Executive Board

President's memorandum
Proposed additional financing to United Republic of Tanzania Climate Smart Dairy Transformation Project (C-SDTP)

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Action: The Executive Board is invited to approve the recommendation for the proposed additional financing contained in paragraph 62.

Technical questions:

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Contents

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Financing summary

Initiating institution:	IFAD
Borrower/recipient:	United Republic of Tanzania
Executing agency:	Ministry of Livestock and Fisheries
Total project cost:	US$231.458 million
Amount of original IFAD financing under the performance-based allocation system (PBAS):	US$40 million
Terms of original IFAD financing (PBAS):	Highly concessional terms: 40 years, including a grace period of 10 years, to be repaid at 4.5 per cent of the total principal per annum in years 11 to 30, and 1 per cent of the total principal per annum in years 31 to 40
Amount of original IFAD financing under the Borrowed Resource Access Mechanism (BRAM):	US$5 million
Terms of original IFAD financing (BRAM):	Ordinary terms: maximum maturity period of 31 years, with a maximum grace period of 8 years, subject to a maximum average maturity of 20 years and interest at a rate equal to the IFAD reference interest rate, including a variable spread
Amount of additional IFAD financing (BRAM):	US$14.48 million
Terms of additional IFAD financing:	Ordinary terms: maximum maturity period of 35 years, with a maximum grace period of 10 years, subject to a maximum average maturity of 20 years and interest at a rate equal to the IFAD reference interest rate, including a variable spread
Cofinanciers:	(i) Green Climate Fund (GCF); (ii) OPEC Fund for International Development (OPEC Fund); (iii) Heifer International; (iv) Tanzania Agriculture Development Bank (TADB); and (v) Agence Française de Développement (AFD)
Amount of cofinancing:	GCF: US$49.375 million (US$18.375 million additional) OPEC Fund: US$50 million (US$30 million additional) Heifer International: US$5.138 million TADB: US$7 million AFD: US$32.50 million
Terms of cofinancing:	Loans, grants
Contribution of borrower:	US$22.976 million (US$5.035 million additional)
Contribution of project participants:	US$4.989 million (US$0.731 million additional)
Amount of original IFAD climate finance:	US$21.34 million
Amount of additional IFAD climate finance:	US$7.240 million
Cooperating institution:	IFAD

I. Background and project description

A. Background

1. The Climate Smart Dairy Transformation Project (C-SDTP) was approved in December 2023, became effective in September 2024, and disbursed its first tranche of funds in April 2025. The project completion date is scheduled for September 2034 and closing in March 2035.

2. The original project budget is US$174.364 million, including a loan provided under the Twelfth Replenishment of IFAD's Resources (IFAD12) in the amount of US$45 million – US$40 million under the performance-based allocation system (PBAS) and US$5 million under the Borrowed Resource Access Mechanism (BRAM); Green Climate Fund (GCF) grant financing of US$31 million through the Dairy Interventions for Mitigation and Adaptation Programme (DaIMA); an OPEC Fund for International Development (OPEC Fund) loan of US$20 million; a loan from Agence Française de Développement (AFD) loan in the amount of US$32.50 million; a loan from the Tanzania Agriculture Development Bank (TADB) in the amount of US$7 million; and a Heifer International grant of US$5.138 million. The Government's contribution is estimated at US$17.941 million, and the project participants' contribution at US$4.258 million. The project has a financing gap of US$11.527 million.

3. The Government, in a letter dated 7 May 2025, requested additional financing of US$14.48 million from IFAD13 BRAM resources. This funding will be complemented by additional financing of US$18.375 million (in the form of a US$14 million grant and US$4.375 million loan) from DaIMA and a US$30 million loan from the OPEC Fund. These combined additional resources will fill the existing funding gap and extend the project to include the Arusha and Kilimanjaro regions.

B. Original project description

4. The goal of C-SDTP is to contribute to the transformation of the dairy value chain to improve livelihoods, increase food safety and mitigate the impact of climate change on the dairy sector. The project's development objective is to improve the incomes, climate resilience and nutrition of smallholder dairy producers and increase their participation in a competitive and safe value chain.

5. The project aims to reach 120,000 households (600,000 persons), including 40 per cent women and 30 per cent youth. The project is designed as gender-transformative, nutrition-sensitive and inclusive of adaptive capacity. Of the IFAD financing, 47.4 per cent is climate finance.

Component 1: Increased climate-smart production, productivity and resilience of dairy production systems

6. This component aims to increase the productivity of dairy farmers through the climate-smart livestock development approach, which combines boosting productivity with reducing livestock-related greenhouse gas emissions. Animal health, breed choice, fodder and farmer management are the cornerstones of both resilience and increased productivity together with lower greenhouse gas emissions.

Component 2: Inclusive climate-smart value chains, private investment, milk consumption and policy

7. This component aims to promote inclusive climate-smart value chains by leveraging private investment and increasing milk consumption. The project will achieve this by: (i) creating and strengthening dairy producers' groups and cooperatives in governance and management of milk chilling centres (MCCs) and milk collection points (MCPs); (ii) supporting primary MCCs, including with the rehabilitation of feeder roads; (iii) supporting productive partnerships to facilitate

access to inputs and services at aggregation points; and (iv) promoting digitalization to help value chain actors increase efficiency gains.

8. The project will support youth entrepreneurship, as well as access to financial services, livestock insurance and support to small and medium-sized enterprises across the sector. The project will promote milk consumption and nutrition awareness throughout the project area. Finally, it will work with policymakers and actors on the mainland and in Zanzibar to create a conducive policy environment for transformation of the dairy sector.

Component 3: Policy support and project management, monitoring and evaluation, and knowledge management

9. This component deals with overall implementation, including the collection, analysis and dissemination of project data to inform decision makers.

II. Rationale for additional financing

A. Rationale

10. The additional financing will: (i) close the financing gap; (ii) extend the activities to new districts in two additional regions; (iii) increase the number of MCPs built and rehabilitated; and (iv) scale up the Green Dairy Financing Facility for wholesale lending to financial institutions in the dairy sector.

11. A summary of the additional financing for C-SDTP is outlined below, taking into consideration the additional resources from IFAD13 BRAM, the approval of DaIMA and the OPEC Fund commitment.

Table 1
Summary of additional financing for C-SDTP
(Millions of United States dollars)

Source	*Amount*	*Status*
GCF loan	4.375	DaIMA approved
GCF grant	14	DaIMA approved
IFAD BRAM	14.48	Subject to approval through this President's memorandum
OPEC Fund	30	OPEC Fund approved
Government	5.035	Under request through this President's memorandum
Project participants	0.731	Under request through this President's memorandum
Total	**68.621**	

12. The eligibility criteria for additional financing, as outlined in the President's bulletin and the project design guidelines, have been assessed for a project seeking to fill a financing gap and scale up activities. The project has progressed smoothly since its start-up, meeting the first disbursement milestone. The additional financing aligns with the original project objectives and implementation approaches, particularly in scaling up climate mitigation and rural finance activities within DaIMA. All activities comply with IFAD policies, including the Social, Environmental and Climate Assessment Procedures (SECAP) and performance indicators. A formal request for additional financing has been submitted, specifying BRAM terms, and no project extension is required. The project is not categorized as a problem project, and the current disbursement rate is 1.4 per cent.

13. A partial supervision mission took place in August 2025, promoting the project from start-up status and marking its readiness to commence groundwork. The key project implementation structure, including the project steering committee, has been fully established and is functional. All the staff have been recruited at all

levels. The regional and district government officials have been fully on board in implementation of the project. The project has used the start-up period to organize leadership, clarify roles and ready systems for implementation. Advancing the recruitment of the knowledge management specialist, information technology specialist and nutrition specialist this year will help the project obtain rapid results and impact on the ground. The project has begun engaging with 162 cooperatives and farmer groups, reaching out to 9,000 members. The immediate need for additional financing is to bring the DaIMA and OPEC Fund agreements with the Government of the United Republic of Tanzania into immediate implementation.

