparation	TARGET CHANGED to 28,000 beneficiary households participate in VDP preparation	New figure represents about 80% of the population of the target villages
Output: Women-led improvement in household nutrition.	28,000 women in project area of 15-49 years of age, consume at least 5 out of 10 defined food groups daily	Number of HH provided with targeted support to improve their nutrition (e.g. from Farmer Nutrition School, Garden Grant, and Nutrition Awareness Programme). (Target 21,000)	Original wording describes an outcome not an output, and has been adopted as an outcome indicator (see above)
Outcome 3	Market-driven partnerships increase income of at least 10,000 participating farmers by at least 40%	10,000HH participating in the project activities increase income by 30%.	Market driven partnerships are not the main element of Component 3, and new target is more realistic
	10,000 farmers with new land use rights.	DROPPED	Agreed not to proceed with land use planning and titling activities.
Output 3.1: Profitable Investment in nutrient-sensitive, climate adapted agriculture.	2,000 hectares of new irrigated land established.	300 hectares of new irrigated land established.	Original target was based on an over-estimate of amount of irrigable land available.
	Beneficiary HHs participate in VDP preparation (Target 34,000)	DROPPED	Duplicates Outcome 2 indicator
Output 3.2: Linking farmers to markets	At least 20 private or public-private agro-processing and quality control facilities installed	CHANGED TO: At least 7 private or public-private partnership agreement signed and implemented.	Agreed not to proceed with further PPCP initiation beyond the 7 enterprises currently with completed or draft agreements.
	25 registered agricultural cooperatives or community-based agro-enterprises established with sound charters and business plans	DROPPED	There are no existing agriculture cooperatives in the target area and no progress had been made on this activity by MTR

49. Many of these changes were adopted to improve clarity or to facilitate measurement of indicators. The most significant in terms of impact on project physical outputs were (i) the agreement not to increase the number of TSC supported beyond the 14 reached by MTR, associated with increased emphasis on F2F extension and on-site demonstrations; (ii) a specific target for

meetings of the DNC; (iii) reduced emphasis on market-driven partnerships, and agreement not to increase the number of PPCP beyond the 7 already achieved; and (iv) dropping of two activities which had made little progress by MTR, namely the land use planning and the support to agricultural cooperatives.

50. The changes agreed at MTR were broadly appropriate, improved the clarity of the logframe, set realistic targets and strengthened the focus on core activities of convergence planning, FNS and demand-led village level investments and agriculture support.

51. In hindsight, the decision to drop the land use planning activity seems questionable. The decision was made because little progress had been made with this activity and there was only limited potential to achieve the purpose of "new land rights" for farmers. Conversely, appropriate land use planning focused on sustainable land and natural resource management may have been a useful complement to the agriculture production activities and enhanced the overall sustainability of project results, though, as noted, this was not the primary purpose of the activity as designed and it may have been challenging to introduce this approach effectively at MTR.

(ii) Additional Financing and Extension of Completion Date

52. Additional Financing for AFN was agreed by GAFSP in November 2020 as a response to the COVID-19 emergency. The additional financing was allocated to scale-up existing activities of AFN which were found to be highly relevant to the needs created by emergency. The aim was to "deepen the intervention on nutrition and resilience to COVID-19 effects among its core target group and to reach more direct beneficiaries notably poor women and their children, poor small-holder farmers and poor ethnic groups."[11]

53. The planned results of the additional financing comprised (i) an additional 100 APGs with grants; (ii) strengthening of support to local extension service providers consisting of Lead Farmers (LF); Village Technicians (VT); Village Veterinary Workers (VVW) and private input suppliers; (iii) 150 additional on-farm demonstrations in 50 villages; (iv) 25 additional infrastructure schemes; (v) FNS in additional 120 villages; (vi) 10,000 additional women receiving Garden Grants; and (vii) strengthened training of 1,200 VNF. Activities implemented by MAF (i, ii, iii, iv) would be implemented in existing AFN target villages while WFP would implement activities v, vi and vii in 120 additional villages.

54. The AF design document presents a logframe noting changes including 13,850 additional direct beneficiaries, 2,000 additional households to be lifted out of poverty and 5,000 additional households with improved food security (objective indicators); additional 5,000 women consuming at least 5 out of 10 defined food groups daily (Outcome 2 indicator); additional 10,000 households provided with targeted support to improve their nutrition; additional 1,500 households increase income by at least 30% (Outcome 3 indicator). However, these changes were not integrated in the logframe. The proposed expansion villages were already covered by the World Bank's PRF project. With agreement from GAFSP, it was decided to scale up and intensify activities in 120 villages that were in the first batch selected for AFN in 2017-19 and to make the garden grants available to a larger beneficiary group.

55. To allow time for activities under Additional Financing, the project completion date was extended by six months, from 30th June to 31st December 2022, while WFP-led field activities were continued until June 2023 with a 12 months no-cost extension from GAFSP.

D. Assessment of project effectiveness

56. Project effectiveness is rated as **Satisfactory (5),**e. "the project objective was mostly met and most important output targets were achieved (over 90% of physical targets met). Most outputs have led to the desired outcomes and most results were achieved on time." [12]

57. The Objective of Improved and Diversified climate resilient agricultural production and household nutrition enhance life prospects has been achieved for a high proportion of direct beneficiaries with the caveat that overall climate resilience of agricultural practices in the target areas needs further improvement (see Section D7). The endline survey estimated that with an average income of USD 493.65 per capita, 17,846 households from the target villages have escaped from poverty, equivalent to 85% of the Objective indicator target of "21,000 HH out of poverty by increasing per capita income from the current level to more than $270/yr. by Project-end". This is considered satisfactory considering that it was achieved despite the negative impacts of COVID-19 and the war in the Ukraine which were not anticipated at the time of design. The second Objective indicator target, "at least 21,000 households with improved food security (measured as a HFIAS score of 7.0 or lower)" has been exceeded, with the cumulative result of 31,663 households being reported by the endline survey.

58. The Goal indicator of reduced malnutrition is specified to be measured from Laos Social Indicator Survey (LSIS) data. Data collection for LSIS-III was in progress at the time of the Mission and so no update data are available. The project has compiled data on malnutrition levels from other sources but the judgement of the mission is that these reflect varying data-sets and methodologies and cannot provide a sound basis for assessment of the Goal indicator. However, based on near-complete achievement of the Objective indicators (above) and the assessment that the project logic is sound, the project is assessed to have fulfilled its stated Goal which was to contribute to reduced extreme poverty and malnutrition, both in the target villages and (as a project within a national programme) at national level.

D.1. Physical targets and output delivery

(i) Component 1: Strengthened Public Services

59. The project logframe defines a single Output for Component 1, which is to build government staff capacities and procedures and technical packages to support and converge community implementation of selected National Nutrition Strategy Interventions.

60. Physical output targets specified in the logframe (after MTR revisions, see above) comprise (i) 14 TSC with improved capacity and support to target farmers; and (ii) At least 9 guidelines and tools developed and implemented on a project-wide level: Finance, procurement, planning M&E, PPCP, APG, Garden Grant, Infrastructure, Participatory Action Research (PAR), and F2F extension. Project reporting shows these targets to have been fully completed.

61. In addition, the project reports the following physical achievements under Output 1:

    - Selection, training and certification of 884 LF (of whom 127 are women), exceeding a target of 800;
    - Support to 769 registered VVW and establishment of Vaccination Funds in many of the project areas;
    - PAR models developed by NAFRI and DEAC for 29 sustainable, climate-adapted and nutrition-sensitive agriculture and natural resource management technologies (including development of simple, appropriate learning materials for use by extension agents and farmers);
    - On-farm demonstrations and farmer trainings under guidance of NAFRI in 285 villages, with 900 demonstrations established (target was 250 villages and 600 demonstrations);
    - Forage production activities in 196 villages with a total of 3,178 households growing different forage types for grazing and cut-and-carry on a total of 1,958ha. A total of 92.7 tons of forage seed and planting material was produced and distributed to farmers (target 120 tons);
    - Development (by FAO) of a management information system for MAF, known as Project Monitoring System (ProMIS).

62. Support to TSCs aligned the project with a prominent activity in the MAF Agriculture Development Strategy. However, thee project design report notes that the network of TSCs operated under DAFO "is both under-resourced and under-motivated to service its smallholder farmer clients. Past attempts to support such centres have often not been sustainable." Hence, the design proposed that TSC support to AFN farmers should be mediated through outcome-based contracts with APGs, allowing the farmer members of the APGs to determine the scope and scale of activities. TSCs were to develop viable business plans (the TSC is intended to be partially self-financing).

63. As noted above, the ambition to finance TSC activities through outcome-based contracts was probably unrealistic and no such contracts were established. Preparation of TSC business plans was dropped as an activity after MTR. The problems of under-resourcing and under-motivation remain, while TSC staff do not have a strong sense that "service to smallholder farmer clients" is their core purpose. In the best examples, able and motivated TSC staff are able to operate TSC facilities as viable (though subsidised) semi-commercial agro-enterprises. The main services provided to farmers consist of production of seeds, planting materials, fish fingerlings, improved livestock breeds etc., though many of these services could be performed by the private sector. On-site demonstration and farmer training is very much a secondary function of the TSC, if it occurs at all. Most farmers will never see an on-TSC demonstration, and most such demonstrations are of no higher quality than on-farm demonstrations implemented by LF with support from TSC and / or DAFO staff. Even with AFN support, extension activities by TSC staff are limited to a small number of nearby villages.

64. It is possible to reimagine the TSC as a system of out-posting DAFO extension staff who would focus primarily on demand-led services to farmers and use the TSC facility itself as a resource to support those services, whether for seed production, for on-site training, or other purposes as needed. Establishing such a system would still face the challenge that most DAFO staff do not welcome postings to relatively remote locations, and of financing an effective system from a combination of state budget resources and the (probably limited) payments that could be contributed by users. In any event, the TSC as it currently exists does not seem to offer any specific advantage over DAFO-based staff for delivery of extension services to smallholder farmers.

65. Support to LFs and VVFs (who are often the same people and generically referred to as Village Technicians) has been generally successful, especially after the focus on these activities was intensified after MTR. On-farm demonstrations are most useful when they are closely linked to activities that farmers in the village already engage in and / or want to and can replicate. In some cases, demonstrations attempted to introduce activities that were not important to most farmers in the village. In some such cases (e.g. frog raising) the lead farmers were able to implement the demonstrations successfully and even establish a viable small production enterprise, but there was little evidence of replication by other farmers, which is the true test of a successful demonstration activity.

66. The PAR materials, which were applied as learning materials in demonstrations and trainings, were well received by extension agents and farmers. Of the 29 topics covered, 19 have been actively applied in field demonstrations. LFs were able to show the Mission copies of these materials and were able to understand them (fewer literate farmers would probably not, though the materials make good use of graphics). Production of short videos, formatted for viewing on smartphones, would be a good initiative. The PAR materials have been adopted for use in PICSA and there is evidence of uptake by other donor projects and NGOs.

67. The forage activities appear to have had a good initial impact, with seed and planting material production plots established on-farm as well as on TSC sites. Farmers have had significant success expanding livestock production based on the use of improved forage. It is less clear whether a sustainable supply chain of planting materials has been effectively established. Greater attention should have been given to increasing production through intensification on existing land rather than extending the area in production. The completion report notes that forage activities were delayed by unnecessary proposals to source species from Australia rather than from existing available sources in Laos.

68. The development of ProMIS was delayed and the system was handed over to MAF in 2021. This system has potential to increase MAF's capacity for strategic monitoring of development assistance activities in the sector, but does not have the level of

specific detail needed to replace project M&E systems. It is not clear that the system is fully operational as yet, and it is noted that support for further development is proposed under AFN-II.

(ii) Component 2: Community-Driven Agriculture-based nutrition interventions

69. The Completion Report notes the following physical achievements associated with Output 2.1 Planning for improved nutritional outcomes: 12 DNC holding at least 2 meetings per year (100% of target); 365 Village Development Committees (VDCs) with a basic convergence plan on food and nutrition (target 300); and 33,095 households participating in Village Development Plan (VDP) preparation (target 28,000).

70. DNC were formally established under the NNSPA before inception of AFN, but the project has succeeded in effecting a substantial improvement in the functioning of these committees. Meetings of the full DNC are held twice yearly and "secretariat-level" meetings are held between two and four times yearly. District stakeholders reported some ongoing challenges in coordination between agencies. There are significant differences between Districts, particularly in relation to coordination and reporting. Some District DNCs told the Mission they lack adequate resources (budget and access to vehicles) to carry out their role effectively.

71. VDPs were prepared or updated in 2017-18 for all 400 villages. Most villages had an existing village plan but preparation of these plans (before AFN) appears to have been mainly through consultation between District and Village authorities. The Mission was able to verify that there was widespread participation in the AFN-supported planning, and participants recalled discussion of alternative investment proposals, selection by voting and (in some cases at least) separate prioritization by women and men. Plans are updated through participatory processes, though it appears that this is not done consistently on an annual basis, as was the project intention. VDPs were endorsed by the District Social and Economic Development Committees, DESDCs) and are seen as an essential precondition for state budget funding for any activity.

72. Although AFN design anticipated that the scope of VDPs would be broadened to include food and nutrition topics, the plans as actually prepared focused primarily on infrastructure investments and were an effective tool for selection of infrastructure to be financed by AFN Component 3. The Mission noted that it often required some prompting for participants in village meetings to recall the planning activities. Participatory planning is an important practical tool for actionable decisions on allocation of real, immediate resources but rural people do not experience the activity itself as transformative or even particularly significant. The Mission noted that village chiefs described participation by "heads of households" or by "all residents" as alternative approaches to planning; given that heads of households are almost all older men, these alternatives would be expected to produce different results.

73. Village Nutrition Plans (VNPs) were introduced after MTR as an additional activity in response to the infrastructure focus of the VDPs. Preparation of these plans was ongoing (under WFP support) at the time of the Mission, with 365 completed and the target to reach 400 by project closure. Village facilitators were able to show the Mission copies of these plans and to explain content including nutrition-related problem tree analyses.

74. For Output 2.2 Women Led Improvement in Household Nutrition the Completion Report notes associated physical achievements as (i) recruitment and training of 1,217 VNFs (79% women); (ii) implementation of FNS in all 400 villages; (ii) construction of 386 Nutrition Learning Centres (NLC); (iii) 22,970 households (target 21,000) provided with targeted support to improve their nutrition (e.g. from FNS, Garden Grant and Nutrition Awareness Programme); (iv) Household farm/garden planning and distribution of Garden Grants for 22,970 women who had completed the FNS training.

75. There is some lack of clarity as to whether the Garden Grant is an activity under Component 2 or Component 3 (most of the funding was from the IFAD-managed grant, i.e. Component 3), but because of the close association between the FNS and the Garden Grant, it will be treated as a Component 2 activity here.

76. The FNS are considered as a highly successful activity and an example of best practice with strong potential for replication and scaling up. An assessment of the outcomes of the FNS is provided under Section D4 (iii) on Food Security and Nutrition below. The appreciation and enthusiasm of VNFs and FNS participants was evident during village meetings conducted by the Mission. Learning materials were said to be appropriate and accessible (the concern had been raised by the mission team that some materials, particularly on diet, might need adjusting to the specific food availability for different areas or ethnic groups, but this was not confirmed as a problem by stakeholders).

77. Some modifications were made to the FNS approach during the course of the project. Initially, the FNS were based around 10 learning modules, but in 2019 this was revised to four modules with increased focus on the priority agricultural interventions. In the early phase, the FNS were targeted narrowly to pregnant and lactating women but after MTR this was broadened to encourage participation by all women of reproductive age as well as older women, men and adolescent girls.

78. FNS normally studied one module each month. In some villages a single FNS course (i.e. one cycle of four modules) was presented, while in other villages the cycle was repeated with new participants. The modules are complemented by cooking demonstrations and also by "household visits" for mutual support on nutrition and child feeding; these latter activities are ongoing. Village Nutrition Days have been staged in villages since 2020, often as the final event after completion of the training. VNFs received a stipend of 65,000 LAK per month and the project provided support for materials for cooking demonstrations. Facilitators and participants asserted their intention to continue activities after project closure, however it remains to be seen whether they will be able to do this without financial support.

79. The NLC seen by the Mission are in good condition and appear to be in regular use for a variety of communal purposes (at MTR it was noted that some NLC were locked except when in use for the monthly FNS session). A standardised design was used for the NLC and the Mission was told that a more flexible approach, allowing the design to be adjusted to suit local needs and cultural tastes, would have been better. The design of the buildings with semi-open sides exposes wall display materials to the

weather and it is worthwhile to use durable materials to avoid deterioration of these displays.

80. Women who completed the FNS training became eligible for Garden Grants of $120 per household. From the number of grants disbursed (22,790) it is evident that about 70% of households in the target villages benefited from these grants. Women prepared a grant proposal with the assistance of the facilitators. Once the proposal was approved, the grant was disbursed as cash[13] and the grantee purchased the materials, which was then verified by project staff. Although the grants were specifically allocated to women, it is noted that in most cases (94%)[14] the women discussed the use of the grants with their husbands and household members.

81. Women received basic training on techniques for establishment of home gardens. The completion report prepared by the project notes, "To support the establishment of home gardens, the project trained 1,150 VNFs, LFs plus selected DAFO / LWU staff (of whom 473 are female) on Basic Agriculture Techniques (5-day course) and facilitated additional monitoring and training activities on the village level by technical staff from DAFO and the Regional Agricultural Training Centers."

82. The primary purpose of the Garden Grants was to support production of nutritious produce and small livestock for home consumption, with sale of a surplus being a secondary benefit (described as (i) FNS-initiated group or individual household activities targeting household vegetable production and (ii) FNS-initiated production of small livestock and aquaculture products for improved household protein supply in the project design report). In Xiengkhouang and Houaphan provinces (where livestock agriculture is more important than in Oudomxay and Phongsaly) the majority of grant funds seems to have been allocated to small livestock production, primarily poultry for both household consumption and market production, but also including pig raising which is primarily a market activity. There was a strong overlap between the activities financed by Garden Grants and those financed by APGs, and farmers were not always able to clearly distinguish between these two sources of support. The Garden Grants were clearly successful in increasing household access to nutritious foods as well as providing an incentive for FNS participation. The number of households growing vegetables on homestead plots has increased as a result of the project (the endline survey estimates that 94.6% of households in AFN villages have home gardens, compared with 77.2% in control villages). However, given that Garden Grants and APGs were implemented in the same villages and often with the same households benefiting, a clearer distinction between the purposes of each facility would have been desirable.

(iii) Component 3: Sustainable and Inclusive Market-Driven Partnerships

83. Physical achievements reported for Output 3.1 Profitable investment in nutrition-sensitive, climate-adapted agriculture consist of (i) 12 Strategic Investment Plans (SIPs, one per District); (ii) 465 village infrastructure schemes (target 400); and (iii) 872 APGs formed, with 802 having received grant funding.

84. The SIPs were (according to the project design report) intended to "identify commodities that have investment potential and which are in compliance with the provincial socio-economic development plans (SEDPs)" and which would be suitable APG and PPCP support. SIPs were intended to present realistic business models, necessary complementary interventions and an analysis of potential co-financiers.

85. SIPs are acknowledged to have proved of limited practical use. The SIPs were prepared on a per-commodity basis based on "a general selection of "best" commodities in each District. The NCPO's completion report comments that the SIPs were "too theoretical to be used as farmer training materials, it would have been better to analyse potential value chains and value chain actors as a direct input to the PPCP activities".

86. Of 400 target villages, 342 implemented at least one infrastructure scheme. Some villages did not receive a scheme because their proposals became delayed and budget funds were exhausted. Schemes were selected through the VDP process, with prioritisation by votes of the participants. Table 3 reproduces data on selection of schemes from the Completion Report.

Table 3: Infrastructure Sub-Projects

Category of Scheme	**Schemes**	**Total Size**
Rural Roads / Access Tracks	186	757 km
Drinking Water Supply	120	9,995 hh
Irrigation	71	559 ha 1,235 hh
Livestock habitat fencing	54	778 hh
Community Fishpond	16	582 hh
Suspension Bridge	7	

Paddy field development	3	37 hh
Warehouse	3	121 hh
Community Market	2	
Erosion Control Measures	2	
Cardamom Drying Facility	1	43 hh
TOTAL	**465**	

87. Proposed sub-projects were subject to review and approval at District, Provincial and NPCO levels. Design responsibilities were assigned to the appropriate District technical offices (e.g. Public Works for roads, Health for water supplies). Schemes were subject to a simple checklist-based environmental and social screening process. Procurement was through a community procurement process (though in practice procurement was too complex for the villages to handle without assistance from DAFO). Implementation was mainly through local contractors who were paid through village bank accounts. IFAD finance contributed 70% of the cost of the schemes, with 15% paid by GoL and 15% contributed (in-kind) by beneficiaries.

88. In most cases, operation and maintenance committees were established for each scheme, though this does not seem to have been applied everywhere (or some committees were so inactive that village informants were not aware of them)[15]. In some cases, user fees or contributions are collected, but the more common practice seems to be to collect contributions in cash or in kind when the need arises. It was noted that in some irrigation schemes, the users pay a crop-area based water fee of which 80% is managed centrally by DAFO and only 20% is retained for operation and maintenance of the specific scheme (this was said to be a national system but was not applied in all schemes visited).

89. The road sub-projects are of relatively low quality, generally earth surfaced, lacking cross-drainage structures and without adequate attention to stabilisation of slopes above and below the road line. These roads are likely to be very difficult to travel in the wet season and need regular (probably annual) maintenance. Potential concerns about the environmental impacts of these roads were raised at MTR. Nevertheless, the roads and the suspension bridges provide an effective low-cost access between production areas and village centres in most cases and are well appreciated by the beneficiaries. Actual environmental damage appears to be minor, limited to the immediate vicinity of the roads and acceptable in the circumstances.

90. Drinking water supplies are a high priority for those villages that do not already have adequate facilities, and generally provide benefits cost-effectively to a high proportion of the village population. As malnutrition, particularly in children, is related to incidence of disease as well as diet quality, these schemes are highly relevant to the project objective if they result in improved quality of water consumed and facilitate improved hygiene. Access to water at or near the homestead is also essential for year-round homestead gardening, even on plot sizes of a few tens of square metres. Overall these schemes are considered highly appropriate and cost-effective and although they were implemented in 120 villages, they could perhaps have been prioritised more strongly.

91. The cost-effectiveness of irrigation sub-projects is more questionable. Those rice irrigation schemes visited by the Mission appear to benefit rather few households who are owners of the limited irrigable land in the village and are not likely to be amongst the poorer households. Maintenance costs of the schemes are likely to be high and some schemes may prove unsustainable. Increased rice production is not likely to make a significant contribution to improved nutrition. Therefore, greater care should be taken in evaluating the appropriateness and viability of this type of scheme in future projects including AFN-II.

92. The logic of prioritising community fishponds is not clear. Aquaculture is an intensive activity requiring expenditure on inputs (fingerlings, feed) and constant care and attention to the pond, this makes it much more suitable as a private / household activity. In one village visited the Mission was told that the pond would be harvested for celebratory meals when high-level officials visited the village, or perhaps for a community ceremony. Either of these uses seems rather remote from the purpose of AFN.

93. The project design report planned establishment of 1,300 APGs of maximum 15 farmers per group. These groups would then compete for investment funding, with 650 APGs expected to receive funds. This approach was found to be impractical and at MTR it was agreed to target 800 APGs, all of which were expected to receive grants.

94. The project design report states that the purpose of “productive farmers’ organisations” (i.e. APGs) would be to “improve agriculture production and productivity, household nutrition and climate adaptation.” APGs would be encouraged to invest in “the most profitable commodities for their location, with a view to achieving greater market power through higher volume production.” Therefore, though nutrition was an objective of the APGs, much more emphasis was given to production for the market, as compared to the Garden Grants.

95. Selection of APG members was voluntary and based on the interests of individual farmers. Nevertheless, considering that membership of an APG entitled a member to benefits worth several hundred USD, - in many cases received in the form of a sub-grant at household level - there was a considerable material incentive to join. In village meetings, stakeholders were not able to

clearly articulate how decisions on selection of members were made, though it was stated that poorer households received priority. The Grant Guidelines state that at least 50% of group participants should be women. Groups should have poorer and better-off members, but at least 30% of members on average should be poor. Membership of some groups required criteria that might be difficult for poorer households to meet, e.g. the need to own a fish pond before joining a fish group, or the requirement to be an existing cattle raiser to join a cattle group. Of perhaps greater concern, it appeared that membership, with financial benefits, by individual households in two or sometimes more APGs was common.

96. APGs were overseen by member committees and prepared grant proposals which were subject to review and approval at District, Province and NPCO levels. Funds were transferred to APG bank accounts. In some cases, the bank used by the project did not have a District branch, meaning that the APG members had to travel to the Provincial centre to open the account and to withdraw funds. Community procurement processes were applied for purchase of inputs but these were still challenging for the APG, so DAFO support to procurement was often required. Members were required to contribute 15% of costs.

97. Table 4 reproduces data from the Completion Report on the selection of APG activities.

Table 4: APG activities

Category of APG	**Groups**	**HHs**	**Grants**
Poultry raising	205	3,543	199
Fish raising	50	788	46
Vegetable production	46	716	43
Pig raising	146	2,496	130
Goat raising	123	1,958	119
Cardamom	75	1,196	73
Galangal	53	818	53
Fruit trees plantation	11	176	8
Mushroom	6	86	1
Job's Tear production	1	11	1
Forage production & cattle raising	91	1,456	86
Maize production	29	484	29
NTFP production	1	9	1
Tea planting	3	38	3
Beekeeping	1	12	1
Rice production	8	128	8
TOTAL	**871**	**13,915**	**802**

98. Members' assessments of their APG activities were generally very positive. Within the project, livestock raising activities, particularly cattle and goats, were identified as among the most successful. APGs supported group marketing activities to varying extents. Some groups were active in making connections with potential buyers, while others relied on the increased volume of production resulting from the group activity to attract buyers to the village and still other groups focused primarily on production activities. Some, but not all, APGs collect member contributions and manage their bank accounts as revolving credit funds – the MTR was cautious about this activity but some successful examples were seen by the PCR mission.

99. The project assessed the institutional strength of APGs in 2021, with 111 groups (13.8%) assessed to be "strong", 452 groups "medium", 223 at "initial stage of development" and 19 groups "inactive". This finding is consistent with observations by the Mission and it must be expected that a substantial proportion of APGs will not succeed in sustaining meaningful group activities after project completion. However, this should not be understood as meaning that these APGs have "failed." In many cases, individual farmer members of the groups will have achieved a sustainable increase in productivity through a combination of technical training and grant finance. Group organisation is valuable for farmers where it serves a specific purpose, such as access to technical knowledge, mutual support (which is likely to be available in the village with or without a formal group) or group marketing activities. Depending on the circumstances of the individual farmer these benefits may or may not justify the investment of time and effort in group membership.

100. The considerable overlap between APG and garden grant activities has been noted above. APGs could have been more market-focused, perhaps through inclusion of financial / business literacy and marketing training together with technical skills. Networking with buyers and other value chain actors could have been a useful extension of the scope of APG activities. For this to succeed, the optimum size of APGs may have been rather larger, and there may have been no-need for separate APGs to be formed for each commodity produced.

101. Physical achievements reported for Output 3.2 Linking Farmers to Markets consist of the formation of 7 PPCPs. These PPCPs were based on local, small to medium scale agri-enterprises based around poultry raising (1 enterprise); cardamom production and processing (5) and pig raising and processing (1). A total of 2,832 smallholder farmers (target 2,000) in 73 villages are linked to these enterprises through semi-formal buyer agreements.

102. PPCP enterprises benefited from grant finance for facilities including warehousing, drying and processing. To varying extents, the enterprises provided extension training to participating farmers.

103. Although the number of PPCPs established is much smaller than the original target of 30 and the effort required to establish the PPCPs seems to have been considerable, results at the level of individual PPCPs seem encouraging. Project staff commented that it may have been an error to restrict PPCP participation to locally based firms owned by Lao citizens, as these are generally few in number with limited capacity compared to Provincial or Vientiane based firms. Conversely, the AFN scheme with its relatively small grant sizes was probably more attractive to small local firms than it would have been for larger enterprises. Contract farming and out-grower schemes operated by large firms (e.g. CP Ltd.) often require farmer participants to produce at a scale that cannot be achieved by poorer smallholders.

Achievement of Project Outcomes

104. *Outcome 1: Strengthened Public Services* is considered to have been partially achieved.

105. The outcome indicator 14 TSC with improved capacity and support to target farmers is reported as fully achieved. However, as observed above, TSC are not configured and resourced to sustainably provide smallholder farmers with effective, demand-responsive support, and their need to generate income probably conflicts with, rather than enhances, this role (i.e. it is not realistic to expect extension services to be financed by user fees charged to small farmers, leading TSC to focus mainly on production of agriculture inputs, in which role they represent subsidised competition to the private sector). Therefore, it is not assessed that the project support to TSC will result in major, sustained improvement in services to smallholder farmers.

106. The second outcome indicator, Households reporting adoption of new/improved technologies or practices, is reported as over-achieved (20,630 as compared to the target of 10,000). This is a significant achievement. However, it is not clear that achievement of this target demonstrates a sustainable improvement in services, outside the project context.

107. The project has made significant achievements in strengthening public service delivery capacity including (i) development and operationalisation of the ProMIS system; (ii) development of the PARs and associated training materials; and (iii) improvements in technical capacity of staff and agencies at all levels through the experience of project implementation. It is notable that, though indicators and outputs associated with Outcome 1 relate mainly to services in support of agriculture production, service delivery capacity for nutrition action has clearly been significantly improved as a result of Component 2 activities.

108. *Outcome 2: Community-driven, agriculture-based nutrition interventions established*, is considered to be fully achieved. The Outcome Indicator target of 300 Village Development Committees have a basic convergence plan on food and nutrition has been exceeded (365 achieved) and the target of 28,000 women reporting MDD-W has been exceeded (34,750 achieved). The ToC pathway of addressing under-nutrition though integrated agriculture and nutrition behaviour change communication has been validated and a replicable model for implementation has been developed and demonstrated as effective.

109. *Outcome 3: Sustainable and inclusive market-driven partnerships* has fully achieved its outcome target of 10,000 households participating in the project increase their income by 30% (19,506 achieved). However, market-driven partnerships (the PPCPs) benefited only 2,832 households and so played a minor role. As discussed above, the outcome definition was not well chosen to reflect the main drivers of change which were investments in infrastructure and agricultural production.

D.2. Rural Poverty impact

i) Household income and assets

110. The project is assessed as having made a Satisfactory (5) contribution to Household Incomes and Assets of the project beneficiaries, having generated a measured, quantified and documented increase in the incomes and physical and financial assets owned by rural poor women and men, with most targets met[16].

111. The endline survey estimated that 19,506 beneficiary households increased their income by 30% and also measured an increase of 10.6% in a basket of household assets compared to the baseline, compared to 8.9% in control villages. The endline survey estimates that project households have experienced an increase of 92% in real on-farm income, from LaK 7.3 million at baseline to LaK 14 million endline calculated at constant prices[17]. Project beneficiaries attested to the project impact of increased incomes through sales of produce and increased assets in the form of livestock in particular.

112. Overall household income increased significantly in comparison to the baseline and in comparison, to control group villages. As explained in the endline survey report, full quantitative data on household incomes is difficult to collect and unreliable. However, in response to a question on perceived change in financial situation, 32.3% of AFN village households reported a significant increase (characterized as “income almost doubling”) compared to 13.4% of households in control villages, while only 4.5% reported less income than before (13.2%).

Table 5: Perception of household financial situation after project implementation [18]

Financial situation perception	AFN	Control	Total
Better financial situation, significant increase	32.3%	13.4%	22.9%
Better financial situation, moderate increase	57.8%	52.0%	54.9%
Same as before	5.2%	19.6%	12.3%
Less income that before	4.5%	13.2%	8.8%
A lot less than before	0.3%	1.7%	1.0%
Total	**100%**	**100%**	**100%**

113. In assessing these achievements, it must be remembered that the target communities suffered the adverse impacts of COVID-19 which included temporarily losing access to important markets; outbreaks of African swine fever and avian influenza, and increased prices of agriculture inputs linked to the war in the Ukraine and to the major devaluation of the Lao currency, all during the final three years of the project. In this context, the demonstrated impact of the project on household income must be considered a significant success.

ii) Human and social capital

114. The project contribution to Human and Social Capital is assessed as Satisfactory (5). Poor rural women and men have been supported to develop and their organizations have been strengthened. They have gained some control over economic relations and institutions and actively participate in local decision-making processes. They are now in a better position to gain access to essential social and productive services.[19]

115. At community level, 365 villages were supported to develop or update village plans, introducing a participatory planning approach that was a departure from established practice. A total of 34,638 village residents were reported as participating in planning and the Mission confirmed that beneficiaries were able to recall and describe the planning process and were satisfied with the results. In addition, the project expected to complete preparation of village nutrition plans in all 400 villages by closure of the WFP activities in June 2023. The Mission confirmed that beneficiaries and Village Nutrition Facilitators (VNF) were able to present and explain these plans.

