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**Report to the President  
Proposed additional financing to Rwanda for the  
Rwanda Dairy Development Project (RDDP)**

**Project ID: 2000001195**

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**Action:** According to the delegation of authority procedure approved by the Executive Board at its 126<sup>th</sup> session and detailed in document [EB 2019/126/R.48/Rev.2](#) the President is invited to approve the recommendation contained in paragraph 57.

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**Technical questions:**

**Sara Mbago-Bhunu**

Regional Director

East and Southern Africa Division

e-mail: [s.mbago-bhunu@ifad.org](mailto:s.mbago-bhunu@ifad.org)

**Dagmawi Habte-Selassie**

Country Director

East and Southern Africa Division

e-mail: [d.habte-selassie@ifad.org](mailto:d.habte-selassie@ifad.org)

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### Appendices:

- I. Updated logical framework incorporating the additional financing
- II. Updated summary of the economic and financial analysis

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<b>Project delivery team</b>	
Regional Director:	<b>Sara Mbago-Bhunu</b>
Country Director:	<b>Dagmawi Habte-Selassie</b>
Technical Lead:	<b>Antonio Rota</b>
Finance Officer:	<b>Marie-Laure Giquel</b>
Climate and Environment Specialist:	<b>Paxina Chileshe</b>
Legal Officer:	<b>Ebrima Ceesay</b>

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## Financing summary

<b>Initiating institution:</b>	IFAD
<b>Borrower/recipient:</b>	Government of Rwanda
<b>Executing agency:</b>	Rwanda Agriculture and Animal Resources Development Board (RAB)

<b>Total project cost:</b>	US\$70.1 million
<b>Amount of original IFAD Financing:</b>	SDR32.14 million (equivalent to approximately US\$44.7 million)
<b>Terms of original IFAD financing:</b>	SDR31.35 million highly concessional loan and SDR0.79 million grant
<b>Amount of additional IFAD loan 1:</b>	US\$2.99 million
<b>Terms of additional IFAD loan 1:</b>	Super Highly Concessional Loan
<b>Amount of additional IFAD loan 2:</b>	US\$0.75 million
<b>Terms of additional IFAD loan 2:</b>	Highly Concessional Loan
<b>Cofinancier(s):</b>	Heifer International, Private Sector/Banks
<b>Amount of cofinancing:</b>	Heifer International: US\$4.0 million Private Sector/Banks: US\$7.2 million
<b>Terms of cofinancing:</b>	Grant
<b>Contribution of borrower/recipient:</b>	US\$4.5million
<b>Contribution of beneficiaries:</b>	US\$5.9 million
<b>Cooperating institution:</b>	IFAD

## I. Background and project description

### A. Background

1. The [Rwanda Dairy Development Project](#) (RDDP) was approved by the Executive Board the 04 November 2016.<sup>1</sup> With a duration of six years, the project entered into force on 19 December 2016. The project overall budget was US\$65.1 million, with an IFAD loan of US\$43.6 million; an IFAD grant of US\$1.1 million; a contribution from Heifer International (HI) of US\$4.0 million; a contribution from the Private Sector/Banks of US\$6.6 million; a contribution from the Government of Rwanda (GoR) for a total of US\$3.9 million; and an estimated contribution from beneficiaries of US\$5.9 million. This request is for additional financing for scaling-up of US\$3,734,045, from Rwanda's IFAD12 PBAS allocation of US\$44.27 million.
2. Project coordination is under the responsibility of the Single Project Implementation Unit (SPIU) for IFAD-funded projects, under the Rwanda Agriculture and Animal Resources Development Board (RAB) of the Ministry of Agriculture and Animal Resources (MINAGRI). Key implementing partners are HI Rwanda, the Business Development Fund (BDF), the Rwanda Council of Veterinary Doctors (RCVD), the Rwanda Cooperative Agency (RCA), the National Dairy Platform (RNDP) and the Rwanda Youth in Agribusiness Forum (RYAF).
3. Following the approval by IFAD Management on 05 September 2022 of a one-year project extension, the completion and closure dates are 31 December 2023 and 30 June 2024, respectively.