14. C-SDTP aims to unlock the significant potential for sustainable economic growth and poverty reduction in the United Republic of Tanzania's dairy sector. By leveraging GCF resources, complemented by resources from the OPEC Fund and AFD, C-SDTP through DaIMA will contribute to transforming the East African dairy sector in terms of productivity, income potential for smallholders and environmental footprint. This additional financing will magnify the intended impact of C-SDTP. These additional funds will contribute to existing activities embedded within C-SDTP – financial inclusion, climate mitigation and resilience – and the project objectives remain unchanged.

Special aspects relating to IFAD's corporate mainstreaming priorities

15. In line with IFAD's mainstreaming commitments, the project has been validated as:

☒ Including climate finance

☒ Gender-transformative

☒ Nutrition-sensitive

☒ Including adaptive capacity

B. Description of geographical area and target groups

16. C-SDTP was designed to be implemented in 14 districts in seven regions. The additional financing is expanding its scope to include four new districts in two additional regions. Information and analysis about these two new districts have been included in the overall project environmental and social management plan and SECAP review note.

17. Targeting remains unchanged, with the same main target groups and targeting strategy. The only modification is an expanded outreach, which increases from 120,000 households (or 600,000 people) directly targeted under the initial financing to 140,000 with the additional financing (700,000 people). The indirect target group (benefiting from improved access to markets through new roads) will be increased from 480,000 households to 560,000 households.

C. Components, outcomes and activities

18. The additional financing will be implemented within the same project structure, components and subcomponents as the original financing.

Component 1: Increased climate-smart production, productivity and resilience of dairy smallholder production systems

19. Subcomponent 1.1: Capacity-building, social mobilization and asset building. The number of farmers receiving cows and cowsheds will remain unchanged as this activity will not be implemented in the two new regions where the availability of quality animals is already satisfactory. The livestock farmers field schools (L-FFS) will be replicated in the two new regions, with 9,000 additional farmers (360 groups) involved. Two hundred of these groups will also be involved in Gender Action Learning System (GALS) training. The number of biogas units will be increased by 1,500 units, benefiting both the originally targeted and new districts.

20. Subcomponent 1.2: Provision of essential dairy livestock services. All activities initially planned under this subcomponent will remain unchanged and will be replicated in the two new regions. These include support to fodder seeds producers, distribution of seeds to L-FFS participants, construction of water harvesting systems, rehabilitation and construction of valley dams and boreholes, vaccination campaigns, and training of extensionists, lead farmers and laboratory technicians. The new activities will be the construction of a liquid nitrogen unit in Ugunja and participatory rangeland management planning and rangeland restoration for around 35,000 hectares of communal pasture and rangelands.

Component 2: Inclusive and climate-smart value chains, private investment, milk consumption and policy

21. Subcomponent 2.1: Organization of producers, milk aggregation and facilitation of productive alliances. All activities under this subcomponent will be replicated in the new regions. Twenty additional MCCs will be constructed in the new regions, and 120 additional MCPs will be rehabilitated, and 120 constructed, in all regions. Thirty additional cooperatives will also receive capacity-building and business coaching, as well as facilitation of productive alliances, in the new regions. In addition, 125 milk transporters will be trained and supported to acquire equipment, and 300 additional kilometres of rural roads will be upgraded.

22. Subcomponent 2.2: Support to emergence of safe, short and green value chains and milk consumption. Eleven additional small-scale processing units will be constructed, and nutrition campaigns will be scaled up by 15,244 persons.

23. Subcomponent 2.3: Access to financial services. The additional financing will cover a third year of insurance premiums for participants benefiting from cattle placement in addition to the two years initially budgeted, and the volume of the credit line managed by TADB will be increased by 154 per cent.

24. Subcomponent 2.4: Policy support and stakeholder dialogue remains unchanged and will mostly consist in supporting policy formulation and review for eight policy products and establishing or strengthening district dairy multistakeholder platforms.

D. Costs, benefits and financing

Project costs

25. With the additional financing, the overall project costs are estimated at US$231.458 million. The total additional financing is US$68.621 million. The additional financing for component 1 is US$21.967 million, with significant contributions from the OPEC Fund additional financing (42 per cent) and the GCF grant (45 per cent). The additional financing for component 2 is US$39.050 million, with major funding from the OPEC Fund additional financing (51 per cent) and IFAD additional financing from BRAM (20 per cent). The additional financing for component 3 is US$7.603 million, primarily funded by IFAD with additional financing from BRAM (87 per cent) to fill the financing gap.

26. The project is partially counted as climate finance. According to the multilateral development banks' methodologies for tracking climate change adaptation and mitigation finance, US$7.240 million and US$28.58 million are considered as the additional and total amount of IFAD climate finance, respectively, for this project.

Table 2
Original and additional financing summary
(Thousands of United States dollars)

	Original financing	*Additional financing*	*Total*
Government	17 941	5 035	22 976
IFAD PBAS	40 000	-	40 000
IFAD BRAM	5 000	14 480	19 480
OPEC Fund	20 000	30 000	50 000
GCF grant	31 000	14 000	45 000
GCF loan		4 375	4 375
AFD	32 500	-	32 500
TADB	7 000	-	7 000
Heifer International	5 138	-	5 138
Financing gap	11 527	(11 527)	-
Project participants	4 258	731	4 989
Total	**174 364**	**68 621**	**231 458**

Table 3
Additional financing: project costs by component and subcomponent and financier
(Thousands of United States dollars)

	Government		*IFAD additional financing (BRAM)*		*OPEC Fund additional financing*		*GCF grant*		*GCF loan*		*Project participants*		*Total*	
	Amount	*%*	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*
A. Increased climate-smart production, productivity and resilience of dairy production systems														
1. Capacity-building, social mobilization and asset building	2 818	4	-	0	3 599	28	14 094	64	-	0	344	3	20 856	30
2. Support provision of essential dairy livestock services	(560)	7	-	0	5 560	49	(4 274)	40	-	0	381	3	1 111	2
Subtotal	**2 258**	**10**	**-**	**0**	**9 159**	**42**	**9 820**	**45**	**-**	**0**	**731**	**3**	**21 967**	**32**
B. Inclusive climate-smart value chains, private investment, milk consumption and policy														
1. Organization of producers, milk aggregation and facilitation of productive alliances	3 433	12	-	0	14 584	88	6 928	0	-	0	-	0	24 946	36
2. Support the emergence of safe, short and green value chains and milk consumption	(884)	0	-	0	3 690	100	(4 588)	0	-	0	-	0	(1 782)	(-3)
3. Access to financial services	274	2	7 712	53	1 016	7	1 250	9	4 375	30	-	0	14 627	21
4. Policy support and stakeholder dialogue	80	0	-	0	601	100	579	0	-	0	-	0	1 260	2
Subtotal	**2 903**	**7**	**7 712**	**20**	**19 891**	**51**	**4 169**	**11**	**4 375**	**11**	**-**	**0**	**39 051**	**57**
C. Policy support and project management, monitoring and evaluation (M&E), and knowledge management														
1. M&E and knowledge management	147	0	-	0	407	100	1 088	0	-	0	-	0	1 643	2
2. Project management	(273)	0	6 768	92	543	7	(1 077)	0	-	0	-	0	5 960	9
Subtotal	**(126)**	**0**	**6 768**	**87**	**950**	**12**	**11**	**0**	**-**	**0**	**-**	**0**	**7 603**	**11**
Total	**5 035**	**7**	**14 480**	**21**	**30 000**	**44**	**14 000**	**20**	**4 375**	**6**	**731**	**1**	**68 621**	**100**

Table 4
Additional financing: project costs by expenditure category and financier
(Thousands of United States dollars)

	Government		*IFAD additional financing (BRAM)*		*OPEC Fund additional financing*		*GCF grant*		*GCF loan*		*Project participants*		*Total*	
	Amount	*%*	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*
1. Works	2 284	11	-	0	16 533	80	1 367	7	-	0	386	2	20 570	30
2. Vehicles	1.42	0	-	0	891	100	-	0	-	0	-	0	892	1
3. Good, services and inputs	467	9	-	0	5 715	113	(1 447)	(29)	-	0	344	7	5 079	7
4. Equipment and materials	2 531	16	-	0	77	0	13 789	84	-	0	-	0	16 397	24
5. Consultancies	27.17	0	719	171	2 181	518	(2 479)	(589)	-	0	-	0	449	1
6. Training and workshop	1.83	0	2 260	23	3 567	37	3 848	40	-	0	-	0	9 676	14
7. Grants and subsidies	-	0	7 203	60	514	4	-	0	4 375	36	-	0	12 092	18
8. Salaries and allowances	-	0	4 298	95	461	10	(225)	(5)	-	0	-	0	4 535	7
9. Operating costs	(277)	26	-	0	61	(6)	(853)	79	-	0	-	0	(1 069)	(2)
Total	**5 035**	**7**	**14 480**	**21**	**30 000**	**44**	**14 000**	**20**	**4 375**	**6**	**731**	**1**	**68 621**	**100**

