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Investing in rural people

President's memorandum

Proposed additional financing

Republic of Sierra Leone

Agriculture Value Chain Development Project

Project ID: 2000001544

Note to Executive Board representatives

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Abbreviations and acronyms

AVDP	Agriculture Value Chain Development Project
AWP/B	annual workplan and budget
DSF	Debt Sustainability Framework
M&E	monitoring and evaluation
NPCU	National Programme Coordination Unit
OFID	OPEC Fund for International Development
PBAS	performance-based allocation system
PIU	project implementation unit

Financing summary

Initiating institution:	IFAD
Borrower/recipient:	Republic of Sierra Leone
Executing agency:	Ministry of Agriculture and Forestry
Total project cost:	US$101.2 million
Amount of original IFAD financing:	US$11.8 million
Terms of original IFAD financing:	50 per cent Debt Sustainability Framework (DSF) grant and 50 per cent loan on highly concessional terms, over 40 years, including a grace period of 10 years, with a service charge of three quarters of one per cent (0.75 per cent) per annum
Amount of additional IFAD financing:	US$28.5 million
Terms of additional IFAD financing:	27 per cent DSF grant and 73 per cent loan on highly concessional terms, over 40 years, including a grace period of 10 years, with a service charge of 1.46 per cent per annum. Principal is to be repaid at 4.5 per cent of the total each year for years 11 to 30, and 1 per cent of the total per annum for years 31 to 40.
Amount of IFAD climate finance:*	US$5.7 million
Cofinanciers:	Adaptation Fund; Tony Blair Institute
Amount of cofinancing:	Adaptation Fund: US$9.2 million (grant) Tony Blair Institute: US$0.1 million (grant)
Potential scaling up (IFAD11 financing):	US$12.3 million
Contribution of borrower/recipient:	US$14.5 million (taxes and duties)
Contribution of beneficiaries:	US$2.7 million
Contribution from private sector:	US$2.1 million
Financing gap:	US$20 million
Appraising institution:	IFAD
Cooperating institution:	Directly supervised by IFAD

* As per the Multilateral Development Banks Methodologies for Tracking Climate Adaptation and Mitigation Finance.

Recommendation for approval

The Executive Board is invited to approve the recommendation contained in paragraph 43.

I. Background and project description

A. Background

1. The Agricultural Value Chain Development Project (AVDP) in the Republic of Sierra Leone was approved by IFAD's Executive Board through the lapse-of-time (LOT) procedure in December 2018. On that occasion the project was approved with a Tenth Replenishment of IFAD's Resources (IFAD10) financing amount of US$11.8 million and a financing gap of US$28.5 million, which was the amount expected for Sierra Leone in the IFAD11 period.

2. When officially communicated at the December 2018 Executive Board, the IFAD11 performance-based allocation system (PBAS) allocation for Sierra Leone turned out to be US$40.8 million, which is to say US$12.3 million over the US$28.5 million foreseen at design.

3. The Government has subsequently requested allocation of the full IFAD11 amount of US$40.8 million to the AVDP. As well, IFAD is also in discussions with the OPEC Fund for International Development (OFID) for them to finance an amount of US$20 million.

4. While the present financing for Executive Board approval only refers to the US$28.5 million to cover the original financing gap, the IFAD Sierra Leone country team, in consultation with the Government, has redimensioned the AVDP project design and created: (i) a new financing gap of US$20 million to accommodate planned cofinance from OFID; and (ii) provisions for scaling up with an additional US$12.3 million from IFAD, subject to meeting the scaling up criteria at a later stage. These amounts have been included in the overall costs of the project. Among other aspects, this has included updates to the cost tables, economic and financial analysis, logical framework, and social, environmental and climate assessment.

B. Original project description

Project goal and development objective

5. The overall goal of the AVDP is to improve the livelihoods, food security and climate change resilience of rural farming households in Sierra Leone. The project development objective is to increase the incomes for smallholder farmers through the promotion of agriculture as a business.

6. The main outcomes by component are as follows:

Component 1: Climate-resilient and climate-smart agricultural production. The expected outcome of component 1 is that the volume and value of production is increased and the production systems are made more climate-resilient.

Component 2: Agricultural market development. The expected outcome of this component is improved performance and organization of the selected value chains, for increased smallholder production and productivity.

Component 3: Project coordination and management. The expected outcome is effective and efficient project implementation, with enhanced transparency and policy engagement for the project.

II. Justification for the additional financing

A. Rationale and justification for the additional financing

7. The proposed request to finance the original financing gap of US$28.5 million fully complies with the requirement for additional financing as outlined in the revised guidelines for additional financing for ongoing projects (PB/2014/01/Rev.1), since: (i) the objectives remain the same as in the original project design; (ii) Sierra Leone is eligible for PBAS resources, and there are resources available; (iii) the suggested activities comply with all IFAD policies; and (iv) the Government of Sierra Leone has officially requested the additional financing.

8. The Government has requested the full IFAD11 allocation of US$40.8 for the AVDP, i.e. US$12.3 million over the original financing gap of US$28.5 million. The Government has additionally requested US$20 million from OFID to finance further rehabilitation and maintenance of rural roads, which is a priority in the Government's Medium-term National Development Plan 2019-2023, as well as in the Government's New Direction People's Manifesto. This justifies the inclusion of these amounts in the overall project costs.

9. The AVDP is in the initial phase of start-up, as the financing agreement for US$11.8 was signed and ratified by the country's parliament in July 2019. The Ministry of Agriculture and Forestry and the IFAD country office have initiated the necessary processes to set up the project implementation unit (PIU), including fine-tuning of the project implementation manual.

B. Description of geographic area and target groups

10. The AVDP will be implemented in all 16 districts of Sierra Leone. With the exception of Western Area Urban District (at 20.7 per cent), all of the districts have poverty rates of 50 per cent to 62 per cent. Moyamba and Tonkolili have the highest poverty rates at 70.8 per cent and 76.4 per cent respectively. The widespread poverty in the country justifies the (national) geographic coverage of the AVDP. While rice is produced throughout the country, the production of cocoa, oil palm, vegetables and tubers is localized within specific districts, and thus the composition and intensity of project interventions will vary from one district to another.

11. The target population remains unchanged from the original approved design: men, women and youth. However, project outreach has expanded, and the number of direct beneficiaries has grown from 204,000 people (34,000 households) in the original design report, to 260,000 people (equivalent to 43,000 households).

C. Components/outcomes and activities

12. The project design, including all proposed financing sources, would have the following characteristics:

    Component 1: Climate-resilient and climate-smart agricultural production. The expected outcome of component 1 is that the volume and value of production is increased and production systems are made more climate resilient. Component 1 will have three subcomponents, as follows:

    (a) Subcomponent 1.1: Support for smallholder rice production and productivity. The project would originally support a total of 10,000 rice farmers by providing technical assistance through farmer field schools (FFSs) and financial support for the development of inland valley swamps, for double- or triple-cropping of rice and improved access to quality inputs and mechanized farming services. With the additional financing, another 625 rice farmers will be reached. Additionally, more farmers will have access to irrigation through boreholes and earth dams.