116. The project supported formation of 400 Farmer Nutrition Schools with 34,628 participants learning enhanced skills for nutrition and related topics, and 871 Agriculture Production Groups (13,915 members) learning enhanced agriculture production skills. These grassroots organisations contribute significantly to enhance social capital as well as to the social and productive skills of their members. The Mission witnessed impressive enthusiasm and commitment to continue the activities of FNS and APG, while recognising that this will not be sufficient in all cases. However, the strongest groups have an excellent chance to achieve sustainability.

117. The project trained 884 Lead Farmers and 1,200 VNF. Notably, the VNF are predominantly women and most had not undertaken any formal public role previously. These women have gained enhanced confidence and leadership skills as well as technical knowledge and can be expected to continue to play active leadership roles in their communities in the future.

iii) Food security

118. **The project contribution to Food Security and Nutrition is rated as Satisfactory (5).** AFN was originally not designed as a nutrition-sensitive project, but nutrition was mainstreamed at MTR. The rational for going beyond food security and retrofitting nutrition in AFN I, was the rising evidence on the lack of diet quality and diversity, rather than limited access to food and calories intake. The end line Survey and completion mission assessed both food security and nutrition impact and showed satisfactory

results on both these dimensions.

119. On food security, against a target of 21,000 HHs having 2 months or less food insecurity, AFN attained 31,366 households, including 29,765 households reporting having zero months of food insecurity. The project has focused on many activities to improve all variables of food security. In particular, AFN focused on food availability by expanding and intensifying the production of nutrition-dense plant-based foods (vegetables, legumes and fruits), as well as the promotion of animal-based protein for household consumption (chickens, ducks and pigs); it increased food accessibility by promoting income-generating activities, with a focus on women; it also invested on food utilisation by investing in market access and infrastructures, as well as nutrition education; and it limited the negative impact of cyclical events on food access by building life skills and increasing overall livelihoods.

120. Concerning nutrition, the project demonstrated a clear improvement in dietary diversity among women of reproductive age and under five children. In particular, 55% of children between 6-23 months met the minimum acceptable diet (MAD), versus only 14% at baseline and 35% in control (not AFN) villages at completion. On respect to minimum diet diversity of women (MDD-W), this indicator was not assessed at baseline given that nutrition was mainstreamed only at MTR, but the endline data shows that 89% women reached it in the project area, against 80% in control villages. Another positive trend is confirmed by the household dietary diversity score (HDDS), which shows that households living in AFN villages have a better score (7.4), than households living in control villages (6.4) and that the score has significantly improved since baseline (5.2). This means that at completion, the percentage of households that consume more than 5 food groups in a day is 89% in AFN village, compared to 74% for control villages." All women benefiting from the garden grants have established (homestead) gardens, which provide them with food for eating and surplus for selling", as explained by Si Phut, a 30 years old Farmer Nutrition School facilitator from TaT Mouan Village. With the profit women declared to buy food items and pay for other expenses for children and family; in some cases, the profit has been used to expand the food items of their (homestead) gardens and make more money.

121. A specific KAP survey was also carried out to assess progress on key nutrition education elements. Findings show that there is an overall better understanding on food and nutrition. All topics related to food practices, infant and young child feeding and cultures are understood by all the households members interviewed (total average score 90%) as well as hygiene and food safety (average score 87%). All six focus group discussions organised by the mission team with women benefitting from APG and /or Garden grants proved that women, with no difference between ethnic groups, have gained more capacities on nutrition which are applied on a daily basis to ensure adequate diet diversity for all household members, appropriate Infant and Young Child Feeding practices, family planning, adequate hygiene and use of safe water for drinking and cooking. Also, they reported to have learnt how to cook and prepare food which is healthy and nutritious.

122. As explained by all key informants another great result of AFN is the improved knowledge and awareness on nutrition of men and their enhanced interest on children care and prevention of malnutrition. Another significant result of AFN is the contribution provided on policy and governance with the operationalization of the District Nutrition Committees (DNCs) in all 12 districts covered by the project and the development of community driven Village Nutrition Plans (VNPs) integrated with the Village Development Plans (VDPs) process and highly representative of all village members, both men and women.

123. Concerning AFN project goal on stunting reduction, the mission observed that it was not very appropriate because: i) the objective of 10% decrease in rate over the project life cycle of 6 years is absolutely too ambitious, and even more important, because ii) the relevance of many other determinants in malnutrition (i.e. social justice, health equity, maternal education, human rights etc.) indicate that they shall all coexist at regional, national, community and household level in order to produce an impact, whereas AFN only addressed some of them. Having said that, no anthropometric measurements were taken during the endline survey and data assessment relied on national surveys. According to the Logframe, project goal indicator of stunting was to be measured through the data from the Lao Social Indicator Survey (LSIS) provided by Ministry of Health. However, data from the third round is not yet available as data collection for LSIS III was delayed due to the COVID-19 from 2022 to 2023. Therefore, in order to estimate the progress achieved up to now, data at baseline from LSIS II were compared to other secondary data available at district level (from the Reducing Rural Poverty and Malnutrition Project of the World Bank). According to them, stunting at district level has decreased in average by 2.1% and underweight by 5.5%. Furthermore, preliminary data analysis of LSIS II data confirm the reduction; in addition, three Provincial Health Officers interviewed during the completion mission, explained that the number of admissions for stunting has decreased in the targeted villages since AFN and data from regular child growth monitoring show a much better situation.

iv) Agricultural productivity

124. Agricultural Productivity is rated as Satisfactory (5). Project activities have led to a good increase in agricultural productivity or production in the project target area. Such increase is well measured, quantified and documented and meets targets[20]. The endline survey reports an increase in total sales of crops and livestock in AFN target villages from LAK 7 million per household at baseline to LAK 21 million at endline. After deflating based on the consumer price index, this represents a real increase of about 114%[21]. At endline in AFN villages, value of livestock sales per household was 44% higher than in control villages, while value of crop sales per household was 35% higher than in control villages.

125. In the context of high inflation and currency depreciation, volume sales figures provide strong supporting evidence for the impact of the project on agriculture productivity. Table 6 is recalculated from data presented in the endline report for households receiving agriculture production support (garden grants and / or APG grants) and shows overall increase of 94% in annual crop production and 104% in livestock production. Garden vegetable production, which was a specific focus of the project, shows a notably impressive increase of 165%. These findings are also substantiated through discussions with beneficiary farmers by the mission team.

Table 6: Annual Production of Beneficiary Households[22]

Commodity	Annual production per household in kg.		% Increase
	Baseline	Endline	
Cardamom	149	272	83%
Garden Vegetables	87	231	165%
All Crops	*215*	*417*	*94%*
Cattle (Fattening)	730	1496	105%
Chicken	55	100	83%
All livestock	*381*	*775*	*104%*

v) Institutions and policies

126. Project impact on Institutions and Policies is rated as Moderately Satisfactory (4). Grassroots organizations (FNS and APGs) have made good progress to sustainability overall but (except the strongest) will still require support and it cannot be guaranteed that this support will be provided post-project. Institutional capacities of implementing agencies, particularly at District level, have been significantly improved, as has the capacity and functioning of the DNC. The overall policy and institutional framework has not been significantly altered by the project, but capacity and commitment to implementation of existing and appropriate policy and programme, particularly for nutrition, has been enhanced.

vi) Access to markets

127. Access to Markets is rated as Moderately Satisfactory (4). There is evidence that some, though not all, APGs were able to improve their market access through (mostly informal) arrangements with buyers and through the advantage of production at increased scale making it more worthwhile for buyers to visit these remote communities. Road investments also increased farmers' access to markets and facilitated buyers' travel to villages and production areas. However, the SIPs had little impact. The PPCPs succeeded in improving market access but the total beneficiaries of these arrangements (2,832 farmers) was small compared to the total target population.

D.3. Gender equality and women's empowerment

128. Gender Equality and Women's Empowerment is rated as Satisfactory (5). **Women accounted for a substantial number** of beneficiaries: 50% of total project outreach beneficiaries were women; in addition, women represented 91% of FNS participants and 100% of garden grants beneficiaries (22,970 women); women constitute 79% of the Village Nutrition Facilitators. The project reports that 48% of APG members were women and out of seven PPCP entrepreneurs, two were women. This is a shift from previous practices where men were often the target participants for village meetings, trainings, and information sessions because women were supposed to be busy with household chores and tasks. With AFN, women became more confident to participate in household and community discussions and more accepted by communities and household to do so. This was due to a large participation of women to Farmer Nutrition Schools, increased knowledge on nutrition and agriculture, improved awareness on causes of malnutrition and how to prevent it, increased income through selling of vegetables and small animals from homestead gardens, active participation in village planning. AFN was designed to promote positive impact on gender equality through a gender-nutrition nexus: by increasing women's access to productive and financial resources, income opportunities, education and services, there is a consequent increase in agricultural output and a significant reduction in the number of poor and hungry people. The rational is that an empowered woman can influence the extent to which resources, specifically food, are allocated in the household, benefiting the health and nutrition of the entire family. By treating gender as relational, and therefore, dynamic and something that can be transformed, AFN went beyond the approach of gender being as an issue between women and men and open the door to women empowerment and a change in social norms and equal resource distribution.

129. All **three dimensions** of Gender equality and women's empowerment were assessed at completion by a specific gender assessment carried out by an independent gender specialist. The assessment involved 600 beneficiary households and 120 key village actors, in 60 villages of all 12 target districts of the project. In addition, the completion mission team undertook eight individual interviews and six focus group discussions. Unfortunately, the AFN baseline did not integrate quantitative data to allow comparison before and after the project implementation, so we mainly rely on the recorded perceptions of beneficiaries.

130. Overall, all dimensions of Gender Equality and Women's Empowerment (GEWE) have improved; it has observed an increase in nutrition knowledge for women, but also indirectly for men; this knowledge refers to the topic of the training, namely, food hygiene and safe water, Infant and Young Child Feeding, Diet diversity, reproductive health and family planning. It was also observed a stronger economic empowerment and decision-making, time-saving, increased leadership and decision-making roles for women in the communities, and women having increased access to information and training. In particular, concerning i) **women workload:** 85% of pregnant women interviewed stated that they worked less since joining FNS; according to the 90% of those women, the reason is that the husband helps out more during the pregnancy. Furthermore, 96% female participants indicated that they have received more support from their families since attending FNS, particularly with cooking (87%), caring for other household members (85%) and cleaning (72%). Men's groups mentioned that the water assets supported by the project reduced the heavy work and time of women spent on water collection from distant sources.

131. On respect to ii) **women's participation in decision-making** processes, the majority of women agree that husbands and wives had more discussions on sharing chores and on livelihood activities, and that men had more respect for the opinions of their wives than before. In 55% of households, both women and men decide on what food to buy, whereas in 24% only women decide and in 17% only men decide. The majority of women indicated that they can make their own decisions on seeking healthcare (64%), spending time with relatives and friends (69%), and 34% cannot visit the district center without permission. Furthermore, 57% of women indicated that they are not able to make their own choice about their sexual and reproductive care. 89% of women reported being more involved in decision-making within the village after the AFN project started. This was confirmed by women in FGDs, who also noted that they were able to attend more meetings together with men after the project started. This was confirmed by the majority of men who agreed that collaboration between women and men was enhanced and that women were more confident to communicate their knowledge to the household.

132. With regard to the third dimension of GEWE on iii) **economic empowerment**, 100% of women interviewed declared that the project was able to provide additional livelihoods to women and also to increase their income as a result of being able to sell more products (90%) and also as a result of skills increase (80%). According to FGDs, these results were achieved through the implementation of homestead green gardens and the attendance of the FNS.

133. Throughout the project implementation and during the completion mission it was acknowledge through interactions that the role played by LWU to empower and train women at community level was crucial and well appreciated. This confirms the positive impact of involving a national local association/organization on the topic of gender mainstreaming. A bigger role on gender mainstreaming - with a clear action plan - could be assigned to the LWU in AFN-II. The project developed a gender action plan in 2019, which was then updated in 2021, but did not include M&E tools to regularly track gender dimensions during project implementation. Therefore, the overall gender impact was assessed at completion through a specific gender assessment (March 2023).

134. In Laos, ethnicity and the female birth order have, to some extent, implications on gender equity and nutrition. For example, the youngest daughter often remains in the home, and the groom comes to live with her family. She has more social capital than the groom, which gives her power, and the house and land may pass to her upon the death of her parents rather than being shared amongst the children. In ethnic groups with a matriarchal system, women have a lead role in the family and decision-making (e.g. Ta Oi, Brao, Lave, Katang, Ong, Sou, Nyouane, Lahu and Pray). In contrast, in other communities, men and women decide together (e.g. Khmu, Lao Hoy and Suay). Therefore, considering these variables, together with behaviour and practices, is essential when planning alleviation measures for gender equality and estimating the development impact of gender empowerment actions across different ethnic groups.

D.4. Adaptation to climate change

135. Adaptation to Climate Change is rated as Moderately Satisfactory (4). Climate resilient agricultural production forms part of the Objective of AFN. The project design report and the PIM indicate that the agricultural techniques to be promoted are expected to be climate-smart and to enhance the climate resilience of the target communities and farmers. However, few specific climate change adaptation (CCA) measures are mentioned in the design report. AFN reported to GAFSP that 95% of the total beneficiary outreach had been assisted to cope with the impact of climate change, with specific interventions listed as (i) promotion of short-term and drought-tolerant crops and varieties; (ii) water management practices including drip irrigation; (iii) organic production practices; (iv) soil preparation techniques; (v) irrigation; (vi) promotion of forage cover crops; and (vii) climate change proofing of infrastructure.

136. According to results from the end-line project intervention impact assessment, the project reached a total of 33,294 beneficiary households, with 78% of them belonging to non-Lao/Tai ethnic groups[23]. The 13,915 smallholder farmers have benefited from joining APGs and the cash grants provided by the project, together with intensive agriculture trainings. Beneficiaries have succeeded in increasing their agricultural productivity, incomes and food security using techniques promoted in the PARs which are specifically designed as climate-resilient. On-farm crop production has increased by 94% since the start of the project, and livestock ownership has increased by 79%, resulting in incomes that have increased by an average of 92%. The 22,970 women received cash grants to develop their home gardens and small livestock activities, mainly for household production, but many of these women started to sell their surplus production on the local markets. Most (95%) households now grow crops and raise poultry in their home gardens, compared to only 77% in other villages. These figures show that the beneficiaries have learned and received new agriculture extension techniques, including crop varieties, climate-smart agriculture techniques, greenhouse water management practices, and enhanced agribusiness value chains, which are parts of climate change adaptation and resilience. The overall effect has been to reduce vulnerability to climate-change shocks and stresses by at least one step.

137. However, in view of the increasing importance of climate change and the severe threat it poses to the target communities, this issue could have been given more prominence in the design and implementation of AFN[24]. The MTR noted a need to enhance CCA efforts including through promotion of specific adaptive interventions and through mainstreaming CCA in planning. These suggestions do not appear to have been taken up (though in fairness, most village plans were completed before MTR and most

AFN activities were selected before MTR, and a top-down imposition of the suggested CCA interventions would not have been compatible with the AFN approach. CCA should be more rigorously addressed in AFN-II. This could be achieved through (i) analysis of specific CCA vulnerabilities at village level; (ii) ensuring that vulnerabilities are considered in village planning and in selection of agricultural (APG) activities; and (iii) promoting specific adaptive technologies through dissemination and demonstration.

D.5. Environment and natural resource management

138. Environment and Natural Resource Management is rated as Moderately Unsatisfactory (3). High pressure on the natural resource base linked to harmful agricultural practices, primarily uncontrolled clearing of forest on steep slope areas for cultivation, was evident throughout the project target districts from mission observations and discussions with project beneficiaries. Communities commented on increasing problems with water supplies which are likely to be linked to clearing of watershed areas for production. Soil erosion, siltation of watercourses and slope instability are likely consequences of excessive land clearing. Throughout the field mission the project area was under cover of smoke haze caused at least in part by the annual burning of ground in preparation for cultivation (shifting cultivation). If this continues it is likely to have significant effects on human health.

139. Large-scale land clearing is driven by factors outside the influence of AFN, which is not considered to have contributed significantly. However, when operating in this context, any expansion of agriculture production, for example increases in cattle herd numbers, carries the risk of increasing pressure on finite resources. Agriculture production roads supported by AFN may have facilitated cultivation of land that was not previously under cultivation (the mission observed one example of cultivation on a steep and potentially unstable hillside adjacent to an AFN road). In AFN-II, greater attention should be given to identifying and mitigating these potential risks.

140. The project supported a number of interventions with potential to improve natural resource management and the environment. As discussed above, the pilot participatory land use planning and land management (PLUPA) could have been orientated to this objective, though that was not the primary purpose and the activity made little progress before it was dropped at MTR. The project succeeded in converting large areas of shifting agriculture land to perennial forage, with benefits including soil improvement and reduced erosion. Other conservation-agriculture activities supported included cardamom plantations under forest canopy. Expansion of cash crops and perennial crops such as vegetables, NTFP, cardamom, galangaea, Job's tears, forage and maize can offer improved protection from erosion if accompanied by good soil management practices and the effect is to replace traditional slash-and-burn techniques, so allowing some land to return to forest cover. However, there is no evidence that the project paid strong attention to these aspects (environmental screening was carried out only for infrastructure projects, not for APG activities) and the overall trend in the project villages, as witnessed by the Mission, is increased clearance of land, as described above.

141. The project adopted a checklist approach to screen infrastructure sub-projects for social and environmental risk, and any negative impacts are expected to be very minor.

142. The project design report assesses the environmental and social risk category as "high", mainly because of the project location in an area with mainly indigenous minority population. An indigenous people's plan, Free, Prior and Informed Consent Plan, grievance redress mechanism and an Abbreviated Environment, Social and Climate Management Framework were formulated at design. However, these do not appear to have played an important role in project implementation (they are not mentioned in the PIM) and the proposal in the design report to recruit a full-time Environment, Natural Resources Management and Climate Change Specialist for the project does not appear to have been implemented. The design report states that infrastructure feasibility studies should include Social, Environment and Climate Change risk assessments and management plans. The MTR noted that these were lacking, and subsequently the project adopted a checklist approach to screening infrastructure sub-projects. No safeguards report has been prepared. Environment and natural resource management is an area that should be strengthened in AFN-II, which will be aligned to the 2021 IFAD's Social, Environmental and Climate Assessment Procedures (SECAP).

D.6. Targeting and outreach

143. Targeting and Outreach is rated as Moderately Satisfactory (4). The project achieved 92.8% of its target outreach, though the reported data are unclear in some respects (see paragraph 8) and it is likely that the reported number includes villages that did not benefit from the full scope of project support (e.g. no infrastructure activity; APGs not receiving grants). Selection of target Districts and villages was generally satisfactory (though there seem to be some villages that may not have been highest priority). Criteria for selection of target beneficiaries for FNS, APGs and grants were clear and appropriate. However, it is less clear that selection criteria were consistently applied for APG beneficiaries. It is noted that some households were able to benefit from multiple grants (e.g. garden grant and one or more APGs) while others missed out. For some APG activities, criteria set to ensure capacity of the farmer to participate (e.g. having a fishpond for fish APG, cow owner for cattle APG) are likely to have excluded poorer households who could have benefited if additional support had been provided. Irrigation activities seem to have typically benefited only a limited number of households per scheme who were not likely to have been the poorest.

D.7. Innovation

144. Innovation is rated as satisfactory (5). The project has tested some new innovative approaches to rural poverty reduction which adapted and improved upon existing practices. Learning systems were satisfactory and lessons learned often brought to higher levels. Project experience in testing these adaptations was well documented and there is not only interest in but commitment to replicating these innovations from Government and other partners[25].

145. The FNS represents a novel solution within the context and the project area. The FNS methodology was improved over the project implementation period based on lessons learned, including a reduction from ten modules initially to four simplified modules, combining cooking demonstration sessions with behavior change toward more balanced and healthy food preparation and feeding. Thanks to these, women and their families have greater incentive to apply grant for crop and livestock diversification in their home gardens and farms through the Garden Grant and APG. The process became more inclusive as the FNS sessions are open for all villagers after the MTR. Nutrition awareness has improved in the whole community, not just pregnant and lactating women. Through the FNS women are empowered to take part in different project activities, and their workloads have been reduced as result. The FNS methodology has been documented through guidelines and training materials and is being replicated (see Scaling Up).

146. The Village Nutrition Plans (VNP) represent a further innovation based on the observation that general village development plans remained dominated by proposed infrastructure investments even when prepared by participatory methods with project facilitation. The project responded by introducing the VNP which assists villagers, led by the VNFs, to identify and address specific constraints and opportunities for improving nutrition. Therefore, the VNP is novel in the context and is new in the project area. As the VNP was introduced after project MTR, there has been less time to evaluate the effectiveness of the approach, but VNP will be adopted in the methodology of AFN-II and other WFP-supported initiatives (see Scaling Up).

147. While not strictly a technical innovation, the project led the way in committing to support the convergence approach and strengthening the DNC, and took a decentralized implementation approach in line with the GoL “Sam Sang” policy. The project has made notable efforts to document and disseminate lessons learned.

D.8. Scaling up

148. Scaling Up is rated as Satisfactory (5), meaning that “Development partners have shown strong interest in certain elements of the project implementation strategy and good potential for scaling-up and replication exists[26].”

149. Support to the convergence approach and the DNCs has already been replicated by other agencies. Funds have been committed by government and development partners to scale up FNS through two World Bank supported projects (PRF-III and CLEAR). and WFP plans to replicate important elements of AFN in its own programmes, funded separately by ADB/EU and GAFSP. In addition, GoL, with GAFSP finance and support from IFAD and WFP, will scale up the AFN approach as a whole through AFN-II. Elements of the AFN approach are also replicated in the IFAD-financed PICSA. PRF-III extends the FNS methodology to additional target areas and beneficiaries within northern Laos. Through PRF-III, CLEAR and AFN-II, the FNS approach will be replicated in new target areas in southern Laos.

150. The PAR models and extension materials have achieved good uptake by other projects including PICSA and by NGOs working with smallholder farmers. Interested farmers in villages neighbouring the AFN villages have replicated PAR models such as poultry and pig raising, plastic house for vegetables, tilapia fish rearing, forage production and cattle raising.

E. Assessment of project efficiency

151. Project efficiency is rated as Satisfactory (5). Project implementation was efficient and output delivery largely problem-free despite some challenges, including staff and consultant recruitment, COVID-19 and additional financing, that caused slow progress and disbursement in 2017-2019 and 2021, especially Component 2.

152. DAFO provided active support for preparation of infrastructure/ APG proposals, technical trainings, procurement and implementation concerning limited capacity of the village implementation teams. The VDP process and community contribution (labour, local materials) for construction of small-scaled infrastructure helped to (i) increase participation and ownership; (ii) strengthen local empowerment and community cohesiveness; and (iii) enhance maintenance capacity. Limited interest of contractors for small-scaled infrastructures in remote location of villages resulted in low competition and marginal cost-saving through procurement. Procedures for APG grant transaction and procurement of production inputs are still complicated and could be simplified. For example, APG could purchase inputs directly from local suppliers with receipt records.

153. Actual project costs stand at 101% of appraisal. GoL expenditure is reported as significantly less (-15%) than the commitment, while beneficiary contributions exceed the design estimate (+54%). Other financiers’ contributions were largely on target. AFN delivered good value for money (except for investments in irrigation and community fishponds). The estimated economic internal rate of return (EIRR) is higher than the design estimate of 8.65% (though adjustment for the actual number of beneficiary households is needed). Costs per beneficiary and management costs are higher than the design estimates, reflecting the high costs of working in the remote target villages.

E.1. Project costs and financing

154. Up to 30 June 2023 the actual project costs will reach USD 43.26 million, accounting for 101% of the approved budget (Table 7). Component 3 is the costliest with disbursement amounting to USD 20.27 million, or 47% of the total project costs. It received the largest original budget allocation (USD18.99 million, or 45% of the total project budget), and actually spent USD 1.2 million more, mainly from higher contribution of beneficiaries in APG and infrastructure, which implies local communities’ positive perception of the value and effectiveness of those investments. Other components stay slightly below or within the budget.

Table 7: Project Costs by financier in USD (up to June 2023)

	GAFSP IFAD		GAFSP WFP		Government		Beneficiaries		Private sector		Total	
	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual
	59.8%	58.7%	19.4%	19.2%	12.8%	10.7%	6.8%	10.3%	1.2%	1.1%	100%	100%
Component 1	4,834,844	4,601,317	-	-	-	64,488	-	-	-	-	4,834,844	4,665,805
												97%
Component 2	-	-	8,300,000	8,300,000	-	-	-	-	-	-	8,300,000	8,300,000
												100%
Component 3	15,577,244	15,185,337	-	-	17,647	157,169	2,900,000	4,448,402	500,000	483,398	18,994,891	20,274,306
												107%
Component 4	5,087,912	5,614,049	-	-	5,459,353	4,409,598	-	-	-	-	10,547,265	10,023,648
												95%
TOTAL Project Costs	25,500,000	25,400,703	8,300,000	8,300,000	5,477,000	4,631,255	2,900,000	4,448,402	500,000	483,398	42,677,000	43,263,758
%		100%		100%		85%		153%		97%		101%

155. **Financing by financier**: GAFSP-IFAD grant covers the largest proportion of costs, with 58.7% of the actual total disbursement, followed by GAFSP-WFP grant with 19.2%, the Government with 10.7%, beneficiaries with 10.3% and private enterprises contributing just around 1% (Table 1). Compared to the original financing composition, beneficiaries' share is 3% higher than expected, while the shares of IFAD and the Government shrink by 1% each. In terms of USD value, the actual Government expenditure is reported as significantly less (-15%) than the commitment, while beneficiary contributions exceed the design estimate (+54%) as local people were willing to pay more for APG and infrastructure. Apart from that, the financial projections included in the original design is adequate and there are not any significant cost deviations from original estimates. Other financiers' contributions are largely adequate and on time.

156. Annual project costs by component is presented in Table Overall, the project financial performance is quite smooth. By the project mid-year of 2019 almost half of the total project budget had been disbursed, and the disbursement rates of Components 1, 3 and 4 ranged from 49% to 65%. However, Component 2 was falling a bit behind with cumulative spending of only 28% at the end of 2019. This is mainly attributable to WFP's slow personnel recruitment, including recruitment of the CTA.

Table 8: Annual Project Costs by component in USD (up to 30 June 2023)

	2016	2017	2018	2019	2020	2021	2022	2023 (estimate)	Total
Component 1	98,598	514,454	935,363	1,481,510	865,073	383,439	374,353	14,948	4,667,737
%	2%	11%	20%	32%	19%	8%	8%	0.3%	11%
Component 2	44,409	526,497	659,536	1,063,243	1,453,630	1,725,832	2,350,974	475,879	8,300,000
%	0.5%	6%	8%	13%	18%	21%	28%	5.7%	19%
Component 3	-	250,798	3,297,562	6,312,483	7,786,062	2,070,158	557,239	-	20,274,302
%	0%	1%	16.3%	31%	38.4%	10%	3%	0%	47%
Component 4	305,053	1,009,057	2,743,867	1,460,327	2,012,765	1,127,348	1,184,798	178,500	10,021,715
%	3.0%	10%	27.4%	15%	20%	11%	12%	1.8%	23%
TOTAL Project Costs	448,059	2,300,807	7,636,328	10,317,563	12,117,529	5,306,777	4,467,365	669,327	43,263,755
%	1%	5%	18%	24%	28%	12%	10%	2%	100%

157. Annual project allocations and expenditures by component since the project starts are summarized in Table 7 Coherence between the Annual Work Plan and Budget (AWPB) and disbursement improves over time. In the first two years the disbursement rates against AWPB was rather low, revealing over-ambitious planning and slow implementation progress at the beginning of the project. The problem persisted for two more years with Component 2, which was financed by GAFSP WFP, due to slow recruitment and procurement, particularly in the remote districts. Meanwhile, Components 1, 3 and 4, which were mainly financed by GAFSP IFAD, were able to catch up with the AWPB. In 2021 the disbursement rate dropped again to around 70% for all components. This is related to the Covid-19 pandemic breakout and subsequent social distancing requirements of the government, and also related to late arrival of additional financing. The disbursement rate was much improved 2022 and will reach 100% in 2023.

Table 9: Annual disbursement versus Annual Work Plan and Budget (AWPB)*

	2016		2017		2018		2019		2020		2021		2022		2023	
	AWPB	Disbursed	AWPB	Disbursed	AWPB	Disbursed	AWPB	Disbursed	AWPB	Disbursed	AWPB	Disbursed	AWPB	Disbursed	AWPB	Disbursed
IFAD																
Component 1	221,500	98,598	990,365	514,454	1,537,016	935,363	2,870,774	1,471,455	1,229,899	818,978	615,802	375,100	413,754	374,353	14,948	14,948
		45%		52%		61%		51%		67%		61%		90%		100%
Component 3	82,300	-	947,955	250,798	2,623,802	3,178,997	4,858,693	5,877,911	4,759,943	4,922,335	985,313	715,559	257,035	239,736	-	-
		0%		26%		121%		121%		103%		73%		93%		-
Component 4	896,200	195,999	1,984,961	469,281	1,835,928	1,354,652	1,210,311	998,489	991,616	913,556	800,511	642,092	946,543	863,049	175,000	175,000
		22%		24%		74%		82%		92%		80%		91%		100%
Sub-total	1,200,000	294,596	3,923,281	1,234,534	5,996,745	5,469,012	8,939,777	8,347,856	6,981,457	6,654,869	2,401,626	1,732,750	1,617,333	1,477,138	189,948	189,948
		25%		31%		91%		93%		95%		72%		91%		100%
WFP																
Component 2	50,000	44,409	1,539,000	526,497	1,522,283	659,536	1,857,689	1,063,243	1,672,768	1,453,630	2,447,525	1,725,832	2,775,850	2,350,974	475,879	475,879
		89%		34%		43%		57%		87%		71%		85%		100%
TOTAL	1,250,000	339,005	5,462,281	1,761,031	7,519,028	6,128,548	10,797,466	9,411,099	8,654,225	8,108,499	4,849,151	3,458,582	4,393,183	3,828,112	665,827	665,827
		27%		32%		82%		87%		94%		71%		87%		100%

* IFAD, WFP

158. The largest revision to the financing agreements is the additional financing of USD 1.5 million for IFAD and USD 2.3 million for WFP "to support short-and-medium-term responses to impacts resulting from the COVID-19 pandemic". The money was adequately allocated and paid for expansion and strengthening of extension services and activities, APG, targeted infrastructure, garden grants and farmer nutrition school activities and sustainability, as well as support for project management. Other key revision is the reallocation of originally unallocated budget among expenditure. In general, the revisions are appropriate and on time to meet the needs of the project.

E.2. Quality of project management

159. Project Management is rated as Satisfactory (5) which is consistent of the SM ratings post-MTR. AFN benefited from effective

management by NPCO with support from WFP technical assistance. Project management capacity was more uneven at Provincial and District levels which were key to project delivery under the decentralized structure of AFN.

160. The PSC met regularly throughout the project period and provided effective oversight of the project.

161. SM in the early years of the project noted challenges including inadequate coordination between different agencies and the need to strengthen work planning. Initial capacity at DAFO was weak and work was needed to achieve timely and efficient implementation of the project. Management costs significantly exceeded the budget allocation; this reflects, in part, the difficulties and high costs of working in remote areas but also the large number of agencies with a role in implementation, particularly at District level. The CTA position was vacant for a period in 2018-19. Issues were noted with over-ambitious financial targets set in the AWPB (particularly for Component 1 which spent only about 50% of its budget for several years pre-MTR).

162. Post-MTR, and with an effective CTA in place, project management performance improved and no major issues were noted in Supervision Reports, although coordination between agencies at sub-national levels remained troublesome.

i) Procurement

163. Procurement was undertaken by the NPCO, WFP (Component 2) as well as multiple implementing agencies including NAFRI, PAFOs, DAFOs and Village Nutrition Committees (VNCs) in four project provinces. The procurement team at NPCO include a procurement officer, a procurement assistant and a part-time procurement specialist. Project procurement activities include mainly goods (vehicles, IT equipment, office facilities, agriculture equipment, agriculture inputs for on-farm demonstrations, and agriculture production inputs using APG grants[27]), works (TSC office buildings upgradation, VDF infrastructure investments[28]) and consulting services (specialists at NPCO, PAFO/DAFO contracted project staffs, service providers). The procurement of VDF infrastructure schemes and agriculture inputs using APG grants were carried out by VNCs with DAFO/DST supports. PAFOs/DAFOs carried out procurements related to office renovation and purchasing office furniture, and contracted project staff at PAFOs/DAFOs. NAFRI/DAFO carried out procurements of agriculture inputs for the on-farm demonstrations. NCPO carried out procurement of service providers and specialists, and some good contracts, such as procurement of vehicles, IT equipment, office facilities, agriculture machinery.

164. The Law on Public Procurement No. 30/NA, 2017 and national procurement instructions/regulations to the extent such are consistent with the IFAD Project Procurement Guidelines were applied for project procurement activities. Harmonized standard bidding documents are available in both English and Lao languages, and used for works, goods, and non-consulting services. IFAD's templates (REoI, RFP) are used for consulting services. Procurement planning, procurement documents were assessed at moderate quality. The procurement ratings by supervision missions had some improvement over time. Guidelines for implementation of VDF investments (village infrastructure, APG grants, garden grants) including procurement procedures was developed in the first years of project implementation. Limited interest of contractors for small-scaled infrastructures in remote location of villages resulted in low competition and marginal cost-saving through procurement of VDF activities. Procedures for APG grant transaction and procurement of production inputs are still complicated and could be simplified. For example, APGs could purchase inputs directly from local suppliers with receipt records.