## II. Rationale for additional financing

### A. Rationale

4. RDDP is in its sixth year of implementation and progress to-date is deemed to be highly satisfactory. The project has already achieved or even surpassed most of its targets both in terms of outreach and outputs. Impact is significant, on poverty, agricultural productivity, job creation, nutrition, women and youth empowerment. Key achievements are as follow:
  - 152,880 beneficiaries (153 per cent of the initial target);
  - Over 55,000 farmers are involved in Livestock Farmer Field Schools (L-FFS) (91 per cent of the target);
  - 6,300 poor farmers have received cows through the "Girinka" programme (105 per cent of the target);
  - Beneficiaries' income has increased by 19 per cent;
  - Milk productivity has increased between 30 per cent for local animals and 56 per cent for crossed animals;
  - 12 of the 13 planned communal cowsheds are operational, and the last unit is under construction;
  - The installation and construction of the 32 planned boreholes in Kayonza, Gatsibo and Nyagatare districts, has been concluded;
  - 58 Milk Collection Centres have been rehabilitated and 50 Milk Collection Points constructed (100 per cent of the targets);
  - 4 Satellite Veterinary Laboratories (100 per cent of the target) have been rehabilitated and handed over for utilization across the 4 Provinces of the Country;
  - The National Artificial Insemination Centre has been rehabilitated;
  - 4,088 individual and collective projects have been cofinanced by the Business Development Fund (BDF), in the domains of primary production, small-scale processing, collection and marketing, and access to water.

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<sup>1</sup> President's Report code: EB 2016/118/R.19/Rev.1

5. The last RDDP Supervision Mission of April 2022 confirmed that the Project is Not at Risk (NAR), with the likelihood of achieving its development objective (LADO) and overall implementation performance (OIP) rated as 4.58 and 4.50, respectively. In terms of potential for scaling up the project was valued as *highly satisfactory* (6). The disbursement rates of the IFAD loan and grant are respectively 91 per cent and 99 per cent as of 28 July 2022, and the latest rating for disbursement performance is satisfactory. While quality of Financial Management is rated at *Moderately Satisfactory*, and quality and timeliness of audit is rated at *Satisfactory*.
6. This notwithstanding, the Mission noted that due to the outbreak and spread of the COVID-19 pandemic, the stringent control measures imposed by the Government, and their impact on the implementation of some project's activities, RDDP would not be able to implement all of its planned interventions by its current completion date of December 2022. Consequently, on 29 June 2022, the Government of Rwanda submitted to IFAD a one-year project extension request, alongside a request for Additional Financing (AF) for US\$3,734,045.
7. The AF would enable the project to scale up some important activities and address new emerging challenges during the extension phase. Proposed activities, which have been identified during the supervision mission held in April 2022 are in line with the original design as well as the project's implementation approach and components. Activities would contribute to the project theory of change, supporting the achievement of its development objective, existing outputs and outcomes.

**Special aspects relating to IFAD's corporate mainstreaming priorities**

8. As it was designed in 2016, RDDP is not validated under IFAD's mainstreaming themes.
9. **Gender:** Rwanda has a good record on gender and affirmative action. The national government comprises 50 per cent of women ministers, although at district and local government levels this falls to 40 per cent of local governors and 10 percent of mayors. In rural areas, 66.8 per cent of positions in cooperative leadership are occupied by men. The Gender Development Index (GDI) shows that although women live longer than men, their mean years of schooling and incomes are lower. In the economy, although female participation in the labour market is slightly higher (86.4 per cent) than for men (85.3 per cent), only 27.2 per cent of women are engaged in wage employment in the non-agricultural sector and the vast majority are employed in the agricultural sector.
10. **Nutrition:** Rwanda has recently subscribed to the Global Compact to end hunger and malnutrition by 2025. Official estimates show that 19 per cent of households are food insecure. Food insecurity follows a similar distribution across districts as poverty is highest in the Northern (46.2 per cent) and Western (45.3 per cent) provinces, and in many cases, it relates to the stability of rural incomes as well as the ownership of animals, and events such as crop failures and seasonal scarcities which reduce access to food. National stunting rates have significantly decreased from 34.9 per cent in 2018 to 32.4 per cent in 2021. Of this, 24.0 per cent of children under five years of age are moderately stunted and 8.4 per cent are severely stunted. Acute malnutrition in children under 5 is 2.4 per cent, with 1.8 per cent experiencing moderate acute malnutrition (MAM) and 0.6 per cent experiencing severe acute malnutrition (SAM). Improving nutrition faces multiple challenges both at policy and household levels, including limited knowledge of basic nutritional requirements and inadequate food consumption patterns, with insufficiently diverse diets, inappropriate infant and young child feeding practices, and inadequate maternal nutrition.
11. **Youth:** Rwanda has a very young population with more than half aged under 20 and about 82 per cent aged under 40. Literacy levels among Rwandan youth (defined to be between 14 to 35 years old) are high with 80 per cent being able to read and write. Net school attendance however drops dramatically from 88 per cent in primary