(b) Subcomponent 1.2: Support for tree crop production and productivity. The original design involved work with 13,000 farmers (5,000 cocoa and 8,000 palm oil producers), receiving technical assistance and support for the establishment of one hectare plots on fallow or abandoned agricultural land. No deforestation is permitted in order to clear land for the smallholder plantations. No large plantations will be supported. With the additional financing, another 2,000 tree crop farmers will be reached.

(c) Subcomponent 1.3: Support for smallholder vegetable and tuber production. This is a new subcomponent, financed through the proposed scaling up with additional IFAD funds. The subcomponent will facilitate increased access to improved vegetable seeds, fertilizer and agrochemicals, set up irrigation, and support mechanization for land preparation and harvesting, on-farm and off-farm storage, and improvement in processing facilities to reduce post-harvest losses.

Component 2: Agricultural market development. The expected outcome of this component is improved performance and organization of the selected value chains, for increased smallholder production and productivity. The component is made up of two subcomponents:

(a) Subcomponent 2.1: Market access. This subcomponent will focus on strengthening the business skills of agribusiness centres and farmers' organizations, FFSs, facilitating value chain organizations, and deal making, through the establishment of provincial multi-stakeholder platforms. Only marginal changes to the subcomponent are included, reflecting the request for further private sector counterpart funds in order to ensure ownership.

(b) Subcomponent 2.2: Climate-resilient rural infrastructure. This subcomponent originally involved the rehabilitation of warehouses to improve product drying and storage capacity, provide potable water and latrines, and rehabilitate feeder roads and farm tracks. With the financing gap (and planned OFID financing) the component will increase the feeder roads rehabilitated from 100 km to 420 km; the construction of farm tracks will increase from 150 km to 350 km; and, in addition, spot improvements will be undertaken on approximately 150 km of trunk road. Additionally, some buildings will be financed to house the frontline staff of the Ministry of Agriculture and Forestry in the areas with the highest concentration of project activities.

Component 3: Project coordination and management. This component has the objective of facilitating effective and efficient project implementation and monitoring and evaluation (M&E). With the potential scaling up, the financing of some additional frontline staff will be added, particularly engineers to facilitate the road work. Also, drawing on the potential scaling up of financing and with the objective of enhancing the ability of the Ministry of Agriculture and Forestry to deliver agricultural transformation and meet the targets of the Medium-term National Development Plan 2019-2023, the project will set up a delivery unit with the support of the Tony Blair Institute. Please see further details in paragraph 31.

D. Costs, benefits and financing

Project costs

13. The total combined AVDP investment and incremental recurrent costs, including physical and price contingencies, are estimated at US$101.2 million. Table 1 presents a summary of the breakdown of original and additional financing, while table 2 presents a breakdown of the costs by components and subcomponents for the additional financing, cofinancing and the potential scaling up. Component 1, climate-resilient and climate-smart agricultural production, will receive an additional amount of US$29.6 million (43 per cent of additional costs), while component 2, agricultural market development, accounts for US$28.6 million (42 per cent of additional costs), with US$10.5 million for the project coordination and management component (15 per cent of additional project costs). Table 3 below presents the additional project costs by expenditure category and financier, while table 4 presents project costs by component and year.

14. Project component 1, climate-resilient and climate-smart agricultural production, and in particular subcomponents 1.1 and 1.2, each contribute in part towards the IFAD climate finance. The total amount of IFAD climate finance for this project is preliminarily calculated at US$5,733,532, representing 20.1% of IFAD's investment.

Table 1
Original and additional financing summary
(Thousands of United States dollars)

	Original financing[a]	*Additional financing*	*Scaling up*[b]	*Total*
IFAD loan	5 895	20 805	9 027	35 726
IFAD grant	5 895	7 695	3 339	16 929
Adaptation Fund	9 156	-	-	9 156
Financing gap[c]	-	20 000	-	20 000
Tony Blair Institute	-	-	145	145
Beneficiaries/private sector	2 774	-	1 986	4 760
Borrower/counterpart	8 084	-	6 416	14 500
Total	**31 804**	**48 500**	**20 912**	**101 215**

[a] See tables 2 and 3 in document 5106-SL for a detailed breakdown.
[b] The scaling up amount will be presented for approval once the project meets the scaling up criteria.
[c] According to the plan, the financing gap will be financed with US$20 million from OFID in early 2020.

Table 2
Additional financing: Project costs by component (and subcomponents) and financier
(Thousands of United States dollars)

Component/ subcomponent	IFAD11 loan[a]		IFAD11 grant[a]		Additional														Total	
					Financing gap[b]		Proposed scaling up[c]		Tony Blair Institute		Private sector, beneficiaries			Government						
	Amount	%	Amount	%	Amount	%	Amount	%	Amount	%	Cash	In-kind	%	Cash	In-kind	%	Amount	%
1. Climate-resilient and climate-smart agricultural production																				
1.1. Support for smallholder rice production/productivity	6 637	45	2 455	17	-	-	4 156	28	-	-	102	169	2	1 207	-	8	14 727	21.2		
1.2. Support for tree crop production and productivity	6 619	51	2 448	19	-	-	3 215	25	-	-	88	92	2	557	-	4	13 019	18.8		
1.3. Support for smallholder vegetable and tuber production	-	-	-	-	-	-	1 743	85	-	-	0	0	-	308	-	15	2 051	3.0		
Subtotal	**13 256**	**44**	**4 903**	**16**	**-**	**-**	**9 114**	**31**	**-**	**-**	**190**	**261**	**2**	**2 072**	**-**	**7**	**29 797**	**42.9**		
2. Agricultural market development																				
2.1. Market access	1 112	41	411	15	-	-	-	-	-	-	298	696	37	168	-	6	2 686	3.9		
2.2. Climate-resilient rural infrastructure	2 105	8	779	3	20 000	76	-	-	-	-	363	177	2	2 971	-	11	26 394	38.0		
Subtotal	**3 217**	**11**	**1 190**	**4**	**20 000**	**69**	**-**	**-**	**-**	**-**	**662**	**873**	**5**	**3 139**	**-**	**11**	**29 080**	**41.9**		
3. Project coordination and management																				
Project coordination and management	4 332	41	1 602	15	-	-	3 252	31	145	1	-	-	0	1 205	-	11	10 537	15.2		
Total	**20 805**	**30**	**7 695**	**11**	**20 000**	**29**	**12 366**	**18**	**145**	**0**	**852**	**1 134**	**3**	**6 416**		**9**	**69 413**	**100.0**		

[a] IFAD11 loan and grants totalling an amount of US$28.5 million are presented for approval through this President's memorandum.
[b] According to the plan, the financing gap will be financed with US$20 million from OFID in early 2020.
[c] IFAD financing for scaling up will be presented for approval before the end of IFAD11, subject to meeting the scaling up criteria.