165. IFAD No Objection Tracking Utilities System (NOTUS) was launched for Laos program in early 2019, followed by the ICP Contract Monitoring Tool. A procurement training workshop for project procurement staff was conducted by IFAD in Beijing in December 2019, and an on-line training workshop on NOTUS and ICP - Contract Monitoring Tool was conducted by IFAD in 2021. The project procurement staffs have got used to NOTUS and ICP - Contract Monitoring Tool. However, data and information of a number of contracts (goods, works, services) managed by implementing agencies and grants were not updated regularly and sufficiently in the ICP Contract Monitoring Tool.

166. The setup of decentralized project implementation system from national to village level, remote location and poor access roads of targeting villages, and lack of familiarization with IFAD project procurement framework generated many challenges. Delays were experienced, due to main reasons: (i) the complex set-up resulted in the multiplication of layers of approval; (ii) late development of project guidelines/manuals and trainings to project staff and implementing agencies; (iii) shortcomings in preparation and finalization of the AWPBs, Procurement Plans, bidding documents that required time-consuming revisions during review and approval process; and (iv) the COVID-19 pandemic hampered implementation progress of procurement activities planned for 2020 and 2021.

167. At the first years of project implementation, there were challenges faced by VNCs for selecting contractors and suppliers for VDF infrastructure investments and APG grants at village levels. Difficulties encountered include: (i) VNC members lack of experience and capacities for infrastructure investment management and procurement; (ii) project villages are located in remote areas and VDF infrastructure investments are small-scale that did not attract many potential contractors and suppliers; (iii) Procurement officers at districts are government staff and busy with their own jobs. The challenges and constrains were overcome gradually with specific measures undertaken: (i) develop and apply the VDF Infrastructure Guidelines with simple templates for investment and procurement process and procedures; (ii) on-the-job training and coaching VNC members by NPCO and DAFO for procurement and implementation of VDF activities; and (iii) intensive supports by District Support Teams (DSTs) for implementation of VDF infrastructure investments and APG grants on preparation of proposals, technical trainings, procurement and contract administration.

168. The VDP process, decentralized management and community contribution (labor, local materials) for construction of small-scaled infrastructure helped (i) to increase participation and ownership, (ii) strengthen local empowerment and community cohesiveness, (iii) enhance maintenance capacity. Decentralized management and implementation of small-scaled infrastructure investment at village level require clear implementation guidelines in line with local context, capacity building and intensive supports from relevant technical agencies, and might not be suitable for infrastructure sub-projects with high technical

requirements or extensive machinery use.

ii) M&E and KM

169. The performance of the project M&E improved over the course of the implementation period and especially since the MTR. The project established a well-functioning M&E system, with assigned full-time staff at NPCO, provincial and district levels. The M&E guideline was developed in 2017 and has been updated regularly, especially to incorporate some changes of indicators after the MTR. The M&E system is spreadsheet based and was finalized during 2020. Through the efforts of the AFN M&E team and advisers in 2019/2020, the quality of data increased substantially. The PCR mission found the M&E Data Bank useful, user friendly, easy to check detailed activities and summary of outputs disaggregated by province, districts, gender, youth, ethnicity and household economic status in certain cases. The project also completed baseline, mid-term and endline surveys to assess the project outcome and impact indicators with results updated in the Logframe. An Annual Impact/Outcome survey was planned but was implemented only once, in January 2021. The project has started with Behavioral Change Monitoring and the use of the KOBO tool to track the output and impact progress in FNS activities under WFP. The M&E data and results have been used effectively by the NPCO and MAF to prepare the AWPBs, make decision for 6 month-extension and reallocate funds in order to achieve outcome level objectives, such as adoption of new technologies by farmers and income increase at household level as well as enhancing sustainability of the project interventions.

170. However, at the end of the project the M&E system (which will be used for AFN-II) still has some significant weaknesses as follows: (i) The project used consistently out of date household size of 6.7 member from 2005 census in the project design report for estimating corresponding total number of households' members for both the end-target setting and actual achievement of the outreach. In principle, it would have been better to use the actual size of project households measured directly in the household survey (though there are some unexplained inconsistencies in these data); (ii) Double-counting of total number of beneficiaries across project interventions as the project did not have a good monitoring system in place to record participation of different members from the same households (e.g., male for APG, female for FNS of the same HH) as well as for the same persons in different project activities to meet requirement from IFAD's guidelines. During the PCR mission, the M&E data for a number of interventions was reviewed again by the project staff to improve its accuracy; (iii) lack of baseline data for certain outcome indicators such as MDD-W (Minimum Dietary Diversity for Women); (iv) comparison of results between the AFN and control villages is not always visible in the end-line survey report which results in difficulty for the PCR team to assess impact and attribution from the project; and (v) finally, for certain interventions in the M&E databank, e.g. PPCP, data on benefiting households disaggregated by poor and near poor is not available.

171. Knowledge management: Knowledge management (KM) was a priority for successful implementation of the AFN in the poor and remote areas. However, the project faced difficulty at the beginning to build coordinated action plans and working approaches for KM activities at the district and village level as local staff lacked understanding and information about project instruments and financial resources. The situation improved since MTR thanks to great efforts made by the project in documenting and communicating project activities, approaches, results, and stories to wide range of audiences through website, mass media, purpose related Facebook and WhatsApp groups, workshops, regular PSC and technical meetings and key government and UN events (e.g. World Food Day, National Poverty Eradication Day, yearly National Nutrition Day, and F2F extension trainings). Apart from project guidelines, and posters of PAR techniques and FNS demonstrations displayed in the targets villages and districts, the project has completed and released a number of good KM products such as a compendium of case studies ("AFN Stories from Lao PDR 2021"), "Women as change makers for nutrition in the Hills of Lao PDR" and a "Story Map" - an interactive interface combining GIS data with pictures, video and text information mapped down at village level prepared by AFN and the GAFSP GIS expert. The project has also maintained well its websites and Facebook and WhatsApp groups to update and share project information and good practices among project staff at all levels and public audiences.

E.3. Quality of financial management

172. Quality of Financial Management is rated as Satisfactory (5) reflecting the assessment of Supervision Missions post-MTR.

173. Early in the project life, SM reports noted the potential to improve the capacity of financial management staff. Accounts were initially maintained using a single-entry manual system which was prone to errors. The Financial Manual was not fully applied and some gaps in procedures were noted. Staff were trained in the IPSAS cash basis accounting standards but these were not applied by the time of the 2019 SM.

174. An automated account system (PAS) was operationalized in 2018 but this did not have the capability to import reports from the District level. District reports were submitted in spreadsheet format and input manually to PAS. The 2018 SM report also notes that, as there was no cashier at the District level, the Accountant was performing all financial duties including handling cash and preparing bank reconciliations.

175. An issue of improper categorization of expenditures was noted in the 2019 SM report.

176. By MTR (2020) inconsistencies had been reduced or eliminated and financial management performance was upgraded to Satisfactory. The accounting system was considered as IPSAS compliant. Later SM reports (2021 and 2022) noted the high competence of the NCPO Finance Officer.

177. SM reports (2018, 2019) noted that no certified statements of expenditures were provided for expenditures of the WFP-managed TA grant. This arose because WFP accounting system is not set up to report expenditures by project. No fully satisfactory solution to this problem had been agreed by end of project.

178. Disbursement was slow during the start-up phase and was rated as Unsatisfactory (2) in 2018 and 2019 SM reports. However,

there was a rapid improvement in 2019-2020, so that this rating was increased to Satisfactory (5) in the MTR and subsequently.

179. Quality and Timeliness of Audit, Counterpart Funds and Compliance with Covenants were consistently rated Moderately Satisfactory (4) or Satisfactory (5) throughout the project life, with only minor issues noted in SM reports.

E.4. Project internal rate of return

180. **Internal rate of return**: AFN delivers good value for money. The actual economic internal rate of return (EIRR) of the AFN project is estimated at 16.9%. The estimated economic net present value (ENPV) at a 10% discount rate is LAK 363.9 billion (USD 13.6 million). The Economic Benefit-Cost Ratio (EBCR) of 5.2 indicating a return of approximately 5 dollars for every dollar invested. These indicators are better than the original estimates at project design. However, they are computed based on considerable model and assumption updates, including changes in the review period and rate of discount, and therefore, the apparent above-target performance should be treated with caution. Despite that, the calculations indicate that the project investments yield a positive rate of return.

181. Cost ratios. The grant costs per beneficiary is estimated at USD 1,068 per household, taken into account the GAFSP grants for both IFAD and WFP, while the total project costs per beneficiary is USD1,371 per household. They are just slightly higher than the original ratios calculated based on the project design report, which is acceptable given the increased input prices and serious inflation in Lao PDR in the recent years. Benchmarking against the Southern Laos Food and Nutrition Security and Market Linkages Program (FNML), completed in September 2020, shows that AFN cost per beneficiary is almost the same as FNML.

182. However, project management is very costly in AFN, reflecting the high costs of working in the remote target villages. For the grant finances, the administrative costs per beneficiary is 14% higher than the original estimate, and the actual management costs accounts for 29% of the total grant amount, which is 2% higher than the estimate. For all funding sources, one third of the total project costs is spent on management, or USD 447 per household. Most ratios are not too different from the original estimates, but they are over four times higher than the reference project of FNML, where implementation took place in Attapeu, Xekong and Salavan provinces which have more convenient and affordable access and transportation in the South of Lao PDR.

Table 10: Key Efficiency Ratios

	Unit	Original	Realization		Benchmark (FNML Laos)		
		commitment	Jun-23	% original	Value	%	Ref. project
Project costs per beneficiary HH, grant (*)	USD/HH	994	1,068	7%	1,007	6%	FNML Lao PDR
Project costs per beneficiary HH, total (**)	USD/HH	1,255	1,371	9%	1,332	3%	FNML Lao PDR
Adminitrative costs per beneficiary HH, grant (*)	USD/HH	269	307	14%	-	-	
Adminitrative costs per beneficiary HH, total	USD/HH	429	447	4%	98	355%	FNML Lao PDR
Project management costs, grant (*)	%	27%	29%	-	-	-	
Project management costs, total	%	34%	33%	-	7%	342%	FNML Lao PDR

* GAFSP-IFAD and GAFSP-WEP
** Whole Project

F. Partners' performance

F.1. IFAD's performance (Quality of supervision and implementation support)

183. Performance of IFAD is rated as Satisfactory (5). IFAD assisted GoL to prepare a strong design received approval and funding from GAFSP and that has stood the test of implementation in most respects and has provided strong supervision support (evidenced by the quality of supervision reports) and guidance on modifications where needed. The completion report produced by NPCO largely reproduces the descriptor from the ratings guideline: “IFAD has provided a strong support during design and implementation, as recognized by most partners. The quality and timeliness of supervision mission was satisfactory and their recommendations relevant. Adequate implementation support was provided when required. Loan administration and procurement reviews were managed promptly, and funds’ transfers were mostly timely. IFAD was pro-active in solving most implementation issues.” WFP commented that the several changes in Country Director (CD) for Lao PDR caused some coordination challenges, but the Country Programme Officer (CPO) has provided constant support throughout the project life.

184. SM reports are uniformly of a high standard, reflecting IFAD’s mobilization of well qualified technical expertise. IFAD led the MTR and PCR missions at the request of GoL with satisfactory results.

185. IFAD performance in providing review and No Objection on financial and procurement matters was satisfactory and timely and / or with only minor delays experienced. IFAD performance in administering the GAFSP grant was satisfactory.

186. However, the NCPO’s completion report notes a number of respects in which the project felt that IFAD systems and procedures could improve/do differently based on the experience with AFN:

- It was challenging for the project to develop necessary manuals and guidelines in the inception period and more support from IFAD would have been welcome;
- More IFAD training for project staff would have assisted in operationalizing the project M&E systems at the start of the project;
- New indicators were introduced during the project life, causing some confusion;
- Recommendations were not always consistent from one supervision mission (SM) to the next, depending on the views of the

different consultants mobilized;
- SM recommendations had at times budget implications but no guidance was given on this aspect;
- With a number of changes in the CD during the project lifetime, there were times when communications became difficult and decisions were delayed. The CPS provided strong support throughout but did not have decision-making authority to resolve these situations.

187. Points 1) and 2) above relate to the level of implementation support which IFAD was able to provide during the inception period, and which was constrained by budget resources available to IFAD. In fairness, the project design envisaged that systems would be developed and operationalized by project TA, with IFAD's role being primarily to advise on the required standards rather to actively draft manuals and train staff.

188. On point 3), the SM report of 2018 noted the need to adjust the logframe to the ORMS template. It was agreed that NPCO would draft changes and submit to IFAD for No Objection. Any changes to indicators and targets resulting from this exercise appear to have been minor. A more extensive review of the logframe was undertaken at MTR through discussions between the MTR team, project staff and advisers (see Section C4 above). The result of this exercise was mainly to set clear and measurable indicators and achievable targets, also to drop some activities.

189. While it is always possible that changes in personnel between missions will result in some differences of emphasis, an examination of the SM reports does not reveal any major inconsistencies in advice provided to the project between missions (point d). Changes made at MTR were budgeted with the assistance of the MTR mission. In general, it would be the responsibility of the project to budget for implementation of actions agreed with supervision missions, within the limits of flexibility allowed by the Financing Agreement, the AWPB and the Procurement Plan (point e).

190. Five individuals held the position of CPM / CD during design and implementation of the project (point f). This, understandably, may have caused some disruption to relationships and it would have been challenging for the CDs to achieve full familiarity with the project and context of the project. However, there was a clear assignment of CD responsibilities at all stages of the project and it is not clear that any delays in decision-making resulted from the changes.

F.2. Government's performance

191. Government Performance is rated Satisfactory (5). Project management and M&E systems were responsive and effective. District implementing agencies cooperated fairly well under the District PSCs (some coordination challenges were mentioned in District stakeholder meetings). The project overcame the considerable challenge of COVID-19 to deliver most outputs in a timely and efficient manner. The performance of the Ministry of Finance in managing the Special Account and complying with IFAD's rules and regulations was satisfactory. The PSCs on national, provincial and district levels met as scheduled and were proactive in providing the required directions in steering the project implementation.

192. The project was proactive and effective in implementing agreements made with SM and MTR missions.

193. GoL compliance with covenants of the Financing Agreement was satisfactory with only minor issues noted in SM reports (e.g. lack of health insurance for project personnel) in the early stage of the project.

194. GoL provided counterpart funding in a full and timely manner (rated 6, Highly Satisfactory by the end of the project).

F.3. Other partners' performance (including co-financiers)

195. Implementing Partners include FAO, DAEC and National Agriculture and Forestry Research Institute (NAFRI) which were all assigned responsibilities for activities under the project logframe and AWPB, as well as the decentralised levels of PAFO and DAFO.

196. FAO responsibilities included the development of the ProMIS database as well as assistance to forage development under Component 1, preparation of the SIPs under Component 3 and the planned support to a contract farming review. The ProMIS system was successfully operationalised after some delay. Preparation of the SIPs was somewhat delayed and was curtailed at MTR when it was decided that the SIPs did not meet the needs of PPCP entrepreneurs and farmers, but is not clear whether this reflected any failing of FAO. No progress was made on the contract farming activity.

197. DAEC and NAFRI were primarily responsible for implementation of extension activities under Component 1, including preparation of the PARs, primarily by NAFRI. These activities were completed with good quality although SM reports in the early stages of the project noted implementation delays and failure to fully implement AWPB activities.

198. Both PAFO and DAFO faced challenges of lack of technical and management capacity to implement a complex set of activities, as noted above. However, performance improved during the project and capacity developed is likely to be sustained. The adoption of decentralised implementation arrangements was highly advantageous overall in view of the remote locations and varying contexts and needs of the project target communities.

G. Assessment of sustainability

199. Project Sustainability is rated as moderately satisfactory (4). The most important project benefit streams are expected to continue after project completion. The policy framework is expected to remain consistent and capacity to deliver the national

nutrition programme, particularly at District and village level, has been significantly enhanced. The project has prepared an exit strategy including arrangements for hand-over of responsibilities for ongoing support to FNS and APGs. There is considerable enthusiasm amongst participants to continue with FNS activities, though the capacity to sustain them without project funding and assistance may be limited. The strength of APGs is variable (the project assessed 14% of APG as “strong”, 56% as “medium”, 28% were in the initial stage of development and 2% were inactive) but the strongest groups are likely to continue their activities centred around group marketing, sharing of techniques, some cooperative production activities and / or group revolving funds. On the negative side, the responsible agencies at District level (DAFO, LWU and others), lack resources needed to provide consistent ongoing support to village-level institutions in the absence of project funds.

200. The project has supported the formation of operation and maintenance committees for most infrastructure outputs. In some cases, user fees are collected, while in others, contributions of cash and labour will be mobilised when there is a need. There is an evident intention on the part of the beneficiaries to maintain these investments. However, it is likely that in some cases the resources needed for maintenance and /or emergency repairs will exceed what can be mobilised at village level, while there are very limited state budget funds available for maintenance of village infrastructure.

201. Environmental sustainability of agricultural practices in the project target areas is a significant concern. As observed by the mission team there is widespread clearance of forest land (well beyond the scale and previous extent of traditional slash-and-burn practices) in all target provinces for agriculture production which includes upland rice, maize and fodder for cattle. This is leading to a serious air pollution problem and likely to cause damage to water resources as slope soils lose their water retention capacity, soil erosion, loss of fertility and potentially destabilisation of slopes. AFN agriculture activities are not a contributor to this problem but take place within this context, and future projects should complement agriculture production support with measures to improve sustainable management of land, forests and watersheds.

202. Key actions needed to enhance sustainability of AFN are identified in the Action Plan annexed to the project exit strategy. The most important ongoing actions after project closure will include:

- Ensuring that an adequate budget is provided to DNC to support ongoing operations, including field support by convergence agencies to the Village Nutrition Committees, VNFs and FNS;
- Ensuring that an adequate budget is provided for field operations of DAFO and / or TSC to provide ongoing support to APGs;
- Ensuring that the mandated agencies (e.g. District Office of Public Works for roads, DoH for water supplies) have budget to support the infrastructure maintenance committees;
- Certification of Lead Farmers by DAEC and DAFOs;
- An system of certification of the VNFs, as a framework for them to receive ongoing support;
- Ensure wide continuing availability of the PAR materials, online as well as in hard copy;
- Ensure (through necessary regulation / instruction) that village development planning continues to follow participatory processes with inclusion of women, and addresses village needs including nutrition in an integrated way;
- Strengthen enforcement of existing law on clearing of forest land and steep slopes for agriculture;
- Ensure that lessons learned from AFN are fully taken into account in implementation of AFN-II.

203. Based on lessons learned, MAF could review the mandate, structure and resources of the TSCs to have a strong primary focus on providing in-village and on-farm extension services to smallholders, using the TSC facilities as a resource to support this purpose. However, to be successful, this would require considerably larger resources from State budget than are needed for the actions suggested in the preceding paragraph.

H. Lessons learned and knowledge generated

Climate Change and Environmental Sustainability

Climate Change and Environmental Sustainability are major challenges for upland communities and smallholder agriculture and a more systematic approach to these issues should be integrated in future project designs.

Project monitoring and evaluation

In order to provide accurate, sufficient and reliable data for project performance assessment, quality and timely technical support should be provided to the NPCO staff right at the first year of the projection implementation in (i) finalizing key performance indicators (output, outcome, impact) and setting realistic end-target taking into account of actual total population and household size from the target villages; (ii) Developing good M&E guidelines in line with IFAD’s recent COI guidelines (and consistent with GAFSP requirements), with clear indicator definition, measurement, data sources, frequency of data collection and analysis for specific project indicators, as well as simple excel files with detailed instructions to ensure systematic data collection and entry from the villages to district, province and NPCO; (iii) providing proper training and coaching for M&E staff in using the guidelines and excel files, with especial attention on feasible method of how to record persons receiving direct services promoted or supported by the project and calculation of corresponding number of households reached, to avoid double counting. In addition, agreement should be reached between NPCO and WFP from the beginning to ensure that WFP staff provide M&E data from Component 2 to MAF, PAFO and DAFO in the overall designed templates and formats that are linked to the AFN M&E system.

A private-sector led value chain strategy

A private-sector led value chain strategy - i.e. the Strategic Investment Plan (SIP), contract farming and Public-Private-Community

Partnerships (PPCP) in AFN – requires considerable effort and resources and may not be successful if adopted as a secondary approach in a project primarily focused on agriculture livelihoods and nutrition, as was the case with AFN. A more successful approach may be to expand the size and scope of informal / semi-formal farmer groups like the APGs, integrating training in business, financial literacy and marketing, and facilitating networking with local agri-entrepreneurs and other value chain actors (this is the basis of the "business cluster" approach adopted in Cambodia.

Agricultural extension

In order to achieve more effective and sustainable agricultural extension services reaching out to the target upland and remote villages, high commitment from the GOL (through MAF and PAFO) in decentralizing staffing and budget allocation to local extension system is extremely important. Agriculture extension should be decentralized, demand-led, and directly connected to production activities or value chains that a significant number of farmers already engage in or are ready to begin. Extension methodology should focus on village-based F2F and E2F training using lead farmers, facilitators and veterinaries. DAFO and / or TSC extension staff should see demand-led and village-based work as their primary role. Outcome-based contracts are a possible model to be explored further but these did not succeed in AFN and there are major challenges to this model in poor, remote communities with weak market links. In order to roll out successful climate smart, high nutritional and economic value of technical packages relevant to the needs and conditions of the poor households in different agro-ecological zones, the district extensions services should be technically supported by the AFN in strategic PAR designing, on-farm demonstration, evaluation, and documentation activities. To improve effectiveness of vaccination supported by DAFO for livestock in target remote villages, the project might need to support a refrigerator for each village to store the vaccines and provide good capacity building for village veterinaries to use these properly. In addition, DEAC, NAFRI, PAFO, DAFO together with NPCO should ensure (i) timely preparation of technical guidelines and communication materials right at initial years of project implementation; (ii) greater coordination and synergy between replication of successfully tested models and AFN investments (GG and APG grants, PPCP and infrastructure); (iii) promotion of on-farm demonstration and learning through Farmer Field Schools F2F and E2F training using village lead farmers and enterprises; and (iv) close M&E and learning to assess results and adjust the designed approach and models.

Farmer Nutrition Schools

Farmer Nutrition Schools linked to homestead agriculture production (the Garden Grants) have proved a highly successful model for addressing the problem of persistently lagging nutrition indicators in poor and remote communities. Progress has already been made in replicating and upscaling this model and it should be adopted and promoted as best practice within the NNSPA.

I. Conclusions and recommendations

I1. Summary of findings vs. GAFSP reporting requirements

(i) Collaboration between Technical Assistance and Investment projects

204. There has been good and productive overall cooperation between the IFAD-administered investment project of AFN and the WFP-administered and implemented technical assistance (TA) project. Staff and consultants employed by MAF under the investment project have shared offices and worked closely with WFP-contracted staff at all levels. The project has benefited greatly from the quality of TA mobilized by WFP.

205. Some concerns were expressed during Supervision Missions that WFP TA at District level focused primarily on Component 2 (implemented directly by WFP) rather than provide assistance to all components as agreed. There were also dissatisfactions about project access to WFP vehicles (though this would have been constrained by UN operating rules).

206. WFP role in AFN went beyond technical assistance as WFP were fully responsible for implementation of Component 2. The underlying logic of this is not very clear: in principle, the capacities required for facilitating village planning and farmer nutrition schools (WFP responsibilities) are not different from those needed for facilitation of farmer groups (DAFO responsibilities). Implementation of Component 2 by WFP was of high quality. Costs were probably higher than would have been the case if the component was delivered through the investment project, although this is difficult to assess as WFP accounting system did not facilitate attribution of expenditures to specific project activities and outcomes identified in the project cost-tables.

207. The split between investment and TA responsibilities resulted in some overlaps and even duplication of activity types (not duplication to individual beneficiaries). As noted above, the scope of activities financed by the Garden Grants overlapped considerably with that financed by the APG grants. Agriculture extension training on similar topics was delivered separately under Components 2 and 3. Garden Grants were financed by both TA and investment projects, with slightly different delivery mechanisms (e.g. use of a bank for cash transfers by WFP).

208. Notwithstanding these issues, the overall outcome of the collaboration between the TA and investment projects was satisfactory, as acknowledged by GoL in its evaluation of WFP performance and request for similar arrangements for implementation of AFN-II.

(ii) Value Addition of GAFSP Financing

209. Implementing modality for the investment project was in most respects the same as would be the case for a project financed from IFAD core funds. The fundamental differences were (i) the specific food security and nutrition focus aligned with GAFSP mandate; (ii) grant rather than loan financing; and (iii) the complementary TA project implemented by WFP, which has been discussed above.

210. Governments receiving ODA, including GoL, are increasingly concerned about the debt sustainability impacts of loan-financed development and reluctant to agree to loan financing for projects with a strongly "social" emphasis. It would typically be difficult to agree a project with the strong food security, nutrition and poverty alleviation focus of AFN with loan financing alone, even at concessional rates. Accordingly, AFN-II will scale up AFN through a combination of IFAD loan financing and a further GAFSP grant.

(iii) Alignment between public sector and private sector investment

211. AFN-II did not seek to align public sector investment with private sector investment financed outside the AFN framework. However, the project attempted to mobilize private sector investment to increase productivity of pro-poor value chains through the specific interventions of the SIPs, development of contract farming approaches, and the PPCPs.

212. As discussed above, preparation of the SIPs did not result in actionable business investment plans that could be adopted by farmer groups or by the private sector, while the contract farming activity did not progress. The PPCPs had some limited success in mobilizing investment by private sector firms, incentivized by the matching grants provided by the project. This was achieved in a challenging environment, with smallholder agriculture being primarily subsistence-focused and farmers lacking familiarity with formal market institutions, while local agri-businesses engaged were small-scale, semi-formal, lacking in capital and primarily engaged in buying and trading commodities rather than in value-adding processing. However, valuable lessons were learned which will assist in an effective strategy for linking farmers to markets under AFN-II.

I2. General Summary of Findings

213. AFN is a successful project. Overall project achievement is rated as satisfactory (5).

214. AFN is strongly aligned with GoL's key policies and strategies in the agriculture, food security and nutrition sectors, including the National Nutrition Plan. AFN led the way in adopting a decentralized implementation approach based on coordination and capacity enhancement of the key convergence agencies at District level.

215. AFN substantially achieved its outreach target of 227,800 direct beneficiaries (reported outreach is 92.5% of target) who are mainly poor and near-poor residents of upland villages selected on the basis of priority need for nutrition and agriculture livelihoods support. Around 50% of direct beneficiaries are female and 78% belong to non-Lao ethnic groups.

216. AFN substantially achieved its Project Development Objective (PDO) of Improved and Diversified climate resilient agricultural production and household nutrition enhance life prospects despite the negative influence of the COVID-19 pandemic and increased input prices and disruption to product markets caused by the Ukraine conflict. The PDO indicator based on households achieving income above poverty level was 85% achieved and the indicator based on improved food security was fully achieved.

217. Project Relevance, Effectiveness and Efficiency are rated as Satisfactory (5). Project Sustainability is rated as Moderately Satisfactory (4). Environmental sustainability is a concern in the context of increasing pressure on land and natural resources in the project areas.

I3. General Recommendations

218. The following general recommendations are offered based on the assessment of AFN performance and lessons learned presented above:

- Allocate sufficient State budget resources to ensure ongoing support to key institutions established / strengthened by AFN (see Section G above for details;
- Promote the successful FNS model for replication as an effective tool to address nutrition challenges in poorer and more remote villages;
- Strengthen demand-led extension services to smallholder farmers, with an emphasis on climate resilience and environmental sustainability of production techniques;
- Develop appropriate tools to link smallholder farmers, including those in remote areas to markets by facilitating networks of farmers, local agri-entrepreneurs and other value chain actors;
- Strengthen environmental protection including preventing clearing of forest on steep slopes and watershed areas.

I4. Specific Recommendations for AFN-II

219. The following recommendations are offered for consideration in developing implementation guidelines for AFN Phase II:

- Adopt a stronger focus on water for domestic use and homestead agriculture, including (i) a logframe target; (ii) conservation and management of watersheds; (iii) water, sanitation and hygiene education integrated with nutrition learning content; (iv) prioritize investments in water supply systems where needed;
- Clarify clearly the different purposes of garden grants and APG grants to beneficiaries;
- Strengthen the targeting of APG grants to (i) ensure no household can benefit from individual grant finance from more than one APG; and (ii) additional measures to assist poorer households to overcome barriers to their participation in APGs;
- Simplify village procurement processes and consider measures to overcome difficult access to banking services for remote villages;
- Adapt the APG to a more market-orientated approach, including business planning, financial literacy and marketing training and building networks with buyers and other value-chain actors, similar to the Business Cluster approach of IFAD projects in Cambodia;
- Integrate food processing with nutrition education and cooking classes in the Farmer Nutrition Schools (FNS). Design of FNS buildings should be flexible to accommodate local needs and cultural preferences;

- Rice irrigation schemes should be funded only where it can be verified that (i) the scheme will cost-effectively benefit a high proportion of households including the poor (ii) that the scheme is not highly vulnerable to natural disasters; and (iii) that sustainable operation and maintenance provisions can be made;
- Community fishponds should be dropped as an eligible expenditure of infrastructure grants;
- Adopt a gender-transformative approach across all project components, including an action-orientated gender action plan (GAP);
- Assign more tasks and responsibilities to the LWU on gender mainstreaming with a clear action plan.
- Given the role of ethnicity and women birth order in gender practices and women empowerment, AFN II should consider these variables when planning alleviation measures and /or estimating development impact across different ethnic groups
- Develop tools to identify and address specific climate change vulnerabilities at the village level, ensuring that these are fully understood by beneficiaries and promoting appropriate adaptation measures;
- Adopt appropriate measures to improve sustainable land management, including protection of forested slopes and watersheds, as a complement to agriculture production support activities;
- Further strengthen the M&E system including (i) ensuring a consistent survey instrument, methodology and sampling strategy is used for the household survey at baseline, mid-term and endline; (ii) improve population estimates (number of households and household size) in target villages; (iii) ensure no double-counting of beneficiaries in outreach figures; and (iv) consistent disaggregation of data by poor / non-poor households.

Footnotes

[1] The project's original name was *Strategic Support for Food Security and Nutrition Project*. The name was changed to *Agriculture for Nutrition* in 2017 for simplicity (ref. supervision report no 4379-LA).

[2] WFP implemented field activities until June 2023 and was scheduled to complete Village Nutrition Plans for all 400 AFN project villages.

[3] At design the project was known as Strategic Support for Food Security and Nutrition (SSFSN). The name was changed during the inception period at the request of the Government of Lao PDR,

[4] The mission team comprised Julian Abrams, Team Leader; Do Thanh Lam, Agronomist and M&E specialist; Ilaria Bianchi, IFAD Nutrition specialist; Keo Duangchai, Safeguard specialist (SECAP); Duy Phan Toan, Procurement Specialist; and Nguyen Huong Tra, Economist. Rachele Arcese, Programme Officer and AFN Task Manager joined for the wrap-up meeting.

[5] Household Food Insecurity Access Scale (HFIAS), (http://www.fao.org/fileadmin/user_upload/eufao-fsi4dm/doc-training/hfias.pdf)

[6] DEAC underwent a name change to Department of Technical Extension and Agro-Processing (DTEAP) for a period before the previous name was re-adopted. For the purpose of this report it is referred to as DEAC throughout. Similarly, various changes in terminology were adopted during the project implementation process, for example the terms APG and PPCP do not appear in the design document. For simplicity, the terms used in later project reporting are used here.

[7] The NCPO's completion report identifies the target of FNS and Garden Grants as "young children and their mothers" which is a slightly different group from either pregnant and lactating women or women of reproductive age.

[8]Lao Economic Monitor, October 2022: Tackling Macroeconomic Vulnerabilities (worldbank.org)

[9]Lao PDR: Economy | Asian Development Bank (adb.org)

[10]LaoPDREconomicMonitorOctober2022.pdf (worldbank.org)

[11] Additional Financing document

[12] Ratings descriptor in Project Completion Guidelines

[13] WFP used BCEL bank to handle the cash transfers, but this was not done for grants funded by the IFAD-managed grant through DAFO.

[14] WFP, April 2023, Post Distribution Monitoring (PDM) Report

[15] The project carried out an Infrastructure Assessment Survey in 2022 with 84 infrastructure schemes (roads, irrigation, and water supply). All schemes were found to have O&M committees but 31% did not have any fund available.

[16] Rating descriptor from Project Completion Guidelines

[17] Endline survey report states that the 92% increase is calculated after taking inflation into account, though the method used is not clearly explained.

[18] Reproduced from endline survey report Table 33.

[19] Rating descriptor from Project Completion Guidelines

[20] Rating descriptor from Project Completion Guidelines

[21] The endline survey report states the increase as 207% but does not indicate whether inflation has been taken into account. Here, the endline figure has been deflated by a factor of 1.4 obtained from World Bank WDI data on CPI index for Lao PDR.

[22] Obtained by recalculating data presented in Tables 58 – 60 of Endline Report. Figures in the text of the endline report are for all households so vary slightly from these figures for households receiving production support.