Table 5
Project costs by component and project year
(Thousands of United States dollars)

	2024	*2025*	*2026*	*2027*	*2028*	*2029*	*2030*	*2031*	*2032*	*2033*	*Total*
A. Increased climate-smart production, productivity and resilience of dairy production systems											
1. Capacity-building, social mobilization and asset building	3 582	6 544	7 772	5 950	8 076	8 010	6 540	2 755	-	-	49 229
2. Support provision of essential dairy livestock services	1 869	2 360	2 395	7 036	7 641	4 916	3 659	1 942	826	176	32 820
Subtotal	**5 451**	**8 904**	**10 167**	**12 986**	**15 717**	**12 926**	**10 199**	**4 697**	**826**	**176**	**82 049**
B. Inclusive climate-smart value chains, private investment, milk consumption and policy											
1. Organization of producers, milk aggregation and facilitation of productive alliances	1 191	4 350	10 555	17 502	15 798	11 348	8 313	7 328	3 714	1 253	81 352
2. Support to emergence of safe, short and green value chains and milk consumption	-	791	1 470	1 920	2 111	2 098	880	909	935	539	11 653
3. Access to financial services	2 065	2 764	4 668	6 556	7 408	4 957	1 762	1 588	1 018	-	32 786
4. Policy support and stakeholder dialogue	204	169	385	292	334	307	353	300	279	232	2 855
Subtotal	**3 460**	**8 074**	**17 078**	**26 270**	**25 651**	**18 710**	**11 308**	**10 125**	**5 946**	**2 024**	**128 646**
C. Policy support and project management, M&E, and knowledge management											
1. M&E and knowledge management	512	36	172	348	595	288	269	160	85	403	2 868
2. Project management	3 215	1 791	2 127	2 038	1 699	1 757	1 246	1 292	1 340	1 390	17 895
Subtotal	**3 727**	**1 827**	**2 299**	**2 386**	**2 294**	**2 045**	**1 515**	**1 452**	**1 425**	**1 793**	**20 763**
Total	**12 638**	**18 805**	**29 544**	**41 642**	**43 662**	**33 681**	**23 022**	**16 274**	**8 197**	**3 993**	**231 458**

Financing and cofinancing strategy and plan

27. The overall cost of the project is estimated at US$231.458 million, to be disbursed over 10 years. The contributions are distributed among various sources: the Government is contributing US$22.976 million, while IFAD provides US$40 million through PBAS, US$5 million through BRAM, and an additional US$14.48 million through BRAM, totalling US$59.48 million. The OPEC Fund is contributing US$50 million, of which US$20 million in original financing, plus additional financing of US$30 million. The GCF DaIMA is providing a grant of US$45 million and a loan of US$4.375 million, for a total of US$49.375 million, of which US$31 million was part of the original financing and US$18.375 million is additional financing. TADB is contributing US$7 million, Heifer International is providing US$5.138 million and the project participants are contributing US$4.989 million. AFD's contribution is expected to be US$32.5 million. The project is expected to attract other financiers, as it is designed to be a flagship programme in line with the agreed country compact.

28. Recurrent costs are estimated be US$13.476 million, representing 5.8 per cent of the total project financing. IFAD’s contribution to these costs will amount to US$7.575 million (13 per cent of IFAD financing), which remains within the allowable limits set by IFAD.

Disbursement

29. Two designated accounts will be opened in United States dollars at the Bank of Tanzania, one to receive IFAD loans and one to receive GCF financing through IFAD. Similarly, C-SDTP will maintain two operational bank accounts in Tanzanian shillings to receive the resources from the designated accounts.

30. For the OPEC Fund, withdrawal applications will follow IFAD procedures and be submitted through the IFAD Client Portal. IFAD will notify the OPEC Fund upon receipt of a satisfactory withdrawal application. The OPEC Fund will then disburse the funds into a dedicated designated account opened in hard currency.

31. For AFD funds, the project coordination office will submit withdrawal applications to IFAD, which will notify AFD following review, and AFD will transfer the payments into a separate designated account.

32. Heifer International funds will be channelled by the project coordination office in local currency to a commercial bank account opened by Heifer International. This will be done quarterly on justification of previous advances and based on reporting requirements.

33. A partnership agreement between TADB and the project will be signed. The agreement will indicate the disbursement arrangements and quarterly reporting requirements. TADB will open a segregated operational account in Tanzanian shillings to receive project funds. TADB will then enter into individual agreements with eligible partner financial institutions for the utilization of funds.

34. C-SDTP will maintain a separate operational account for counterpart contributions from the Government of the United Republic of Tanzania.

Summary of benefits and economic analysis

35. The analysis period spans 20 years to account for the phasing and gestation of the proposed interventions. Economic benefits from the livestock farms and agribusiness/small and medium-sized enterprise/service provider models have been aggregated for each livestock and agribusiness activity under the project interventions, considering different adoption rates extracted from the costing exercise.

36. After the additional financing, the economic costs associated with livestock and agribusiness activities were estimated at US$208.91 million. These economic costs have been deducted from the overall economic benefit stream to calculate the

project's net incremental benefit stream. The economic analysis still shows satisfactory results, with a net present value reduction from US$132.69 million to US$122.71 million. Although the economic internal rate of return (EIRR) drops from 24.13 to 18.64 per cent after inclusion of the additional financing, the overall project is still economically profitable.

37. Results were tested for sensitivity to variations in benefits and costs, as well as for various delays in the realization of benefits. A two-year delay in generating benefits or a 30 per cent decline relative to the base scenario would reduce the EIRR to 12.47 and 12.47 per cent, respectively, which remains substantially above the discount rate. Cost overruns would have a very moderate impact, with the EIRR falling to 14.14 per cent with a 30 per cent increase in costs. All scenarios demonstrate robust results under all hypothetical conditions for the project after the additional financing.

Exit strategy and sustainability

38. The sustainability of C-SDTP interventions relies on the implementation of productive partnerships and private sector engagement and the economic sustainability of smallholders' production by making it more profitable. Strengthening farmers' organizations will also ensure the sustainability of the services provided to farmers. Finally, it is expected that local governments will continue to maintain the investments post project.

III. Risk management

A. Risks and mitigation measures

39. The overall inherent risk is assessed as moderate. The country context and political commitment are generally stable, with moderate inherent risks and residual risks due to proactive government engagement and policy alignment efforts. Governance and macroeconomic risks remain moderate with substantial efforts in anti-corruption strategies and macroeconomic stability policies.

40. The inherent and residual risks related to institutional capacity for implementation and sustainability, as well as financial management, are evaluated as substantial. According to the integrated project risk matrix, within the realm of financial management, the areas of project organization and staffing, along with project funds flow/disbursement arrangements, are assessed as high for both inherent and residual risks.

41. The IFAD portfolio has faced delays in start-up, disbursement and audit reporting, largely due to administrative burdens and a complex tax exemption process. A non-customized integrated financial management information system and reliance on manual processes increase the risk of errors, while other risks include high staff turnover and a lack of computer equipment. The presence of multiple financiers and a decentralized implementation structure further complicates the reporting process. To mitigate these risks, the project will engage the Ministry of Finance early to grant training for tax exemption process, engage with the National Audit Office to designate the C-SDTP as a priority project for auditing to meet IFAD's audit deadlines, procure the TOMPRO accounting software, and provide dedicated laptops to financial management staff at all levels.

42. Sector strategies and policies, along with policy development and implementation, present substantial inherent risks, primarily due to outdated policy frameworks and low representation of smallholder farmers in policy dialogue. However, these risks are mitigated to moderate levels through inclusive policy formulation and support for regulatory updates. The environment and climate context pose substantial risks, particularly in biodiversity conservation and resource efficiency, but these are addressed through sustainable practices and climate adaptation measures, reducing residual risks to moderate or low levels.