Table 3
Additional financing: Project costs by expenditure category and financier
(Thousands of United States dollars)

Component/ subcomponent	*IFAD11 loan*[a]		*IFAD11 grant*[a]		*Financing gap*[b]		*Proposed scaling up*[c]		*Tony Blair Institute*		*Private sector, beneficiaries*			*Government*			*Total*	
	Amount	%	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*	*Cash*	*In-kind*	*%*	*Cash*	*In-kind*	*%*	Amount	%
I. Investment costs																		
A. Civil works	2 105	8	779	3	17 798	69	1 494	6	-	-	380	216	2	3 130	-	12	25 902	29.9
B. Goods, equipment and vehicles	-	-	-	-	-	-	1 782	83	-	-	0	0	-	363	-	17	2 145	3.1
C. Technical assistance	2 851	30	1 055	11	2 202	23	1 381	14	145	2	282	658	10	1 009	-	11	9 582	16.3
D. Grants and subsidies	13 081	55	4 838	20	-	-	4 538	19			213	238	2	999	-	4	23 908	39.0
Total investment costs	**18 037**	**29**	**6 671**	**11**	**20 000**	**33**	**9 196**	**15**	**145**	**0**	**875**	**1 111**	**3**	**5 501**	**-**	**9**	**61 537**	**88.4**
II. Recurrent costs																		
A. Salaries and allowances	1 940	38	718	14	-	-	2 494	48	-	-	-	-	-	-	-	-	5 152	8.1
B. Operating costs	827	30	306	11	-	-	677	25	-	-	-	-	-	915	-	34	2 725	3.5
Total recurrent costs	**2 767**	**35**	**1 024**	**13**	**-**	**-**	**3 171**	**40**	**-**	**-**	**-**	**-**	**-**	**915**	**-**	**12**	**7 876**	**11.6**
Total	**20 805**	**30**	**7 695**	**11**	**20 000**	**29**	**12 366**	**18**	**145**	**0**	**875**	**1 111**	**3**	**6 416**	**-**	**9**	**69 413**	**100.0**

[a] IFAD11 loan and grants totalling an amount of US$28.5 million are presented for approval through this President's memorandum.
[b] According to the plan, the financing gap will be financed with US$20 million from OFID in early 2020.
[c] IFAD financing for scaling up will be presented for approval before the end of IFAD11, subject to meeting the scaling up criteria.

Table 4
Project costs by component and year
(Thousands of United States dollars)

	2020		*2021*		*2022*		*2023*		*2024*		*2025*		*Total*
Component/subcomponent	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*	*Amount*
1. Climate-resilient and climate-smart agricultural production													
1.1. Support for smallholder rice production and productivity	667	2	8 646	30	9 764	34	5 699	20	3 047	11	705	2	28 529
1.2. Support for tree crop production and productivity	1 058	6	4 830	25	9 917	52	3 174	17	53	-	53	-	19 083
1.3. Support for smallholder vegetable and tuber production	1 028	50	764	37	259	13	-	-	-	-	-	-	2 051
Subtotal	**2 752**	**6**	**14 240**	**29**	**19 940**	**40**	**8 873**	**18**	**3 100**	**6**	**758**	**2**	**49 663**
2. Agricultural market development													
2.1. Market access	963	16	1 579	27	1 337	23	795	14	595	10	607	10	5 875
2.2. Climate-resilient rural infrastructure	2 727	9	8 178	28	7 978	27	7 093	24	1 785	6	1 651	6	29 413
Subtotal	**3 689**	**10**	**9 757**	**28**	**9 315**	**26**	**7 888**	**22**	**2 380**	**7**	**2 258**	**6**	**35 288**
3. Project coordination and management													
Project coordination and management	4 358	27	2 639	16	2 657	16	2 672	16	1 905	12	2 033	13	16 265
Subtotal	**4 358**	**27**	**2 639**	**16**	**2 657**	**16**	**2 672**	**16**	**1 905**	**12**	**2 033**	**13**	**16 265**
Total	**10 800**	**11**	**26 636**	**26**	**31 912**	**32**	**19 432**	**19**	**7 385**	**7**	**5 049**	**5**	**101 215**

Project financing and cofinancing strategy and plan

15. In December 2018, the IFAD Executive Board approved financing for the AVDP in an amount of US$11.8 million, comprising an IFAD loan and IFAD grant, each in the amount of US$5.9 million. Additionally, an amount of US$9.2 million from the Adaptation Fund has been approved as cofinancing. The original IFAD financing also included a contribution from the borrower of US$8.1 million, and contributions of approximately US$2.8 million from beneficiaries and the private sector.

16. For approval by the Executive Board at this point are an IFAD loan of US$20.8 million and IFAD Debt Sustainability Framework grant of US$7.7 million. As well, the project has been redimensioned to accommodate a financing gap of US$20 million, likely to be covered by OFID in early 2020.

17. IFAD funds in an amount of US$12.3 million are expected to be presented for approval by IFAD's Executive Board in 2021. Following the principles of results-based management, the request for approval of this scaling up is subject to the project showing satisfactory progress, as outlined in IFAD's scaling up procedures. With this potential scaling up, the Tony Blair Institute would provide cofinancing in an amount of US$0.15 million, while the Government would provide additional counterpart funds in an amount of US$6.4 million. Beneficiaries and the private sector would provide an additional amount of approximately US$2 million in cofinancing.

Disbursement

18. The IFAD financing shall be disbursed against duly certified withdrawal applications, in accordance with the IFAD disbursement procedures. Three standard disbursement procedures may be used for withdrawal of financing: (i) advance withdrawal; (ii) direct payment; and (iii) reimbursement.

19. The designated account for the IFAD financing will be operated and replenished following the imprest account arrangements. The authorized allocation will be outlined in the Letter to the Borrower.

20. The borrower will open separate designated accounts on behalf of the project at a commercial bank for each of the financing sources, denominated in United States dollars. The funds will not be mingled. The disbursements will be front-loaded, with around two thirds of the funds being disbursed by project mid-term.

Summary of benefits and economic analysis

21. The economic analysis shows that the project has the capacity to generate an economic rate of return (ERR) of 32% over a 20-year period, with a net present value of Sierra Leonean leone 583,734 billion (approximately US$67.3 million). Given the many unquantifiable benefits, the actual ERR will likely be higher than this.