[23] These groups include Hmong, Khmu and Lao Loum.

[24] The Project Design Report states, “While AFN-II is not designed as a climate-focused project, it includes several elements to strengthen environmental sustainability and climate resilience…”

[25] IE the project exceeded the level of achievement required to justify a rating of 5 according to the PCR guidelines, and arguably could be considered close to a 6 for this aspect.

[26] PCR Guidelines

[27] Total 802 Agriculture Production Groups have received APG grants of around LAK 35,77 million per group excluding 15% contribution from the APG members. The total support from the project is LAK 28,686,989,500 (equivalent USD 3,37 million at exchange rate 8,500).

[28] The project funded the construction and rehabilitation of 465 small scale infrastructure schemes, benefitting 30,350 households. The main infrastructure schemes supported are access tracks to production areas (186 schemes/ 757km), irrigation (71 schemes/ 560ha) and drinking water supply (120 schemes/ 9795 HHs). The total cost for these sub-projects is LAK 99,077,779,079 (equivalent USD 11,65 million at exchange rate 8,500), this includes IFAD contribution of 70%, GOL of 15% and beneficiaries 15% (mostly in-kind). Average VDF grant per scheme is LAK 149,4 million (USD 17,577).

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Appendix 1: Project logical framework

Mission Dates:	27 March - 11 April 2023
Document Date:	27/06/2023
Project No.	2000001131
Report No.	6522-LA

Asia and the Pacific Division
Programme Management Department

Strategic Support for Food Security and Nutrition Project - GAFSP funds

Logical Framework

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2022)	Cumulative Result (2022)	Cumulative Result % (2022)	Source	Frequency	Responsibility	
Outreach	1 Persons receiving services promoted or supported by the project							Project Report	Annual	project management	
	Males			113 900	**2 400**	**90 434**	**79.398**				
	Females			113 900	**4 028**	**120 250**	**105.575**				
	Young					**0**					
	Indigenous people			170 850	**4 821**	**147 940**	**86.591**				
	Total number of persons receiving services			227 800	**6 428**	**210 684**	**92.486**				
	1.a Corresponding number of households reached							Project Report	Annual	project management	
	Women-headed households			1 000	**0**	**710**	**71**				
	Non-women-headed households			33 000	**1 071**	**30 847**	**93.5**				
	Households			34 000	**1 071**	**31 557**	**92.8**				
	1.b Estimated corresponding total number of households members										
	Household members		227 800	227 800	**6 428**	**210 684**	**92.5**				
Project Goal Contribute to reduced extreme poverty and malnutrition	incidence malnutrition (height for age) among two year old children reduced from 60% at present to 50% by project completion							LAOS Social Indicator Survey (LSIS) for Children under 5	every 5 years (2022)	Ministry of Health	
	malnutrition	47		42.3	**43.7**	**43.7**	**103.31**				

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2022)	Cumulative Result (2022)	Cumulative Result % (2022)	Source	Frequency	Responsibility	
Development Objective Improved and diversified climate resilient agricultural production and household nutrition enhance life prospects	21,000 HH out of poverty by increasing per capita income from the current level to more than $270/yr by Project-end							Baseline Survey	Mid line and end line	project management	Continued government commitment to multi- sectoral approaches to improved food security and nutrition; Resource access and land security of poor communities is supported and expanded.
	Households		8 000	21 000	**2 863**	**17 846**	**84.981**				
	Indigenous people			15 750	**0**	**10 938**	**69.448**				
	At least 21,000 households with improved food security (measured as a HFIAS score of 7.0 or lower)							Baseline Survey using score of 11 MAHFP	Project start, mid-term and end-project	project management	
	Households		8 000	21 000	**4 179**	**31 663**	**150.8**				
	Indigenous people			15 750	**0**	**20 064**	**127.4**				
Outcome 1. Strengthened public services	14 Technical Sevice Centers improved capacity and support to target farmers							Project M&E	Annual	project management	DAEC, NAFRI and TSC collaboration for technology testing and dissemination;Comprehensive mapping and use of proven/tested tools within country and Asian regionTSC's incentivised to operate sustainablyProgramme financing is disbursed in time to supportfield implementation.
	service centres			14	**0**	**14**	**100**				
	1.2.2 Households reporting adoption of new/improved inputs, technologies or practices							Project M&E	Annual	project management	
	Total number of household members			67 000		**43 604**	**65.1**				
	Households			10 000	**14 122**	**20 630**	**206.3**				
Output 1.1 Build government staff capacities and procedures and technical packages to support and converge community implementation of selected National Nutrition Strategy interventions	At least 9 guidelines and tools developed and implemented on a project-wide level: Finance, procurement, planning M&E, PPCP, APG, Garden Grand, Infrastructure, PAR, and F2F							Project M&E records	Annual	project management	Technical coordination is responsive to the grassroots level needs. Effective mobilization of service providers and experts within govt. and non-state actors
	guidelines/tools			9	**0**	**9**	**100**				

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2022)	Cumulative Result (2022)	Cumulative Result % (2022)	Source	Frequency	Responsibility	
Outcome 2. Community-driven agriculture-based nutrition interventions established	300 Village Development Committees have a basic convergence plan on food and nutrition							Project M&E	Annual	WFP	VDPs are prepared and implemented at field level; Service providers successfully transfer participatory development skills to district administrations; Programme financing is disbursed in time to support field implementation; Convergence with other programmes and nutrition initiatives
	Basic convergence plan		100	300	**140**	**365**	**121.667**				
	1.2.8 Women reporting minimum dietary diversity (MDDW)							Baseline Survey	Project start, mid-term and end-project	project management	
	Women (%)			100		**89**	**89**				
	Women (number)			28 000		**24 367**	**87**				
	Households (%)			80		**86.5**	**108.1**				
	Households (number)			22 400		**17 494**	**78.1**				
	Household members			150 000		**106 463**	**71**				
	Indigenous			21 000		**30 526**	**145.4**				
Output 2.1 Planning for improved nutritional outcomes	12 District Nutrition Committees hold at least two meeting per year to develop, coordinate and implement a convergence plan on food and nutrition							Project M&E	Annual	WFP	
	District			12	**2**	**12**	**100**				
	28,000 beneficiary households participate in VDP preparation							Project M&E	Annual	WFP	
	Households			28 000	**357**	**33 095**	**118.2**				
	Males			14 000	**288**	**17 433**	**124.5**				
	Females			14 000	**69**	**15 662**	**111.9**				
	Indigenous people			21 000	**268**	**20 780**	**99**				
Output 2.2 Women-led improvement in household nutrition	1.1.8 Households provided with targeted support to improve their nutrition							Baseline Survey	Project start, mid-term and end-project	project management	
	Total persons participating			30 000	**4 837**	**34 628**	**115.427**				
	Males			6 000	**1 382**	**7 249**	**120.817**				

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2022)	Cumulative Result (2022)	Cumulative Result % (2022)	Source	Frequency	Responsibility	
	Females			24 000	**3 455**	**27 379**	**114.079**				
	Households			21 000	**3 061**	**22 970**	**109.381**				
	Household members benefitted			140 700	**6 428**	**173 627**	**123.402**				
	Indigenous people			15 750	**3 628**	**26 013**	**165.162**				
	Young					**0**					
Outcome 3. Sustainable and inclusive market-driven partnerships established	10,000HH participating the the project activities increase income by 30%.							Baseline Survey	Project start, mid-term and end-project	project management	Adequate and timely solutions provided to smallholders (aggregation, technology and policy, financing); Contract farming and cooperative laws put in place and implemented by GoL institutions to ensure fair treatments and reasonable benefits for farmer groups/ associations and cooperatives; Productivity improvements in areas with continued growth in market demand; Villages receive fair terms of trade for their products
	Males			33 500	**2 400**	**38 100**	**113.731**				
	Females			33 500	**4 028**	**39 520**	**117.97**				
	Indigenous people			50 250							
	Households			10 000	**8 992**	**19 506**	**195.06**				
Output 3.1 Profitable investment in nutrient-sensitive, climate-adapted agriculture	1.1.2 Farmland under water-related infrastructure constructed/rehabilitated							Project M&E	Annual	project management	
	Hectares of land			300	**1**	**560**	**186.667**				
	2.1.5 Roads constructed, rehabilitated or upgraded							Project M&E	Annual	project management	
	Length of roads	0	200	400	**0**	**757**	**189.3**				
Output 3.2 Linking farmers to markets	At least 7 private or public-private partnership agreement signed and implemented							Project M&E system	Annual	project management	
	Agreement Implemented			7	**0**	**7**	**100**				

Results Hierarchy	Indicators							Means of Verification			Assumptions
	Name	Baseline	Mid-Term	End Target	Annual Result (2022)	Cumulative Result (2022)	Cumulative Result % (2022)	Source	Frequency	Responsibility	
	2000HH benefiting from the PPCP							Project M&E	Annual	project manage-ment	
	Households			2 000	**7**	**2 832**	**141.6**				

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Appendix 2: Summary of amendments to the financing agreement

Mission Dates:	27 March - 11 April 2023
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Appendix 2: Summary of amendments to the financing agreement

The following summary details the amendments issued for the Grant No. 2000001548 and Additional Grant No. 2000003685:

Amendment dated 27 April 2020

Request for reallocation grant proceeds (Grant No. 2000001548) approved as follows:

Category	Original Allocation (USD)	Revised Allocation (USD)
Works	290,000.00	150,000.00
Consultancies, capacity building and training	3,830,000.00	5,870,000.00
Grants and subsidies	12,500,000.00	12,880,000.00
Goods, services and inputs	2,200,000.00	1,820,000.00
Operating costs	2,800,000.00	3,280,000.00
Unallocated	2,380,000.00	
Authorized allocation		
Total	24,000,000	24,000,000

Amendment dated 25 January 2021

Additional financing under the GAFSP allocated totaling USD 1.5 million (Additional Grant No. 2000003685)

Amendment dated 14 January 2022

Six-month extension of project completion date approved from 30 June 2022 to 31 December 2022, with a financial closure date consequently extended from 31 December 2022 to 30 June 2023

Amendment dated 22 November 2022

Request for reallocation of funds amongst categories approved as follows:

Budget reallocation for Grant Number 2000001548

Currency: In US Dollar

No.	Category	Original allocation	First budget reallocation (xxx)	Proposed Increase (+)	Proposed Decrease (-)	Proposed Allocation

1	Civil work	290,000.00	150,000.00	-	- 2,078.36	147,921.64
2	Good & service & inputs	3,830,000.00	1,820,000.00	-	- 378,578.42	1,441,421.58
3	Grant & subsidies	12,500,000.00	12,880,000.00	+ 134,645.32	-	13,014,645.32
4	Consultancies	2,200,000.00	5,870,000.00	+ 180,219.68	-	6,050,219.68
5	Operating cost	2,800,000.00	3,280,000.00	+ 65,791.78	-	3,345,791.78
6	Unallocated	2,380,000.00			-	-
Total		24,000,000.00	24,000,000.00	+ 380,656.78	- 380,656.78	24,000,000.00

Budget reallocation for Grant number 2000003685

Currency: In US Dollar

No.	Category	Original Allocation	Proposed Increase (+)	Proposed Decrease (-)	Proposed Allocation
1	Civil work				
2	Good & service & input	150,000		- 82,056.33	67,943.67
3	Grant & subsidies	800,000		- 506,334.84	293,665.16
4	Consultancies	450,000	+ 51,641.79		501,641.79
5	Operating cost	100,000	+ 536,749.38		636,749.38
Total		1,500,000	+ 588,391.17	- 588,391.17	1,500,000

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Appendix 3: Actual project costs

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Appendix 3: Actual project costs

Table 1A: Disbursement by financier*
(USD)

Financier	Appraisal	Actual									%
		2016	2017	2018	2019	2020	2021	2022	2023(est.)	Total	
GAFSP IFAD	25,500,000	294,596	1,234,534	5,469,012	8,347,856	6,654,869	1,732,750	1,477,138	189,948	25,400,703	100%
GAFSP WFP	8,300,000	44,409	526,497	659,536	1,063,243	1,453,630	1,725,832	2,350,974	475,879	8,300,000	100%
Government	5,477,000	109,054.03	539,775.84	1,389,215.70	471,892.07	1,294,240.51	499,064.84	324,512.81	3,500.00	4,631,256	85%
Beneficiaries	2,900,000	-	-	118,564.59	434,572.13	2,467,058.97	1,126,491.97	301,714.40	-	4,448,402	153%
Private sector	500,000			-	-	247,730	222,638	13,030		483,398	97%
Total	42,677,000	448,059	2,300,807	7,636,328	10,317,563	12,117,529	5,306,777	4,467,369	669,327	43,263,758.70	101%

** both financing*

*Table 1B: Financial performance per disbursement category, GAFSP IFAD**
(USD)

Category	Original	Final	Actual								% final
	allocation*	reallocation	2016	2017	2018	2019	2020	2021	2022	2023 (est.)	Total	reallocation
I. Works	290,000	147,922	-	-	31,880	44,362	71,679	-	-	-	147,922	100%
II. Goods, services and inputs	2,350,000	1,509,365	-	110,761	732,158	364,374	180,091	85,217	34,122	-	1,506,723	99%
III. Grants and subsidies	13,300,000	13,308,310	-	69,164	2,662,112	5,138,591	4,726,567	527,248	171,342	-	13,295,025	99%
IV. Consultancies	4,280,000	6,551,861	198,929	772,363	1,552,562	2,174,376	806,039	478,194	481,993	45,948	6,510,405	99%
V. Operating costs	2,900,000	3,982,541	95,667	282,245	490,299	626,153	870,492	642,092	789,680	144,000	3,940,628	99%
Unallocated	2,380,000	-	-	-	-	-	-	-	-	-	-	0%
Total	25,500,000	25,500,000	294,596	1,234,534	5,469,012	8,347,856	6,654,869	1,732,750	1,477,138	189,948	25,400,703	99.6%

** both financing*

Table 1C: Financial performance per activities, GAFSP WFP [1]
(estimate, WFP will send a separate financial report after June 2023 as agreed with GAFSP)

(USD)

Description	Appraisal		Actual								
	First financing	Additional financing	2016	2017	2018	2019	2020	2021	2022	2023 (est.)	Total
Output 2, 3 [2]	6,000,000	2,300,000	27,977	163,682	191,544	518,921	485,827	412,479	818,906	215,794	2,835,130
Nutrition center [3]			-	-	72,750	100,500	116,250	-	-	-	289,500
Garden grants [4]			-	-	-	-	128,880	489,960	477,360	-	1,096,200
Salary & associated costs			14,662	173,833	217,758	351,050	479,943	569,816	776,218	157,120	2,740,400
CTA			-	168,000	151,200	50,400	184,800	184,800	184,800	84,000	1,008,000
Other OC			1,770	20,982	26,284	42,372	57,930	68,777	93,690	18,965	330,770
Total		8,300,000	44,409	526,497	659,536	1,063,243	1,453,630	1,725,832	2,350,974	475,879	8,300,000
%			0.5%	6%	8%	13%	18%	21%	28%	5.7%	100%

[1] This is only an estimate from both financing.
[2] Costs for hiring consultancies, organizing workshops and training
[3] Building of farmer nutrition schools, cooking utensils, etc.
[4] Estimate USD120 per grant, actually a fixed amount in local currency LAK

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Appendix 4: Project internal rate of return (detailed analysis)

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Appendix 4: Project internal rate of return (detailed analysis)

I5. EFA summary tables

(iv) *Table A1: Beneficiaries and phasing*[\a]

	TOTAL	2017	2018	2019	2020	2021	2022	2023
		PY 1	PY 2	PY 3	PY 4	PY 5	PY 6	PY7
Total beneficiary HH	31,557	2,604	5,836	7,258	6,661	5307	3406	485
	Beneficiary HH phasing in by intervention							
Garden grants	22,970	-	2,667	4,927	7,315	4,083	3,978	-
APG grants/ Total HH	13,915	19	766	4,368	6,748	1,268	746	-
Incl.: Poultry	3,292	-	186	1,033	1,596	300	176	-
Pig	2,167	-	122	680	1,051	197	116	-
Goat	1,732	-	98	544	840	158	93	-
Cardamom	1,716	-	97	539	832	156	92	-
Galangal	1,184	-	67	372	574	108	63	-
Forage	1,676	-	95	526	813	153	90	-
Fish	703	-	40	221	341	64	38	-
Vegetables	553	-	31	174	268	50	30	-
Infrastructure/ Total HH	28,241	-	511	16,177	10,885	476	192	-
Incl.: Road	15,361	-	496	7,928	6,937	-	-	-
Water supply	7,865	-	-	4,850	2,294	459	262	-

\a Actual achievement

(v) Table A2: Project Cost and Indicators for Log Frame

(actual achievement based on AFN final revised logframe)

Total Project Total Costs (USD m): **38.78**		Grant: **33.8**	PCO 1
Beneficiaries \1	People **210,684**	Households **31,557**	Villages **400**
Cost per beneficiary	USD **205** x person	USD **1,371** x HH	Participation rate: **95%**

Components and Cost (USD M)		**Outcomes, Indicators and Achievement**	
Component 1	4.66	OC 1: Strengthened public services 14/ 14\b TSC improved capacity and support to target farmers 20,630/ 10,000 HH reporting adoption of new/ improved inputs, technologies or practices	Output 1.1: Build government staff capacities and procedures and technical packages to support and converge community implementation of selected National Nutrition Strategy interventions 9/ 9 guidelines and tools developed and implemented on a project-wide level
Component 2	8.30	OC 2: Community-driven agriculture-based nutrition interventions established 365/ 300 Village Development Committees have a basic convergence plan on food and nutrition. 34,750/ 28,000 women reporting minimum dietary diversity (MDDW)	Output 2.1: Planning for improved nutritional outcomes 12/ 12 District Nutrition Committees hold at least two meeting per year to develop, coordinate and implement a convergence plan on food and nutrition 33,095/ 28,000 beneficiary HH participate in VDP preparation Output 2.2: Women-led improvement in household nutrition 22,970/ 21,000 HH provided with targeted support to improve their nutrition
Component 3	20.27	OC 3: Sustainable and inclusive market-driven partnerships established 19,506/ 10,000 HHs participating the project activities increase income by 30%.	Output 3.1: Profitable investment in nutrient-sensitive, climate-adapted agriculture 560/ 300 ha farmland under water-related infrastructure constructed/rehabilitated 757/ 400 km roads constructed, rehabilitated or upgraded Output 3.2: Linking farmers to markets 7/7 private or public-private partnership agreement signed and implemented 2,832/ 2,000 HHs benefiting from the PPCP

\a Actual achievement against logframe target, for example 14/ 14 TSC means 14 Technical Service Centers improved against the target of 14.

(vi) Table A3: Main Assumptions of Illustrative Farm Models

(financial terms)

Model/ Key parameters	Unit	Price (LAK)	Scenario	
			WOP	WP
1. Integrated home garden (represented by vegetables and poultry)				
Vegetable: 0.02 ha, 2 crop cycles per year				
Poultry: 2 cycles per year, 30% mortality rate, broiler and egg production				
Main production				
Adult chickens/ducks sales	hd	70,000	15	20
Adult chickens/ducks consumed	hd	70,000	5	10
Eggs consumed	pc	1,200	50	100
Eggs sales	pc	1,200	-	20
Fresh vegetable sale	l.sum/yr	-	400,000	1,000,000
Fresh vegetable Consumed	l.sum/yr	-	1,500,000	2,500,000
Investment costs				
Poultry house improvement	l.sum/yr	-	100,000	500,000
Land preparation	l.sum/yr	-	25,000	100,000
Parent chicken/ ducks [\1]	hd	100,000	15	20
Operating inputs				
Feed (rice bran, broken rice)	kg	2,500	-	100
Veterinary service	visit	160,000	-	-
Seeds	bag	50,000	2	3
Fertilizer (manure)	l.sum/yr	100,000	-	1
Chemicals application	l.sum	1	-	-
Family labour (poultry)	wd/yr	48,000	15	25
Family labour (vegetables)	wd/yr	48,000	20	30
[\1] *Only first year. Farmers produce own parent chickens/ ducks from eggs in subsequent years.*				
2. Poultry raising				
3 cycles per years, 30% mortality rate, broller and egg production				
Main production				
Adult Chickens sales	kg	55,000	180	350
Adult Chickens consumed	kg	55,000	72	100
Eggs consumed	pc	1,500	168	200
Eggs sales	pc	1,500	-	220
Investment on infrastructure			-	
Chicken house improvement	l.sum/4yrs	-	-	3,000,000
Parent chicken [\2]	hd	100,000	20	50
Operating inputs			-	
Feed (rice bran)	kg	2,000	140	350
Animal Feed	kg	7,500	50	125
Corn	kg	1,500	136	340
Feed (foraging and HH waste)	kg	100	100	250
vacinneted chicks	hd	2,000	-	770
Veterinary Service	visit	50,000	-	2
Skilled (paid) labour	wd/yr	80,000	-	-
Family labour	wd/yr	48,000	90	150
[\2] *Only first year. Farmers produce own parent chickens from eggs in subsequent years.*				
3. Pig raising				

2 cycle per years, 30% mortality rate, no piglet				
Main production				
Adult pig (40kg) sales	kg	35,000	100	200
Piglet sales	kg	100,000	100	360
Investment on infrastructure				
Pig pen improvement [3]	l.sum/yr	-	1,000,000	-
Pig pen improvement [4]	l.sum	-	-	3,000,000
Pig pen maintenance [5]	l.sum/yr			
Pig pen big repair [6]	l.sum/yr			
Operating inputs				
Feed (rice bran)	kg	2,000	500	2,500
Corn/Casava	kg	1,500	500	2,000
Feed (foraging and HH waste)	kg	100	100	6,000
Animal Feed	kg	10,000	-	1,000
Piglet	hd	1,000,000	2	8
Veterinary expense	l.sum/yr	1	100,000	500,000
Skilled (paid) labour	prs.day	80,000	-	-
Family labour	prs.day	48,000	90	120
[3] *Local material, every year*				
[4] *Local material, only first year*				
[6] *Every forth year*				
[5] *Every second and third year*				
4. Goat raising				
2 cycle per years, 20% mortality rate				
Main production				
Adult goat sales (25kg)	kg	45,000	40	500[6]
Investment on infrastructure				
Goat pen improvement (local material)	l.sum/yr	1	500,000	1,500,000
Fence	l.sum/yr	1	-	3,000,000
Land preparation	l.sum/yr	1	-	300,000
Operating inputs				
Grass stem	log	500	-	500
Grass seed	kg	30,000	-	40
Suppliment	year	1	10,000	200,000
Adult goat	hd	1,200,000	2	3
Veterinary expense	l.sum/yr	1	100,000	500,000
Skilled (paid) labour	prs.day	80,000	-	-
Family labour	prs.day	48,000	90	120
[6] *At full development from third year, only 75 in first year and 300 in second.*				
5. Cardamom production				
1 ha, 1 cycle per year				
Main production				
Fresh cardamon sale	kg	40,000	200	500
Investment on infrastructure				
Land preparation, first year	l.sum/yr	1	-	500,000
Land preparation	l.sum/yr	1	100,000	100,000
Cardamon young plant, first year	plant	50,000	1,000	2,000
Skilled (paid) labour, first year	prs.day	80,000	-	10
Family labour, first year	prs.day	48,000	-	100
Operating inputs				
Family labour, subsequent years	prs.day	48,000	50	50
6. Galangal production				
1 ha, 1 cycle per year				
Main production				
Dry galangal sale	kg	25,000	140	300
Fresh galangal sale	kg	2,000	80	200
Galangal consumption	kg	2,000	20	50
Investment on infrastructure				
Land preparation, first year	l.sum/yr	1	-	500,000
Land preparation	l.sum/yr	1	100,000	100,000
Galangal Varieties, first year	plant	10,000	160	300
Skilled (paid) labour, first year	prs.day	80,000	-	1
Family labour, first year	prs.day	48,000	-	100
Operating inputs				

Family labour	prs.day	48,000	50	50
7. Forage production				
0.2 ha, 1 cycle per year				
Main production				
Fresh grass sales	kg	1,000	-	-
Fresh grass Consumed	kg	1,000	700	1,500
Fresh grass seeds sales	kg	30,000	25	50
Investment on infrastructure				
Land preparation	l.sum/yr	1	100,000	100,000
Fence [7]	l.sum/yr	1	-	3,000,000
Operating inputs				
Seeds	kg	30,000	20	40
Fertilizer	l.sum/yr	1	-	-
Chemicals application	l.sum/yr	1	-	-
Logistic and packaging	l.sum/yr	1	-	-
Skilled (paid) labour	prs.day	80,000	-	-
Family labour	prs.day	48,000	15	15
[7] *Only first year*				
8. Fish raising				
1 cycle per year, 20% mortality rate				
Main production				
Fish sales (tilapia)	kg	25,000	150	300
Consumed (40%)	kg	30,000	50	150
Investment on infrastructure				
Land preparation	l.sum/yr	1	100,000	500,000
Operating inputs				
Feed (rice bran)	kg	2,000	300	600
Feed (foraging and HH waste)	kg	100	100	300
Animal feed	kg	9,000	-	200
Fingerling	hd	500	1,000	2,000
Skilled (paid) labour	prs.day	80,000	-	-
Family labour	prs.day	48,000	90	90
9. Vegetable production (under transparent transparent plastic house)				
0.2ha, 2 cycles per year				
Main production				
Fresh vegetable sale	kg	6,000	1,000	2,300
Consumed	kg	6,000	80	200
Investment on infrastructure				
Land preparation	time	1	500,000	1,500,000
Equipment	time	1	100,000	200,000
Operating inputs				
Seeds	kg	25,000	5	10
Manure	kg	1,000	250	500
Fertilizer	kg	50,000	-	15
Skilled (paid) labour	prs.day	80,000	-	-
Family labour	prs.day	48,000	50	100

(vii) Table A4: Results of illustrative production models

(in financial terms)

No.	Model	NPV (LAK)	NPV (USD)	B/C ratio	Return to family labour (per person-day)				
					WOP (LAK)	WOP (USD)\2	WP (LAK)	WP (USD)\2	Change over WOP
1	Integrated home garden	5,013,012	550	1.52	82,845.97	9.09	87,345	9.58	5%
2	Poultry raising	24,196,811	2,654	1.54	134,230.56	14.72	132,450	14.53	-1%
3	Pig raising	28,059,692	3,078	1.20	121,516.67	13.33	124,750	13.68	3%
4	Goat raising	80,006,208	8,776	4.58	122,384.72	13.42	141,479	15.52	16%
5	Cardamom production	25,007,533	2,743	1.51	152,900.00	16.77	276,900	30.37	81%
6	Galangal production	22,530,729	2,471	6.79	134,820.00	14.79	146,620	16.08	9%
7	Forage production	6,251,352	686	2.91	151,000.00	16.56	165,333	18.14	9%
8	Fish raising	21,075,865	2,312	2.03	79,188.89	8.69	83,000	9.10	5%
9	Vegetable production\1	23,933,089	2,625	1.84	117,210.00	12.86	118,000	12.94	1%

No.	Model	Family labour demand (person-day/year)			Total return to family labour				
		WOP	WP	Change over WOP	WOP (LAK)	(USD)\2	WP (LAK)	WP (USD)\2	Change over WOP
1	Integrated home garden	35	55	57%	2,899,609.09	318.06	4,804,000	526.95	66%
2	Poultry raising	90	150	67%	12,080,750.00	1,325.13	19,867,500	2,179.26	64%
3	Pig raising	90	120	33%	10,936,500.00	1,199.62	14,970,000	1,642.05	37%
4	Goat raising	90	120	33%	11,014,625.00	1,208.19	16,977,500	1,862.26	54%
5	Cardamom production	50	55	10%	7,645,000.00	838.58	15,229,500	1,670.52	99%
6	Galangal production\3	50	55	10%	6,741,000.00	739.42	8,064,100	884.55	20%
7	Forage production\3	15	15	0%	2,265,000.00	248.45	2,480,000	272.03	9%
8	Fish raising	90	90	0%	7,127,000.00	781.76	7,470,000	819.38	5%
9	Vegetable production	50	100	100%	5,860,500.00	642.84	11,800,000	1,294.34	101%

\1 *Under transparent plastic house*
\2 *Exchange rate: 9,117*
\3 *100% in first year when young plants are grown, then stay the same*

(viii) Table A5: Farm Model – Integrated home garden

(in financial terms)

Currency: LAK

YIELDS AND INPUTS (Per Year)			WOP	WP									
ITEMS	**UNIT**	**PRICE**	**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Main production													
Adult chickens/ducks sales	Head	70,000	15	20	20	20	20	20	20	20	20	20	20
Adult chickens/ducks consumed	Head	70,000	5	10	10	10	10	10	10	10	10	10	10
Eggs consumed	Number	1,200	50	100	100	100	100	100	100	100	100	100	100
Eggs sales	Number	1,200	0	20	20	20	20	20	20	20	20	20	20
Fresh vegetable sale	lumpsum	1	400,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Fresh vegetable Consumed	lumpsum	1	1,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000
Investment costs													
Poultry house improvement	lumpsum	1	100,000	500,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Land preparation	lumpsum	1	25,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Operating inputs													
Feed (rice bran, broken rice)	kg	2,500	0	100	100	100	100	100	100	100	100	100	100
Parent Chicken	Head	100,000	15	20	0	0	0	0	0	0	0	0	0
Veterinary Service	Vet visit	160,000	0	0	0	0	0	0	0	0	0	0	0
Family labour (poultry)	person-day	48,000	15	25	25	25	25	25	25	25	25	25	25
Seeds	Small bag	50,000	2	3	3	3	3	3	3	3	3	3	3
Fertilizer (manure)	lumpsum	100,000	0	1	1	1	1	1	1	1	1	1	1
Chemicals application	lumpsum	1	0	0	0	0	0	0	0	0	0	0	0
Family labour (vegetables)	person-day	48,000	20	30	30	30	30	30	30	30	30	30	30
Financial Analysis			WOP	WP									
ITEMS			**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Total revenue			3,360,000	5,744,000	5,744,000	5,744,000	5,744,000	5,744,000	5,744,000	5,744,000	5,744,000	5,744,000	5,744,000
Total costs			3,405,000	5,740,000	3,340,000	3,340,000	3,340,000	3,340,000	3,340,000	3,340,000	3,340,000	3,340,000	3,340,000
Net income				4,000	2,404,000	2,404,000	2,404,000	2,404,000	2,404,000	2,404,000	2,404,000	2,404,000	2,404,000
Income (before family labour costs)				2,644,000	5,044,000	5,044,000	5,044,000	5,044,000	5,044,000	5,044,000	5,044,000	5,044,000	5,044,000
Average Income (before family labour costs)				**4,804,000**									
Return to family labour				**48,073**	**91,709**	**91,709**	**91,709**	**91,709**	**91,709**	**91,709**	**91,709**	**91,709**	**91,709**
Return to family labour (Average)				**87,345**									
Incremental revenue				2,384,000	2,384,000	2,384,000	2,384,000	2,384,000	2,384,000	2,384,000	2,384,000	2,384,000	2,384,000
Incremental cost				2,335,000	1,435,000	1,435,000	1,435,000	1,435,000	1,435,000	1,435,000	1,435,000	1,435,000	1,435,000
Incremental net income				49,000	949,000	949,000	949,000	949,000	949,000	949,000	949,000	949,000	949,000
Discount rate	10.0%												
NPVb	14,648,648												
NPVc	9,635,636												
B/C ratio	1.52												
Increamental NPV	5,013,012												

(ix) Table A6: Farm Model – Poultry raising

(in financial terms)

Currency: LAK													
YIELDS AND INPUTS (Per Year)			**WOP**	**WP**									
ITEMS	**UNIT**	**PRICE**	**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Main production													
Adult Chickens sales	kg	55,000	180	350	350	350	350	350	350	350	350	350	350
Adult Chickens consumed	kg	55,000	72	100	100	100	100	100	100	100	100	100	100
Eggs consumed	Number	1,500	168	200	200	200	200	200	200	200	200	200	200
Eggs sales	Number	1,500	0	220	220	220	220	220	220	220	220	220	220
Investment on infrastructure			0										
Chicken house improvement	lumpsum	1	0	1,500,000	500,000	500,000	500,000	1,500,000	500,000	500,000	500,000	500,000	500,000
Operating inputs			0										
Feed (rice bran)	kg	2,000	140	350	350	350	350	350	350	350	350	350	350
Animal Feed	kg	7,500	50	125	125	125	125	125	125	125	125	125	125
Corn	kg	1,500	136	340	340	340	340	340	340	340	340	340	340
Feed (foraging and HH waste)	kg	100	100	250	250	250	250	250	250	250	250	250	250
Parent Chicken	Head	100,000	20	50	0	0	0	0	0	0	0	0	50
vacinneted chicks	Head	2,000	0	770	770	770	770	770	770	770	770	770	770
Veterinary Service	Vet visit	50,000	0	2	2	2	2	2	2	2	2	2	2
Skilled (paid) labour	person-day	80,000	0	0	0	0	0	0	0	0	0	0	0
Family labour	person-day	48,000	90	150	150	150	150	150	150	150	150	150	150
Financial Analysis			**WOP**	**WP**									
ITEMS			**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Total revenue			14,112,000	25,380,000	25,380,000	25,380,000	25,380,000	25,380,000	25,380,000	25,380,000	25,380,000	25,380,000	25,380,000
Total costs			7,189,000	17,512,500	11,512,500	11,512,500	11,512,500	12,512,500	11,512,500	11,512,500	11,512,500	11,512,500	16,512,500
Net income				7,867,500	13,867,500	13,867,500	13,867,500	12,867,500	13,867,500	13,867,500	13,867,500	13,867,500	8,867,500
Income (before family labour costs)				15,067,500	21,067,500	21,067,500	21,067,500	20,067,500	21,067,500	21,067,500	21,067,500	21,067,500	16,067,500
Average Income (before family labour costs)				**19,867,500**									
Return to family labour				**100,450**	**140,450**	**140,450**	**140,450**	**133,783**	**140,450**	**140,450**	**140,450**	**140,450**	**107,117**
Return to family labour (average)				**132,450**									
Incremental revenue				11,268,000	11,268,000	11,268,000	11,268,000	11,268,000	11,268,000	11,268,000	11,268,000	11,268,000	11,268,000
Incremental cost				10,323,500	6,323,500	6,323,500	6,323,500	7,323,500	6,323,500	6,323,500	6,323,500	6,323,500	11,323,500
Incremental net income				944,500	4,944,500	4,944,500	4,944,500	3,944,500	4,944,500	4,944,500	4,944,500	4,944,500	(55,500)
Discount rate	10.0%												
NPVb	69,236,982												
NPVc	45,040,171												
B/C ratio	1.54												
Increamental NPV	24,196,811												