to 23 per cent in secondary education (for boys and girls between 13–18 years old). In 2021, the proportion of young females aged 16-30 in Rwanda was slightly higher (14.2 per cent) than their male counterparts (13.6 per cent) and remained almost the same since 2016. The data also shows that the proportion of children, defined as share of population aged 0-17, was almost the same for both females and males in 2021 (22.2 per cent) and reflects no significant differences between 2014 and 2018<sup>2</sup>.

## **B. Description of geographical area and target groups**

12. The project area comprises 14 districts in four Provinces of Rwanda. Selection was based on: (i) current level of cattle population and milk production; (ii) current and projected market development potential, including investments in Milk Collection Centers (MCCs), dairy processing plants, animal feed factories, and evolving domestic and export market linkages; and (iii) level of poverty, food insecurity and malnutrition. The project area has an estimated population of 4.6 million people and hosts 45 per cent of the national cattle herd (601,479) of which 33 per cent are crossbreeds, 22 per cent purebreds and the remaining 45 per cent are local breeds, mainly Ankole. Poverty levels in the project area are higher than the national average estimated at 43 per cent in 2014 with targeted districts in the North and West having the highest poverty incidence levels of 52 per cent and 47 per cent, respectively. The activities under the additional financing will be implemented in the same districts as per original project design.
13. The initial primary target group of the project comprised 100,000 resource-poor rural households, of whom 80,000 are involved in smallholder dairy farming (mostly zero-grazing) and 20,000 in off-farm activities along the dairy value chain. The project's strong performance allowed for this target to be exceeded by an additional 52,880 households. Overall, it was expected that women would account for at least 45 per cent of total beneficiaries, and while the target for female beneficiaries of 46,000 has been reached (totalling 46,046), the target for men was surpassed by almost 100 per cent (106,834 against the 54,000 target). While the target for the total number of female beneficiaries was accurate, the presence of additional male beneficiaries who could be covered by the project was underestimated at design, mostly because of cultural patterns in rural areas where cows are mostly owned by men, which meant the project was able to reach a lot more male additional beneficiaries than anticipated, while meaning that the proportion of female beneficiaries has reduced to 30 per cent. Nevertheless, the outreach through the additional financing will adhere to the original target of reaching 45 per cent female beneficiaries.
14. In total, the outreach will increase from 152,880 to 162,959 households. Of the additional 110,079 households benefitting, 9,959 will be joining the L-FFS and 100,120 will receive cofinancing for their business plans.

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<sup>2</sup>National Institute of Statistics, 2021

## C. Components, outcomes and activities

15. The specific objectives of RDDP are to:
  - (a) Sustainably intensify dairy production and productivity among participating smallholder farmers and increase their consumption of milk and dairy products at household level.
  - (b) Increase incomes among 80 per cent of participating smallholder farmers from dairy farming through improved market access.
16. Four **development outcomes** are expected:
  - (a) Smallholder dairy farming productivity and supply of quality milk to domestic and regional markets enhanced and milk consumption at household level increased;
  - (b) Organizational capacity, enterprise skills of smallholder dairy farmers and their cooperatives enhanced;
  - (c) Infrastructure for collection, handling and processing of milk and other dairy products expanded and its utilization improved and tailored to adverse climate risks; and
  - (d) A conducive policy and institutional environment for the development of smallholder dairy industry fostered and strengthened.

### **Component 1: Climate-smart Dairy Production Intensification**

17. The first component aims at increasing smallholder dairy farmers and farm assistants capacity to sustainably produce and supply higher volumes of quality milk to the dairy market with a focus on three broad areas: (i) enhance the capacity of smallholder dairy farmers and farm assistants to improve their knowledge, attitude, and behaviour for increased milk productivity and quality; (ii) enhance sustainable access of smallholder dairy farmers to public and private livestock services and inputs; and (iii) support to resource-poor households who have no cattle to acquire dairy assets. The additional financing will allow the project to improve the climate resilience of fodder production systems, reduce the impact of climate sensitive and vector-borne animal diseases and improve productivity and production; will enable RAB to respond to the increasing demand of Artificial Insemination services; and will enable farmers to cope with water deficient during the dry season through the investment in water harvesting systems.
18. This will be achieved through scaling up of the L-FFS, investing in water harvesting infrastructure and hay baling machines, training and equipping new inseminators and supporting acquisition of sexed semen. Productivity will also be supported by improvements to an ongoing feed advisor application, while disease prevention will benefit from construction of additional spray races and additional laboratory equipment for detection.