Exit strategy and sustainability

22. The overall exit strategy for the AVDP includes consolidating the achievements of the legacy farmers in past IFAD-supported projects. Private sector partners will be identified to provide market outlets for all value chains. In areas where large private sector processors do not exist, the project will promote small-scale oil presses, rice mills etc., at various strategic locations. In addition, the AVDP will strengthen farmers' organizations to collectively plan production, purchase inputs and sell their produce, through stable private sector engagement.

23. In coordination with the Rural Finance and Community Improvement Programme Phase II, the project also seeks to ensure that farmer-based organizations (FBOs) are accessing rural financial services for inputs on a sustainable basis. In addition, the productive investments will be climate-proofed through financing from the Adaptation Fund. Finally, through policy engagement, the project will contribute to

maintain the Government's focus on the rural poor and facilitate its support to the target group after project completion.

III. Risks of implementing the additional financed activities

A. Project risks and mitigation measures

24. Since governance issues could compromise the expected impact on communities and increase project costs, the risk is classified as high. Elite capture of outputs, especially physical assets – which are intended for well-defined target groups – is another problem associated with poor governance. These governance risks will be mitigated by complementing the Government's initiatives with: (i) increased transparency and publicity concerning the distribution of outputs; (ii) training for implementers at all levels in financial management, procurement, M&E and reporting procedures; (iii) the implementation of a clear targeting strategy; and (iv) continued improvement of the grievance mechanism for beneficiaries. During implementation of the AVDP, the Good Governance Framework will be applied that was developed for the Smallholder Commercialization Programme/Global Agriculture and Food Security Programme (SCP-GAFSP).

25. Risks related to institutional capacity for implementation and sustainability are considered moderate. Project coordination failure is a risk, especially among and within non-state actors and private agribusiness. Private stakeholders consistently indicate that institutions that provide critical support services to private sector investors remain weak, with coordination among them fragmented. The project will mitigate this risk by ensuring that the PIU has clear mechanisms for effective coordination during project implementation.

B. Environment and social category

26. The AVDP is not expected to have negative environmental impacts overall. However, since small commercial agricultural activities may produce unexpected cumulative impacts, careful design of an appropriate monitoring system is critical. The major concerns are associated with the increased use of fertilizers and pesticides potentially resulting from wider distribution of these products, and with their impact on biodiversity and human health. The following are considered to be sufficient mitigation measures: training on proper use and disposal; adoption of the principles of FAO's International Code of Conduct on the Distribution and Use of Pesticides; and the design of an environmental monitoring system, in partnership with the Sierra Leone Environment Protection Agency. Based on the above information, the project has been classified as category B in accordance with IFAD's classification standards.

27. The promotion of palm oil is considered to entail limited risks, as only smallholder oil palm plantations of a maximum of one hectare will be established under the project. Large-scale plantations will not be supported. Furthermore, new smallholder plantations will be established only on fallow or abandoned agricultural land, with no deforestation being accepted. Moreover, oil palm (Elaeis guineensis) is endemic to West Africa and is therefore a natural part of the vegetation in Sierra Leone. The palm oil produced will largely be used for cooking and sold on the domestic market.

C. Climate risk classification

28. The AVDP is categorized as a high-risk project for climate. The project presents an opportunity to transform the Sierra Leonean agricultural sector into a sustainable and climate-smart production system that increases productivity and improves the resilience and adaptive capacity of the rural smallholder farmers. The strengthening of the meteorological office – with capacity-building and dissemination of climate information to rural smallholder farmers – will improve

agricultural resilience. However, the most important climate risk is the projected climatic changes suggesting that Sierra Leone will suffer increasingly reduced climatic suitability for cocoa over the next 30 years. Maximum temperatures are expected to increase. While overall precipitation is not projected to change significantly, annual rainfall variability may result in an increased risk of droughts and dry spells during the dry season, and storms and floods in the rainy season. A greater risk of surface run-off increases the risk of river flooding, landslides and damage to road infrastructure.

IV. Implementation

A. Compliance with IFAD policies

29. The project is aligned with the IFAD11 priorities and policies on a range of parameters. First, it addresses gender, youth, nutrition and climate change, and therefore supports the IFAD11 mainstreaming agenda. Second, the project has managed to attract cofinancing from the Adaptation Fund and OFID (subject to approval) and will therefore contribute to the corporate cofinancing targets. Third, the project is designed to have a relatively front-loaded disbursement profile, underpinned by substantial investments in equipment and irrigation systems, as well as road rehabilitation and maintenance in the initial years, all of which will contribute to an increasing corporate disbursement ratio. Fourth, the project covers two PBAS cycles and is therefore aligned with the notion of delivering bigger, better and smarter.

B. Organizational framework

Project management and coordination

30. A PIU will be established within the existing IFAD National Programme Coordination Unit (NPCU) at the Ministry of Agriculture and Forestry to implement the AVDP in partnership with the district level of the Ministry, partner private sector entities and FBOs/cooperatives. This responsibility includes: project planning; financial management; procurement; M&E; communication and knowledge management; supervision of project activities at the district level; facilitating linkage with governmental, private sector and development institutions; and integrating project experience into policy dialogue.

31. In addition to the IFAD NPCU, a delivery unit will be established within the Ministry of Agriculture and Forestry. It will have the overall objective of enhancing the Government's capacity to promote agricultural transformation and deliver on the country's Medium-term National Development Plan 2019-2023. The delivery unit will be set up in collaboration with the Tony Blair Institute and will have three specific objectives:

    (a) To develop capacity and systems within the Ministry of Agriculture and Forestry for coordination, monitoring and tracking of delivery of the Medium-term National Development Plan 2019-2023 and the National Agricultural Transformation Programme 2023;

    (b) To create a sustainable system for agricultural data collection, management and analysis that is used for decision-making and M&E;

    (c) To set up an integrated, improved system for agro-inputs supply, with the private sector in the lead and facilitated by new technologies.

Financial management, procurement and governance

32. Financial management. The inherent risk is assessed as high. As a result, the project will largely follow the financial management arrangements already established under the ongoing IFAD projects, which will lower this risk to medium. The financial management arrangements will include the following: (i) a qualified financial controller and an accountant will be appointed; (ii) all project transactions will be recorded in customized accounting software, in accordance with the

International Public Sector Accounting Standards cash basis of accounting; (iii) a designated account in United States dollars for IFAD financing will be maintained at a commercial bank, with IFAD funds not being mingled with other funds; (iv) IFAD financing will be disbursed in accordance with IFAD disbursement procedures; and (v) the NPCU will prepare quarterly financial reports in formats agreed upon with IFAD. Furthermore, the consolidated financial statements will be audited annually by the Audit Service Sierra Leone, in the Office of the Auditor General, in accordance with the audit requirements of the International Standards of Supreme Audit Institutions of the International Organization of Supreme Audit Institutions and of IFAD. Together with the management letter, the audit report will be submitted to IFAD within six months of the end of the fiscal year.