43. Project-specific risks, such as scope, relevance and technical soundness, are moderate and managed through flexible design and strong governance structures. Institutional capacity and implementation arrangements remain substantial risks, with efforts focused on capacity-building and performance-based contracts to ensure effective execution. Financial management and procurement processes face high inherent risks due to complex funding arrangements and procurement challenges, but structured mitigation plans aim to maintain these at moderate levels. The risk mitigation measures were implemented, including the establishment of a project coordination unit and the completion of staff recruitment. Similarly, implementing partners for each component have been identified and sensitized, and agreements have been signed. Project staff recruitment followed a competitive process to ensure quality expertise is in place. The implementation of the project is structured around performance-based contracts, as indicated in the financing agreement. Service providers will be contracted through competitive government procedures and based on renewable performance-based service contracts to provide advisory services consistent with government standards.

44. IFAD will closely monitor the progress of these mitigation measures through annual implementation support and supervision missions.

Table 6
Overall risk summary

Risk areas	*Inherent risk rating*	*Residual risk rating*
Country context	Moderate	Moderate
Sector strategies and policies	Substantial	Moderate
Environment, social and climate context	Substantial	Moderate
Project scope	Moderate	Moderate
Institutional capacity for implementation and sustainability	Substantial	Substantial
Financial management	Substantial	Substantial
Project procurement	Moderate	Moderate
Overall	**Moderate**	**Moderate**

B. Environment and social category

45. The environmental and social category is substantial. From a social perspective, women and youth need particular attention. The project will promote gender-transformative and nutrition-sensitive activities to ensure a positive impact on livelihoods. The project will also promote youth engagement and international labour standards will be applied.

46. Environmental degradation, increased use of pesticides and fertilizers, pollution risks associated with the intensification of dairy production and lack of appropriate waste management, significant water extraction or containment, and raw materials consumption are important issues to consider along the dairy value chain. The project will include measures to boost resource and energy use efficiency and reduce emissions associated with dairy production. Improving pasture productivity and quality, and promoting low-carbon sources of energy, are important means of improving food security and natural resource management and mitigating environmental risks.

C. Climate risk classification

47. The climate risk classification for the project is moderate. A detailed climate risk and adaptation assessment has been prepared, including a list of climate change mitigation and adaptation investments, to be implemented along the dairy value chain. The choice of adaptation measures to be applied will be guided by the analysis of each subproject and the climate risks most relevant to local conditions.

IV. Implementation

A. Compliance with IFAD policies

48. The proposed financing is fully compliant with IFAD policies and all the eligibility criteria for additional financings to fill a financing gap, as outlined in the project design guidelines, are met.

B. Organizational framework

Management and coordination

49. A semi-autonomous project coordination office under the Ministry of Livestock and Fisheries will oversee day-to-day implementation of the project at the central level. District implementing units, through district facilitation teams, will implement activities at the local level. The implementing units will be supported by teams of competitively recruited and seconded staff.

Financial management, procurement and governance

50. The C-SDTP additional financing will use same financial management arrangements adopted by the original financing. The project will submit quarterly interim financial reports within 30 days of period end for disbursements. For GCF funds, the project will follow GCF reporting requirements and use GCF financial reporting templates to ensure compliance.

51. An off-the-shelf accounting software (TOMPRO) will be used, with interim financial reporting templates integrated into the software to enable automatic generation of interim financial reports.

52. An independent internal audit unit, under the aegis of the Internal Auditor General, has been created at the Ministry of Livestock and Fisheries and will have oversight of the C-SDTP. Internal project audit reports will be submitted to IFAD upon request.

53. External audit will be the responsibility of the Controller and Auditor General and will comply with IFAD policies and procedures. The audit will include the use of funds from all financing sources and lines of credit

54. Taxes and duties will be covered by the Government of the United Republic of Tanzania.

55. The country has a robust public procurement act with established oversight bodies, the Public Procurement Regulatory Authority and the Public Procurement and Disposal of Assets Authority for the mainland and Zanzibar, respectively. These legal frameworks cover all aspects of public procurement. Procurement arrangements as envisaged at the design stage will continue to apply for the additional financing.

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

56. Three types of M&E will be performed under the project: (i) monitoring of implementation and financial progress; (ii) monitoring of social and environmental safeguards; and (iii) outcome and impact assessment.

57. Lessons learned from C-SDTP approaches will be disseminated in collaboration with the Tanzania Dairy Development Forum, where public and private stakeholders convene annually to aggregate, synthesize and disseminate information relevant to the dairy industry. Through radio, television and social media campaigns, knowledge management will promote wider societal awareness of the nutritional importance of consuming safe milk.

D. Proposed amendments to the financing agreement

58. Schedule 2 of the financing agreement will be revised to reflect the updated contributions from IFAD and GCF. Additionally, schedule 1 will be amended to include a description of the rangeland activities and the additional geographic areas of Arusha and Kilimanjaro.

V. Legal instruments and authority

59. A financing agreement between the United Republic of Tanzania and IFAD will constitute the legal instrument for extending the proposed financing to the borrower. The signed financing agreement will be amended following approval of the additional financing.

60. The United Republic of Tanzania is empowered under its laws to receive financing from IFAD.

61. 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

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

> RESOLVED: that the Fund shall provide a loan on ordinary terms to the United Republic of Tanzania in an amount of fourteen million four hundred eighty thousand United States dollars (US$14,480,000) and upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented herein.

Alvaro Lario
President

Updated logical framework after the additional financing

Results Hierarchy	Indicators					Means of Verification			Assumptions
	Name	**Baseline**	**Mid-Term**	**Original Target**	**Final Target**	**Source**	**Frequency**	**Responsibility**	
Outreach	**1 Persons receiving services promoted or supported by the project**					Project M & E System	Annually	PMU	Existing Dairy farmers are interested in participating in project activities and the provision of heifers to youth and women allow these to become dairy farmers
	Males - Males	0	150000	300000	350 000				
	Females - Females	0	150000	300000	350 000				
	Young - Young people	0	180000	360000	420 000				
	Total number of persons receiving services - Number of people	0	300000	600000	720000				
	Persons with disabilities - Number	0	9000	18000	21 000				
	1.a Corresponding number of households reached					Project M & E System	Annually	PMU	
	Households - Households	0	60000	120000	140 000				
	1.b Estimated corresponding total number of households members					Project M & E System	Annual	PMU	
	Household members - Number of people	0	300000	600000	700 000				
Project Goal Contribute to the transformation of the dairy value chain to improve livelihoods, increase food security and to mitigate the impact of the dairy sector on climate change	**Targeted smallholder households reporting an increase in income of at least 30% from sales of milk and milk products**					COI Survey	Baseline, Mid and Completion	PMU/External service provider	Direct beneficiaries are reporting an increase in income and are able to attribute it to project interventions
	Household - Number	0	40000	90000	105 000				
	Reduction in emission intensity (kg CO2e/kg protein)					COI Survey and GLEAM-i and/or/ EX-ACT analysis			
	Milk emission intensity (kg CO2e/kg protein) (number) - Number	0							
	Milk emission intensity (kg CO2e/kg protein) - Percentage (%)	0							
	Meat emission intensity (kg CO2e/kg protein) - Number	0							
	Meat emission intensity (kg CO2e/kg protein) - Percentage (%)	0							
Development Objective Improve income, climate resilience and nutrition of smallholder dairy producers and their participation in a competitive and safe VC	**1.2.8 Women reporting minimum dietary diversity (MDDW)**					COI Survey	Baseline, mid term, Completion	PMU/External service provider	The main services delivered by the public and private entities supported by the project will adequately meet target groups productive/business/employment and livelihood needs
	Women (%) - Percentage (%)	0	25	55	55				
	Women (number) - Females	0	30000	66000	77 000				
	Households (%) - Percentage (%)	0	25	55	55				
	Households (number) - Households	0	30000	66000	77 000				
	Household members - Number of people	0	150000	330000	385 000				
	Women-headed households - Households								
	SF.2.1 Households satisfied with project-supported services					COI Survey	Baseline, mid term, Completion	PMU/External service provider	
	Household members - Number of people	0	240000	480000	560 000				
	Households - Percentage (%)	0	40	80	80				
	Households - Households	0	48000	96000	112 000				
	SF.2.2 Households reporting they can influence decision-making of local authorities and project-supported service providers					COI Survey	Baseline, mid term, Completion	PMU/External service provider	
	Household members - Number of people	0	180000	450000	525 000				