(x) Table A7: Farm Model – Pig raising

(in financial terms)

Currency: LAK														
YIELDS AND INPUTS (Per Year)			**WOP**	**WP**										
ITEMS	**UNIT**	**PRICE**	**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Main production														
Adult pig (40kg) sales	Kg	35,000	100	200	200	200	200	200	200	200	200	200	200
Piglet sales	Kg	100,000	100	200	360	360	360	360	360	360	360	360	360
Investment on infrastructure														
Pig pen improvement (local material)	lumpsum	1	1,000,000	3,000,000	100,000	100,000	500,000	100,000	100,000	500,000	100,000	100,000	500,000
Operating inputs														
Feed (rice bran)	kg	2,000	500	1,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Corn/Casava	Kg	1,500	500	1,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Feed (foraging and HH waste)	kg	100	100	3,000	6000	6000	6000	6000	6000	6000	6000	6000	6000
Animal Feed	kg	10,000	0	200	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Piglet	Head	1,000,000	2	8	8	8	8	8	8	8	8	8	8
Veterinary expense	lumpsum	1	100,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Skilled (paid) labour	person-day	80,000	0	0	0	0	0	0	0	0	0	0	0
Family labour	person-day	48,000	90	120	120	120	120	120	120	120	120	120	120
Financial Analysis			**WOP**	**WP**										
ITEMS			**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Total revenue			13,500,000	27,000,000	43,000,000	43,000,000	43,000,000	43,000,000	43,000,000	43,000,000	43,000,000	43,000,000	43,000,000
Total costs			9,180,000	24,060,000	32,960,000	32,960,000	33,360,000	32,960,000	32,960,000	33,360,000	32,960,000	32,960,000	33,360,000
Net income				2,940,000	10,040,000	10,040,000	9,640,000	10,040,000	10,040,000	9,640,000	10,040,000	10,040,000	9,640,000
Income (before family labour costs)				8,700,000	15,800,000	15,800,000	15,400,000	15,800,000	15,800,000	15,400,000	15,800,000	15,800,000	15,400,000
Average Income (before family labour costs)				**14,970,000**									
Return to family labour				**72,500**	**131,667**	**131,667**	**128,333**	**131,667**	**131,667**	**128,333**	**131,667**	**131,667**	**128,333**
Return to family labour (average)				**124,750**									
Incremental revenue				13,500,000	29,500,000	29,500,000	29,500,000	29,500,000	29,500,000	29,500,000	29,500,000	29,500,000	29,500,000
Incremental cost				14,880,000	23,780,000	23,780,000	24,180,000	23,780,000	23,780,000	24,180,000	23,780,000	23,780,000	24,180,000
Incremental net income				(1,380,000)	5,720,000	5,720,000	5,320,000	5,720,000	5,720,000	5,320,000	5,720,000	5,720,000	5,320,000
Discount rate	10.0%													
NPVb	166,719,275													
NPVc	138,659,583													
B/C ratio	1.20													
Increamental NPV	28,059,692													

(xi) Table A8: Farm Model – Goat raising

(in financial terms)

Currency: LAK													
YIELDS AND INPUTS (Per Year)			**WOP**	**WP**									
ITEMS	**UNIT**	**PRICE**	**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Main production													
Adult goat sales (25kg)	kg	45,000	40	75	300	500	500	500	500	500	500	500	500
Investment on infrastructure													
Goat pen improvement (local material)	lumpsum	1	500,000	1,500,000	500,000	500,000	500,000	1,500,000	500,000	500,000	500,000	500,000	500,000
Fence	lumpsum	1	0	3,000,000	0	0	0	3,000,000	0	0	0	0	0
Land preparation	lumpsum	1	0	300,000	0	0	0	300,000	0	0	0	0	0
Operating inputs													
Grass stem	log	500	0	500	0	0	0	500	0	0	0	0	0
Grass seed	kg	30,000	0	40	0	0	0	40	0	0	0	0	0
Suppliment	year	1	10,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Adult goat	Head	1,200,000	2	3									
Veterinary expense	lumpsum	1	100,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Skilled (paid) labour	person-day	80,000	0	0	0	0	0	0	0	0	0	0	0
Family labour	person-day	48,000	90	120	120	120	120	120	120	120	120	120	120
Financial Analysis			**WOP**	**WP**									
ITEMS			**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Total revenue			1,800,000	3,375,000	13,500,000	22,500,000	22,500,000	22,500,000	22,500,000	22,500,000	22,500,000	22,500,000	22,500,000
Total costs			7,330,000	16,310,000	6,960,000	6,960,000	6,960,000	12,710,000	6,960,000	6,960,000	6,960,000	6,960,000	6,960,000
Net income				(12,935,000)	6,540,000	15,540,000	15,540,000	9,790,000	15,540,000	15,540,000	15,540,000	15,540,000	15,540,000
Income (before family labour costs)				(7,175,000)	12,300,000	21,300,000	21,300,000	15,550,000	21,300,000	21,300,000	21,300,000	21,300,000	21,300,000
Average Income (before family labour costs)				**16,977,500**									
Return to family labour				**(59,792)**	**102,500**	**177,500**	**177,500**	**129,583**	**177,500**	**177,500**	**177,500**	**177,500**	**177,500**
Return to family labour (average)				**141,479**									
Incremental revenue				1,575,000	11,700,000	20,700,000	20,700,000	20,700,000	20,700,000	20,700,000	20,700,000	20,700,000	20,700,000
Incremental cost				8,980,000	2,030,000	2,030,000	2,030,000	7,780,000	2,030,000	2,030,000	2,030,000	2,030,000	2,030,000
Incremental net income				(7,405,000)	9,670,000	18,670,000	18,670,000	12,920,000	18,670,000	18,670,000	18,670,000	18,670,000	18,670,000
Discount rate	10.0%												
NPVb	102,368,159												
NPVc	22,361,951												
B/C ratio	4.58												
Increamental NPV	80,006,208												

(xii) Table A9: Farm Model – Cardamom production

(in financial terms)

Currency: LAK													
YIELDS AND INPUTS (Per Year)			**WOP**	**WP**									
ITEMS	**UNIT**	**PRICE**	**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Main production													
Fresh Cardamon sale	kg	40,000	200	500	500	500	500	500	500	500	500	500	500
Investment on infrastructure													
Land preparation	lumpsum	1	100,000	500,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Cardamon young plant	plant	50,000	1,000	2,000	0	0	0	0	0	0	0	0	0
Operating inputs													
Skilled (paid) labour	person-day	80,000	0	10	0	0	0	0	0	0	0	0	0
Family labour	person-day	48,000	50	100	50	50	50	50	50	50	50	50	50
Financial Analysis			**WOP**	**WP**									
ITEMS			**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Total revenue			8,000,000	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000
Total costs			52,500,000	106,100,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000
Net income				(86,100,000)	17,500,000	17,500,000	17,500,000	17,500,000	17,500,000	17,500,000	17,500,000	17,500,000	17,500,000
Income (before family labour costs)				(81,300,000)	19,900,000	19,900,000	19,900,000	19,900,000	19,900,000	19,900,000	19,900,000	19,900,000	19,900,000
Average Income (before family labour costs)				**9,780,000**									
Return to family labour				**(813,000)**	**398,000**	**398,000**	**398,000**	**398,000**	**398,000**	**398,000**	**398,000**	**398,000**	**398,000**
				276,900									
Incremental revenue				12,000,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000
Incremental cost				53,600,000	0	0	0	0	0	0	0	0	0
Incremental net income				(41,600,000)	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000
Discount rate	10.0%												
NPVb	73,734,805												
NPVc	48,727,273												
B/C ratio	1.51												
Increamental NPV	25,007,533												

(xiii) Table A10: Farm Model – Galangal production

(in financial terms)

Currency: LAK														
YIELDS AND INPUTS (Per Year)			**WOP**	**WP**										
ITEMS	**UNIT**	**PRICE**	**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Main production														
Dry galangal sale	kg	25,000	140	300	300	300	300	300	300	300	300	300	300
Fresh galangal sale	kg	2,000	80	200	200	200	200	200	200	200	200	200	200
Galangal consumption	kg	2,000	20	50	50	50	50	50	50	50	50	50	50
Investment on infrastructure														
Land preparation	lumpsum	1	100,000	500,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Operating inputs														
Galangal Varieties	plant	10,000	160	300	0	0	0	0	0	0	0	0	0
Skilled (paid) labour	person-day	80,000	0	1	0	0	0	0	0	0	0	0	0
Family labour	person-day	48,000	50	100	50	50	50	50	50	50	50	50	50
Financial Analysis			**WOP**	**WP**										
ITEMS			**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Total revenue			3,700,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000
Total costs			4,100,000	8,380,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000
Net income				(380,000)	5,500,000	5,500,000	5,500,000	5,500,000	5,500,000	5,500,000	5,500,000	5,500,000	5,500,000
Income (before family labour costs)				4,420,000	7,900,000	7,900,000	7,900,000	7,900,000	7,900,000	7,900,000	7,900,000	7,900,000	7,900,000
Average Income (before family labour costs)				**7,552,000**									
Return to family labour				**44,200**	**158,000**	**158,000**	**158,000**	**158,000**	**158,000**	**158,000**	**158,000**	**158,000**	**158,000**
Return to family labour (average)				**146,620**									
Incremental revenue				4,300,000	4,300,000	4,300,000	4,300,000	4,300,000	4,300,000	4,300,000	4,300,000	4,300,000	4,300,000
Incremental cost				4,280,000	0	0	0	0	0	0	0	0	0
Incremental net income				20,000	4,300,000	4,300,000	4,300,000	4,300,000	4,300,000	4,300,000	4,300,000	4,300,000	4,300,000
Discount rate	10.0%													
NPVb	26,421,639													
NPVc	3,890,909													
B/C ratio	6.79													
Increamental NPV	22,530,729													

(xiv) Table A11: Farm Model – Forage production

(in financial terms)

Currency: LAK													
YIELDS AND INPUTS (Per Year)			**WOP**	**WP**									
ITEMS	**UNIT**	**PRICE**	**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Main production													
Fresh grass sales	kg	1,000	0	0	0	0	0	0	0	0	0	0	0
Fresh grass Consumed	kg	1,000	700	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Fresh grass seeds sales	kg	30,000	25	50	50	50	50	50	50	50	50	50	50
Investment on infrastructure													
Land preparation	lumpsum	1	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Fence	lumpsum	1	0	3,000,000	0	0	0	0	0	0	0	0	0
Operating inputs													
Seeds	kg	30,000	20	40	0	0	0	0	0	0	0	0	0
Fertilizer	lumpsum	1	0	0	0	0	0	0	0	0	0	0	0
Chemicals application	lumpsum	1	0	0	0	0	0	0	0	0	0	0	0
Logistic and packaging	lumpsum	1	0	0	0	0	0	0	0	0	0	0	0
Skilled (paid) labour	person-day	80,000	0	0	0	0	0	0	0	0	0	0	0
Family labour	person-day	48,000	15	15	15	15	15	15	15	15	15	15	15

Financial Analysis			**WOP**	**WP**									
ITEMS			**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Total revenue			1,450,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Total costs			1,420,000	5,020,000	820,000	820,000	820,000	820,000	820,000	820,000	820,000	820,000	820,000
Net income				(2,020,000)	2,180,000	2,180,000	2,180,000	2,180,000	2,180,000	2,180,000	2,180,000	2,180,000	2,180,000
Income (before family labour costs)				(1,300,000)	2,900,000	2,900,000	2,900,000	2,900,000	2,900,000	2,900,000	2,900,000	2,900,000	2,900,000
Average Income (before family labour costs)				**2,480,000**									
Return to family labour				**(86,667)**	**193,333**	**193,333**	**193,333**	**193,333**	**193,333**	**193,333**	**193,333**	**193,333**	**193,333**
Return to family labour (average)				**165,333**									
Incremental revenue				1,550,000	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000
Incremental cost				3,600,000	0	0	0	0	0	0	0	0	0
Incremental net income				(2,050,000)	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000	1,550,000

Discount rate	10.0%
NPVb	9,524,079
NPVc	3,272,727
B/C ratio	2.91
Increamental NPV	6,251,352

(xv) Table A12: Farm Model – Fish raising

(in financial terms)

Currency: LAK													
YIELDS AND INPUTS (Per Year)			**WOP**	**WP**									
ITEMS	**UNIT**	**PRICE**	**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Main production													
Fish sales (tilapia)	Kg	25,000	150	300	300	300	300	300	300	300	300	300	300
Consumed (40%)	Kg	30,000	50	150	150	150	150	150	150	150	150	150	150
Investment on infrastructure													
Land preparation	lumpsum	1	100,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Operating inputs													
Feed (rice bran)	kg	2,000	300	600	600	600	600	600	600	600	600	600	600
Feed (foraging and HH waste)	kg	100	100	300	300	300	300	300	300	300	300	300	300
Animal feed	kg	9,000	0	200	200	200	200	200	200	200	200	200	200
Fingerling	Head	500	1,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Skilled (paid) labour	person-day	80,000	0	0	0	0	0	0	0	0	0	0	0
Family labour	person-day	48,000	90	90	90	90	90	90	90	90	90	90	90
Financial Analysis			**WOP**	**WP**									
ITEMS			**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Total revenue			5,250,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000	12,000,000
Total costs			5,530,000	8,850,000	8,850,000	8,850,000	8,850,000	8,850,000	8,850,000	8,850,000	8,850,000	8,850,000	8,850,000
Net income				3,150,000	3,150,000	3,150,000	3,150,000	3,150,000	3,150,000	3,150,000	3,150,000	3,150,000	3,150,000
Income (before family labour costs)				7,470,000	7,470,000	7,470,000	7,470,000	7,470,000	7,470,000	7,470,000	7,470,000	7,470,000	7,470,000
Average Income (before family labour costs)				**7,470,000**									
Return to family labour				**83,000**	**83,000**	**83,000**	**83,000**	**83,000**	**83,000**	**83,000**	**83,000**	**83,000**	**83,000**
Return to family labour (average)				**83,000**									
Incremental revenue				6,750,000	6,750,000	6,750,000	6,750,000	6,750,000	6,750,000	6,750,000	6,750,000	6,750,000	6,750,000
Incremental cost				3,320,000	3,320,000	3,320,000	3,320,000	3,320,000	3,320,000	3,320,000	3,320,000	3,320,000	3,320,000
Incremental net income				3,430,000	3,430,000	3,430,000	3,430,000	3,430,000	3,430,000	3,430,000	3,430,000	3,430,000	3,430,000
Discount rate	10.0%												
NPVb	41,475,828												
NPVc	20,399,963												
B/C ratio	2.03												
Increamental NPV	21,075,865												

(xvi) Table A13: Farm Model – Vegetable production under transparent transparent plastic house

(in financial terms)

Currency: LAK													
YIELDS AND INPUTS (Per Year)			**WOP**	**WP**									
ITEMS	**UNIT**	**PRICE**	**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Main production													
Fresh vegetable sale	kg	6,000	1,000	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300
Consumed	kg	6,000	80	200	200	200	200	200	200	200	200	200	200
Investment on infrastructure													
Land preparation	time	1	500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Equipment	time	1	100,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Operating inputs													
Seeds	kg	25,000	5	10	10	10	10	10	10	10	10	10	10
Manure	kg	1,000	250	500	500	500	500	500	500	500	500	500	500
Fertilizer	kg	50,000	0	15	15	15	15	15	15	15	15	15	15
Skilled (paid) labour	person-day	80,000	0	0	0	0	0	0	0	0	0	0	0
Family labour	person-day	48,000	50	100	100	100	100	100	100	100	100	100	100

Financial Analysis			**WOP**	**WP**									
ITEMS			**1-10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Total revenue			6,480,000	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000
Total costs			3,375,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000
Net income				7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000	7,000,000
Income (before family labour costs)				11,800,000	11,800,000	11,800,000	11,800,000	11,800,000	11,800,000	11,800,000	11,800,000	11,800,000	11,800,000
Average Income (before family labour costs)				**11,800,000**									
Return to family labour				**118,000**	**118,000**	**118,000**	**118,000**	**118,000**	**118,000**	**118,000**	**118,000**	**118,000**	**118,000**
Return to family labour (average)				**118,000**									
Incremental revenue				8,520,000	8,520,000	8,520,000	8,520,000	8,520,000	8,520,000	8,520,000	8,520,000	8,520,000	8,520,000
Incremental cost				4,625,000	4,625,000	4,625,000	4,625,000	4,625,000	4,625,000	4,625,000	4,625,000	4,625,000	4,625,000
Incremental net income				3,895,000	3,895,000	3,895,000	3,895,000	3,895,000	3,895,000	3,895,000	3,895,000	3,895,000	3,895,000

Discount rate	10.0%
NPVb	52,351,712
NPVc	28,418,623
B/C ratio	2
Increamental NPV	23,933,089

(xvii) Table A14: Infrastructure model – Rural road

(in financial terms)

Unit: 1Km																						
Currency: LAK																						
Increase area of production and volume after track construction (25%)																						
Increased yields (5%) (maize - cassava - cardamom - garlic etc)																						
Transport saving per HH per year (reduce the transportation cost): 200,000 LAK																						
Time Saving per HH per year: 1,000,000 LAK																						
		USD	LAK																			
Actual construction costs	km	6,564	59,844,045																			
			WoP	**WP**																		
Parameters	**Unit**	**Price**	**1-20**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Beneficiary (4 km)	HH		80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Sales (1 km)																							
Maize	ton	3,500,000	70	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Cassava	ton	2,000,000	70	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Garlic, Cardamom etc	ton	10,000,000	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Transport saving (4 km)	HH	200,000	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Time Saving (4 km)	HH	1,000,000	0	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Cost																							
Construction	Km	59,850,000		4				4					4					4					4
O&M	Km	7,500,000			4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Incremental Benefit				161,000,000	161,000,000	161,000,000	161,000,000	161,000,000	161,000,000	161,000,000	161,000,000	161,000,000	161,000,000	161,000,000	161,000,000	161,000,000	161,000,000	161,000,000	161,000,000	161,000,000	161,000,000	161,000,000	161,000,000
Incremental Cost				239,400,000	30,000,000	30,000,000	30,000,000	269,400,000	30,000,000	30,000,000	30,000,000	30,000,000	269,400,000	30,000,000	30,000,000	30,000,000	30,000,000	269,400,000	30,000,000	30,000,000	30,000,000	30,000,000	269,400,000
Net Incremental				**(78,400,000)**	**131,000,000**	**131,000,000**	**131,000,000**	**(108,400,000)**	**131,000,000**	**131,000,000**	**131,000,000**	**131,000,000**	**(108,400,000)**	**131,000,000**	**131,000,000**	**131,000,000**	**131,000,000**	**(108,400,000)**	**131,000,000**	**131,000,000**	**131,000,000**	**131,000,000**	**(108,400,000)**
NPV (LAK)		591,069,842																					
Discount rate		10.0%																					

(xviii) Table A15: Infrastructure model - Drinking Water Supply

(in financial terms)

Unit: 65 families per scheme																							
Currency: LAK																							
Increase volume of production after year 3: 5%																							
Water saving per HH per year: 200 000 LAK							13.33																
Time Saving per HH per year: 500 000 LAK (45 min/day/HH at 30,000 LAK/day)																							
Average health cost saving per HH per year: 200 000 LAK (water borne diseases decreased such as diarrhea)																							
			USD	LAK																			
Actual construction costs	scheme		17,870	162,914,001																			
				WoP	WP																		
Parameters	Unit	SCF	Price	1-20	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Vegetable sales	LS	1.000	20,000,000	1	1	1	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Water saving from existing system	HH	1	200,000	0	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
Time Saving	HH	1	500,000	0	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
Health cost saving	HH	1	200,000	0	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
Cost																								
Construction	LS	1.000	162,915,000		1									1										
O&M per scheme	LS	1	2,000,000			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Incremental Benefit					58,500,000	58,500,000	59,500,000	59,500,000	59,500,000	59,500,000	59,500,000	59,500,000	59,500,000	59,500,000	59,500,000	59,500,000	59,500,000	59,500,000	59,500,000	59,500,000	59,500,000	59,500,000	59,500,000	59,500,000
Incremental Cost					162,915,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	164,915,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Net Incremental					(104,415,000)	56,500,000	57,500,000	57,500,000	57,500,000	57,500,000	57,500,000	57,500,000	57,500,000	(105,415,000)	57,500,000	57,500,000	57,500,000	57,500,000	57,500,000	57,500,000	57,500,000	57,500,000	57,500,000	57,500,000
Discount rate			10.0%																					
NPV			278,697,228																					

(xix) Table A16: Key parameters of AFN nutrition model

GDP per capita (current USD)	USD	1920	World Development Indicators
GDP per capita growth		5.3%	World Development Indicators
Employment to population ratio, 15+, modeled ILO estimate		77.84%	World Development Indicators
Share of population 15+		66.50%	Inside Lao Social Indicator Book
Share of population of working age and working		52%	Computed
GDP per employed person	USD	3709	Computed
Official Exchange rate		15,033	Ministry of Finance
SCF		0.9852	Computed
GDP per employed person	LAK	54,936,562	Computed
Total percentage loss of adult yearly income		19.80%	Economic consequences
Out of pocket expenditures (OOP)			
Average, per child under 2	410,000		World Bank (2016), "Maternal and Child Health Out-of-Pocket Expenditure and Service Readiness in Lao PDR"
Assumed, for stunted children	488,016		Assumption
Assumed, for healthy children	331,984		Assumption
Project area			
Project target: village	village	400.00	
Benefited households per village	HH	83.42	
Participating households	HH	33,366.00	
Average household size	pax.	6.00	Results of Population and housing census
Population growth	%/year	1.46	
Population			
Crude Birth Rate (CBR) \1		23	Inside Lao Social Indicator Book (LSIS-II), 2017-18
Birth mortality rate per 1000		46	Inside Lao Social Indicator Book (LSIS-II), 2017-18

(xx) Table A17: AFN nutrition benefit model

(in economic terms)
(extract)

		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
		1	2	3	4	5	6	7	8	9	10	11	12	13
Project target: village					400									
Benefited households per village					79									
Participating households					31,557									
Average household size	Rural areas	6												
Population at project time					189,342									
Population growth	1.46				1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46
Population					189,342	192,106	194,911	197,757	200,644	203,574	206,546	209,561	212,621	215,725
Crude Birth Rate (CBR) [1]	Rural areas	23												
Birth					4,355	4,418	4,483	4,548	4,615	4,682	4,751	4,820	4,890	4,962
Birth mortality rate per 1000		46												
Children under 2					4,155	8,370	8,492	8,616	8,742	8,869	8,999	9,130	9,264	9,399
Without project	0.35%													
Stunting rate, % in average of the 4 target provinces	47.0%	46.84%	46.67%		46.51%	46.35%	46.18%	46.02%	45.86%	45.70%	45.54%	45.38%	45.22%	45.06%
Stunting children (under 2)					1,932	3,879	3,922	3,965	4,009	4,053	4,098	4,143	4,189	4,235
Non-stunted children (under 2)					2,222	4,491	4,570	4,651	4,733	4,816	4,901	4,987	5,074	5,163
OOP stunted children (under 2)					942,946,758	1,893,011,728	1,913,927,425	1,935,074,218	1,956,454,659	1,978,071,331	1,999,926,843	2,022,023,835	2,044,364,974	2,066,952,958
OOP non-stunted children (under 2)					737,780,339	1,490,855,271	1,517,194,734	1,543,969,279	1,571,185,817	1,598,851,365	1,626,973,050	1,655,558,108	1,684,613,889	1,714,147,853
Earnings in adulthood, stunted children														
Earnings in adulthood, non-stunted children														
With project	0.55%													
Stunting rate, % in average of the 4 target provinces	47.0%	46.74%	46.48%		46.23%	45.97%	45.72%	45.47%	45.22%	44.97%	44.72%	44.48%	44.23%	43.99%
Stunting children (under 2)					19.21	38.48	39	39.18	40	40	40	41	41	41
Non-stunted children (under 2)					4,135	8,331	8,453	8,577	8,702	8,829	8,959	9,090	9,223	9,357
OOP stunted children (under 2)					9,372,806	18,778,601	18,947,979	19,118,884	19,291,330	19,465,332	19,640,904	19,818,059	19,996,812	20,177,177
OOP non-stunted children (under 2)					1,372,864,660	2,765,843,793	2,806,296,398	2,847,340,254	2,888,983,999	2,931,236,398	2,974,106,342	3,017,602,854	3,061,735,088	3,106,512,330
Earnings in adulthood, stunted children														
Earnings in adulthood, non-stunted children														
With project														
Savings on health care costs					298,489,631	599,244,605	605,877,782	612,584,358	619,365,146	626,220,966	633,152,647	640,161,030	647,246,963	654,411,304
Incremental earnings														
Total additional benefits (LAK)					298,489,631	599,244,605	605,877,782	612,584,358	619,365,146	626,220,966	633,152,647	640,161,030	647,246,963	654,411,304
Total additional benefits (USD)	0	0	0		34,479	67,337	63,489	43,284	38,760	39,189	39,623	40,062	40,505	40,954
Discount rate					10%									
NPV (LAK)					72,028,183,613									
NPV(USD)					3,432,907									

[1] *CBR: number of births in the last 3 years, divided by the total population, per 1000 population*

(extract continued)

2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46
218,875	222,070	225,312	228,602	231,940	235,326	238,762	242,248	245,784	249,373	253,014	256,708	260,456	264,258	268,117	272,031	276,003
5,034	5,108	5,182	5,258	5,335	5,412	5,492	5,572	5,653	5,736	5,819	5,904	5,990	6,078	6,167	6,257	6,348
9,536	9,675	9,816	9,960	10,105	10,253	10,402	10,554	10,708	10,865	11,023	11,184	11,348	11,513	11,681	11,852	12,025
44.91%	44.75%	44.59%	44.44%	44.28%	44.13%	43.97%	43.82%	43.66%	43.51%	43.36%	43.21%	43.06%	42.90%	42.75%	42.61%	42.46%
4,282	4,330	4,377	4,426	4,475	4,524	4,574	4,625	4,676	4,727	4,780	4,832	4,886	4,940	4,994	5,050	5,105
5,254	5,346	5,439	5,534	5,631	5,729	5,828	5,930	6,033	6,137	6,244	6,352	6,462	6,574	6,687	6,802	6,920
2,089,790,515	2,112,880,401	2,136,225,406	2,159,828,346	2,183,692,074	2,207,819,469	2,232,213,446	2,256,876,949	2,281,812,957	2,307,024,480	2,332,514,563	2,358,286,283	2,384,342,752	2,410,687,117	2,437,322,557	2,464,252,291	2,491,479,568
1,744,167,580	1,774,680,763	1,805,695,218	1,837,218,878	1,869,259,802	1,901,826,171	1,934,926,294	1,968,568,608	2,002,761,680	2,037,514,208	2,072,835,028	2,108,733,108	2,145,217,557	2,182,297,624	2,219,982,701	2,258,282,323	2,297,206,175
					85,131,205,954	170,905,058,869	172,793,371,774	174,702,548,460	176,632,819,447	178,584,417,806	180,557,579,180	182,552,541,817	184,569,546,596	186,608,837,059	188,670,659,439	190,755,262,688
					122,087,628,414	246,706,200,850	251,064,845,740	255,495,487,927	259,999,270,953	264,577,356,076	269,230,922,540	273,961,167,849	278,769,308,046	283,656,577,994	288,624,231,665	293,673,542,428
43.75%	43.51%	43.27%	43.03%	42.79%	42.56%	42.32%	42.09%	41.86%	41.63%	41.40%	41.17%	40.95%	40.72%	40.50%	40.27%	40.05%
42	42	42	43	43	44	44	44	45	45	46	46	46	47	47	48	48
9,494	9,633	9,774	9,917	10,062	10,209	10,358	10,510	10,664	10,820	10,978	11,138	11,301	11,466	11,634	11,804	11,977
20,359,169	20,542,803	20,728,093	20,915,054	21,103,701	21,294,050	21,486,116	21,679,915	21,875,461	22,072,771	22,271,861	22,472,746	22,675,444	22,879,970	23,086,340	23,294,572	23,504,682
3,151,944,005	3,198,039,674	3,244,809,036	3,292,261,934	3,340,408,355	3,389,258,429	3,438,822,437	3,489,110,808	3,540,134,126	3,591,903,126	3,644,428,702	3,697,721,908	3,751,793,957	3,806,656,228	3,862,320,264	3,918,797,778	3,976,100,655
					846,196,528	1,695,371,413	1,710,663,155	1,726,092,823	1,741,661,663	1,757,370,928	1,773,221,887	1,789,215,816	1,805,354,006	1,821,637,758	1,838,068,384	1,854,647,209
					227,181,156,378	457,690,848,551	464,384,931,300	471,176,854,058	478,068,046,246	485,059,958,169	492,154,061,310	499,351,848,647	506,654,834,965	514,064,557,173	521,582,574,627	529,210,469,460
661,654,920	668,978,688	676,383,495	683,870,236	691,439,820	699,093,161	706,831,187	714,654,834	722,565,050	730,562,791	738,649,027	746,824,736	755,090,908	763,448,544	771,898,655	780,442,264	789,080,406
					20,808,518,537	41,774,960,245	42,237,376,941	42,704,910,494	43,177,617,508	43,655,555,214	44,138,781,476	44,627,354,798	45,121,334,330	45,620,779,877	46,125,751,906	46,636,311,552
661,654,920	668,978,688	676,383,495	683,870,236	691,439,820	21,507,611,698	42,481,791,432	42,952,031,775	43,427,475,543	43,908,180,299	44,394,204,241	44,885,606,212	45,382,445,706	45,884,782,874	46,392,678,532	46,906,194,170	47,425,391,958
41,407	41,865	42,329	42,797	43,271	1,345,965	2,658,548	2,687,976	2,717,729	2,747,812	2,778,228	2,808,981	2,840,073	2,871,510	2,903,294	2,935,431	2,967,923

(xxi) Table A18: AFN nutrition benefit model - Key assumption comparison between design and PCR

Parameter	Original assumptions (design)	Updated assumption (PCR)
Persons per household	6.7	6
Number of households per village	85	83
Population growth rate	2.1 per cent per annum	1.46 per cent per annum
Crude birth rate	27 per 1,000 persons	23 per 1,000 persons
Infant mortality	Commences at 54 per 1,000 births	Commences at 46 per 1,000 births
WOP stunting rate	Baseline assumed at 60%	Actual baseline 47%
WP stunting rate	Reduction assumed at 2.5% per year, as result of AFN activities	Actual reduction at 0.55% per year, failing to meet logframe target
Income earning age	Age assumed at 15 years.	Age assumed at 15 years.
Working life	Assumed at 40 years.	Assumed at 40 years.
GDP per capita	USD 1,177	USD 1,920
GDP growth rate	3% – while current and forecast rates are higher, 3% is assumed as a better estimator for the timeframe concerned.	5.3%
Impact on annual earning	15% - This could be considered the impact of the combination of better cognitive function, school attendance, school completion and health.	15% - This could be considered the impact of the combination of better cognitive function, school attendance, school completion and health.
Expenditure on health care per capita	USD 32 per year. The proposition is the annual health care costs and less for non-stunted individuals from better development and immune systems and function.	USD410 per year, average per CU2
Proportion of per capita health expenditure saved	25%, consultant's estimate	25% - consultant's estimate
Discount rate	6%	10%
Period of analysis	80 years – sufficient to capture the life time earning of all individuals born during the AFN implementation	20 years

(xxii) Table A19: AFN Economic Analysis – EIRR and ENPV

(Extracts)