33. IFAD has a zero-tolerance policy toward fraudulent, corrupt, collusive or coercive actions in all projects financed through its loans and grants. IFAD's anticorruption policy and whistle-blowing procedures will be mainstreamed in the project implementation manual.

34. Procurement. A procurement assessment was undertaken as part of the design mission. According to the assessment, the legal and regulatory framework for public procurement in Sierra Leone will be used for all AVDP procurement activities, with the exception of international competitive bidding, for which the World Bank guidelines and framework will apply. In addition, the procurement plan to be used by the AVDP will be based on the version presented as part of the IFAD Project Procurement Handbook.

35. Governance. The AVDP will be placed under the technical supervision of the Ministry of Agriculture and Forestry. A national steering committee will provide oversight, direction and advice for project implementation, and in particular, will approve the project's annual workplan and budget (AWP/B), as well as its periodic progress reports.

C. Monitoring and evaluation, learning, knowledge management and strategic communication approaches

36. Planning, monitoring and evaluation. The project will prepare an AWP/B for approval by the national steering committee and subsequent presentation to IFAD for its no objection. The AWP/B will serve as the basis for all work that the project undertakes. The AWP/B will be prepared in consultation with beneficiaries and other stakeholders, and will build on the project's progress.

37. The project's logical framework will be the main document for supporting results-based and objective-oriented implementation. The AVDP M&E system will build on the system developed in the SCP-GAFSP, including its M&E manual. The M&E system will be in line with the requirements of the Government of Sierra Leone, as well as IFAD's Operational Results Management System, and will generate gender- and age-disaggregated data on project outputs, outcomes and impacts.

38. Knowledge management and learning are key to meeting project objectives, since reliable information is the basis of results-based management. Best practices and proven concepts will be fed into the Ministry of Agriculture and Forestry and regional knowledge management systems. The lessons learned will also be fed into ongoing improvement of manuals, concepts and strategies, and will be disseminated to the various target groups, including the public, using appropriate communication media.

D. Proposed amendments to the project financing agreement

39. The project financing agreement will be amended to include additional financing in an amount of US$28.5 million from IFAD.[1]

V. Legal instruments and authority

40. A letter of amendment between the Republic of Sierra Leone and IFAD will constitute the legal instrument for extending the proposed financing to the borrower.

41. The Republic of Sierra Leone is empowered under its laws to receive financing from IFAD.

42. I am satisfied that the proposed additional financing will comply with the Agreement Establishing IFAD and the Policies and Criteria for IFAD Financing.

VI. Recommendation

43. I recommend that the Executive Board approve the proposed additional financing in terms of the following resolution:

RESOLVED: that the Fund shall provide a Debt Sustainability Framework grant to the Republic of Sierra Leone in an amount of seven million seven hundred thousand United States dollars (US$7.7 million) and upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented herein.

FURTHER RESOLVED: that the Fund shall provide a loan under highly concessional terms to the Republic of Sierra Leone in an amount of twenty million eight hundred thousand United States dollars (US$20.8 million) and upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented herein.

Gilbert F. Houngbo
President

[1] In early 2021 the last tranche of IFAD11 financing for Sierra Leone, in an amount of US$12.3 million, will be presented to the Executive Board. On that occasion the financing agreement may be revisited.

Updated Logical Framework Incorporating Additional Financing

Narrative Summary	Key Performance Indicators				Means of Verification			Assumptions
	Name [CORE INDICATOR (CI)]	Baseline (Y0)	Mid-term (Y3)	End Target (Y6)	Source	Frequency	Responsibility	
Outreach	Number of households receiving services promoted or supported by the project(CI:1) [1] Lead	0	33,000	43,000	Project M&E system	bi-annual, annual	IFAD PIU	Commitment of all stakeholders to participate in poverty reduction efforts
Goal:								
Improved livelihoods, food security and climate change resilience of rural farming households in Sierra Leone	Targeted households that experience a reduction in length of hungry season from 4 to 2 months Lead [2]	0	13,200 (40% of total outreach)	25,800 (60% of total outreach)	Baseline, Completion Survey or secondary data	PY1, PY6	IFAD PIU, survey providers	N/A
	Proportion of target population below the minimum level of dietary energy consumption by gender and vulnerable groups [3]	TBD	TBD	TBD	Baseline, Completion Survey. Secondary data: CFSVA	PY1, PY6	IFAD PIU, survey providers	
	Households reporting increased assets (asset ownership index) Lead [4]	N/A	8,250 (25% of total outreach)	21,500 (50% of total outreach)	Baseline, Completion Survey	PY1, PY6	IFAD PIU, survey providers	
Project Development Objective:								
Increased incomes for smallholder farmers through the promotion of agriculture as a business	Number of rural producers reporting an increase in sales (CI:2.2.5)* Y,S [5]	0	10,650 of which 4,260 youth and 4,260 women	22,500 of which 9,000 youth and 9,000 women	Mid-term Review, Completion Survey	PY1, PY3, PY6	IFAD PIU, survey providers	Government policies are stable and global demand for oil palm and cocoa do not decrease
	Number of rural producers reporting an increase in income Y,S [6]	0	10,650 of which 4,260 youth and 4,260 women	22,500 of which 9,000 youth and 9,000 women	Mid-term Review, Completion Survey	PY1, PY3, PY6	IFAD PIU, survey providers	