Results Hierarchy	Indicators					Means of Verification			Assumptions
	Name	**Baseline**	**Mid-Term**	**Original Target**	**Final Target**	**Source**	**Frequency**	**Responsibility**	
	Households - Percentage (%)	0	30	75	75				
	Households - Households	0	36000	90000	105 000				
	2.2.1 Persons with new jobs/employment opportunities					COI Survey	Annual	PMU	
	Males - Males	0	1500	3000	3 230				
	Females - Females	0	1000	2900	3 000				
	Young - Young people	0	1500	3000	3 100				
	Total number of persons with new jobs/employment opportunities - Number of people	0	2500	5900	6 230				
	Persons with disabilities - Number	0	75	150	160				
	IE.2.1 Individuals demonstrating an improvement in empowerment					COI Survey	Annual	PMU	
	Total persons - Percentage (%)	0	6	12	12				
	Total persons - Number of people	0	36000	72000	84 000				
	Females - Percentage (%)	0	4.5	9	9				
	Females - Females	0	14000	28000	31 500				
	Males - Percentage (%)	0	7.5	15	15				
	Males - Males	0	22000	44000	52 500				
Outcome Outcome 1. Increased climate-smart production, productivity and resilience of dairy smallholder production systems	**3.2.2 Households reporting adoption of environmentally sustainable and climate-resilient technologies and practices**					COI survey	Baseline, Mid Term, Completion	PMU/External service provider	Climate smart varieties of forage available; techniques for forage conservation known, new forage production technologies developed. water for livestock availability will improve. new trainings in the new production practices and technologies will be effective to the smallholder dairy farmers
	Total number of household members - Number of people	0	145000	360000	420 000				
	Households - Percentage (%)	0	24	60	60				
	Households - Households	0	29000	72000	84 000				
	1.2.4 Households reporting an increase in production					COI survey	Baseline, Mid Term, Completion	PMU/External service provider	
	Total number of household members - Number of people	0	180000	450000	525 000				
	Households - Percentage (%)	0	30	75	75				
	Households - Households	0	36000	90000	105 000				
	1.2.9 Households with improved nutrition Knowledge Attitudes and Practices (KAP)								
	Indigenous households - Households								
	Women-headed households - Households								
	Households (number) - Households				98 000				
	Households (%) - Percentage (%)				70				
	Household members - Number of people				490 000				
Output Output 1.1 Enhanced capacities of smallholder farmers	**1.1.4 Persons trained in production practices and/or technologies**					Project M & E system	Annually	PMU	MCPs will be equipped with solar power, and the construction of biodigestors will be piloted. these technologies will meet farmers needs while contributing to reduce GhG emissions
	Men trained in livestock - Males	0	17400	34800	40 200				
	Women trained in livestock - Females	0	11600	23200	26 800				
	Young people trained in livestock - Young people	0	5800	11600	13 400				
	Total persons trained in livestock - Number of people	0	29000	58000	67 000				

Results Hierarchy	Indicators					Means of Verification			Assumptions
	Name	**Baseline**	**Mid-Term**	**Original Target**	**Final Target**	**Source**	**Frequency**	**Responsibility**	
	3.1.3 Persons accessing technologies that sequester carbon or reduce greenhouse gas emissions					Project M & E System	Annually	PMU	
	Males - Males	0	17400	34800	40 200				
	Females - Females	0	11600	23200	26 800				
	Young - Young people	0	5800	11600	13 400				
	Total persons accessing technologies - Number of people	0	29000	58000	67 000				
Output Output 1.2: Enhanced provision of essential livestock services (animal health, breeding, feeding, inputs) and technical innovations and nature based solutions developed, tested and disseminated	**Number of technical solutions and innovations tested and disseminated**					Project M & E system	Annually	PMU	Production inputs (e.g improved seeds, heifers, veterinary medicines etc.) and technological packages (e.g processing equipment, farming tools, animal health and artificial insemination kits) will be provided to project beneficiaries. Small scale water harvesting facilities and boreholes will be fully implemented. Existing digital extension tools will be effectively strengthened and disseminated
	Number - Number	0	10	25	25				
	1.1.3 Rural producers accessing production inputs and/or technological packages					Project M & E system	Annually	PMU	
	Males - Males	0	16600	37200	42 600				
	Females - Females	0	12400	24800	28 400				
	Young - Young people	0	9300	18600	21 300				
	Total rural producers - Number of people	0	29000	62000	71 000				
	Number of farmers accessing digital extension services					Project M & E system	Annually	PMU	
	Total - Number	0	29000	58000	67 000				
	Youth - Number	0	5800	11600	13 400				
	Male - Number	0	17400	34800	40 200				
	Female - Number	0	11600	23200	26 800				
Outcome Outcome 2: Improved market access, for smallholder farmers and reduced environmental footprint of the dairy value chain.	**2.2.6 Households reporting improved physical access to markets, processing and storage facilities**					COI survey	Annually	PMU/External service provider	The construction and rehabilitation of (MCCs and MCPs), as well as the rehabilitation of roads, will result in beneficiaries reporting improved access to facilities.
	Households reporting improved physical access to markets - Percentage (%)	0	45	91	91				
	Size of households - Number of people	0	270000	550000	637 000				
	Households reporting improved physical access to markets - Households	0	54000	110000	127 400				
	2.2.3 Rural producers' organizations engaged in formal partnerships/agreements or contracts with public or private entities					COI survey	Annually	PMU	
	Percentage of POs - Percentage (%)	0	45	90	90				
	Number of POs - Organizations	0	72	146	170				
	Women in leadership position - Females %	0	20	40	40				
Output Output 2.1: Strengthened capacity of dairy cooperatives and farmers in governance and business management, and financial literacy	**2.1.3 Rural producers' organizations supported**					Project M & E system	Annually	PMU	Dairy cooperatives are interested in participating in project activities. The project is effective in establishing new dairy producer groups
	Total size of POs - Organizations	0	4200	8400	10 600				
	Rural POs supported - Organizations	0	80	163	212				
	Males - Males	0	2520	5040	6 360				
	Females - Females	0	1680	3360	4 240				
	Young - Young people	0	840	1680	2 120				
	Rural POs supported that are headed by women - Organizations	0	32	65	71				

Results Hierarchy	Indicators					Means of Verification			Assumptions
	Name	**Baseline**	**Mid-Term**	**Original Target**	**Final Target**	**Source**	**Frequency**	**Responsibility**	
Output Output 2.2: Mechanisms for collection, storage, aggregation and transport of milk established and/or strengthened, with milk consumption and nutrition awareness promoted	**Milk Collection Centres and Milk Collection Points constructed or upgraded**					Project M & E System	Annually	PMU	Infrastructure activities are implemented as planned
	Total number of facilities - Number	0	470	940	1 210				
	MCCs constructed - Number	0	50	100	120				
	MCCs rehabilitated - Number	0	50	100	100				
	MCPs constructed - Number	0	350	700	820				
	MCPs rehabilitated - Number				120				
	MCCs equipped with solar powering - Number	0	25	50	50				
	2.1.5 Roads constructed, rehabilitated or upgraded					Project M & E System	Annually	PMU	
	Length of roads - Km	0	140	140	170				
	1.1.8 Households provided with targeted support to improve their nutrition					Project M & E System	Annually	PMU	
	Total persons participating - Number of people	0	32500	65000	77 484				
	Males - Males	0	19500	39000	46 490				
	Females - Females	0	13000	26000	30 994				
	Households - Households	0	32500	65000	77 484				
	Household members benefitted - Number of people	0	165500	325000	387 420				
	Young - Young people	0	9750	19500	23 245				
Output Output 2.3: Small and medium dairy processing enterprises supported with business development services and access to finance; Tailored financial products and services, including climate finance and insurance developed for dairy value chain actors	**2.1.1 Rural enterprises accessing business development services**					Project M & E System	Annually	PMU	Small and medium dairy processing enterprises are interested in the business development services offered by the project
	Rural enterprises - Enterprises	0	30	60	60				
	1.1.5 Persons in rural areas accessing financial services					Project M & E System	Annually	PMU	
	Women in rural areas accessing financial services - savings - Females	0	8600	17200	17 200				
	Young people in rural areas accessing financial services - savings - Young people	0	6450	12900	12 900				
	Men in rural areas accessing financial services - savings - Males	0	12900	25800	25 800				
	Men in rural areas accessing financial services - credit - Males	0	12900	25800	25 800				
	Women in rural areas accessing financial services - credit - Females	0	8600	17200	17 200				
	Young people in rural areas accessing financial services - credit - Young people	0	6450	12900	12 900				
	Total persons accessing financial services - savings - Number of people	0	21500	43000	43 000				
	Total persons accessing financial services - credit - Number of people	0	21500	43000	43 000				
	Total persons accessing financial services - insurance - Number of people	0	18900	18900	18 900				
	Men in rural areas accessing financial services - insurance - Males	0	11160	11160	11 160				