		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Aggregation incremental cost																					
	Integrated home garden grants		-	9,087,135,750	20,604,664,500	35,792,946,250	35,250,308,000	40,736,340,500	32,875,812,500	32,875,812,500	32,875,812,500	32,875,812,500	38,129,802,500	42,582,002,500	47,286,362,500	40,919,322,500	40,712,472,500	32,875,812,500	32,875,812,500	32,875,812,500	32,875,812,500
	Poultry raising		-	1,898,909,556	11,733,355,360	23,985,210,923	20,762,533,725	21,568,100,615	21,707,685,910	22,262,298,601	20,985,291,228	20,863,649,285	21,421,524,404	24,761,318,140	26,979,768,905	21,871,739,412	21,385,171,639	20,689,808,500	20,689,808,500	20,689,808,500	20,689,808,500
	Pig raising		-	874,802,860	5,065,177,298	17,704,041,189	13,294,748,599	10,467,664,545	12,388,358,322	17,217,918,652	13,295,869,065	12,922,272,371	9,823,996,338	12,388,358,322	17,217,918,652	12,849,893,068	12,922,272,371	10,663,919,874	12,100,210,280	17,310,773,269	14,135,792,601
	Goat raising		-	874,802,860	5,065,177,298	17,704,041,189	13,294,748,599	10,467,664,545	12,388,358,322	17,217,918,652	13,295,869,065	12,922,272,371	9,823,996,338	12,388,358,322	17,217,918,652	12,849,893,068	12,922,272,371	10,663,919,874	12,100,210,280	17,310,773,269	14,135,792,601
	Cardamom		-	4,880,392,670	27,156,121,250	41,952,725,778	7,883,233,000	4,637,927,301	-	-	-	-	4,880,392,670	27,156,121,250	41,952,725,778	7,883,233,000	4,637,927,301	-	-	-	-
	Galangal		-	257,325,934	1,431,846,723	2,212,019,617	415,655,138	244,541,588	-	-	-	-	-	257,325,934	1,431,846,723	2,212,019,617	415,655,138	244,541,588	-	-	-
	Forage		-	339,528,211	1,889,247,423	2,918,645,057	548,435,378	322,659,931	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fish culture		-	129,942,717	852,987,033	1,969,997,803	2,179,892,536	2,303,379,500	2,303,379,500	2,303,379,500	2,303,379,500	2,303,379,500	2,303,379,500	2,303,379,500	2,303,379,500	2,303,379,500	2,303,379,500	2,303,379,500	2,303,379,500	2,303,379,500	2,303,379,500
	Vegetables under greenhouse		-	143,887,947	944,528,143	2,181,414,599	2,413,834,876	2,550,574,250	2,550,574,250	2,550,574,250	2,550,574,250	2,550,574,250	2,550,574,250	2,550,574,250	2,550,574,250	2,550,574,250	2,550,574,250	2,550,574,250	2,550,574,250	2,550,574,250	2,550,574,250
	Access tracks: # of line (4Km)		-	1,414,854,000	22,817,664,000	4,946,472,000	3,300,000,000	4,714,854,000	25,937,664,000	5,186,472,000	3,300,000,000	3,300,000,000	4,714,854,000	25,937,664,000	5,186,472,000	3,300,000,000	3,300,000,000	4,714,854,000	25,937,664,000	5,186,472,000	3,300,000,000
	Water supply: # of facility (65HH)		-	-	148,000,000	218,000,000	240,000,000	240,000,000	240,000,000	240,000,000	240,000,000	240,000,000	12,114,874,350	5,856,494,625	2,005,184,025	240,000,000	240,000,000	240,000,000	240,000,000	240,000,000	240,000,000
Total			-	19,901,582,506	97,708,769,028	151,585,514,407	99,583,389,851	98,253,706,776	110,391,832,803	99,854,374,156	88,846,795,609	87,977,960,277	105,763,394,350	156,181,596,842	164,132,150,986	106,980,054,416	101,389,725,071	84,946,810,085	108,797,659,310	98,467,593,289	90,231,159,952
Aggregation incremental Benefit																					
	Integrated home garden grants		-	6,262,756,080	17,832,534,560	35,009,910,160	44,597,774,080	53,939,072,800	53,939,072,800	53,939,072,800	53,939,072,800	53,939,072,800	53,939,072,800	53,939,072,800	53,939,072,800	53,939,072,800	53,939,072,800	53,939,072,800	53,939,072,800	53,939,072,800	53,939,072,800
	Poultry raising		-	2,000,877,139	13,134,420,249	30,334,316,977	33,566,307,056	35,467,777,560	35,467,777,560	35,467,777,560	35,467,777,560	35,467,777,560	35,467,777,560	35,467,777,560	35,467,777,560	35,467,777,560	35,467,777,560	35,467,777,560	35,467,777,560	35,467,777,560	35,467,777,560
	Pig raising		-	1,625,606,235	12,597,662,172	25,180,380,703	44,095,886,212	48,752,812,817	50,855,832,201	50,583,738,604	50,583,738,604	50,855,832,201	50,583,738,604	50,039,551,410	49,495,364,216	48,951,177,023	48,406,989,829	47,862,802,635	47,318,615,442	46,774,428,248	46,230,241,054
	Goat raising		-	151,583,218	1,969,505,992	18,448,696,616	31,889,976,404	37,927,800,379	40,252,995,909	44,202,340,522	44,202,340,522	44,202,340,522	41,076,152,092	41,076,152,092	44,202,340,522	43,658,655,577	43,658,655,577	41,076,152,092	40,532,467,147	43,658,655,577	44,202,340,522
	Cardamom		-	1,076,235,846	7,064,768,555	16,316,283,829	18,054,713,196	19,077,480,000	19,077,480,000	19,077,480,000	19,077,480,000	19,077,480,000	19,077,480,000	19,077,480,000	19,077,480,000	19,077,480,000	19,077,480,000	19,077,480,000	19,077,480,000	19,077,480,000	19,077,480,000
	Galangal		-	255,906,079	1,679,852,263	3,879,666,559	4,293,028,226	4,536,220,500	4,536,220,500	4,536,220,500	4,536,220,500	4,536,220,500	4,536,220,500	4,536,220,500	4,536,220,500	4,536,220,500	4,536,220,500	4,536,220,500	4,536,220,500	4,536,220,500	4,536,220,500
	Forage		-	146,552,138	962,016,773	2,221,805,088	2,458,528,796	2,597,800,000	2,597,800,000	2,597,800,000	2,597,800,000	2,597,800,000	2,597,800,000	2,597,800,000	2,597,800,000	2,597,800,000	2,597,800,000	2,597,800,000	2,597,800,000	2,597,800,000	2,597,800,000
	Fish culture		-	263,682,783	1,730,901,125	3,997,565,357	4,423,488,630	4,674,071,250	4,674,071,250	4,674,071,250	4,674,071,250	4,674,071,250	4,674,071,250	4,674,071,250	4,674,071,250	4,674,071,250	4,674,071,250	4,674,071,250	4,674,071,250	4,674,071,250	4,674,071,250
	Vegetables under greenhouse		-	261,810,707	1,718,612,192	3,969,183,717	4,392,083,050	4,640,886,600	4,640,886,600	4,640,886,600	4,640,886,600	4,640,886,600	4,640,886,600	4,640,886,600	4,640,886,600	4,640,886,600	4,640,886,600	4,640,886,600	4,640,886,600	4,640,886,600	4,640,886,600
	Access tracks: # of line (4Km)		-	960,150,000	16,322,550,000	17,602,750,000	17,602,750,000	17,602,750,000	17,602,750,000	17,602,750,000	17,602,750,000	17,602,750,000	17,602,750,000	17,602,750,000	17,602,750,000	17,602,750,000	17,602,750,000	17,602,750,000	17,602,750,000	17,602,750,000	17,602,750,000
	Water supply: # of facility (65HH)		-	-	4,329,000,000	6,449,390,000	7,127,365,000	7,138,200,000	7,138,200,000	7,138,200,000	7,138,200,000	7,138,200,000	7,138,200,000	7,138,200,000	7,138,200,000	7,138,200,000	7,138,200,000	7,138,200,000	7,138,200,000	7,138,200,000	7,138,200,000	7,138,200,000
Total			-	13,005,160,225	79,341,823,881	163,409,949,007	212,501,900,651	236,354,871,906	240,783,086,820	244,460,337,835	244,460,337,835	244,732,431,432	241,334,149,406	240,789,962,212	243,371,963,448	242,284,091,310	241,739,904,116	238,613,213,437	237,525,341,299	240,107,342,535	240,106,840,286
Sum																					
Aggregation incremental cost			-	19,901,582,506	97,708,769,028	151,585,514,407	99,583,389,851	98,253,706,776	110,391,832,803	99,854,374,156	88,846,795,609	87,977,960,277	105,763,394,350	156,181,596,842	164,132,150,986	106,980,054,416	101,389,725,071	84,946,810,085	108,797,659,310	98,467,593,289	90,231,159,952
Aggregation incremental benefit			-	13,005,160,225	79,341,823,881	163,409,949,007	212,501,900,651	236,354,871,906	240,783,086,820	244,460,337,835	244,460,337,835	244,732,431,432	241,334,149,406	240,789,962,212	243,371,963,448	242,284,091,310	241,739,904,116	238,613,213,437	237,525,341,299	240,107,342,535	240,106,840,286
Aggregation incremental net benefit			-	(6,896,422,281)	(18,366,945,147)	11,824,434,600	112,918,510,800	138,101,165,130	130,391,254,017	144,605,963,680	155,613,542,227	156,754,471,155	135,570,755,056	84,608,365,370	79,239,812,462	135,304,036,894	140,350,179,045	153,666,403,352	128,727,681,989	141,639,749,246	149,875,680,334
Nutrition Benefit		0	-	-	298,489,631	599,244,605	605,877,782	612,584,358	619,365,146	626,220,966	633,152,647	640,161,030	647,246,963	654,411,304	661,654,920	668,978,688	676,383,495	683,870,236	691,439,820	21,507,611,698	42,481,791,432
Project cost		(3,589,038,844)	(18,830,147,307)	(64,264,790,280)	(89,320,290,923)	(107,836,919,129)	(50,642,900,192)	(63,225,770,926)	(10,695,384,411)												
Project benefit: Incremental net benefit (LAK)		(3,589,038,844)	(18,830,147,307)	(71,161,212,561)	(107,388,746,439)	(95,413,239,924)	62,881,488,390	75,487,978,563	120,315,234,752	145,232,184,645	156,246,694,874	157,394,632,186	136,218,002,019	85,262,776,674	79,901,467,382	135,973,015,582	141,026,562,540	154,350,273,588	129,419,121,809	163,147,360,944	192,357,471,765
	Aggregate incremental benefit (LAK)	-	-	6,108,737,944	60,974,878,733	175,234,383,607	325,420,411,451	374,456,037,036	371,174,340,837	389,066,301,515	400,073,880,062	401,486,902,587	376,904,904,461	325,398,327,582	322,611,775,910	377,588,128,204	382,090,083,161	392,279,616,789	366,253,023,289	381,747,091,782	389,982,520,620
	Aggregate incrementatl cost (LAK)	(3,589,038,844)	(18,830,147,307)	(44,363,207,774)	8,388,478,106	43,748,595,277	48,940,489,659	35,027,935,850	99,696,448,392	99,854,374,156	88,846,795,609	87,977,960,277	105,763,394,350	156,181,596,842	164,132,150,986	106,980,054,416	101,389,725,071	84,946,810,085	108,797,659,310	98,467,593,289	90,231,159,952
Project benefit: Incremental net benefit (USD)		(441,339)	(2,300,807)	(8,455,802)	(12,404,686)	(10,721,493)	6,589,236	5,333,780	7,529,433	9,088,757	9,778,055	9,849,894	8,524,642	5,335,819	5,000,304	8,509,310	8,825,566	9,659,375	8,099,162	10,209,905	12,037,899
	Aggregate incremental benefit (USD)	-	-	725,877	7,043,328	19,690,917	34,100,209	26,458,068	23,228,415	24,348,110	25,036,974	25,125,402	23,587,039	20,363,712	20,189,327	23,629,796	23,911,532	24,549,202	22,920,435	23,890,067	24,405,448
	Aggregate incrementatl cost (USD)	(441,339)	(2,300,807)	(5,271,503)	968,970	4,915,987	5,128,384	2,474,981	6,239,091	6,248,974	5,560,110	5,505,738	6,618,766	9,773,981	10,271,534	6,694,905	6,345,058	5,316,046	6,808,653	6,162,188	5,646,745
	SCF	0.985																			
	Exchange rate (post AFN)	15,979																			
	Avg. Exchange rate (during AFN)	2016	2017	2018	2019	2020	2021	2022	2023												
		9,117	8,132	8,184	8,416	8,657	8,899	9,543	14,153	15,979											
	Discount rate	10%																			
	B/C (LAK)	4.6	1,900,732,167,917	416,009,326,551																	
	ENPV in LAK	363,944,006,792																			
	B/C (USD)	5.2	$136,134,365	$26,001,812																	
	ENPV in USD	13,623,149																			
	EIRR	16.9%																			

1. **Methodology:** The EFA at PCR tries, to the extent it is possible and appropriate, to comply with the same methodology used at the project design. It involves: (i) developing and updating illustrative production models and supportive infrastructure models; (ii) converting costs and benefits from financial to economic terms, using the standard conversion factor calculated at project design; (iii) aggregating the economic returns from the illustrative models according to the household participation sequence to establish the incremental net cashflow over the review period; (iii) revisiting the nutrition benefits model to re-examine the measure of incremental net nutrition benefits stream; and (iv) combining the nutrition benefits streams, the production net cashflow and the project costs to re-examine the measure of overall project impact.

2. The AFN project has been working in 400 villages, reaching out to 31,557 households (95% of the total number of households in the target villages based on the national statistics). Direct benefits accrue to the communities through diversification of homestead food production, investments in nutrition and agriculture related infrastructure and farming system productivity improvements. It is reported that by the end of 2022 as many as 22,970 households have received targeted support for nutrition in the form of garden grants, 13,915 households received support for nutrient-sensitive agriculture production in the form of APG matching grants, 28,241 households benefited from supportive small-scale infrastructure investments. Benefited household participation sequence in the AFN project is summarized in Table A1 and the key results achieved related to project logframe indicators presented in Table A2 herein above.

3. The EFA is based on prices, costs and productivity data from the following sources: (i) the project M&E data and activities reports up to the time of PCR mission, April 2023; (ii) the data collected or confirmed by the latest IFAD Supervision Mission, June 2022; and (iii) the data collected by National Agriculture and Forestry Research Institute (NAFRI, under MAF) for AFN Cost and Benefit Analysis, March 2022. Altogether they provide an update of the data used by the AFN Final Design Mission in September 2015 and better reflect the changing conditions of project implementation and impacts. The key price, cost and productivity data used for EFA are detailed in Tables A3 herein above.

4. **Assumptions:** Except for the above-mentioned update, the PCR uses the same context and key assumptions for EFA as the ones employed at the project design. Only one more detail is added to the assumption on marketing. On top of selling fresh in local markets or ex-farm to local traders or middlemen as assumed at design, some production outputs may find their way into the Chinese, Vietnamese and Thai markets through PPCP and collectors coming from those markets. This is particularly true for cardamom and other non-timber forest products (NTFP), which account for 98% of the NTFP production groups from Phongsaly and Oudomxay provinces near the borders with Vietnam and China, and about 12% of the total APG in the project.

5. **Illustrative production and infrastructure models:** The crop, animal and forestry models developed at project design have been updated to better reflect the actual results of and long-term potential directions from the project investments. From the two original Valley Bottom and Upland household models, the PCR developed nine illustrative household production models, including: (i) one model for nutrition-related production: integrated home garden, mainly applied by households receiving garden grants, and (ii) eight models for nutrient-sensitive agriculture production: poultry, pig, goat, cattle/ forage, fish, cardamom, galangal, and vegetables, which are mainly applied by households benefited from APG matching grants. In addition, two supportive infrastructure models, one for rural roads and the other for drinking water supply schemes, have been developed to measure the actual impacts on production and nutrition improvements. Compared to the original models at design the key differences include:

- Exclusion of positive irrigation impact on production improvement: Small scale irrigation investments did not work out as expected in the AFN project due to serious water shortages, high disaster risks, poor watershed management related to common slash-and-burn farming practice of local people. Improved yield and productivity in the illustrative models are mainly

attributable to improved inputs, technical skills, processes and technologies gained through capacity building and investment support in the project.

- Split of Valley Bottom and Upland farm models into more commodity-specific farm models: The original Valley Bottom model is based on the correlation between successful irrigation investment and improved production of rice paddy, rotating summer cash crops, home gardens, and subsequently pigs and cardamom. This in fact did not work out and the Valley Bottom household model has been cancelled. The original Upland household model combines home garden, upland rice, maize, forage, fish and bamboo shoot. In fact, this combination does not represent how the project has impact on nutrient-sensitive production. AFN actually supports single commodities through APG instead of a combination of products, and some commodities from the combination have not received any support (e.g. upland rice), or have insufficient data to quantify related costs and benefits (e.g. maize and bamboo shoot). By contrast, a few new commodities have emerged and produced by a significant number of beneficiary households in the project. Therefore, to better illustrate the actual achievements and long-term projections in production improvement, the single commodity production models have been developed. Some of them are split from the original Valley Bottom and Upland farm models, and some are based on new developments during the project life.
- Update of rural road impact: In the original analysis, the impact of rural roads is considered in two scenarios (an upland model and "valley bottom" model) and two investments types (a new construction and a rehabilitation) over four activities: tea, maize, vegetable and NTFP (bamboo) production. In fact, this differentiation turns out too complicated and inappropriate. Instead, it is reported from implementation M&E and supported by data collection that the rural road investment benefits a wide range of commodities, including those produced from home gardens, APG, and other products not directly supported by the project. In order to avoid double counting, it is assumed that the benefits of rural road on home gardens and APGs have been blended in the related production models, and therefore are excluded from the road model. The analysis of rural road impact is done on another set of commodities, including staple food (maize, cassava) and cash crop (garlic). On top of that, the additional benefits of transport costs savings and time savings have been quantified and included in the model.
- A separate model of water supply infrastructure has been developed and added to EFA based on collection and verification of data on quantifiable incremental benefits and costs related to the project investment in drinking water supply. The schemes' O&M costs will be covered by water users as they recognize their long-term benefits in health, water and time savings, and sales of surplus from home gardens.

6. It is worthy to note that although the project has made investment in various types of infrastructure, including road, water supply, irrigation, community fish pond, cattle fencing, suspension bridges, paddy rice field development, erosion control and product warehouses, CBA can be developed only for roads and water supply. As explained earlier, irrigation schemes do not work very well, and in the case of the community fish pond, the level of investment and management structure is not appropriate to produce sustainable financial benefits. Though other types of infrastructure are perceived to be beneficial to local communities, their positive impacts are blended in other interventions. For example the benefits of suspension bridges and erosion control (for roads) are merged with benefits of roads, the benefits of cattle fencing and product warehouses blended with benefits of APG.

7. **Financial analysis:** The results of illustrative farm models are summarized in Table A4 herein above. The detailed analyses of the nine models in the financial terms with comparison between the "Without Project" scenario (WOP) and the "With Project" scenario (WP) are presented in Tables A5 - A13. In all the models the net cashflows discounted at 10% over a 10-year period deliver a positive Net Present Value (NPV) and the Benefit-Cost Ratio (BCR) within the range from 1.2 to 6.8. The analysis reveals that the incremental revenue generated in each case outweighs the incremental costs leading to rates of return that justify the investment both in the medium and longer term. Therefore, the

illustrative farm models are robust and financially viable. Overall, the models indicate the value for money of the agriculture-based nutrition interventions.

8. The detailed analysis of the two infrastructure models in the financial terms with comparison between the "Without Project" scenario (WOP) and the "With Project" scenario (WP) are presented in Tables A14 - A15. In both models the net cashflows discounted at 10% over a 20-year period deliver a positive Net Present Value (NPV), implying their financial viability. Overall, the models indicate the value for money of the respective infrastructure investments.

9. **Impact on labour:** In general, both the demand for labour and income increase in the illustrative farm models. In all models good returns per labour day achieved, ranging from LAK 83,000 to LAK 276,900 per day (USD 9.1 to USD 30.4 per day). A higher return to family labour is earned in most models, except for the poultry raising model with a slight decrease of just 1%. This implies that farmers can actually make more money out of an on-farm working day. It can be further improved with more advanced production technologies and processes is practiced and mastered by farmers in the future.

10. At the same time, the demand for family labour increases in seven out of nine farm models. The largest level of increase (100%) is observed in vegetable production under the transparent plastic house, followed by poultry raising (67%), integrated home garden (57%). Pig and goat raising, starting from a relatively high labour demand (90 days per year each type), have a moderate level of increase (33%). The labour demand in cardamom and galangal production doubles in the first year of the 10-year cycle, when young plants are grown, and then is cut back to 50 person-days per year in subsequent years.

11. Taking into account the increased labour demand and higher return per day, the total income for family labour increased at a moderate (20% in galangal production) to very high level (around 100% in vegetable and cardamom production). Four activities (pig, goat, poultry raising and integrated home garden) provide for an increase in total return to family labour of around 40-70%. To the contrary, family workers do not earn much more from fish and forage production with an increase of 5-9%. The labour demand is not rising in both activities and the return per day does not change much, either. Apart from labour demand and return on labour, the AFN project has not provided sufficient gender - disaggregated data to measure the impact on labour in the same comprehensive manner as the original EFA.

12. **Economic analysis:** The cost benefit analysis is based on the key connection between nutrition, education and income earning. The nutrition benefit model used at project design takes into account a few types of benefits, including avoided health care costs for the children under 2's (CU2) and successive years of birth cohorts and higher future earnings of the beneficiary children in their adult life, thanks to AFN positive impact on the rate of stunting.

13. **Update of the nutrition benefit model:** The key assumptions and data sources used for the original nutrition benefit model have been checked against the actual data from project implementation, new researches, statistics and information from the government ministries and donor resources, especially Lao Statistics Bureau, the Ministry of Health, the Ministry of Finance, and the World Bank. The original key assumptions should be updated to better reflect the baseline status and changes in under-nutrition, stunting, health care and income potential of beneficiary households and their children in the project target villages. The updated assumptions used for analysis of the nutrition benefit of the project is summarized Table A16 herein above. Compared to the original ones (Table A17), there are big differences in important parameters related to income, health care costs and expected stunting rate reduction. The original model seems to be over-optimistic about the project impact on stunting reduction, while under-budgeting the costs of health care. However, it is really challenging to make an estimate for the next 80 years. It is excessively long, implying too many risks and uncertainties to re-navigate the potential directions of any development interventions. Therefore, it has been decided to adjust the analyses of the project nutrition benefits by applying 10% discount over

a 30-year period, against 6% discount over an 80-year period as at project design. The CBA for AFN2, the next nutrition project, which will start in June 2023, also applies these parameters.

Economic viability of AFN project: Three indicators have been used to assess the overall performance of the project. They are (i) the economic internal rate of return (EIRR), (ii) the economic net present value (ENPV), and (iii) the economic benefit cost ratio (EBCR). They are estimated based on the aggregated cash flow of the incremental benefit and cost streams from the nine illustrative farm models, two infrastructure models, and the nutrition benefit model as described above. Despite that the illustrative farmer models have been analyzed for a 10-year period, the infrastructure models for a 20-year period, and the nutrition benefit model for a 30-year period, their benefits and cost streams are estimated over 20 years starting from 2016, the first year of the AFN project, and for aggregation into the overall project net cashflow. In this method, the actual economic internal rate of return (EIRR) of the AFN project is estimated at 16.9%. The estimated economic net present value (ENPV) at a 10% discount rate is LAK 363.9 billion (USD 13.6 million). The Economic Benefit-Cost Ratio (EBCR) of 5.2 indicating a return of approximately 5 dollars for every dollar invested. The actual indicators are better than the original estimates at project design. However, they are computed based on considerable model and assumption updates, including changes in the review period and rate of discount, and therefore, the differences in results seem to be less meaningful. Despite that, the calculations indicate that the project investments yield a positive rate of return and AFN

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Appendix 5: Environmental social and climate impact assessment (detailed analysis)

Mission Dates:	27 March - 11 April 2023
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Project No.	2000001131
Report No.	6522-LA

Asia and the Pacific Division
Programme Management Department

Appendix 5: Environmental social and climate impact assessment (detailed analysis)

1. Lao PDR is a landlocked country, with a number of unique geographical regions and multi-ethnic minorities. About two-thirds of the land area is mountainous. The country has a tropical climate with two seasons. The dry season is between mid-October and mid-May and is influenced by the northeast monsoon, mainly from October to February. The coolest period of the season is from November to January, while the hottest period is from March to May. The rainy season is a period from mid-May to mid-October, when the southwest monsoon winds from the Indian Ocean and the Gulf of Thailand bring high humidity into Lao PDR. There are intensive rainfalls between July and September, especially very heavy rainfalls in August. The average annual rainfall over the country is between 1,900 and 3,500 mm. The temperatures vary between the north and the south. Northern regions average 20°C, while southern regions average 25°C–27°C.

2. Due to its geographical location, Lao PDR has been affected by climate change and is at high risk of natural disasters such as floods, droughts, storms, and landslides, as well as epidemics, etc. The country still relies on agricultural production and natural resources and has limited and insufficient disaster prevention, preparedness, and response capabilities. Therefore, more people have been affected by climate change, natural disasters. Increasing rainfall and temperatures are projected, and flood and drought risks are expected to increase as well.

3. From 1970 to 2010, there were 33 significant natural disasters (mostly floods and droughts) that affected nearly 9 million people and caused economic damage of more than $400 million [1]. Floods are a major natural disaster in Lao PDR, with the Mekong River and its tributaries as the main sources of regular floods. A number of major flood disasters, including the floods caused by Typhoon Ketsana in 2009 and Typhoon Haima-Nokten in 2011, which caused damage of US$ 248 million. There was also a significant flood in 2013 that caused damage worth more than US$ 270 million. The most notable floods in 2018 were those caused by Typhoon Son-Tinh and the collapse of the Xe Pian-Xe nam Noi in Attapeu Province. The estimated total flood damage in 2018 was approximately US$ 371 million, or about 2.1 percent of GDP, and Typhoon Bebica and severe floods in 2019, all of which had a significant impact on socio-economic development.

4. In response to climate change and the risk of disaster, the government of Lao PDR has been aware of and committed to building resilience and mitigating climate change, such as the GoL ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1995, the Kyoto Protocol in 2013, and the Paris Agreement in 2016. In 2010, Lao PDR released the Strategy on Climate Change, followed by the Climate Change Action Plan of Laos for 2013-2020 in 2013. Lao PDR communicated its first Nationally Determined Contribution (NDC) to the UNFCCC Secretariat in 2016. In September 2016, Lao PDR passed a decree on climate change (Decree No. 321/Govt).

5. Recently, the Lao PDR released its National Strategy on Climate Change Visioning to the Year 2050, Strategy and Programs of Action to the Year 2030 in 2021.This strategy is an important tool for addressing climate change in Lao PDR. It updates the Lao People's Democratic Republic's Climate Change Strategy 2010, which has been in effect since 2010.The strategy defines the national vision on climate change through 2050. It also outlines the national strategy and programs of action on climate change management to 2030, especially risk prevention and reduction, resilience, and adaptations, the major causes of climate change. Meanwhile, the national strategy on disaster risk reduction (NSDRR) 2021–2030 was also released and effectively implemented in accordance with the decree on the adoption and promulgation of the national strategy on disaster risk reduction 2021–2030, No. 510/PM, 2021. NSDRR aims to prevent and reduce disaster risks, prepare and coordinate emergency responses, and restore economic, social, and environmental infrastructure after a disaster. A part of the strategy mentions key problems and challenges, especially, the established local disaster management committees in most provinces, districts, and villages still have limited knowledge of disaster risk

mitigation. In order to strengthen capacity on climate change adaptation and risk reduction, local disaster management committees must be considered by the AFN-II. The strengthening capability committees will contribute to the fifth five-year labor and social welfare development plan from 2021–2025 and the draft national program for contributing to climate change mitigation (December 2020) in sectoral agriculture and forestry.

6. The project areas have been impacted by climate change recently. The situations of risk and vulnerable areas affected by the major disasters such floods, landslides, storms and droughts. Flood risk in project areas are mainly in the districts located along the rivers are vulnerable to flood-prone areas. The Nam Ou River flows through Phongsaly and Oudomxay provinces and different districts are vulnerable to flood risks. In 2022, the tributaries of Nam Ou such as Nam Pak in Na Mor district and Kho River in La district witnessed severe flash floods and around 270 hectares of farmland was damaged, 90% of which remains unrestored. 18 Irrigation schemes, and a variety of livestock were affected as well. In Houaphan province, 287 households were affected, and four houses were partially damaged. Similarly, in Phongsaly province, the floods affected residential houses, roads, and other community infrastructure. Drought mostly has direct impacts on agriculture and food security, people's livelihoods, clean water resources, and sanitation. The common drought risk areas in different provinces of the project during the dry season between October and March may occur in Oudomxay. Rainy season, between June and September is likely to cause local flooding in Xiengkhouang, and much of Houaphanh. Between April and March drought may occur in Xiengkhouang and surrounding areas on an annual basis.

7. In adaptation and resilience to climate change, the AFN project has supported technical trainings on agriculture, livestock and husbandry programs with the advantage of small-scale infrastructure such as irrigation systems, gravity fed systems, access roads and track, and suspension bridges. These activities have facilitated local communities in improving their livelihoods, generate income, and promote food for nutrition through the project activities such as home gardening, poultry raising, cattle raising, and rice production.

8. The project funded the construction and rehabilitation of 467 small scale infrastructure schemes, benefiting over 30,000 households. The main infrastructure schemes supported are access tracks to production areas, irrigation schemes, and drinking water supply schemes. These schemes directly benefit agriculture production and marketing possibilities in the project villages and also complement the nutrition sensitive activities implemented by the project. To sustain and enhance the project activities, the activities were transferred and responded to by the line agencies at the district level, at the same time, village O&M committees were formed and were responsible for collecting maintenance fees monthly or yearly, depending on the potential income of the beneficiaries and an agreement within the villages.

9. According to results from the end-line project intervention impact assessment, the project reached a total of 33,294 beneficiary households, with 78% of them belonging to various ethnic groups. The 13,915 smallholder farmers have benefited from joining Agriculture Production Groups (APGs) and the cash grants provided by the project, together with intensive agriculture trainings. These activities have contributed to adapting and resisting climate change, so that beneficiaries have reduced their vulnerability to climate change by at least one step. On-farm crop production has increased by 94% since the start of the project, and livestock ownership has increased by 79%, resulting in incomes that have increased by an average of 92%. The 22,970 women received cash grants to develop their home gardens and small livestock activities, mainly for household production, but many of these women started to sell their surplus production on the local markets. 95% of households now grow crops and raise poultry in their home gardens, compared to only 77% in other villages. These figures show that the beneficiaries have learned and received new agriculture extension techniques, including crop varieties, climate-smart agriculture techniques, greenhouse water management practices, and enhanced agribusiness value chains, which are parts of climate change adaptation and resilience.

10. In regard to the project impacts on environment and natural resource management. High pressure on the natural resource base linked to harmful agricultural practices, primarily uncontrolled

clearing of forest on steep slope areas for cultivation, was evident throughout the project target districts from mission observations and discussions with project beneficiaries. It is not considered that AFN has contributed significantly to this problem, though any expansion of agricultural production, for example increases in cattle herd numbers, must inevitably increase pressure on finite resources. Conversely, the project has not taken complementary measures to mitigate environmental degradation. Communities commented on increasing problems with water supplies which are likely to be linked to clearing of watershed areas for production. Soil erosion, siltation of watercourses and slope instability are likely consequences of excessive land clearing. Throughout the field mission the project area was under cover of smoke haze caused at least in part by the annual burning of ground in preparation for cultivation (shifting cultivation). If this continues it is likely to have significant effects on human health.

11. In order to manage natural resources in the target districts, the AFN designed a number of interventions to help improve the management of natural resources and the environment in the project districts and villages. Through the pilot participatory land use planning and land management (PLUPA), forage establishment for livestock and soil improvement, cardamom plantations under forest canopy, and supported community fish conservation zones to help environmental and natural management practices, there have been some improvements in the environment and natural resource management. The replacement of traditional slash and burn or shifting-cultivation agriculture with cash crops and perennial crops such as vegetables, NTFP, cardamom, galanga, tea, Job's tears, and maize offers improved protection from erosion.

12. Farmer nutrition schools, household home garden grants, and APG grants also play important roles in natural resource management. Based on the end-line survey results, farmer nutrition schools were organized in all project villages, and almost 35,000 people joined these training and awareness events in 389 specifically constructed village learning centers. While households received both garden and APG grants, they increased their production and sales, with a 77% increase in production and a 167% increase in sales. With increased production and high income, farmers pay more attention to producing specific crops and animal raising under participatory land use planning and allocating for the replacement of traditional shifting cultivation practices.

13. The project adopted a checklist approach to screen infrastructure sub-projects for social and environmental risk, and any negative impacts are expected to be very minor. The Environmental and Social Management Plan (ESMP) was included in the procurement process and bid documents. Assessment impacts of environment and natural resource management have been reported and rated in supervision missions since the first mission in 2018 up to the last mission in 2022. The environmental category is classified as B. This project has some environmental and social impacts on the human population or significant areas and is site-specific. These impacts were mitigated by applying the environment and social management plan. Positive environment and social impacts were achieved through improvements in new knowledge on agriculture production techniques and training, generating income, ensuring sufficient food security, and promoting nutrition in the project villages, reducing pressure on the natural based sources of income and food consumption. However, the EMP was not systematically monitored, and no safeguards report has been prepared. Environment and natural resource management is an area that should be strengthened in AFN-II.