Narrative Summary	Key Performance Indicators				Means of Verification			Assumptions
	Name	Baseline (Y0)	Mid-term (Y3)	End Target (Y6)	Source	Frequency	Responsibility	
Component 1:Climate Resilient and Smart Agricultural Production								
Outcome1: Volume and value of produce increased	Number of persons reporting an increase in production (CI:1.2.4)* [Y,S] [7]	0	13,000 of which 5,200 youth; 5,200 women	22,500 of which 9,000 youth; 9,000 women	Baseline, MTR, Completion Survey	PY3, PY6	IFAD PIU, survey providers	Land tenure system in project districts does not pose any limitations to project activities Communities are involved and responsive to interventions made
	Number of persons reporting adoption of new/ improved inputs technologies or practices (CI:1.2.2)* [Y,S] [8]	0	13,000 of which 5,200 youth; 5,200 women	22,500 of which 9,000 youth; 9,000 women	Baseline, MTR, Completion Survey	PY3, PY6	IFAD PIU, survey providers	
	Number of persons reporting adoption of environmentally sustainable and climate-resilient technologies and practices (CI:1.2.2)* [Y,S] [9]	0	6,700 of which 2,700 youth; 2,700 women	22,500 of which 9,000 youth; 9,000 women	PMU progress Baseline, MTR, Completion Survey	PY3, PY6	IFAD PIU, survey providers	
Outputs	Number of Agri-Business Centres with improved capacity for service provision (CI: 2.1.6)* [10]	0	107	113	Project M&E system	Quarterly, Bi-annual, Annually	IFAD PIU	
	Number of persons trained in production practice and/or technologies (CI:1.1.4)* [Y,S, Lead] [11]	0	24,000 of which 9,600 youth and 9,600 women	26,625 of which 10,650 youth and 10,650 women	Project M&E system	Quarterly, Bi-annual, Annually	IFAD PIU	
	Number of rural producer organizations supported (CI: 2.1.3)* [Lead] [12]	0	890	937 (FOs – both new and legacy)	Project M&E system	Quarterly, Bi-annual, Annually	IFAD PIU	
	Number of supported rural producers that are part of a rural producer's organization (CI: 2.1.4)* [Y,S] [13]	0	24,000 of which 9,600 youth and 9,600 women	26,625 of which 10,650 youth and 10,650 women	Project M&E system	Quarterly, Bi-annual, Annually	IFAD PIU	
	Number of hectares of land brought under climate-resilient management (CI:3.1.4)* [14]	0	13,950	15,500	Project M&E system	Quarterly, Bi-annual, Annually	IFAD PIU	
	Number of farmers inter-cropping food crops [Y,S] [15]		20,400 of which 8,160 youth; 8,160 women	22,500 of which 9,000 youth and 9,000 women				

Component 2: AgriculturalMarket Development

Outcome2: Value chain organization and performance improved	Number of rural producer's organizations engaged in formal partnerships/agreements with public or private entities (CI: 2.2.3)* [Lead] [16]	0	281 (30%)	843 (90%)	Baseline, MTR, Completion Survey	PY3, PY6	IFAD PIU, survey providers	Stakeholders incl. agribusinesses keep interest in integrating smallholders in value chains. Commodity prices for oil palm and cocoa stay attractive.
	Jobs created through road construction and rehabilitation (temporary employment) [Y,S] [17]	0	1,940 (1455 youth)	3,880 (2,910 youth)	Project M&E system	Quarterly, Bi-annual, Annually	IFAD PIU	
Outputs	Number of functioning multi-stakeholder platforms supported (Policy 2)* [18]	0	12	12	Project M&E system	Quarterly, Biannual, Annually	IFAD PIU	
	Number of kilometres of roads constructed, rehabilitated or upgraded (CI:2.1.5)* [19]	0	450	920	Project M&E system	Quarterly, Bi-annual, Annually	IFAD PIU	
	Number of families with improved access to potable water and sanitation [20]**	0	5,000	10,000	Project M&E system	Quarterly, Bi-annual, Annually	IFAD PIU	

Updated Summary of the Economic and Financial Analysis Incorporating Additional Financing

Table A: Models' financial cash flow

Six financial models were developed: (i) IVS Rice (1ha) with vegetables side rotational cropping (0.15ha); (ii) IVS Rice/double cropping (1ha) with vegetables side rotational cropping; (iii) Cocoa gradual replanting (1ha) with vegetables side rotational cropping (0.15 ha), cassava (0.25 ha) and plantain (0.25ha); (iv) Cocoa new planting (1ha) with vegetables side rotational cropping (0.15 ha), cassava (0.25 ha) and plantain (0.25ha) ,(v) Oil palm new plantation (1 ha) and (vi) vegetables (5 ha) of potato (3 ha), bulb onion (1 ha) and black pepper (1 ha). The analysis compares a "without project" and "with project" situation for indicative one hectare of land. "Without project" scenario has been calculated based on the prevailing traditional average production, where applicable. Project profitability for IRR crops/trees is between 27% and 67% where noted the highest IRR is for IVS Rice/double cropping. The highest IRR is for IVS rice double cropping scheme, estimated at value of 67%

Below Table A provides financial profitability indicators for crop/tree type and production, net present value/hectare, B/C ratio and return to family labour.

The highest profitability for crop/tree is for IVS rice/double cropping with NPV of 26,8 million SLL/ha. The vegetable is the second highest profitable crop with NPV of 22,1 million SLL/ha. The oil palm new planation is the third highest profitable tree, with NPV of 17,9 million SLL/ha. According to B/C ratio vegetables pops out as the most profitable tree assuming project period of 20 years. The internal rate of return is highest for IVS rice/double cropping (67%), following by cocoa gradual plantation (48%) and at value of 42% for oil palm new plantation and cocoa new plantation. As expected, return to family labour is the highest for cocoa new plantation (~6,6 million SLL/ha) due to the high international demand for cocoa.

		PRODUCTION						
FINANCIAL ANALYSIS		IVS Rice (1 ha) (SLL)		Tree crop model 'net incremental benefits (1 ha) (SLL)			Vegetables (5 ha) (SLL)	Infrastructure (SLL)
		IVS Rice (Nerica)*	IVS Rice/double cropping scheme*	Cocoa Gradual Replanting **	Cocoa New Planting**	Oil Palm New Plantation***	Vegetables (5 ha) (SLL), Irish potato, onion, black pepper)	Roads
	PY1	-23.975.255	-19.308.380	-2.832.883	-9.423.554	-7.850.342	10.502	6.167.573
	PY2	6.082.745	11.297.120	-2.655.100	-2.596.877	-1.442.361	101.986	-39.011.029
	PY3	7.542.745	13.852.120	-1.389.213	1.536.363	4.662.639	101.991	-31.384.381
	PY4	7.542.745	13.852.120	2.511.260	4.358.917	4.083.657	101.996	-1.041.467
	PY5	7.542.745	13.852.120	5.079.692	6.588.360	5.193.657	102.000	47.362.617
	PY6	8.272.745	15.129.620	6.754.484	10.474.180	6.303.657	101.043	47.362.617
	PY7	8.272.745	15.129.620	7.977.536	13.155.361	10.743.657	102.007	47.362.617
	PY8	8.272.745	15.129.620	8.748.849	13.080.072	11.298.657	102.010	47.362.617
	PY9..	8.272.745	15.129.620	9.200.589	13.155.361	15.183.657	102.013	47.362.617
	PY20/PY10+	8.302.745	15.182.120	9.200.589	13.531.811	15.183.657	102.015	47.362.617
NPV (SLL)		3.553.806	26.807.828	11.694.085	16.211.847	17.852.817	110.932.913	54.236.166
NPV (USD)		456	3.437	1.499	2.078	2.289	14.222	6.953.355
FIRR (@22%)		27%	67%	48%	42%	49%	30%	39%
B/C		1,2	1,7	1,3	2,0	1,9	2,5	1,6

* plus side rotational cropping of vegetables 0,15 ha

** plus side rotational cropping of vegetables 0,15ha , plaintain 0,30 ha and cassava 0,30 ha

*** plus upland rice/1 ha

\+ for Rice is final PY 10 and other culture is PY20

Table B: Programme/project costs and Logframe targets

Table B provides overall project costs by components and beneficiaries. The total project costs has been estimated at US$ 101.2 million over 6-year project implementation period. The cost per beneficiary has been estimated at US$392 and cost per household has been estimated at US$2,355. Adoption rate of the project is 85% and up to 43 thousand households has been estimated to be impacted by the project implementation (equivalent to 258 thousand beneficiaries). Table summarize expected outcomes and indicators due to the project intervention that has been linked with Logframe targets.