Results Hierarchy	Indicators					Means of Verification			Assumptions
	Name	**Baseline**	**Mid-Term**	**Original Target**	**Final Target**	**Source**	**Frequency**	**Responsibility**	
	Women in rural areas accessing financial services - insurance - Females	0	7740	7740	7 740				
	Young people in rural areas accessing financial services - insurance - Young people	0	5580	5580	5 580				
Output Output 2.4: Formulation, review and update of national policies, strategies and legislations supported	**Policy 1 Policy-relevant knowledge products completed**					Project M & E System	Annually	PMU	Policy analyses, research papers, working papers, studies, strategies, pieces of legislation, by laws or other policy related material will be produced by the project team (with data evidence from M & E and KM activities) as part of the project's policy goals
	Number - Knowledge Products	0	4	8	8				

Updated summary of the economic and financial analysis

A. Methodology

1. This annex presents the Economic and Financial Analysis (EFA) of the Climate Smart Smallholder Dairy Transformation Project (C-SDTP). The methodological approach of the Economic and Financial Analysis (EFA) of the C-SDTP follows that of Gittinger (1982)[1], Belli et al. (2001)[2] and is in line with recent guidelines published on economic and financial analysis[3]. The financial analysis was performed from the perspective of beneficiaries. The economic analysis also differed from the financial analysis due to a shadow price that was assumed for the main project inputs and outputs.

2. Seventeen financial models were developed: thirteen models for agribusiness and Small-Scale Enterprises (SMEs) and four models for livestock activities. The financial analysis shows that the targeted activities are sound. The economic analysis also shows that the project is economically viable. The Economic Internal Rate of Return (EIRR) for the overall project is equal to 19 per cent and the Net Present Value (NPV) equals to US$122.71 million. The Project is sensitive to changes in some of the model's variables (variations on benefits and costs, various lags in the realization of benefits and adoption rates), confirming that sustainable dairy value chain investments are key to project success.

B. Beneficiaries

3. The direct beneficiaries of the Project include: (i) smallholders livestock farmers; (ii) small and medium enterprises (SMEs) such as milk collection points (MCPs), milk collection centres (MCCs), and processing units. The Project will target 140,000 households (HHs) of which 67,000 HHs will be involved in dairy farming (mostly zero grazing) and 73,000 HHs in involved in agribusiness and SME activities along the dairy value chain. This translates to an estimated 700,000 individual beneficiaries.

4. To maintain consistency with the Project Memorandum, a simplified support model has been incorporated in the EFA to account for the 62,101 households not captured under the detailed economic models. These households are expected to benefit indirectly from interventions such as training, awareness campaigns, and improved access to basic services. A conservative one-time incremental benefit of TSh150,000 in Year 1 has been assumed for these households to reflect potential income gains without overstating project impact.

5. The following table represents the phasing of beneficiaries used for the aggregation.

[1] Gittinger, P., 1982. *Economic analysis of agricultural projects.*
[2] Belli, P., J.R. Anderson, H.N. Barnum, J.A. Dixon, and J-P. Tan (2001). *Economic Analysis of Investment Operations: Analytical Tools and Practical Applications*. WBI Development Studies, World Bank Institute, World Bank, Washington, D.C.
[3] IFAD, 2015. *Economic and Financial analysis of rural investment projects, basic concepts and rationale.*

Table 1 Phasing

	Unit	Y1 2024	Y2 2025	Y3 2026	Y4 2027	Y5 2028	Y6 2029	Y7 2030	Y8 2031	Y9 2032	Y10 2033	0 TOTAL
Livestock models												
Zero grazing												
Star-up package intervention - new farmers	farmers	-	2,000	3,000	3,000	-	-	-	-	-	-	8,000
Star-up package intervention - new youth farmers	farmers	-	300	300	-	-	-	-	-	-	-	600
Upgrade package intervention - existing farmers	farmers	-	-	-	8,772	8,751	8,756	8,772	8,751	8,756	-	52,560
Grazing system		-	-	-	-	-	-	-	-	-	-	-
Package of intervention - existing farmers	farmers	-	-	-	975	972	973	975	972	973	-	5,840
Sub-total of dairy farming farmers HHS	***HHs***	***-***	***2,300***	***3,300***	***12,747***	***9,724***	***9,729***	***9,747***	***9,724***	***9,729***	***-***	***67,000***
Agricultural model												
Seed multiplicators	producers (1 ha/produ	-	20	20	20	20	20	10	-	-	-	110
Agribusiness /Small-Medium Enterprises (SME) and Service Provider models												
Construction of new MCCs												
MCC - average 3,000 liter/day	units	-	10	15	10	10	10	10	5	-	-	70
MCC - average 3,000 liter/day (with solar panels)	units	-	-	-	10	10	10	10	10	-	-	50
Rehabilitation of existing MCCs		-	-	-	-	-	-	-	-	-	-	-
MCC - average 3,000 liter/day	units	-	20	20	5	5	-	-	-	-	-	50
Construction of new MCPs												
MCP - average 800 liter/day	units	-	-	100	140	140	140	100	100	100	-	820
Rehabilitation of existing MCPs												
MCP - average 800 liter/day	units	-	40	40	25	5	5	5	-	-	-	120
Processing units												
Small-scale processing units	units	-	5	5	10	10	6	10	10	5	-	61
Medium-scale processing units (with solar panels)	units	-	-	-	3	3	2	2	2	-	-	12
Youth / service providers												
Milk ATMs	ATMs	-	1	1	4	4	9	6	6	5	5	41
Milk zones/bars	bars	-	2	2	4	4	9	7	7	6	-	41
Milk collectors: motorbike	transporters	-	100	150	150	125	100	100	100	-	-	825
Private para-veterinary services	paravets	-	90	90	110	55	-	35	-	40	-	420
Milk refrigerated trucks	transporters	-	-	-	22	10	6	-	-	-	-	38
Sub-total SME and services providers	*HHs*	*-*	*1,433*	*1,763*	*1,980*	*1,838*	*1,670*	*1,181*	*653*	*373*	*10*	10,899
Sub-total of milk coops + suppliers of milk to MCPs/MCPs	*HHs*	*-*	*-*	*-*	*6,059*	*6,044*	*6,048*	*6,059*	*6,044*	*6,048*	*-*	*36,301*
Sub-total poor farmers	*HHs*	*-*	*-*	*-*	*4,306*	*4,296*	*4,298*	*4,306*	*4,296*	*4,298*	*-*	*25,800*
Total of dairy Value Chain HHs benefited by C-SDTP	***HHs***	***-***	***1,433***	***1,763***	***12,344***	***12,177***	***12,016***	***11,545***	***10,993***	***10,719***	***10***	***73,000***
Total HHs of benefited by C-SDTP	**HHs**	**-**	**3,733**	**5,063**	**25,091**	**21,901**	**21,745**	**21,292**	**20,716**	**20,448**	**10**	**140,000**

C. Financial analysis

Agribusiness / SME / service provider models

6. Thirteen agribusiness / SME/ service provider models have been developed: two operating models of Milk Collection Point (MCPs); three models of Milk Collection Centre (MCCs); two models for dairy processing units (small and medium size); milk trader/transporter (motorbike, refrigerated truck); milk ATM; milk zones/bars; seed multiplicator, and service provider such as (para) veterinary services. The main difference between MCP/MCC models lays in the type and scale of their operations and storage capacities.