### **Component 2: Producer Organization and Value Chain Development**

19. The objective of this component is to strengthen the organization of smallholder dairy farmers and improve their access to input, service and output markets.
20. The component has three sub-components: (i) organization and capacity building of dairy farmers' cooperatives and other value chain players; (ii) investments in climate resilient milk collection, processing and marketing infrastructure; and (iii) leveraging financing for climate resilient dairy enterprise development in all segments of the value chain.
21. With the additional financing, 24 MCCs established by the project will access milk cooling equipment to collect higher milk and improve milk quality.

### Component 3: Institutional and Policy Development

22. The objective of this component is to facilitate the consolidation of an evidence-based, inclusive policy framework and institutional structure for the Rwandan dairy sector. The component has three sub-components: (i) policy formulation; (ii) policy implementation and institutional strengthening; and (iii) policy related analysis and technical assistance. Through the additional duration of the project, emphasis will be placed on producing policy notes to share lessons from the project's implementation.

#### D. Costs, benefits and financing

##### Project costs

23. The combined RDDP investment and incremental recurrent costs for both original and additional financing including price and physical contingencies are estimated at US\$70.1 million. Of this total project costs, the IFAD loan was expected to finance US\$43.6 million (corresponding to 67 per cent of the original total costs) and an IFAD grant of US\$1.1 million (equivalent to 2 per cent of the original project costs). With the additional financing, the IFAD loan accounts for US\$47.3 million of the combined project costs.
24. The AF is equal to RWF 3,811,606,176 equivalent to US\$3,734,045. The additional IFAD loan will be 80 per cent on super highly concessional terms (maturity period of fifty (50) years, including a grace period of ten years) and 20 per cent on highly concessional terms (maturity period of forty (40) years, including a grace period of ten (10) years). The loan would be in United States dollars, according to the Government's request, but may further be confirmed between USD, EUR and SDR.
25. Project Component 1 will receive an additional amount of US\$2.232 million (44 per cent of the total additional financing), Component 2 will account for US\$ 2.057 million (41 per cent of additional financing) and Component 3 will receive an additional amount of US\$0.308 million (6 per cent) and US\$0.470 million of the total additional financing will be allocated to Project Coordination and Management.
26. Table 1 presents a summary of the breakdown of the original and additional financing, while table 2 presents a breakdown of the costs by components and subcomponents for the additional financing and cofinancing.

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

	<i>Original financing</i>	<i>Additional financing</i>	<i>Total</i>
IFAD loan	43 619	3 734	47 353
IFAD grant	1 091	-	1 091
Heifer International	3 997	-	3 997
Private/Banks	6 567	679	7 246
Beneficiaries	5 932	-	5 932
Borrower/recipient	3 864	656	4 520
<b>Total</b>	<b>65 070</b>	<b>5 069</b>	<b>70 139</b>



Table 2

**Additional financing: project costs by component (and subcomponent) and financier**

(Thousands of United States dollars)

<i>Component/ subcomponent</i>	<i>Additional financing</i>								
	<i>Additional IFAD loan</i>		<i>GoR</i>			<i>Private Sector</i>			<i>Total</i>
	<i>Amount</i>	<i>%</i>	<i>Cash</i>	<i>In-kind</i>	<i>%</i>	<i>Cash</i>	<i>In-kind</i>	<i>%</i>	<i>Amount</i>
<b>1. Climate-Smart Dairy Production Intensification</b>									
A. Training and capacity building of smallholder dairy farmers	346	94	22		6				368
B. Sustainable access to public and private livestock services	1 028	74	369		26				1 397
C. Asset Building and Climate-Smart Productivity	302	65	165		35				467
<b>2. Producer Organization and Value Chain Development</b>									
A. Organization and capacity building of dairy cooperatives and other VC players	95	100	-		-				95
B. Investment in milk collection and processing infrastructure	144	88	20		12				164
C. Leveraging financing for climate resilient dairy enterprise development	1 084	60	36		2	679	38		1 799
<b>3. Institutional and Policy Development</b>									
A. Policy formulation	4	80	1		20				5
B. Policy Implementation and Institutional Strengthening	200	90	22		10				222
C. Policy related analysis and technical assistance	82	100	-		-				82
<b>4. Project Coordination and Management</b>									
A. Project Management	449	95	21		5				470
B. Monitoring and Evaluation	-	-	-		-				-
<b>Total</b>	<b>3 734</b>	<b>74</b>	<b>656</b>		<b>13</b>	<b>679</b>	<b>13</b>		<b>5 069</b>