PROJECT COSTS AND INDICATORS FOR LOGFRAME					
TOTAL PROJECT COSTS (in million USD)		101,2			
Beneficiaries	**257.910** People	42.985 Households			
Cost per beneficiary	392 USD x person	2.355 USD x HH		**Adoption rates**	**85%**

Components and Cost (EUR million)		Outcomes and Indicators		
Comp 1.. Climate Resilient and Smart Agricultural Production	49,7	Up to 43 000 HH or 258 000 beneficiaries receiving services promoted or supported by project (40% women; 40% youth)	up to 26 000 rural producers that are part of rural producer's organization	7 360 youth jobs created through road construction and rehabilitation
Comp.2..Agricultural Market Development	35,3	181 ABCs with improved capacity for service provision and 977 FOs supported	up to 26 000 HH having access to production input or technological packages	support to 12 multi-stakeholders platforms
C.3. Project Coordination and Management Unit			up to 26 000 HH trained in production practice and/or technologies	
Total	101,2	10 000 HH with improved access to potable water and sanitation	15 700 ha of land brought under climate-resilient management	920 km of kilometers of road constructed, rehabilitated or upgraded

Table C: Main assumptions and shadow prices

Table C provides data on the expected yield (t/ha), such as rice (3t/ha), rice double cropping (5t/ha), cocoa (1t/ha), oil palm(16t/ha), Irish potato (15t/ha) and onion and chilli pepper (20t/ha). It summarizes some of the main input prices included in the models. Input and output prices are 2018 constant prices based on information collected from farmers, entrepreneurs, business proposals submitted/funded for/by on-going IFAD projects, the National Bureau of Statistics of Sierra Leone. Price estimates for tradable commodities have been based on the World Bank's Global Commodity Price Projections. All local costs were converted into their approximate economic values using a Standard Conversion Factor (SCF) of 1.11. The economic analyses include the investment and incremental recurrent costs of Project components. The Project financial costs have been converted to economic values by removal of price contingencies, taxes and duties. In order to avoid double counting, the final aggregation considered only those costs that were not included in the financial models. Economic pricing was undertaken using the following assumptions: (a) the opportunity cost of labour is between SLL 19.060 /day and 23.825 /day (depending on work type), or equivalent to 95% of financial cost of labour, which is justified given rural unemployment; (b) the shadow exchange rate (SER) has been calculated at 1 USD = 8 672 SLL and (c) the standard conversion factor for the exchange rate has been calculated at 1.11; (d) the conversion factors for outputs and inputs have been calculated starting from FOB and CIF prices when data were available; when data were not available CFs were calculated starting from the financial price, deducting any duty or tax and multiplying it by the SCF; overall all CF vary between 0.94 (for imported inputs) and 1.113 (for exported inputs).

MAIN ASSUMPTIONS & SHADOW PRICES						
	Output (kg)	**End Yield t/ha**	**Price (SLL)**	**Input prices**	**Price (SLL)**
	Rice (double crop.)	5	4.000	Rice improved seeds	2.800
	Rice	3	12.500	Fertilizer	7.000
	Cocoa, I grade	1	1.110	Rural wage-family \p.d.	20.000
	Oil Palm	16	11.700	Rural wage-hired \p.d.	25.000
	Irish Potato	15	11.700	Feeder Road/km	15.600.000
FINANCIAL	Onion	20	15.600	Farm track/km	78.000.000
	Chilli Pepper	20	15.600	IVS Rice development/ha	29.328.000
				Cocoa Investment Package/ha	7.329.543
				Oil Palm Investment Package/ha	8.984.324
				Curing Machines	200.000.000
				Greenhouse	106.800.000
	Official Exchange rate (OER)	7.800	Discount rate (opportunity cost of capital)		22%
	Shadow Exchange rate (SER)	8.672	Social Discount rate		16,5%
	Standard Conversion Factor	1,11	Output conversion factor		1,13
ECONOMIC	Labour Conversion factor	0,95	Input Conversion factor		0,94

Table D: Beneficiaries adoption rates and phasing

Table D shows the phasing and adoption rate across years and type of activities for producers/farmers assuming 85% of the new beneficiaries will adopt the measures and 100% adoption rate has been assumed for inherited legacy farmers.

	PY1	PY2	PY3	PY4	PY5	PY6	Total	**Adoption rates**
IVS Rice	984	1.313	1.313	766	0	0	4.375	
Adjusted (adoption rate)	*837*	*1.116*	*1.116*	*651*	*0*	*0*	3.719	85%
IVS rice/double cropping	281	375	375	219	0	0	1.250	
Adjusted (adoption rate)	*239*	*319*	*319*	*186*	*0*	*0*	1.063	85%
Cocoa Gradual Replanting	900	1.575	525	0	0	0	3.000	
Adjusted (adoption rate)	*765*	*1.339*	*446*	*0*	*0*	*0*	2.550	85%
Cocoa New Planting	900	1.575	525	0	0	0	3.000	
Adjusted (adoption rate)	*765*	*1.339*	*446*	*0*	*0*	*0*	2.550	85%
Oil Palm New Plantation	*1.212*	*2.576*	*1.212*	*0*	*0*	*0*	5.000	
Adjusted (adoption rate)	*1.030*	*2.189*	*1.030*	*0*	*0*	*0*	4.250	85%
Oil Palm/ Legacy Farmers	*4.000*	*0*	*0*	*0*	*0*	*0*	4.000	
Adjusted (adoption rate)	*4.000*	*0*	*0*	*0*	*0*	*0*	*4.000*	100%
IVS Rice/ Legacy Farmers	*5.000*	*0*	*0*	*0*	*0*	*0*	5.000	
Adjusted (adoption rate)	*5.000*	*0*	*0*	*0*	*0*	*0*	*5.000*	100%
Trg. on access to potable water	2.250	2.250	2.250	2.250	0	-	9.000	
Adjusted (adoption rate)	*1.913*	*1.913*	*1.913*	*1.913*	*0*	-	*7.650*	85%
Roads con./rehab. Employment	2.320	2.720	2.320	0	0	0	7.360	
Adjusted (adoption rate)	*1.972*	*2.312*	*1.972*	*0*	*0*	*0*	*6.256*	85%
Vegetables	*100*	*350*	*350*	*100*	*50*	*50*	*1.000*	
Adjusted (adoption rate)	85	298	298	85	43	43	*850*	85%
Nr of Targeted Beneficiaries							**42.985**	
Adopting Beneficiaries							**37.887**	