7. The following table shows financial performance of the agribusiness/SME models. The financial internal rate of return (FIRR), NPV, and benefit/cost ratio for the models are good, indicating the financial viability of the proposed activities.

Table 2 Financial performance of SME models

Agribusiness / SME Models	FIRR (17%)	NPV (in TZS)	B/C ratio
Construction of new MCC	44%	164,825,777	1.05
Construction of new MCC with solar panels	23%	60,770,813	1.02
Rehabilitation of existing MCC	119%	274,279,644	1.08
Construction of new MCP	19%	1,647,135	1.01
Rehabilitation of existing MCP	32%	9,512,297	1.02
Small scale processing unit	34%	168,155,760	1.07
Medium processing unit with solar panels	n/a	8,460,778,345	1.43
Seed production	n/a	7,145,723	1.89
Milk ATM	48%	665,943	1.01
Milk zones/bars	81%	19,966,321	1.01
Milk trader - motorbike	21%	532,248	1.01
(Para) veterinary service	1519%	35,961,635	1.27
Milk refrigerated trucks	122%	384,615,520	1.02

Livestock models

8. The livestock models were developed using the herd growth model interface (Livestock Sector Investment Policy Toolkit-LSIPT) for simulating bio-economic performances of herds of tropical domestic ruminants[4]. It is designed to calculate different livestock production outputs (live weights, meat, milk, skin and hides, manure) and financial outputs that can be used in the calculation of economic and financial performance indicators such as IRR and NPV.

9. The LSIPT is a program developed by FAO and Agricultural Research Centre for International Development (CIRAD) under the ALIVE initiative. The LSIPT calculates, in "with" and "without" project scenario, different livestock production outputs (milk, manure, etc.) and financial outputs that can be used to derive economic and financial performance indicators such as IRR and NPV. All the models estimate the "with" and "without" project situation over a 20-years period. For cattle models, the ECORUM module of the LSIPT for simulating bio-economic performance of herd of tropical domestic ruminants have been used.

10. Three farm models were developed by the livestock specialist on the basis of livestock practices in Tanzania: (i) zero grazing systems for new farmers (B1OM); (ii) zero grazing systems for new youth farmers (B1OM-youth); (iii) zero grazing systems for existing farmers (B2OM); in which the improvement of animal feed, veterinary services and Artificial Insemination (AI) will result in the increase of milk production, reduced mortality rate and increased parturition rate; and (iv) grazing systems for existing

[4] The LSIPT is a program developed by FAO and Agricultural Research Centre for International Development (CIRAD) under the ALIVE initiative. The toolkit is built on Microsoft Excel and uses demographic equations to simulate livestock population dynamics over a given period of time.

farmers (B1LG), in which the vaccination campaign and better access to veterinary services supported by the project will lead to decrease mortality rate and improve milk production.

11. The following table shows the main results and parameters used for developing the livestock models.

Table 3 Livestock models parameters and financial results

#	Production model	Investments	Technical parameters	FIRR 15 years	NPV (TZS, 15 years, 17% discount rate)
	Livestock models				
1	Cattle - Zero grazing system - cross breed for new farmers (B1OM)	Investment: 930,000 TZS/farm (cowshed) and 2,000,000 /heifer, Better feed (use of salts/ minerals/ concentrates); Better animal health (vaccination campaigns, better access to veterinary services and medicines) Better access and results of AI (Artificial Insemination)	Herd size: zero cows in WOP vs. WP 2 crossbreed in year 6 Mortality decreases in Juvenile from 20% (WOP) to 15% (WP); fir Sub-adult from 10% to 7%, and for Adult from 5% to 3% Increase in live weight in all ages and sex: Juvenile Female from 130 Kg WOP to 165 kg WP; Juvenile Male from 163 Kg WOP to 206 kg WP; Sub-adult Female live weight 245 Kg WOP to 350 kg WP; Sub-adult Male live weight 306 Kg WOP to 438 kg WP; Adult Female live weight 350Kg WOP to 500 kg WP; Adult Male live weight 438 kg WOP to 625kg for WP Milk productivity: WOP: 4 liter/day for 180 days vs. WP 10.5 liter/day for 275 days (reaching this high value at year 6)	33.4%	6,612,188
2	Cattle - Zero grazing system - cross breed for new youth farmers (B1OM)	Investment: 1.7 million TZS /farm (cowshed) per beneficiary (20member per group) and 2,000,000 /heifer, Better feed (use of salts/ minerals/ concentrates); Better animal health (vaccination campaigns, better access to veterinary services and medicines) Better access and results of AI (Artificial Insemination)	Herd size: zero cows in WOP vs. WP 2 crossbreed in year 6 Mortality decrease in Juvenile from 20% (WOP) to 15% (WP); fir Sub-adult from 10% to 7%, and for Adult from 5% to 3% Increase in live weight in all ages and sex: Juvenile Female from 130 Kg WOP to 165 kg WP; Juvenile Male from 163 Kg WOP to 206 kg WP; Sub-adult Female live weight 245 Kg WOP to 350 kg WP; Sub-adult Male live weight 306 Kg WOP to 438 kg WP; Adult Female live weight 350Kg WOP to 500 kg WP; Adult Male live weight 438 kg WOP to 625kg for WP Milk productivity: WOP: 4 liter/day for 180 days vs. WP 10.5 liter/day for 275 days (reaching this high value at year 6)	27.5%	6,647,495
3	Cattle - Zero grazing system - cross-breed cows for existing farmers (B2OM)	Investment: 930,000 TZS /farm (cowshed) plus LFFS Better infrastructure Better feed (use of salts/ minerals/ concentrates); Better anima, health (vaccination campaigns, better access to veterinary services and medicines)	Herd size equal to 2 local breed WOP vs. WP 2 crossbreed Mortality decreases in Juvenile from 20% (WOP) to 15% (WP); fir Sub-adult from 10% to 7%, and for Adult from 5% to 3% Increase in live weight in all ages and sex : Juvenile Female from 130 Kg WOP to 165 kg WP; Juvenile Male from 163 Kg WOP to 206 kg WP; Sub-adult Female live weight 245 Kg WOP to 350 kg WP; Sub-adult Male live weight 306 Kg WOP to 438 kg WP; Adult Female live weight 350Kg WOP to 500 kg WP;	76.7%	5,231,762

#	Production model	Investments	Technical parameters	FIRR 15 years	NPV (TZS, 15 years, 17% discount rate)
		Better access and results of AI (Artificial Insemination)	Adult Male live weight 438 kg WOP to 625kg for WP Milk productivity: WOP: 4 liter/day for 180 days vs. WP 10.5 liter/day for 275 days (reaching this high value at year 6)		
4	Cattle - Grazing system for existing farmers (B1LG)	Investment: LFFS and vaccines Better feed (access to pasture); animal health (vaccination campaigns, better access to veterinary services and medicines) Use of AI (Artificial Insemination)	Herd size equal to 20 local breed WOP vs. WP 15 local breed with better access to veterinary services Increase in parturition rate from 60% WOP vs. 65% WP (reaching this high value at year 6) Mortality decreases in Juvenile from 25% (WOP) to 20% (WP); fir Sub-adult from 10% to 8%, and for Adult from 5% to 3% Increase in live weight in all ages and sex: Juvenile Female from 80Kg WOP to 100 kg WP; Juvenile Male from 100 Kg WOP to 120 kg WP; Sub-adult Female live weight 160 Kg to 200 kg WP; Sub-adult Male live weight 200 Kg to 240 kg WP; Adult Female live weight 240 Kg to 300 kg WP; Adult Male live weight 300 Kg to 360 kg WP; Milk productivity: WOP: 2 liter/day for 150 days vs. WP 3 liter/day for 175 days (reaching this high value at year 6)	42.2%	1,684,093

D. Summary of the Performance of the Financial Models

12. The Project net cash flows are based on the incremental approach, which results from comparing the With Project Situation and Without Project situations[5]. Financial models were assessed using a 17 per cent discount rate, which reflects the average commercial lending rate in Tanzania. This figure is supported by data from the World Bank and corroborated by 2024 market data, where the actual average lending rate was 16.7 per cent, rounded to 17 per cent for consistency across the analysis. The below table summarizes the models as well as their financial performance.