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Appendix 6: Dates of supervision mission and follow-up missions

Mission Dates:	27 March - 11 April 2023
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Mission	Dates
Supervision Mission 1	20 March 2017 - 31 March 2017
Supervision Mission 2	05 March 2018 - 15 March 2018
Supervision Mission 3	18 February 2019 - 01 March 2019
Mid-Term Review 1	18 February 2020 - 04 March 2020
Impl. Sup/Follow Up Mission 2	07 September 2020 - 15 September 2020
Supervision Mission 4	25 March 2021 - 19 April 2021
Impl. Sup/Follow Up Mission 3	15 November 2021 - 26 November 2021
Supervision Mission 5	16 June 2022 - 30 June 2022
Impl. Sup/Follow Up Mission 4	17 October 2022 - 30 October 2022

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Appendix 7: Terms of Reference of the completions review mission

Mission Dates:	27 March - 11 April 2023
Document Date:	27/06/2023
Project No.	2000001131
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Appendix 7: Terms of Reference of the completions review mission

LAO PDR

TERMS OF REFERENCE (TOR)

COMPLETION REVIEW MISSION

FOR THE

AGRICULTURE FOR NUTRITION (AFN) PROJECT

1. Introduction

1. The proposed project completion review for the Agriculture For Nutrition (AFN) project is undertaken jointly by IFAD, WFP and by the Ministry of Agriculture and Forestry (MAF) through its Department of Planning and Cooperation (DoPC). Its main purpose is to report on the results achieved through project interventions for accountability and learning purposes. The process should also help reflect on performance, elicit lessons learned and define an appropriate hand-over or post-project strategy.

2. The project completion review will take place from **27 March to 11 Apr 2023**. The process completion review process should be guided by the methodological framework set out in ***IFAD Project Completion Review (PCR) Guidelines***, while the present TOR describe the objectives, timeline and deliverables of the completion review mission. In-country, the work of the PCR team will be facilitated by MAF Department of Planning and Cooperation (DPC), through the National Project Coordination Office (NPCO), in close collaboration with IFAD and WFP Laos.

2. Project background

3. **Project objectives and expected outcomes**: The Goal of the AFN Project is: "Contribute to reduced extreme poverty and malnutrition in poorest communities." The Development Objective is: "Improved and diversified agricultural production and household nutrition enhance life prospects." The Project has **three main outcomes: (i) Strengthened public services; (ii) Community-driven agriculture-based nutrition interventions established and (iii) Sustainable and inclusive market-driven partnerships established**. There is also a **Project Coordination outcome**. These outcomes were meant to establish the capacity in public sector agencies necessary to implement a community driven planning process consistent with *sam sang* principles, establish a foundation for widespread adoption of the four NNSPA agriculture interventions, and support the emergence of an efficient and profitable farming sector, producing at scale and effectively linked to agri-businesses adding value in-country.

(a)

4. **Project target area and target group**: The Project has been implemented in 12 districts and approximately 400 villages in Oudomxai, Phongsaly, Xieng Khouang and Houaphan provinces in Northern Laos as detailed in the following table.

Table 1: Project provinces and districts

Oudomxai	Phongsaly	Xieng Khouang	Houaphan
• Namor • Lah	• Mai • Boun-Tai • Samphan • Khua	• Kham • Nonghet	• Huamuang • Xam-Tai • Kuan • Xon

The main target group would be within the population of 400 AFN target villages. Ethnic groups would represent the majority of the population in all AFN districts.

5. **Implementing arrangements:** The Department of Planning and Cooperation (DoPC) of MAF is the AFN lead agency that has overall responsibility for Project implementation. IFAD administers and supervises the GAFSP financing and the main supervising entity of implementation while WFP is also lead technical agency.

(b)

6. **Budget and expenditures:** The total cost for the project is USD 38.8 million. The GAFSP approved a grant of USD 30 million (24 million to IFAD and USD 6 million to WFP) to finance the AFN, while Lao PDR government contributes about USD 5.4 million. Contributions from beneficiary groups and local private sector were estimated to total at about USD 3.4 million. By Jan 2021, the project received additional funding of USD 3.8 million from GAFSP (USD 1.5 million for MAF/IFAD and USD 2.3 million for WFP) to specifically respond to COVID-19 impacts and scale-up existing, successful project activities, specifically targeting women, poor households, and smallholder farmers in the 12 AFN districts. As at 31 December 2022, the project has disbursed 100% of the original allocation (24 USD million) and 80% of the additional financing (1.5 USD million).

(c)

7. **Project milestones:**

Project Concept Note Approval	05/05/2015
EB Approval	13/04/2016
Entry into Force	28/04/2016
First Disbursement	02/09/2016
Mid-term Review	18/02/2020
Original Completion	30/06/2022
Extension completion as the result of COVID-19 restructuring	31/12/2022

3. Detailed objectives

8. The overall objective of the completion review is to assess and document overall project implementation performance and the results achieved. This process calls for an informed reflection on the relevance, effectiveness, efficiency and sustainability of project interventions.

(d)

9. More precisely, the detailed objectives of the completion process include the following:

- To assess the relevance of project interventions at the time of project design and in today's context.
- To assess the effectiveness of project implementation, or the extent to which project objectives were met, and to document the immediate results and impacts of project interventions.
- To review the project costs and benefits and the efficiency of the overall project implementation process, including IFAD's and partners' performance.
- To assess the prospects of sustainability of project benefits beyond project completion.
- To generate and document useful lessons from implementation that will help improve GAFPS, IFAD, WFP's or Borrower's future programming and designs.
- To identify any potential for the replication or up-scaling of best project practices

10.While GAFSP follow the Supervising Entity's (SE, i.e. IFAD) official project completion report requirements, GAFSP requests the PCR mission to collect the following information:

- Project outcome and impact data as per GAFSP M&E plan (e.g., household income, food security, agriculture productivity if applicable); whether intended targets were met. If there is an endline report/impact assessment, please share together with the complete PCR after internal clearance.
- If applicable, how the Technical Assistance projects collaborated with the associated investment projects (i.e., Lao PDR)
- What's the difference or value addition of GAFSP grants compared with SE's regular projects in the country (with similar financing terms); did it support to push the agenda to

investment on certain areas (e.g., thematic, geographic, innovative activities)? Did it help to unlock other sources of financing? Or has it been scaled up by additional funding?

- If applicable, did the project coordinate/align the public sector investments supported under the project with any private sector investments supported by the SE or other development partners in the country? If not, do you see any opportunities/entry points to do so in the future?

4. Methodology

11. The mission will use a mix of quantitative and qualitative tools in order to form an informed judgement on overall project performance and results. For transparency and accuracy purposes, it is important that the consultation with project stakeholders should be as large and inclusive as possible and the list of persons to be met by the mission will require careful consideration.

(e)

12. Primary sources of information will include project reports and documents (supervision reports, MTR report, progress reports, AWPB, etc.), M&E and MIS data (including logframe data), any surveys or specific studies undertaken by the project, NPCO and service providers' records and the records of the groups supported by the project. These sources will be used extensively in order to generate quantitative information on project results or estimate project efficiency.

(f)

13. In addition to primary sources of information, the mission will collect relevant data from secondary sources, such as national and local statistics, other donors' statistics, the civil society, private sector entities (trade associations, universities, etc.). These will be used mainly to breach information gaps on certain issues or to cross-examine the data generated from other sources.

(g)

14. In case sufficient or reliable impact data is not available, the project team should undertake a mini-survey while in the field in order to collect basic information from a small sample of respondents (to be selected using the most appropriate sampling method). To this end, a questionnaire should be developed before the field work starts.

(h)

15. In addition, and in order to gather an in-depth understanding on certain issues, collect stakeholders' feedback and generate important insights, the mission will use a variety of qualitative tools, such as key informants' interviews, focus group discussions and rapid case studies. Before starting the field work, it is important that the mission dedicates sufficient time to prepare the necessary interview guides.

(i)

16. The method of direct observation will also be used by the mission. A large sample of project sites, or locations where project activities took place, will thus be visited in order to collect impressions and feelings, verify that reported interventions took place, confirm that they met expected quality standards and beneficiaries' needs, or to take note of the external context of project intervention. Selection of project sites will require careful consideration in order to avoid biases.

(j)

17. If found useful, the organization of a stakeholders' workshop either before the beginning of the field work or towards the end of the mission, can be envisaged in order to collect initial feedback on project performance or to share the mission's preliminary findings.

18. In order to strengthen the analysis and overcome the weaknesses, intrinsic biases and the problems that may be associated with a single method, the mission will "triangulate" all findings, combining methods and data sources in order to cross-examine initial findings.

5. Timeframe and deliverables

19. The mission will take place from March to May 2023. The field work will take place **from 27 March to 11 Apr 2023**, following the detailed programme and itinerary that will be finalized at the start of the mission based on the tentative programme presented below.

(k)

20. Towards the end of the in-country work, the mission will present its initial findings and conclusions during a wrap-up meeting to be hosted by the Ministry of Agriculture and Forestry (MAF). The mission will prepare a **Project Completion Review report** following the outline presented in IFAD's ***Project Completion Review Guidelines***. The first draft PCR will be prepared shortly after the end of the completion review mission and submitted electronically by the mission's Team Leader to Ambrosio Barros, Country Director / Hub Head, APR (cc Rachele Arcese, IFAD Programme Officer and Task manager for Lao PDR), not later than **21 Apr 2023**. The draft PCR report will be circulated among main stakeholders for review and consolidated, written comments will be sent to the mission's Team Leader not later than **5 May 2023** by IFAD. On this basis, **the final PCR report will be finalized and submitted electronically by the mission's Team Leader not later than 19 May 2023 to IFAD, hence GAFSP**.

6. Tentative programme and itinerary

Activities	Tentative timeframe 2023
Finalization of GoV assessment	
Finalization of GoV assessment (endline survey + other relevant document + full LF analysis) in ENG	15 March 2023
Preparation stage/ initial investigatory work (10 days)	
Desk review of primary and secondary sources of information, including end-line survey and gender assessment carried out by the project (if need be, preparation of a mini- survey); preparation of informants' interviews, focus group discussions and rapid case studies as relevant. If needed, an orientation session (with assessment guidance) may be provided to all project implementers so that they can do self-assessment in advance.	27 Feb-24 March
Analysis of sources of information mentioned above	27-24 March
Field work (15 days)	27 March[1]– 09 April
Meeting with project beneficiaries, implementing agencies, and other related stakeholders at different levels	27 March – 09 April
Stakeholders' workshop to present the preliminary conclusions on project performance and results, and obtain initial feedback before the final wrap-up meeting	10 April
Wrap-up meeting with NPCO and MAF	11 April
PCR finalization (15 days)	
Drafting of the Project Completion Review report (PCR)	11 – 20 April
Submission of 1st draft to IFAD, hence GAFSP	21 April
IFAD and GAFSP review	24 April – 5 May 2023
Submission of final PCR to IFAD, hence GAFSP	19 May 2023

7. Composition of the project completion review team (including expertise and topics covered)

1) Julian Abrams, Team Leader
2) Do Thanh Lam, Agronomist and M&E specialist
3) Ilaria Bianchi, Nutrition specialist
4) Keo Duangchai, Safeguard specialist (SECAP)
5) Duy Phan Toan, Procurement Specialist
6) Nguyen Huong Tra, Economist

Julian Abrams, Mission Leader (julianabrams@gmail.com). In liaison with MAF, IFAD and WFP, the Team Leader will have overall responsibility for guiding and coordinating the mission's work and thus will be responsible for debriefing the Government during the wrap-up meeting and will coordinate the team's meetings with Government counterparts and partners throughout the mission and together with the mission team and the drafting of the Project Completion Report, supporting MAF. In particular, he will be responsible for:

(i) working closely with the AFN I programme management and mission team members assessing the overall performance of project implementation progress (C1, 2, 3) and make an evaluation of realized implementation as compared to the expected results and objectives specifically on the quality of Programme Management and efficiency of the implementing agencies/partners;

[1] Additional field days can be added to specific consultants upon MAF request/based on needs.

(ii) with support from MAF and WFP gender specialist, assess the overall performance of project performance in terms of targeting and gender, review the socio-economic impact and make an evaluation of realized implementation as compared to the expected results and objectives and identify lessons;
(iii) assigning tasks/ sections of the report to be written to the team members;
(iv) ensuring that all deliverables are met in a timely manner and comply with IFAD's required formats and quality standards;
(v) in close co-ordination with the M&E specialist, engage with the relevant staff members in consolidating the data and information required to assess the Programme's effectiveness on target and output delivery, and targeting and outreach;
(vi) identify the areas of policy implications emanating from the implementation of programme activities and the lessons learned from PCR;
(vii) in close collaboration with IFAD, WFP and other mission members, lead drafting of the Aide Memoire for submission and agreement with government; and lead and coordinate drafting of the Project Completion Report which will be submitted to IFAD, WFP and GAFSP.

Do Thanh Lam, Agronomist and M&E specialist (dolam63@gmail.com). In liaison with the team leader, the specialist will review the overall physical and financial progress for Outcome 1 in terms of effectiveness and achievements and assess project M&E and KM system. In particular,

- Support in collaboration with other mission members Outcomes 2 and 3 for crop related technical issues;
- Assess the effectiveness and results of the participatory research, agricultural technologies, forage development etc.
- Assess the effectiveness and results of the extension approach;
- Review the effectiveness of capacity building activities of government and service providers;
- Produce 2-3 lessons learned that can be used in AFNII and other IFAD supported projects;
- assess the M&E performance and quality of implementation in line with the defined result objectives;
- summarize the overall programme implementation progress of the M&E aspects and make recommendations to ensure that by end of project there is proper turnover of the M&E data and lessons learning studies;
- review and validate the data and information contained in the documentation submitted by the government; including linkages between quantitative and qualitative data; extract/obtain missing data from the project, if any, to adequately supply the required data and information for the PCR prepared by government;
- review and provide recommendations to the Exit Strategy and Sustainability Plan prepared by the Project.
- Provide inputs to the Aide Memoire and PCR as requested;
- Other tasks as requested by the team leader, such as providing inputs to lessons learned and knowledge generated part as well as conclusions and recommendations.

Ilaria Bianchi, Nutrition specialist (i.bianchi@ifad.org). The Nutrition Specialist will be responsible for assessing the AFN outcome 2 and all nutrition-related aspects. Specifically, she will:

- Summarize the overall programme implementation progress of to-date on nutrition and identify enablers/barriers in relation to the to the project performance;
- Assess the effectiveness of the project approach to targeting the most nutritionally vulnerable and relevance of interventions to IPs and their local food systems;
- Assess the extent to which the project integrated nutrition with gender and biodiversity;
- Assess the effectiveness of the Village Development Planning mechanisms and outcomes in support of the NNSPA;
- Assess the results and impact achieved on food security and nutrition among the target group (outcome 2). Assess the effectiveness of the project interventions chosen (from all outcomes) and make recommendations for the project to address constraints and support opportunities;
- Assess the capacity of implementing partners to pilot and up-scale agricultural solutions for improved nutrition;

- Assess the AFN progress and effectiveness in supporting the District/Provincial Multi-Sector Convergence Planning;
- Assess the strategy and action plan for Village Nutrition Schools;
- Assess how the identified agricultural commodities / models were relevant in promotion of nutrition;
- Assess the nutrition aspects of (i) overall expenditure for nutrition (ii) the effectiveness of the setup for local implementation mechanism;
- Liaise with the SECAP consultant to provide inputs on nutrition related issues;
- Document lessons learned and case studies;
- Draft all inputs to the Aide memoire and PCR related to nutrition impact as requested by the Team Leader;
- Any other tasks as agreed with the Team Leader.

2. **Keo Duangchai, Safeguard specialist (SECAP) (keoduangchai@gmail.com).** The Environment, Climate and SECAP Specialist will cover the aspects related to environment and natural resources management, climate change adaptation and environmental and social safeguards (SECAP). More specifically the consultant is expected to undertake the following tasks.

3. Environment and Natural Resources Management (ENRM):

- Assess the overall performance of the project activities related to environment and NRM.
- Analyze and document the positive or negative changes in the natural resources base that may be attributable to project interventions, together with positive or negative changes - intended or unintended - on the environment.
- Assess the effectiveness of the approaches to environment preservation and natural resources management appropriate to local circumstances in addressing local problems.
- Assess the project contribution to the protection or rehabilitation of natural and common property resources (land, water, forests and pastures).
- Assess the project's technical and financial capacity to monitor the environmental impacts of the project.
- Document best practices and lessons learned as well as any innovations concerning environment and NRM in the project and assess the capacity of the actors to scale up the techniques and information acquired with regard to natural resource management.

4. Adaptation to Climate Change (ACC):

- Assess the overall performance of the project activities related to climate change adaptation.
- Examine the important issues of adaptation to climate change and resilience to natural disasters.
- Examine the extent to which local communities were empowered and have successfully put in place measures to mitigate or prevent the effects of climate change and natural disasters and have increased their resilience to such external shocks and climate-related risks.
- Assess the effectiveness of the approaches for climate change adaptation promoted by the project and their suitability to local circumstances.
- Assess effectiveness in terms of process or institutional capacities and coordination in mainstreaming climate change adaptation at project level.
- Identify any possible maladaptation activities that the project might have promoted.
- Document best practices and lessons learned as well as any innovations concerning climate change adaptation in the project.

5. Social, Environmental and Climate Assessment Procedures (SECAP) requirements:

6. Under IFAD's Social, Environmental and Social Assessment Procedures (SECAP), the PCR should provide a specific analysis of the impact of environmental, social and climate issues that may have arisen from project implementation, taking special note of views expressed by rural beneficiaries.

This analysis should be included in Appendix 5: Environmental, Social and Climate Impact Assessment. More specifically the consultant should:

- Review the project's SECAP documentation (SECAP review note, Environmental and Social Management Framework (ESMF), Environmental and Social Management Plan (ESMP), Free Prior and Informed Consent (FPIC), Indigenous Peoples Plan (IPP), etc.) as applicable and required during the project's design.
- Assess the quality of the implementation of SECAP plans (including ESMPs, stakeholder engagement plan, grievance redress mechanism) and gather/document evidence of their contribution to the project to address social, environmental, and climate risks and impacts and in producing benefits for project implementation and target groups;
- Assess the project compliance with SECAP requirements and effectiveness in reducing the project's potential adverse environmental and social impacts.
- Assess whether a Grievance and Redress Mechanism (GRM) was in place; and how complaints or grievances were managed/resolved by the project (if any).
- Assess if FPIC agreements reached with the communities were respected (if applicable).
- Assess the implementation of past mission recommendations and agreed actions on SECAP, ERNM and ACC.
- Document challenges faced by the PMU and best practices and lessons learned as well as any innovations concerning the implementation of SECAP plans.

The consultant will contribute to the preparation of mission deliverables as agreed with the Team Leader and the relevant sections of the PCR report, specifically on ENRM, ACC and SECAP; and any other task as assigned by the Team Lead.

Phan Duy Toan, Procurement Specialist (toanp66@gmail.com). In line with Chapter V of the IFAD Procurement Manual the Consultant should carry out the following tasks:

- Assess the overall performance of procurement management by project implementing agencies throughout the life of the project in terms of the quality, reliability, transparency and efficiency, and the effects on project implementation and results delivery;
- The assessment will be based on a desk review of all the Supervision/MTR Reports for the project and colleting missing data from the Project Team, if any, to highlight the following aspects: strengths and weaknesses of the project's procurement set-up; key challenges faced and remedial actions that enabled them to be overcome; key lessons learned; and, recommendations for future procurement designs;
- Review/update the Procurement Risk Assessment, using the IFAD Procurement Risk Matrix (Chapter I of the IFAD Procurement Manual);
- Support the EFA consultant as needed in conducting specific analysis of value for money (VFM) at all levels and the reasonableness of prices for: a. Goods, equipment, etc. using available price indicators; b. Civil Works, compared to locally accepted standards and prices; and c. Services compare quality-output to international standards and prices;
- Assess the procurement performance of the project with respect to five designated parameters: procurement strategy & planning process, processes and procedures from prequalification to bidding, process and procedures for bid evaluation and contract award, contract management and administration, CMT data accuracy and timeliness and record retention;
- Identify lessons learnt in relation to the procurement performance for design and implementation for future project.
- Verify that all deliverables (goods/works/services) for ongoing contracts completed within the timeframes that are established in the signed contracts and before the Project Completion Date;

- Verify that all outstanding contractual payments can be settled and the corresponding contract files can be closed within the FA/Project Closure Date at the latest;
- Verify that follow-up arrangements by the Borrower/Recipient for guaranteeing smooth and timely delivery of the contractor's/supplier's obligations under the Defects Liability Period for Works and the Warranty period for Goods are in place;
- Write the sections of the aide memoire and the report as required by the Team leader;
- Carry out any other activity, as required by IFAD Procurement Officer and the mission Team Leader.

Nguyen Huong Tra, EFA consultant (huongtra74@googlemail.com). In close collaboration with the team leader, the consultant will assume overall responsibility to ensure that data and information required for assessing the programme performance on economic and financial analysis, and the overall costs and benefits, are included in the PCR. This will be conducted in line with IFAD practices for economic and financial analysis (EFA) and best practices. In particular, the EFA consultant will:

- examine the adequacy of data and information available required to analyze the performance from economic and financial perspective, including conduct of the ex-post EFA and estimation of the programme' s Economic Rate of Return (ERR), showing actual costs by component/sub-component and an updated estimation of projected benefits, reflecting changes made during implementation, actual coverage and any changes in economic prices and market conditions;
- review data and information, on the NPV/ROR, efficiency on the use of resources along with the sensitivity analysis of performance indicators;
- review and validate the data and information contained in EFA included in the relevant report submitted by the government; obtain missing data from the project team, if any, to complete the EFA exercise; finalize the EFA aspects of the PCR report;
- prepare/consolidate required tables and information sheets for the assessment of programme' s efficiency – cost and financing and partner's performance (from financing angle) focusing on the PCR appendices of actual project cost by financiers; and,
- write the sections of the aide memoire and the report as required by the Team leader.
- Carry out any other activity, as required by the Team Leader.

8. Responsibilities of the NPCO

- Provide to the PCR team relevant documents, including but not limited to all annual progress reports, AWPB, auditing reports, any surveys or specific studies undertaken by the programme (including the impact baseline, mid-term and endline impact survey) **in English language**;
- Provide all updated financial and M&E and MIS data (including RIMS data) to the PCR team in English language.
- Collect and provide additional secondary data and documents from government agencies concerned to assess project impact as requested by the PCR team in English language.
- Arrange all logistics (including domestic travels to project sites) and facilitate for training, meetings and workshops with project stakeholders according to agreed field assessment plan.
- Assign relevant project staff to meet with the PCR team to discuss on issues related to project performance and the mission's preliminary findings, as well as to provide timely written comments and inputs to the team's draft PCR.
- Provide English interpreters to the PCR team during field work.

9. Responsibilities of IFAD

- Per the Borrower's request, recruit the Team Leader and other consultants, while the Borrower shall appoint staff, or recruit additional national consultants, to form a joint Completion Review Team;
- Provide relevant documents to the PCR team, including but not limited to project design report (including original excel file of financial and economic analysis), financial agreements and amendment, supervision and support mission reports, MTR report, extension agreement, etc. to conduct the review exercise;

- Coordinate review and comment among key stakeholders (MAF, IFAD, WFP and GAFSP) and submit the final PCR to the GAFSP Steering Committee through the Coordination Unit (CU) a full project closing report within 6 months following the project closing date.

Lao People's Democratic Republic

Strategic Support for Food Security and Nutrition Project - GAFSP funds

Project Completion Report

Appendix 8: List of person met and mission's programme

Mission Dates:	27 March - 11 April 2023
Document Date:	27/06/2023
Project No.	2000001131
Report No.	6522-LA

Asia and the Pacific Division
Programme Management Department

Appendix 8: List of persons met and mission programme

No.	Name & Surname	Title	Agency
1.	Dr. Thathsaka SAPHOUNGTHONG	Director General	DOPC, MAF
2.	Mr Soppharthai Lingsone	Director of Division	DOPC, MAF
3.	Mr. Visavanh	Head of Section	DOPC, MAF
4.	Ms. Vanta	Head of Section	DOPC, MAF
5.	Mr. Sopha Siththison	Deputy- Director General	DAEC, MAF
6.	Ms. Sonthala	Technical Staff	DAEC, MAF
7.	Mr. Bounserd	Technical Staff	DAFO, Bountai District, Phonsaly Province
8.	Ms. Bouavone	M&E and Planning Officer	Bountai District, Phonsaly Province
9.	Mr. Tick Xayyaseang	Deputy Project Coordinator	DAFO, Bountai District, Phonsaly Province
10.	Mr. Oulaitham Lathsamima	Technical Coordinator	NAFRI, MAF
11.	Mr Sisovath PHANDANOUVONG	National Project Coordinator	NPCO, DOPC, MAF
12.	Mr. Kroungsivilay MALAYTHONG	Deputy National Project Coordinator	NPCO, DOPC, MAF
13.	Mr. Sisombath	Procurement Officer	NPCO, DOPC, MAF
14.	Ms. Chanthalai	Assistant Accountant	NPCO, DOPC, MAF
15.	Mr. Soulisone	Assistant M & E Officer	NPCO, DOPC, MAF
16.	Ms Chiengkham	Finance Officer	NPCO, DOPC, MAF
17.	Mr Khamtanh	M &E Adviser	NPCO, DOPC, MAF
18.	Mr Lathsamee	AFN Admin Staff	NPCO, DOPC, MAF
19.	Mr. Phonesavanh	Admin Staff	NPCO, DOPC, MAF
20.	Mr. Edwin de Korte	CTA of AFN	WFP
21.	Mr. Somphone Sidavong	Policy Officer	WFP
22.	Ms. Chintana Somkhane	Policy Program Officer Nutrition	WFP
23.	Mr. Vongsone Oudomsuk	Provincial Program Officer	WFP, Xieng Khouang Province
24.	Mr. Thongvanh Sayasan	Provincial Program Officer	WFP, Oudomxay Office
25.	Mr. Khamphone Mounlamay	Director	PAFO, Oumdomxai Province
26.	Ms. Khampheng	Technical staff	PAFO, Oudomxai Province
27.	Mr. Lamphay Thankhanty	M&E officer	PAFO, Oudomxai Province
28.	Ms. Lasoy Laolee	Technical staff	PAFO, Oudomxai Province

No.	Name & Surname	Title	Agency
29.	Mr. Khamxang Inthasone	Assistant M&E Officer	PAFO, Oudomxai Province
30.	Mr. Sikham Sophakhoun	Division Head	PAFO, Oudomxai Province
31.	Ms. Bouavone Phasouk	Head of WFP office	PAFO, Oudomxai Province
32.	Mr. Somsanouk Keolonchan	Technical staff	PAFO, Oudomxai Province
33.	Mr. Lanthaphone Sengla	Deputy Head of Division	PAFO, Oudomxai Province
34.	Mr. Houmphanh Bouphakham	District Governor	Lah District, Oudomxai Province
35.	Mr. Phimmasaen	Deputy Head	DAFO, Lah District, Oudomxai Province
36.	Ms. Mitsakhone	Vice President	LWU, Lah District, Oudomxai Province
37.	Mr. Bounthaen Inthavong	Deputy Head	DHO, Lah District, Oudomxai Province
38.	Mr. Phonesavath	Deputy Head	DICO, Lah District, Oudomxai Province
39.	Mr. Vongdeuane	Deputy Head	DPTO, Lah District, Oudomxai Province
40.	Mr. Chanthachone	District Project Coordinator	DAFO, Lah District, Oudomxai Province
41.	Mr. Chouyang	M&E Officer	DAFO, Lah District, Oudomxai Province
42.	Mr. Xayalak	Head of Houayxang TSC	DAFO, Lah District, Oudomxai Province
43.	Ms. Aenmany	Technical staff	DAFO, Lah District, Oudomxai Province
44.	Mr. Phet Olavong	Technical staff	DAFO, Lah District, Oudomxai Province
45.	Ms. Nithida	Technical Staff	DAFO, Lah District, Oudomxai Province
46.	Ms. Vannaly	Technical Staff	DAFO, Lah District, Oudomxai Province
47.	Mr. Laythong	Livestock officer	DAFO, Lah District, Oumdomxai Province
48.	Mr. Xaiphone Sochaleun	Vice-Governor	Namor District, Oudomxai Province
49.	Mr. Chanthy Inthavong	DP Coordinator	Namor, Oudomxai Province
50.	Mr. Kavy Xaipaseuth	Technical staff	Namor District, Oudomxai Province
51.			
52.	Mr. Khamkong	Deputy Director	DAFO, Namor District, Oudomxai Province
53.	Mr. Vongvilay Phoummixai	Deputy Head of Section	DAFO, Namor District, Oudomxai Province
54.	Mr. Bounsy Lithavong	Head of Agriculture Unit	DAFO, Namor District, Oudomxai Province

No.	Name & Surname	Title	Agency
55.	Ms. Thongsy Bounphachan	Technical staff	DAFO, Namor District, Oudomxai Province
56.	Mr. Phanmany	Technical staff	DAFO, Namor District, Oudomxai Province
57.	Ms. Southida Chanthavong	Program Assistant	WFP Namor District, Oudomxai Province
58.	Mr. Chantha Sengpanya	Program Assistant	WFP, Namor District, Oudomxai Province
59.	Mr. Syvongxai Sulivong	Program Assistant	WFP, Oudomxai Province
60.	Mr. Xaysawath	Deputy Head	DAFO, Namor District, Oudomxai Province
61.	Ms. Vinthaphone	President	LWU, Namor District, Oudomxai Province
62.	Mr. Bounpheang Laoly	Technical Officer	Bountai District, Phongsaly Province
63.	Mr. Somlid Xayyachid	Head Of Health Office	Bountai District, Phongsaly Province
64.	Ms. Khampien	Head of Panning Office	Bountai District, Phongsaly Province
65.	Ms. Phonekeo Onsa	Vice-President	LWU, Bountai District, Phongsaly Province
66.	Mr. Savanth Vanhnavong	AFN Procurement Officer	DAFO, Bountai District, Phongsaly Province
67.	Mr. Somphet Phonvisay	Deputy Director	DAFO, Bountai District, Phongsaly Province
68.	Mr. Songkhang	Assistant M&E Officer	DAFO, Bountai District, Phongsaly Province
69.	Mr. Somjai	Technical Officer	DAFO, Bountai District, Phongsaly Province
70.	Ms Amphone Phandahuk	District Project Coordinator	AFN, DAFO, Bountai District, Phongsaly Province
71.	Mr Lex Yeudavong	Deputy Director	DAFO, Khua District, Phongsaly Province
72.	Mr. Bouanthieng	Technical Officer	DAFO, Khua District, Phongsaly Province
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83.	Mr. Phonethavy	District Governor	Khua District, Phongsaly Province
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85.	Mr. Somneuk	Deputy District Governor	Khua District, Phongsaly Province
86.	Ms. Sykham	President	Khua District, Phongsaly Province
87.	Mr. Bounthong	Deputy Director	Public works and Transport Office, Khua District, Phongsaly Province
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96.	Mr. Thaiyang	Head of DAFO	Nonghead District, Xiengkhuang Province
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Lao People's Democratic Republic

Strategic Support for Food Security and Nutrition Project - GAFSP funds

Project Completion Report

Appendix 9: Final wrap-up/stakeholder workshop findings

Mission Dates:	27 March - 11 April 2023
Document Date:	27/06/2023
Project No.	2000001131
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Asia and the Pacific Division
Programme Management Department

Appendix 9: Final wrap-up/stakeholder workshop findings

Agriculture for Nutrition – Project Completion Review Mission | Aide-Memoire

A. Mission Objectives and Key Conclusions

A1. Background and main objective of the mission

1. The Agriculture for Nutrition (AFN) project is financed by the Global Agriculture and Food Security Programme (GAFSP) and implemented by the Ministry of Agriculture and Forestry (MAF) through its Department of Planning and Cooperation (DoPC). The project became effective on 28 April 2016, the revised completion date is 31 December 2022, and the closing date is 30 June 2023. The total cost for the project is USD 38.8 million, which consists of a GAFSP grant of USD 24 million administered by IFAD; a GAFSP grant of USD 6 million managed by the World Food Programme (WFP); Government of Lao PDR (GoL) contribution of about USD 5.4 million, and contributions from beneficiary groups and local private sector are estimated as USD 3.3 million. Additional Financing of USD 3.8 million (GAFSP grant of USD 1.5 million administered by IFAD and GAFSP Grant of USD 2.3 million administered by WFP) was approved in 2020.
2. AFN is implemented in 12 Districts in the four northern Provinces of Oudomxay, Phongsaly, Xiengkhoang and Houaphan.
3. The IFAD, WFP and the MAF conducted a joint Project Completion Review Mission[34] of the AFN project from 27th March to 11th April 2023. The main purpose of the mission was to report on the results achieved through project interventions for accountability and learning purposes. The Project Completion Review should also help reflect on performance, elicit lessons learned and define an appropriate hand-over or post-project strategy.
4. The mission kick-off meeting was organised on 27th March 2023 and was chaired by Dr. Thatsaka Saphanthong, Director-General of the Department of Planning and Cooperation of MAF, and was joined by project implementing partners at national, Province and District levels as well as external stakeholders. The mission conducted in-depth discussions with the National Project Coordination Office, WFP and United Nations Food and Agriculture Organisation (FAO). Field visits were conducted in all four target Provinces from 29th March to 7th April 2023. The mission presented initial findings to stakeholders at a workshop in Vientiane on 10th April 2023. The wrap-up meeting on 11th April 2023 was also chaired by Dr. Thatsaka Saphanthong.
5. The mission expresses its appreciation to the Government of Lao PDR, MAF, and other related ministries and Departments, NPCO and all stakeholders who participated in meetings of the mission for their cooperation, hospitality and support extended to the mission.