Table E: Programme/project economic cash flow

Costs included cover the Project base costs (as extracted from the COSTAB tables) with their physical contingencies but without taxes and price contingencies. Costs from Costab include all investment, operational, recurrent costs related to the activity and crop models (over the 20 years for trees and 10 years for rice cultivation). Below table represent net incremental benefit of each financial model, converted into shadow prices (table C) and multiplied by the number of beneficiaries (table D). Net incremental costs present all project costs avoiding double counting. The analysis shows that the Project has the capacity to generate an economic rate of return (ERR) of 32% over 20-year period, in addition to many benefits that could not be quantified. Thus, the actual ERR will likely be higher than the 32% reported. The base case net present value of the Project's net benefit stream, discounted at 16.5%, is SLL 583,734, billion (USD 67,3,million).

		NET INCREMENTAL BENEFITS								Net Incremental Costs	Cash Flow
		IVS Rice*	IVS Rice/double cropping*	Cocoa Gradual Replanting **	Cocoa New Planting**	Oil Palm New Plantation***	Vegetables	Roads	Total Net Inc. Benefits	Economic Investment + O&M Costs	Net Incremental benefits
ECONOMIC ANALYSIS	**PY1**	(7.891.129)	(1.652.260)	(676.528)	(2.214.488)	(2.945.162)	(125.536.796)	-	(140.916.362)	60.700.546	**(201.616.909)**
	PY2	(24.953.082)	(4.352.785)	(2.988.081)	(8.096.034)	(10.702.367)	(68.986.306)	(31.951.097)	(152.029.752)	58.949.756	**(210.979.508)**
	PY3	(15.005.609)	961.117	(4.837.950)	(8.126.491)	(9.152.970)	(27.237.611)	(24.548.568)	(87.948.082)	49.835.594	**(137.783.676)**
	PY4	16.212.009	11.176.831	(3.067.169)	1.121.749	7.349.272	96.431.538	3.942.981	133.167.210	30.271.713	**102.895.496**
	PY5	24.982.695	14.512.712	2.386.796	9.481.884	20.145.354	124.763.662	45.136.574	241.409.678	35.875.230	**205.534.447**
	PY6	27.241.024	15.690.471	9.142.564	16.756.526	26.206.575	128.953.400	45.136.574	269.127.134	32.544.258	**236.582.877**
	PY7	33.907.614	17.925.709	14.766.333	26.054.971	35.071.945	151.477.111	45.136.574	324.340.258	4.870.920	**319.469.338**
	PY8	35.295.705	18.619.755	19.256.571	34.272.908	46.789.747	151.499.007	45.136.574	350.870.268	4.870.920	**345.999.348**
	PY9	35.604.170	18.773.987	22.819.221	38.827.298	57.974.922	152.691.353	45.136.574	371.827.525	4.870.920	**366.956.606**
	PY10	35.769.034	18.856.419	24.974.605	40.594.291	68.094.842	152.943.617	45.136.574	386.369.383	4.870.920	**381.498.463**
	PY11	32.358.583	17.054.003	26.006.194	41.892.730	76.217.410	152.943.617	45.136.574	391.609.110	4.870.920	**386.738.191**
	PY12	19.789.161	10.429.127	26.413.743	42.614.113	79.280.017	152.943.617	45.136.574	376.606.351	4.870.920	**371.735.431**
	PY13	7.193.159	3.790.960	26.590.456	42.704.317	80.345.272	152.943.617	45.136.574	358.704.355	4.870.920	**353.833.435**
	PY14	3.596.579	1.895.480	26.644.579	42.758.440	81.277.370	152.943.617	45.136.574	354.252.639	4.870.920	**349.381.719**
	PY15	1.800.948	949.069	26.644.579	42.803.542	81.277.370	152.943.617	45.136.574	351.555.698	4.870.920	**346.684.779**
	PY16			26.644.579	42.803.542	81.277.370	152.943.617	45.136.574	348.805.682	4.870.920	**343.934.762**
	PY17			26.644.579	42.803.542	81.277.370	152.943.617	45.136.574	348.805.682	4.870.920	**343.934.762**
	PY18			26.644.579	42.803.542	77.016.351	152.943.617	45.136.574	344.544.663	4.870.920	**339.673.743**
	PY19			26.644.579	42.803.542	61.037.530	152.943.617	45.136.574	328.565.842	4.870.920	**323.694.922**
	PY20			26.644.579	42.803.542	41.862.944	152.943.617	45.136.574	309.391.256	4.870.920	**304.520.336**
		NPV@ 16,5% ('000 SLL)				**583.734.087,66**					
		NPV@ 16,5% ('000 USD)				**67.313,71**					
		EIRR				**32%**					

** plus side rotational cropping of vegetables 0,15 ha*
*** plus side rotational cropping of vegetables 0,15ha , plantain 0,30 ha and cassava 0,30 ha*
**** plus upland rice/1 ha*

Table F: Sensitivity analysis

In order to test the robustness of the above results, a sensitivity analysis has been carried out, the outcomes of which are presented in Table F below. The sensitivity analysis investigates the effect of fluctuations in Project costs, benefits and delays in implementation on the NPV and EIRR. It shows the economic impacts that a decrease in project benefits - of up to -20% - will have on the project's viability. Similarly, it shows how the economic viability of the project will be affected with an increase – of up to +20% - in project costs and with one and/or two years delay in project implementation. A sensitivity analysis shows that the EIRR drops to 30.5% with an increase in project costs of 20%. The increase of costs of 10% yields a high EIRR of value of 31.5%, and a delay of project aggregate benefits by 1 to 2 years still yields a high EIRR. Finally, the analysis shows that the economic viability of the project remains attractive by preserving positive NPV and EIRR in each case.

SENSITIVITY ANALYSIS (SA)				
	Δ%	Link with the risk matrix	IRR	NPV (SLL)
Base scenario			32,0%	583.734.087,66
Project benefits	-10%	Combination of risks affecting output prices, yields and adoption rates	31,5%	506.996.696,45
Project benefits	-20%		30,0%	430.259.305,25
Project benefits	-50%		25,3%	200.047.131,64
Project costs	10%	Increase of construction material prices	31,5%	565.370.105,22
Project costs	20%		30,5%	547.006.122,78
Project costs	50%		28,5%	491.914.175,47
1 year lag in ben.		Risks affecting adoption rates and low implementation capacity	29,6%	462.528.519,98
2 years lag in ben.			27,3%	357.713.370,66