Table 3

**Additional financing: project costs by expenditure category and financier**

(Thousands of United States dollars)

<i>Expenditure category</i>	<i>Additional financing</i>								
	<i>Additional IFAD loan</i>		<i>GoR</i>			<i>Private Sector</i>			<i>Total</i>
	<i>Amount</i>	<i>%</i>	<i>Cash</i>	<i>In-kind</i>	<i>%</i>	<i>Cash</i>	<i>In-kind</i>	<i>%</i>	<i>Amount</i>
1. Works									
2. Consultancies	2 121	86	476	15		513	17		3 110
3. Grants & Subsidies	221	81	31	12		19	7		271
4. Goods, Services and Inputs	1 002	77	144	11		147	11		1 293
5. Training and Workshops	42	90	5	10		-	-		47
5. Salaries & Allowances	245	100	-	-		-	-		245
5. Operating Costs	103	100	-	-		-	-		103
<b>Total</b>	<b>3 734</b>	<b>74</b>	<b>656</b>	<b>13</b>		<b>679</b>	<b>13</b>		<b>5 069</b>

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

	Original and Additional Financing							Total
	PY1	PY2	PY3	PY4	PY5	PY6	PY7	
	Amount	Amount	Amount	Amount	Amount	Amount	Amount	
<b>1. Climate-Smart Dairy Production Intensification</b>								
A. Training and capacity building of smallholder dairy farmers	311	2 067	3 310	3 324	702	100	474	10 288
B. Sustainable access to public and private livestock services	1 447	2 369	1 748	1 616	1 233	527	1 397	10 332
C. Asset Building and Climate-Smart Productivity	1 968	1 007	1 956	991	2 004	963	383	9 272
<b>2. Producer Organization and Value Chain Development</b>								
A. Organization and capacity building of dairy cooperatives and other VC players	367	1 571	2 626	2 358	448	61	95	7 523
B. Investment in milk collection and processing infrastructure	91	1 203	2 390	1 588	274	-	163	5 709
C. Leveraging financing for climate resilient dairy enterprise development	396	2 074	5 808	5 027	3 340	-	1 799	18 445
<b>3. Institutional and Policy Development</b>								
A. Policy formulation	-	217	59	60	-	-	2	338
B. Policy Implementation and Institutional Strengthening	507	94	216	191	140	65	222	1 436
C. Policy related analysis and technical assistance	258	27	-	21	-	11	82	399
<b>4. Project Coordination and Management</b>								
A. Project Management	787	497	688	933	951	970	449	5 276
B. Monitoring and Evaluation	653	46	128	48	49	191	-	1 117
<b>Total</b>	<b>6 782</b>	<b>11 171</b>	<b>18 929</b>	<b>16 159</b>	<b>9 143</b>	<b>2 884</b>	<b>5 070</b>	<b>70 139</b>

### Financing and cofinancing strategy and plan

27. The original total financing for RDDP was US\$65.1 million comprised of an IFAD loan amounting to US\$43.6 million and a grant of US\$1.1 million. There was cofinancing from HI amounting to US\$4.0 million and domestic cofinancing was projected at US\$16.3 million. This included contribution from borrower/Government of Rwanda of US\$3.8 million, private sector/banks contribution of US\$6.5 million and beneficiary contribution of US\$5.9 million. With the additional financing, contribution from IFAD loan has increased to US\$47.3 million. Domestic cofinancing from private sector/banks and Government of Rwanda has also increased to US\$ 7.2 million and US\$4.5 million respectively.

### Disbursement

28. The main categories of expenditures are consultancies, goods, services and inputs, grants and subsidies. Disbursement will be report-based, following a revolving fund modality.