A2. Key mission findings and conclusions

6. AFN is a successful project. Overall project performance is rated as satisfactory (5).
7. AFN is strongly aligned with GoL's key policies and strategies in the agriculture, food security and nutrition sectors, including the National Nutrition Plan. AFN led the way in adopting a decentralised implementation approach based on coordination and capacity enhancement of the key convergence agencies at District level.

[34] The mission team comprised Julian Abrams, Team Leader; Do Thanh Lam, Agronomist and M&E specialist; Ilaria Bianchi, IFAD Nutrition specialist; Keo Duangchai, Safeguard specialist (SECAP); Duy Phan Toan, Procurement Specialist; and Nguyen Huong Tra, Economist. Rachele Arcese, Programme Officer and AFN Task Manager joined for the wrap-up meeting.

8. AFN substantially achieved its outreach target of 227,800 direct beneficiaries (reported outreach is 92.5% of target) who are mainly poor and near-poor residents of upland villages selected on the basis of priority need for nutrition and agriculture livelihoods support. Around 50% of direct beneficiaries are female and 78% belong to non-Lao ethnic groups.

9. AFN substantially achieved its Project Development Objective (PDO) of *Improved and Diversified climate resilient agricultural production and household nutrition enhance life prospects* despite the negative influence of the COVID-19 pandemic and increased input prices and disruption to product markets caused by the Ukraine conflict. The PDO indicator based on households achieving income above poverty level was 85% achieved and the indicator based on improved food security was fully achieved.

10. Project Relevance, Effectiveness and Efficiency are rated as Satisfactory (5). Project Sustainability is rated as Moderately Satisfactory (4). Environmental sustainability is a concern in the context of increasing pressure on land and natural resources in the project areas.

11. The following recommendations are offered for consideration in developing implementation guidelines for AFN Phase II and for design of future projects:

    a. Agriculture extension should be decentralised and demand-led, based on supporting farmer-to-farmer learning on topics directly connected to production activities or value chains supported by the project, e.g. to Agricultural Production Group (APG) activities;

    b. Adopt a stronger focus on water for domestic use and homestead agriculture, including (i) a logframe target; (ii) conservation and management of watersheds; (iii) water, sanitation and hygiene education integrated with nutrition learning content; (iv) prioritise investments in water supply systems where needed;

    c. Clarify the different purposes of garden grants and APG grants to beneficiaries;

    d. Strengthen the targeting of APG grants to (i) ensure no household can benefit from individual grant finance from more than one APG; and (ii) additional measures to assist poorer households to overcome barriers to their participation in APGs;

    e. Simplify village procurement processes and consider measures to overcome difficult access to banking services for remote villages;

    f. Adapt the APG to a more market-orientated approach, including business planning, financial literacy and marketing training and building networks with buyers and other value-chain actors, similar to the Business Cluster approach of IFAD projects in Cambodia;

    g. Integrate food processing with nutrition education and cookery classes in the Farmer Nutrition Schools (FNS). Design of FNS buildings should be flexible to accommodate local needs and cultural preferences;

    h. Rice irrigation schemes should be funded only where it can be verified that (i) the scheme will cost-effectively benefit a high proportion of households including the poor (ii) that the scheme is not highly vulnerable to natural disasters; and (iii) that sustainable operation and maintenance provisions can be made;

    i. Community fishponds should be dropped as an eligible expenditure of infrastructure grants;

    j. Adopt a gender-transformative approach across all project components, including an action-orientated gender action plan (GAP);

    k. Develop tools to identify and address specific climate change vulnerabilities at the village level, ensuring that these are fully understood by beneficiaries and promoting appropriate adaptation measures;

l. Adopt appropriate measures to improve sustainable land management, including protection of forested slopes and watersheds, as a complement to agriculture production support activities;

m. Further strengthen the M&E system including (i) ensuring a consistent survey instrument, methodology and sampling strategy is used for the household survey at baseline, mid-term and endline; (ii) improve population estimates (number of households and household size) in target villages; (iii) ensure no double-counting of beneficiaries in outreach figures; and (iv) consistent disaggregation of data by poor / non-poor households.

A3. Summary of Project Ratings

Criterion	PCR Rating
Project Performance	
– Relevance	5
– Effectiveness	5
– Efficiency	5
– Sustainability	4
Rural poverty impact	
– Households' incomes and assets	5
– Human and social capital	5
– Food security	5
– Agricultural productivity	5
– Institutions and policies	4
– **Overall rural poverty impact**	5
Additional evaluation criteria	
– Gender equality and women's empowerment	5
– Innovation	5
– Scaling up	5
– Environment and natural resource management	3
– Adaptation to climate change	4
– Targeting and outreach	4
– Access to markets	4
Partners performance	
– IFAD's performance	5
– WFP's performance	5
– Government performance	5
Overall project achievement:	**5**

B.

C. Assessment of Project Performance

C1. Project Delivery

12. **Physical Outputs:** AFN has achieved or exceeded most of the revised physical output targets as agreed at the MTR.

13. **Outreach:** Project reporting indicates that overall project outreach was 31,557 beneficiary households, which is 92.8% of the target. Reported female beneficiaries reached 105.6% of the target while reported male beneficiaries was 79.4% of the target. The Mission notes some inconsistencies in the reported figures, including (1) the implied household size of 6.68 persons (210,684 beneficiaries in 31,557 households) is larger than the actual average household size of 5.8 measured in the household survey; and (2) the implied gender imbalance (population 57% female) does not seem plausible and again is not consistent with the household survey (49.2% female).

C2. Project Performance

14. **Project relevance is rated as satisfactory (5).** The overall design was consistent with the needs of the target groups and to key GoL policies and programmes for nutrition and smallholder agriculture development and remained so throughout the project period. The overall internal logic of the project design is coherent and sound at the strategic level. Project interventions as experienced by direct beneficiaries (nutrition schools, support for production of nutritious foods for home consumption and the market, public infrastructure, grassroots farmer organisations) were highly relevant to their needs. Less relevant activities (e.g. land use planning) were scaled down or dropped after MTR. Elements oriented to value chain development (SIPs and PPCPs) were relevant to the needs of the target groups but proved less relevant to the overall focus of the project activities. Technical Service Centres (TSC) with their current form, staffing and mandate do not have the potential to perform the outreach role that was envisaged in the project design. A more demand-led approach to agriculture extension could have been adopted at the design stage. There was insufficient differentiation between the purpose and eligible expenditures of the Garden Grants and the APG grants.

15. **Project effectiveness is rated as satisfactory (5).** The Project Development Objective of *Improved and Diversified climate resilient agricultural production and household nutrition enhance life prospects* has been achieved for at least a high proportion of direct beneficiaries with the caveat that overall climate resilience of agricultural practices in the target areas needs further improvement and is threatened by uncontrolled clearing of upland slopes and watersheds for cropland. The PDO indicator of households escaping poverty has been achieved for 85% of the target number of households, a creditable performance particularly in view of the impacts of COVID-19 and the war in the Ukraine, while the indicator for improved food security has been exceeded.

16. **Project efficiency is rated as satisfactory (5).** Project implementation was efficient and output delivery largely problem-free despite some challenges, including staff and consultant recruitment, COVID-19 and additional financing, that caused slow progress and disbursement in 2017-2019 and 2021, especially Component 2.

17. DAFO provided active support for preparation of infrastructure/ APG proposals, technical trainings, procurement and implementation concerning limited capacity of the village implementation teams. The Village Development Planning (VDP) process and community contribution (labour, local materials) for construction of small-scaled infrastructure helped to (i) increase participation and ownership; (ii) strengthen local empowerment and community cohesiveness; and (iii) enhance maintenance capacity. Limited interest of contractors for small-scaled infrastructures in remote location of villages resulted in low competition and marginal cost-saving through procurement. Procedures for APG grant transaction and procurement of production inputs are still complicated and could be simplified. For example, APG could purchase inputs directly from local suppliers with receipt records.

18. Actual project costs stand at 101% of appraisal. GoL expenditure is reported as significantly less (-15%) than the commitment, while beneficiary contributions exceed the design estimate (+54%). Other financiers' contributions were largely on target. AFN delivered good value for money (except for investments in irrigation and community fishponds). The economic internal rate of return (EIRR) is estimated at 14.3%, significantly higher than the design estimate of

8.65%. Costs per beneficiary and management costs are much higher than the design estimates, reflecting the high costs of working in the remote target villages.

19. **Project Sustainability is rated as moderately satisfactory (4).** The most important project benefit streams are expected to continue after project completion. The policy framework is expected to remain consistent and capacity to deliver the national nutrition programme, particularly at District and village level, has been significantly enhanced. The project has prepared an exit strategy including arrangements for hand-over of responsibilities for ongoing support to farmer nutrition schools (FNS) and Agriculture Production Groups (APGs). There is considerable enthusiasm amongst participants to continue with FNS activities, though the capacity to sustain them without project funding and assistance may be limited. The strength of APGs is variable (the project assessed 14% of APG as "strong", 56% as "medium", 28% were in the initial stage of development and 2% were inactive) but the strongest groups are likely to continue their activities centred around group marketing, sharing of techniques, some cooperative production activities and / or group revolving funds. It should also be noted that an APG that becomes inactive after facilitating technology transfer and investment grants to its members, enabling them to make a sustained improvement in their livelihoods, has not "failed"; ongoing group activity may not be relevant to the specific needs of the farmers in every case. On the negative side, the responsible agencies at District level (DAFO, LWU and others), lack resources needed to provide consistent ongoing support to village-level institutions in the absence of project funds.

20. The project has supported the formation of operation and maintenance committees for most infrastructure outputs. In some cases user fees are collected, while in others, contributions of cash and labour will be mobilised when there is a need. There is an evident intention on the part of the beneficiaries to maintain these investments. However, it is likely that in some cases the resources needed for maintenance and /or emergency repairs will exceed what can be mobilised at village level, while there are very limited state budget funds available for maintenance of village infrastructure.

21. Environmental sustainability of agricultural practices in the project target areas is a significant concern. As observed by the mission team there is widespread clearance of forest land (well beyond the scale and previous extent of traditional slash-and-burn practices) for agriculture production which includes upland rice, maize and fodder for cattle. This is leading to a serious air pollution problem and likely to cause damage to water resources as slope soils lose their water retention capacity, soil erosion, loss of fertility and potentially destabilisation of slopes. AFN agriculture activities are not a contributor to this problem but take place within this context, and future projects should complement agriculture production support with measures to improve sustainable management of land, forests and watersheds.

C3. Rural Poverty Impact

22. The project is assessed as having made a **satisfactory (5)** contribution to **Household Incomes and Assets** of the project beneficiaries. The endline survey estimated that 19,506 beneficiary households increased their income by 30% and also measured an increase of 10.6% in a basket of household assets compared to the baseline, compared to 8.9% in control villages. Project beneficiaries attested to the project impact of increased incomes through sales of produce and increased assets in the form of livestock in particular. In assessing these achievements, it must be remembered that the target communities suffered the adverse impacts of COVID-19 which included temporarily losing access to important markets; outbreaks of African swine fever and avian influenza, and increased prices of agriculture inputs linked to the war in the Ukraine and to the major devaluation of the Lao currency, all during the final three years of the project.

23. The project contribution to **Human and Social Capital is assessed as satisfactory (5).** Poor rural women and men have been supported to develop and their organisations have been strengthened. At community level, the project supported village development planning with a significantly more participatory approach than was normal practice previously, and also

supported the participatory development of nutrition plans. Beneficiaries have been supported to form farmer nutrition schools and agriculture production groups, the best of which have an excellent chance to achieve sustainability. Capacity of village facilitators, predominantly women, as well as lead farmers has been enhanced. Farmers have gained knowledge and experience in improved production techniques. Beneficiaries, including older women and men outside the initial PLW target, have gained improved knowledge of nutrition.

24. The project has made a substantial contribution to formation of social capital at the village level, including through participatory planning activities, FNS and the APGs.

25. The project contribution **to Food Security and Nutrition is rated as satisfactory (5).** AFN I was originally not designed as a nutrition-sensitive project, but nutrition was mainstreamed at MTR. The rational for going beyond food security and retrofitting nutrition in AFN I, was the rising evidence on the lack of diet quality and diversity, rather than limited access to food and calories intake. The end line Survey and completion mission assessed both food security and nutrition impact and showed satisfactory results on both these dimensions.

26. On **food security**, against a target of 21,000 HHs having 2 months or less food insecurity, AFN I attained 31,366 households, including 29,765 households reporting having zero months of food insecurity. The project has focused on many activities to improve all variables of food security. In particular, AFN focused on food availability by expanding and intensifying the production of nutrition-dense plant-based foods (vegetables, legumes and fruits), as well as the promotion of animal-based protein for household consumption (chickens, ducks and pigs); it increased food accessibility by promoting income-generating activities, with a focus on women; it also invested on food utilisation by investing in market access and infrastructures, as well as nutrition education; and it limited the negative impact of cyclical events on food access by building life skills and increasing overall livelihoods.

27. Concerning **nutrition**, the project demonstrated a clear improvement in dietary diversity among women of reproductive age and under five children. In particular, 55% of children between 6-23 months met the minimum acceptable diet (MAD), versus only 14% at baseline and 35% in control (not AFN) villages at completion. On respect to minimum diet diversity of women (MDD-W), this indicator was not assessed at baseline given that nutrition was mainstreamed only at MTR, but the endline data shows that 89% women reached it in the project area, against 80% in control villages. Another positive trend is confirmed by the household dietary diversity score (HDDS), which shows that households living in AFN villages have a better score (7.4), than households living in control villages (6.4) and that the score has significantly improved since baseline (5.2). This means that at completion, the percentage of households that consume more than 5 food groups in a day is 89% in AFN village, compared to 74% for control villages." All women benefiting from the garden grants have established (homestead) gardens, which provide them with food for eating and surplus for selling", as explained by Si Phut, a 30 years old Farmer Nutrition school facilitator from TaT Mouan Village. With the profit women declared to buy food items and pay for other expenses for children and family; in some cases, the profit has been used to expand the food items of their (homestead) gardens and make more money.

28. A specific nutrition KAP survey was also carried out to assess progress on key **nutrition education** elements. Findings show that there is an overall better understanding on food and nutrition. All topics related to food practices, infant and young child feeding and cultures are understood by all the households members interviewed (total average score 90%) as well as hygiene and food safety (average score 87%). All six focus group discussions organised by the mission team with women benefitting from APG and /or Garden grants proved that women, with no difference between ethnic groups, have gained more capacities on nutrition which are applied on a daily basis to ensure adequate diet diversity for all household members, appropriate Infant and Young Child Feeding practices, family planning, adequate hygiene and use of safe water for drinking and cooking. Also, they reported to have learnt how to cook and prepare food which is healthy and nutritious.

29. As explained by all key informants another great result of AFN is the improved knowledge and awareness on nutrition of men and their enhanced interest on children care and prevention of malnutrition. Another significant result of AFN is the contribution provided on policy and governance with the operationalization of the District Nutrition Committees (DNCs) in all 12 districts covered by the project and the development of community driven Village Nutrition Plans (VNPs) integrated with the Village Development Plans (VDPs) process and highly representative of all village members, both men and women.

30. Concerning AFN project goal on **stunting reduction**, the mission observed that it was not very appropriate because: i) the objective of 10% decrease in rate over the project life cycle of 6 years is absolutely too ambitious, and even more important, because ii) the relevance of many other determinants in malnutrition (i.e. social justice, health equity, maternal education, human rights etc.etc.) indicate that they shall all coexist at regional, national, community and household level in order to produce an impact, whereas AFN only addressed some of them. Having said that, no anthropometric measurements were taken during the project period and data assessment relied on national surveys. According to the Logframe, project goal indicator of stunting was to be measured through the data from the Lao Social Indicator Survey (LSIS) provided by Ministry of Health. However, data from the third round is not yet available as data collection for LSIS III was delayed due to the COVID-19 from 2022 to 2023. Therefore, in order to estimate the progress achieved up to now, data at baseline from LSIS II were compared to other secondary data available at district level (from the Reducing Rural Poverty and Malnutrition Project of the World Bank). According to them, stunting at district level has decreased in average by 2.1% and underweight by 5.5%. Furthermore, preliminary data analysis of LSIS II data confirm the reduction; in addition, three Provincial Health Officers interviewed during the completion mission, explained that number of admissions for stunning has decreased in the targeted villages since AFN and data from regular child growth monitoring are much better.

31. **Agricultural Productivity is rated as Satisfactory (5).** The Project activities have led to a good increase in agricultural productivity or production in the project target area. The endline survey reports increases of 94% in crop production and 79% in livestock production, with sales increasing by more than 200% in both cases. These figures seem surprisingly high, though it is notable that the sales values are expressed in Lao kip which has undergone a major devaluation during the project period. Evidence from discussions with beneficiaries is of very satisfactory improvements in production and productivity from most activities supported by the APGs and by the home garden grants.

32. Project impact on **Institutions and Policies is rated as Moderately Satisfactory (4).** Grassroots organisations (Farmer Nutrition Schools and APGs) have made good progress to sustainability overall but (except the strongest) will still require support and it cannot be guaranteed that this support will be provided post-project. Institutional capacities of implementing agencies, particularly at District level, have been significantly improved, as has the capacity and functioning of the DNC. The overall policy and institutional framework has not been significantly altered by the project, but capacity and commitment to implementation of existing and appropriate policy and programme, particularly for nutrition, has been enhanced.

33. **Overall Rural Poverty Impact is rated as Satisfactory (5).** The project has had a good contribution to reducing rural poverty in the project target area. It has effectively reached out to large numbers of poor rural women and men, meeting targets. The rural poor, and their communities, have largely benefited from project implementation and their incomes, livelihood means, and food security have improved as a result of their participation in project activities. This rating is consistent with the results reported by the household survey and with the views and experiences of project beneficiaries as expressed to the mission.

C4. Additional Evaluation Criteria

34. **Gender Equality and Women's Empowerment is rated as Satisfactory (5).** Women accounted for a substantial number of beneficiaries, including 91% of FNS participants. This is

a shift from previous practices where men were often the target participants for village meetings, trainings, and information sessions because women were supposed to be busy with household chores and tasks. With AFN, women became more confident to participate in household and community discussions and more accepted by communities and household to do so. Garden grants were distributed to 22,970 women. Women constitute 79% of the VNFs. The project reports that 48% of APG members are women and out of seven PPCP entrepreneurs, two were women.

All **three dimensions** of Gender equality and women's empowerment were assessed at completion by a specific gender assessment carried out by an independent consultant recruited by MOA. The assessment involved 600 beneficiary households and 120 key village actors, in 60 villages of 12 target districts of the project. In addition, the completion mission team undertook eight individual interviews and six focus group discussions. Unfortunately, AFN I baseline did not integrate quantitative data to allow comparison before and after the project implementation, so we mainly rely on the recorded perceptions of beneficiaries.

Overall, all dimensions of Gender Equality and Women's Empowerment (GEWE) have improved; it has observed an increase in nutrition knowledge for women, but also indirectly for men, stronger economic empowerment and decision-making, time-saving, increased leadership and decision-making roles for women in the communities, and women having increased access to information and training. In particular, concerning i) **women workload:** 85% of pregnant women interviewed stated that they worked less since joining FNS; according to the 90% of those women, the reason is that the husband helps out more during the pregnancy. Furthermore, 96% female participants indicated that they have received more support from their families since attending FNS, particularly with cooking (87%), caring for other household members (85%) and cleaning (72%). Men's groups mentioned that the water assets supported by the project reduced the heavy work and time of women spent on water collection from distant sources.

On respect to ii) **women's participation in decision-making** processes, the majority of women agree that husbands and wives had more discussions on sharing chores and on livelihood activities, and that men had more respect for the opinions of their wives than before. In 55% of households, both women and men decide on what food to buy, whereas in 24% only women decide and in 17% only men decide. The majority of women indicated that they can make their own decisions on seeking healthcare (64%), spending time with relatives and friends (69%), and 34% cannot visit the district center without permission. Furthermore, 57% of women indicated that they are not able to make their own choice about their sexual and reproductive care. 89% of women reported being more involved in decision-making within the village after the AFN project started. This was confirmed by women in FGDs, who also noted that they were able to attend more meetings together with men after the project started. This was confirmed by the majority of men who agreed that collaboration between women and men was enhanced and that women were more confident to communicate their knowledge to the household.

With regard to the third dimension of GEWE on iii) **economic empowerment**, the project was able to provide additional livelihoods to women and also to increase their income as a result of being able to sell more products (90%), as well as a result of skills increase (80%). According to FGDs, these results were achieved through the implementation of homestead green gardens and the attendance of the FNS

35. **Innovation is rated as satisfactory (5).** The FNS and the Village Nutrition Plans introduced a genuinely innovative approach which is being scaled up in Lao PDR and has potential for replication elsewhere. While not strictly a technical innovation, the project led the way in committing to support the convergence approach and strengthening the District Nutrition Committees and took a decentralised implementation approach in line with the GoL "Sam Sang" policy. The project has made notable efforts to document and disseminate lessons learned.

36. **Scaling Up is rated as satisfactory (5).** Development partners have shown strong interest in certain elements of the project implementation strategy and good potential for scaling-up and

replication exists. Support to the convergence approach and the District Nutrition Committees has already been replicated by other agencies. FNS are part of World Bank supported projects (PRF-III and CLEAR) and WFP plans to replicate important elements of AFN in its own programmes, funded separately by ADB/EU and GAFSP. AFN as a whole, with suitable modifications, will be scaled up in AFN-II. Elements of the AFN approach are replicated in the IFAD-financed PICSA.

37. **Environment and Natural Resource Management is rated as moderately unsatisfactory (3).** High pressure on the natural resource base linked to harmful agricultural practices, primarily uncontrolled clearing of forest on steep slope areas for cultivation, was evident throughout the project target districts from mission observations and discussions with project beneficiaries. It is not considered that AFN has contributed significantly to this problem, though any expansion of agricultural production, for example increases in cattle herd numbers, must inevitably increase pressure on finite resources. Conversely positive measures by the project to improve environmental management were not strong enough to overcome these negative pressures. Communities commented on increasing problems with water supplies which are likely to be linked to clearing of watershed areas for production. Soil erosion, siltation of watercourses and slope instability are likely consequences of excessive land clearing. Throughout the field mission the project area was under cover of smoke haze caused at least in part by burning of ground in preparation for cultivation If this continues it is likely to have significant effects on human health. The project adopted a checklist approach to screen infrastructure sub-projects for social and environmental risk, and any negative impacts are expected to be very minor. However, the Environmental Management Plan (EMP) was not systematically monitored, and no safeguards report has been prepared. Environment and natural resource management is an area that should be strengthened in AFN-II.

38. **Adaptation to Climate Change is rated moderately satisfactory (4).** The project areas have been impacted by climate change recently. Project target areas are increasingly vulnerable to major disasters such as floods, landslides, storms and droughts. The rainy season between June and September is likely to cause local flooding in Xiengkhouang, and much of Houaphan. Parts of the project districts located along the major and tributary rivers are flood-prone; these include areas near the Nam Ou river and its tributaries in Phongsaly and Oudomxay provinces. In 2022, the tributaries of Nam Ou such as Nam Pak in Na Mor district and Kho River in La district experienced severe flash floods and around 270 hectares of farmland was damaged, 90% of which remains unrestored; 18 Irrigation schemes and a variety of livestock were affected as well. In Phongsaly province, the floods affected residential houses, roads, and other community infrastructure. In Houaphan province, 287 households were affected by flooding in the same year, and four houses were partially damaged. Drought mostly has direct impacts on agriculture and food security, people's livelihoods, clean water resources, and sanitation. Drought risk affects all project provinces during the dry season between October and March with Oudomxay, Xiengkhouang and surrounding areas being the most drought-vulnerable.

39. In adaptation and resilience to climate change, the AFN has supported technical trainings on agriculture, livestock and husbandry programs with the advantage of small-scale infrastructure such as irrigation systems, gravity fed systems, access roads and tracks and suspension bridges. These activities have facilitated local communities in improving their livelihoods, generate income, and promote food for nutrition through the project activities such as home gardening, poultry raising, cattle raising, and rice production.

40. **Targeting and Outreach is rated as Moderately Satisfactory (4).** The project achieved 92.8% of its target outreach, though the reported data are unclear in some respects (see paragraph 8) and it is likely that the reported number includes villages that did not benefit from the full scope of project support (e.g. no infrastructure activity). Selection of target Districts and villages was generally satisfactory (though there seem to be some villages that may not have been highest priority). Criteria for selection of target beneficiaries for FNS, APGs and grants were clear and appropriate. However, it is less clear that selection criteria were consistently applied for APG beneficiaries. It is noted that some households were able to benefit from

multiple grants (e.g. garden grant and two or more APGs) while others missed out. For some APG activities, criteria set to ensure capacity of the farmer to participate (e.g. having a fishpond for fish APG, cow owner for cattle APG) are likely to have excluded poorer households who could have benefited if additional support had been provided. Irrigation activities seem to have typically benefited only a limited number of households per scheme who were not likely to have been the poorest.

41. **Access to Markets is rated as Moderately Satisfactory (4).** There is evidence that some, though not all, APGs were able to improve their market access through (mostly informal) arrangements with buyers and through the advantage of production at increased scale making it more worthwhile for buyers to visit these remote communities. Road investments also increased farmers' access to markets and facilitated buyers' travel to villages and production areas. However, the Sector Investment Plans (SIP) and the contract farming support in Component 1 had little impact. The PPCPs succeeded in improving market access but the total beneficiaries of these arrangements (2,832 farmers) was small compared to the total target population.

C5. Partners' Performance

42. **Performance of IFAD is rated as satisfactory (5).** IFAD assisted GoL to prepare a strong design that has stood the test of implementation in most respects, and has provided strong supervision support (evidenced by the quality of supervision reports) and guidance on modifications where needed. The Project Completion Report produced by NPCO largely reproduces the descriptor from the ratings guideline: **"**IFAD has provided a strong support during design and implementation, as recognized by most partners. The quality and timeliness of supervision mission was satisfactory and their recommendations relevant. Adequate implementation support was provided when required. Loan administration and procurement reviews were managed promptly, and funds' transfers were mostly timely. IFAD was pro-active in solving most implementation issues." WFP commented that the several changes in Country Director for Lao PDR caused some coordination challenges, but the CPO has provided constant support throughout the project life.

43. However, the Project Completion Report notes a number of respects in which the project felt that IFAD systems and procedures caused implementation difficulties and IFAD performance could have been stronger, as follows:

    a) It was challenging for the project to develop necessary manuals and guidelines in the inception period and more support from IFAD would have been welcome;
    b) More IFAD training for project staff would have assisted in operationalising the project M&E systems at the start of the project;
    c) New indicators were introduced during the project life, causing some confusion (note: this seems mainly to have been a one-time issue caused by introduction of the new ORMS template globally);
    d) Recommendations were not always consistent from one supervision mission (SM) to the next, depending on the views of the different consultants mobilised;
    e) SM recommendations had at times budget implications but no guidance was given on this aspect;
    f) With a number of changes in the Country Director during the project lifetime, there were times when communications became difficult and decisions were delayed. The Country Programme Officer provided strong support throughout but did not have decision-making authority to resolve these situations.

44. **Performance of WFP is rated as satisfactory (5).** WFP delivered the outputs of Component 2 with good quality and provided strong and effective technical assistance across all project components at NCPO level. WFP provided full support and was part of all the Supervision

Missions and Implementation Support Missions. At Provincial and District levels the WFP staff tended to focus primarily on Component 2. Supervision Missions identified a need for these staff to broaden their focus to provide consistent support across all components.

45. Direct implementation of activities at village level by WFP appears to incur a somewhat higher cost than would be the case with Government implementation, but WFP were able to recruit and deploy qualified and motivated staff whose assistance improved project delivery quality overall. GoL satisfaction with the value for money provided by WFP is indicated by the request for the same implementation arrangements in AFN-II.

46. WFP performance in administering the TA project was satisfactory. Joint WFP-IFAD reports to GAFSP were prepared on time and met the required quality standards.

47. **Government Performance is rated Satisfactory (5).** Project management and M&E systems were responsive and effective. District implementing agencies cooperated fairly well under the District Coordinating Committees (some coordination challenges were mentioned in District stakeholder meetings). The project overcame the considerable challenge of COVID-19 to deliver most outputs in a timely and efficient manner. The performance of the Ministry of Finance in managing the Special Account and complying with IFAD's rules and regulations was satisfactory. The Project Steering Committees on national, provincial and district levels met as scheduled and were proactive in providing the required directions in steering the project implementation. The audit reports were prepared on time and met the highest quality standards.

48. The project was proactive and effective in implementing agreements made with SM and MTR missions.

49. GoL compliance with covenants of the Financing Agreement was satisfactory with only minor issues noted in SM reports (e.g. lack of health insurance for project personnel) in the early stage of the project.

50. GoL provided counterpart funding in a full and timely manner (rated 6, Highly Satisfactory by the end of the project).

Lao People's Democratic Republic

Strategic Support for Food Security and Nutrition Project - GAFSP funds

Project Completion Report

Annex: Appendix 1 B

Mission Dates:	27 March - 11 April 2023
Document Date:	27/06/2023
Project No.	2000001131
Report No.	6522-LA

Asia and the Pacific Division
Programme Management Department

Appendix 1b: Additional Indicators Reported to GAFSP

A: GAFSP Core Indicators

GAFSP Core Indicator		Baseline	End of Project Target at Design	Final Achievement
Number of beneficiaries reached[29]	Number	0	227,800 (34,000 HHs) 100% of population	210,684 (31,557 HHs)
	Gender (Male/ Female)	0	>50% female	57% female
	% helped to cope with impact of climate change[30]	0	No project target	95%
		Briefly explain nature of climate change-related support: • Promote short-term and drought tolerant crops and varieties • Water management practices including drip irrigation • Organic production practices • Soil preparation techniques • Irrigation • Promote forage cover crops Climate change proofing of infrastructure		
Number of people receiving improved nutrition services: (in this case training on nutrition sensitive agriculture as part of FNS), disaggregated by gender, age, vulnerable groups		0	25,000[31]	29,791 (23,924 female) (22,385 non-Lao ethnic groups)
Number of trained additional civil servants dedicated to sectoral planning and strategy (including skills for project implementation)		0	No project target[32]	7,308 with 3,355 women (these are NOT unique participants as this is not tracked)

[29] Number of beneficiaries reached, gender disaggregated, percentage who have been helped to cope with impact of climate change (number of people).
[30] This indicator is not part of the AFN logframe and as such has not been tracked previously. The progress reached in this reporting period is an estimate. All farmer trainings for APG and FNS members include information on climate change and its possible mitigation activities
[31] Target set after MTR
[32] From the start of AFN unique participants of trainings were not tracked.

B: Progress of Key Output and Activity Indicators

The indicators in the following table are not formal project logframe targets but have been included in regular six-month reports to GAFSP.

Main indicators / activities for succesful project implementation	Indicator	Target		Achieve-ment
		After MTR	*With AF*	
Agriculture Production Groups (APG) formed	# of APGs	800	800	872
Number of members of Agriculture Production Groups (APG) - up to 20 members/APG	# of APG member	12,000	14,000	13,915
Lead Farmers selected and trained - crop and livestock	# of lead farmers	800	800	884
APG grants disbursed	# of APG grants	800	800	802
Number of on-farm demonstrations (villages and number of demos)	# of villages	200	200	265
	# of demos	500	600	900
Garden Grants disbursed	# of grants	15,000	25,000	22,970
Participants of Farmer Nutrition School	# of participants	28,000	30,000	34,628
Number of Village Nutrition Facilitators trained and active	# of VNF	1,200	1,200	1,217
Number of Village Nutrition Centers constructed / rehabilitated / upgraded and cooking utensils distributed	# of VNCs	400	400	389
Number of Techical Service Centers (TSC) supported / rehabilitated and operating sustainable	# of TSC	14	14	14
Tons of forage seed produced and disseminated - 15 tons per year	tons of seed	120	90	92.7
Number of beneficiary households participating in VDP preparation	# of households	34,000	28,000	32,738
Number of simple Village Plans developed	# of plans	300	300	365
Number of Small Village Infrastructures constructed	# of sub projects	400	424	443
Number of Small Village Infrastructure activities – Additional Finance	# of sub projects			22
Number of beneficiary households of Small Village Infrastructure activities	# of beneficiaries	30,000	30,000	30,350
Area and beneficiaries of irrigated land established (new and rehabilitated irirgation schemes)	# of ha	300	450	559
	# of HHs	3,000	6,500	1,235
Kilometer of rural road constructed / rehabilitated	km of road	400	400	757
Number of Water Supply beneficiaries	# of HH	7,500	7,500	9,795
Number of PPCP established and farmers benefitting	# of PPCP	7	7	7
	# of beneficiaries	2,000	2,000	2.832