[5] IFAD, 2015, Economic and Financial analysis of rural investment projects, basic concepts, and rationale.

Table 4 Financial model's cash flows

Table A: Models'financial cash flow																		
		Models' net incremental benefits -NIB (in TZS)																
		Livestock models				Agri-business / small-medium enterprises (SME) / service provider models												
FINANCIAL ANALYSIS		Cattle - Zero grazing system - cross breed for new farmers	Cattle - Zero grazing system - cross-breed cows for existing farmers	Cattle - Zero grazing system - cross-breed cows for existing farmers	Cattle - Grazing system for existing farmers (B1LG)	Construction of new MCC	Construction of new MCC with solar panels	Rehabilitation of existing MCC	Construction of new MCP	Rehabilitation of existing MCP	Small scale processing unit	Medium processing unit with solar panels	Seed production	Milk ATM	Milk zones/bars	Milk trader - motorbike	(Para) veterinary service	Milk refrigerated trucks
	PY1	-2,970,403	-3,784,153	-850,197	-236,291	-169,933,181	-312,334,921	-64,266,317	-34,191,954	-17,555,162	-192,309,843	581,295,346	446,149	-658,135	-8,863,518	-4,744,244	-663,649	-101,537,978
	PY2	293,204	293,204	412,439	-309,545	63,106,124	67,747,652	68,137,879	6,005,233	3,445,878	-389,936	1,343,075,787	1,780,490	322,945	7,240,453	1,321,077	10,086,420	123,925,385
	PY3	572,197	572,197	606,014	-109,145	76,360,741	81,002,270	81,392,497	7,137,842	5,711,096	37,151,387	1,663,970,932	1,780,490	322,945	7,240,453	1,321,077	10,086,420	123,925,385
	PY4	1,037,259	1,037,259	805,040	61,564	88,432,896	93,074,425	93,464,652	8,914,979	7,412,757	74,692,710	1,984,866,077	1,780,490	322,945	7,240,453	913,505	8,375,624	123,925,385
	PY5	1,298,643	1,298,643	1,021,145	373,256	89,313,454	93,954,982	94,345,209	9,327,583	7,875,678	112,234,033	2,305,761,221	1,780,490	322,945	7,240,453	1,321,077	10,086,420	123,925,385
	PY6	1,585,779	1,585,779	1,255,062	547,688	85,388,684	90,030,213	90,420,440	8,356,454	6,929,708	149,775,356	2,626,656,366	1,644,632	322,945	7,240,453	1,321,077	10,086,420	123,925,385
	PY7	1,658,958	1,658,958	1,278,602	791,472	88,432,896	93,074,425	93,464,652	8,914,979	7,412,757	149,775,356	2,626,656,366	1,780,490	322,945	7,240,453	913,505	8,375,624	123,925,385
	PY8	1,751,997	1,751,997	1,308,092	784,666	89,313,454	93,954,982	94,345,209	9,327,583	7,875,678	149,775,356	2,626,656,366	1,780,490	322,945	7,240,453	1,321,077	10,086,420	123,925,385
	PY9	1,855,379	1,855,379	1,342,973	773,973	89,464,406	94,105,935	94,496,162	9,352,742	7,925,996	149,775,356	2,626,656,366	1,780,490	322,945	7,240,453	1,321,077	10,086,420	123,925,385
	PY10	1,964,089	1,964,089	1,382,775	761,437	88,432,896	93,074,425	93,464,652	8,914,979	7,412,757	149,775,356	2,626,656,366	1,994,641	322,945	7,240,453	913,505	8,375,624	123,925,385
B/C		na	na	na	na	1.05	1.02	1.08	1.01	1.02	1.07	1.43	1.89	1.01	1.01	1.01	1.27	1.02
NPV (TSh) @		1,708,609	1,013,096	2,750,742	754,348	164,825,777	60,770,813	274,279,644	1,647,135	9,512,257	168,155,760	8,460,778,345	7,145,723	665,943	19,966,321	532,248	35,961,635	384,615,520
IRR		30%	23%	76%	39%	44%	23%	119%	19%	32%	34%	#NUM!	#NUM!	48%	81%	21%	1519%	122%

E. Economic analysis

Assumptions

13. **Economic prices.** In line with estimates from The Economist Intelligence Unit (EIU), the official exchange rate has been set at one US Dollar for TZS 2,325 estimated by the Economist Intelligence Unit (EIU) for whole 2024. Financial prices have been converted to economic by applying the following conversion factors. For non-tradable goods, a conversion factor of one was used since they are generally purchased at local level, without significant tax distortions. For labour, the opportunity cost conversion factor is 0.91[6] based on the unemployment rate in Tanzania. For the tradeable goods and equipment, the Standard Conversion Factor (SCF) 0.93 has been calculated and applied. The import parity price has been calculated for milk equal to 1.04.

14. All models were originally expressed in 2023 constant prices. These have now been updated to reflect 2025 price levels using the official inflation rates for 2024 and 2025. The analysis builds on primary data collected by the preparation team during the field mission in March/April 2023, as well as data from the Government of Tanzania, on-going IFAD projects, and other relevant sources. Conservative assumptions and parameters have been applied to avoid overestimation of benefits and to provide realistic and robust results.

6 Rate of unemployment Tanzania in 2021, National Bureau of Statistics (NBS), March 2023.

Table 5 Standard Conversion and Social Discount Factors

Conversion factor	
CF for tradeable goods	0.93
	1.04
CF for labour	0.91
CF for non-tradeable goods	1.00
Social discount rate	6%

15. **Social discount rate.** In conformity with the World Bank *Technical Note on Discounting Cost and Benefits in Economic Analysis*, a 6 per cent discount rate has been used to reflect the social opportunity cost of capital in Tanzania[7]. This discount rate has been applied to calculate the economic NPV and future net incremental benefits. Although Tanzania does not currently publish an official social discount rate, the use of 6 per cent is consistent with IFAD-supported economic analyses and is considered methodologically sound and conservative in the absence of country-specific guidance.

F. Results

16. The period of analysis is 20 years to account for the phasing and gestation of the proposed interventions. Economic benefits from the livestock farms and agri-business /SME/ service provider models have been aggregated using average incremental net benefits and beneficiaries for each livestock and agri-business activities under the Project interventions and assuming different adoption rates, extracted from the costing exercise. Economic benefits from enterprise models have been aggregated using an expected number of small enterprises to be supported by the Project. Benefits are phased-in progressively for all types of interventions.

17. Economic costs associated with livestock and agri-business activities were estimated at US$208.91 million. The economic costs have then been deducted from the overall economic benefit stream to obtain the Project's net incremental benefit stream. The economic analysis shows satisfactory results, with a NPV at US$122.71 million and an EIRR of 18.64 per cent, suggesting that the overall Project is economically profitable.

[7] Technical Note on Discounting Costs and Benefits in Economic Analysis of World Bank Projects (WB, 2016)

Table 6 Results of the economic analysis

Sensitivity Analysis	Base case
IRR (%)	**18.64**
NPV (in US$ million)	**122.71**

G. Sensitivity analysis

18. Results were tested for sensitivity to variations in benefits and costs and for various lags in the realization of benefits. A delay of 2 years in the generation of benefits or a decline of 30 percent relative to the base scenario would reduce the EIRR to 12.47 percent and 12.47 percent respectively, substantially above the discount rate. Cost overruns would have very moderate impact, with EIRR falling to 14.14 per cent with a 30 per cent increase. All scenarios show robust results under all hypothetical scenarios.

Table 7 Results of the sensitivity analysis

Scenario	EIRR (%)	NPV (million US$)
base scenario	**18.64%**	**122,708,764**
costs +10%	17.03%	110,568,766
costs +20%	15.54%	98,428,768
costs +30%	14.14%	86,288,770
benefits +10%	20.22%	147,119,639
benefits +20%	21.64%	171,530,513
benefits -10%	16.86%	98,297,890
benefits -20%	14.83%	73,887,015
benefits -30%	12.47%	49,476,141
benefits delayed 1 year	15.59%	94,990,470
benefits delayed 2 years	12.94%	69,053,451