### Summary of benefits and economic analysis

29. RDDP was initially designed to contribute to pro-poor national economic growth and improve the livelihood of resource-poor rural households and sustainably intensify dairy production and productivity among participating smallholder farmers in Rwanda. Both the goal and development objective have not changed as a result of additional financing. The EFA has been retrofitted using actual project costs and adding the undisbursed amount to additional financing for the one-year extended period to reflect the actual project achievements. The EFA has also been updated using the actual log frame indicators that are relevant for the analysis. During the additional financing, it is estimated that RDDP will yield an economic internal rate of return (EIRR) of 31.37 per cent, higher than what was anticipated at project design, and have a positive economic net present value of US\$75.52 million which translates

into RwF 77.31 billion (at a 111 per cent discount rate), which is slightly higher than design. The programme will still be highly profitable from an economic standpoint. A sensitivity analysis indicates the presence of a high degree of resilience to increases in costs and reductions in benefits, as the project would still yield an EIRR of 29.15 per cent and 24.32 per cent if benefits were reduced by 10 per cent or 30 per cent, respectively.

### **Exit strategy and sustainability**

30. The Project has an exit strategy which addresses institutional arrangements, legal aspects, ownership and post-project funding. To build ownership and sustain investment in the dairy value chain, the project implementation approach is focused on grassroots institution building as well as participatory and bottom-up approaches with emphasis on community development. In essence, the sustainability of RDDP investments and development results will be ensured through the following complementary thrusts: (i) Promotion of a community-driven development approach (ii) Institutional sustainability; (iii) Community contribution to project cost and technology transfer; (iv) Participation of the private sector; (v) Promotion of partnerships and linkages with key stakeholders; (vi) Economic and financial sustainability; (vii) Scaling-up of project benefits through the AF. The combined extension and AF for the project will provide more time and resources to fully embed the support in local structures and institutions, and strengthen the impacts on beneficiaries and small enterprises, thus ensuring greater sustainability of project benefits.

## **III. Risk management**

### **A. Risks and mitigation measures**

31. The table 5 presents the overall risk summary as per the integrated project risk matrix.

Table 5  
**Integrated Project Risk Matrix**

<i>Risk Categories and Subcategories</i>	<i>Inherent</i>	<i>Residual</i>
Country Context	Moderate	Low
Sector Strategies and Policies	Moderate	Moderate
Environment and Climate Context	High	Moderate
Project Scope	Moderate	Moderate
Institutional Capacity for Implementation	Moderate	Moderate
Procurement	Moderate	Low
Financial Management	Moderate	Moderate
Environment, Social and Climate Impact	Moderate	Low
Stakeholders	Moderate	Moderate

### **B. Environment and social category (B)**

32. The **Original Environmental and Social category was B**, considering that the project intended to promote enhanced natural resources management, green energy technologies and better integration of livestock and crop production. RDDP has ensured the adoption of climate-smart agriculture (CSA) practices (e.g. soil management and conservation, multi-use agroforestry species on progressive and radical terraces, rainwater harvesting facilities, introduction of climate resilient fodder varieties and forage conservation for dry season), through L-FFS and matching grants, to minimise the risk of landslides and soil erosion and mitigate most environmental risks.

33. In the North and Eastern provinces, the inadequate management of water resources and pastoral practices has led to excessive grazing in areas near water sources, uneven utilization of rangeland and livestock traveling long distances to fetch water. In zero grazing systems, the main consequence of water deficit is the increased workload for fetching water for animals. As a result, dairy cattle in pastoral systems are still facing reduced grazing or feeding time, insufficient forage intake and weight gain and decrease of milk production. Hence, access to water remains essential for improving milk production. The additional investments in water harvesting will be concentrated in North-Eastern Regions and will enable farmers to cope with water deficit during the dry season, and thus to reduce seasonality of production.
34. Women and girls time-poverty is addressed through the distribution of labour-saving technologies as well as by facilitating improved access to water. The risk of Gender Based Violence (GBV) is mitigated through the Heifer Value Based Holistic Community Development (VBHCD) model and the implementation of the Gender Action Learning System (GALS).
35. The **Environmental and Social Category will remain a category B**, given that the scope of interventions is not changed and the project intends to consolidate and strengthen ongoing investments in fodder value chain as well as increased access to water for dairy production. These interventions will also have positive social impacts as they will reduce the workload of children and women in charge of fetching water and cutting grasses.

### C. Climate risk classification

36. The North and Western provinces are more impacted by flood events, with higher rainfall intensity leading to landslides, crop and livestock losses, damages to infrastructure and emergence of climate sensitive disease outbreaks such as Rift Valley fever. Eastern and Southern provinces are more vulnerable to drought events, with higher temperatures resulting in proliferation of vector borne diseases, crop decline and reduced land availability, hence jeopardising food security and livestock production. As water and land are more and more limited and as temperatures increase, production, transport and safe storage of milk become complex and demand for energy increases. Hence, **the original climatic risk category for this project was medium to high.**
37. RDDP has promoted adaptation to climate change through water provision during the dry season and CSA practices via L-FFS and matching grants. L-FFS training also covered climate risk management. RDDP has also promoted livestock insurance services which has resulted in a significant uptake. The development of water harvesting and storage technologies for domestic and livestock use has increased water availability in the homesteads and at MCCs/MCPs level, and has reduced the daily labour burden of women and children.
38. During the implementation phase, it was noticed that the lack of water resources at the farm level was worsened during the dry season and in zero-grazing units, yet, with higher temperatures the water requirements of livestock increase. Therefore, RDDP has promoted good dairy farming practices and water use efficiency and management at all levels of the dairy value chain (household-level, MCCs/MCPs and processing plant rainwater harvesting schemes). Based on the assessment of existing constraints along the dairy value chain and adequate monitoring of climate risks, **the climate risk category is considered as Moderate.**
39. During the implementation phase, the project performance in terms of Adaptation to climate change, Environmental and Natural resources Management and compliance to Social, Environment and Climate standards Requirements (SECAP) was rated satisfactory (5). This demonstrates the country commitment to mainstreaming environmental management and climate change adaptation and mitigation along the dairy value chain in Rwanda.

## IV. Implementation

### A. Compliance with IFAD policies

40. **No adjustment made to original project.** RDDP is aligned with the Country Strategic Opportunities Programme and to the IFAD's fifth Strategic Framework covering the period 2016-2025, which is used as an overarching policy guideline to provide direction to IFAD's work, and as a key instrument for consolidating IFAD's development effectiveness. RDDP is also aligned with IFAD's Rural Finance Policy (2009), IFAD's Land Policy, IFAD Strategy on Climate Change and with the IFAD's Knowledge Management Strategy.

### B. Organizational framework

#### Management and coordination

41. **Project oversight.** In line with the practice for other IFAD-funded projects in Rwanda, MINAGRI has constituted a Project Steering Committee chaired by the Permanent Secretary of MINAGRI to provide policy direction of the project, approve AWPBs, and provide oversight to the programme management team to ensure effectiveness. The PSC meets at least twice a year.
42. **Project management.** The SPIU recruited a programme manager for the RDDP and additional professional and support staff to oversee the day-to-day operations of the project. In addition to subject-matter specialists identified under each of the components, the project staff includes officers for Nutrition, Gender, Targeting and community mobilization, and M&E, learning and knowledge management. At district level, MINAGRI has appointed a Project Coordinator for each targeted district.
43. **Performance-based contracts in project implementation.** The implementation of the RDDP is structured around performance-based MoUs with key government agencies, partnership agreements with key partners (FAO and HI) and service contracts with recruited service providers. To ensure uninterrupted service delivery during project implementation, MINAGRI has drafted multi-year agreements with the key government implementing partners and HI, but provides for annual reviews to ensure strict adherence to achievement of results. All other service contracts requiring multi-year engagement are issued on an annual basis, renewable only upon achievement of clearly set performance thresholds.

#### Financial management, procurement and governance

44. **Financial management.** During last supervision mission in April 2022, inherent project FM risk was rated as Moderate and quality of FM moderately satisfactory. No changes are introduced by the request for additional financing regarding financial management arrangements: budgeting, accounting, internal controls, flow of funds, financial reporting, and audit arrangements will follow the FM arrangements already in place within RDDP, supported by the SPIU, and are fully aligned to FM country systems.
45. RDDP opened and is maintaining three bank accounts: Designated Account in US\$ and Operations Account in RWF, Counterpart Account in RWF for the government counterpart funds.
46. Accounting records are maintained in accordance with Rwanda's prescriptions for transitioning to IPSAS-accrual basis of accounting. The SPIU is currently using Integrated Financial Management Information & System (IFMIS) for all IFAD-funded projects in an efficient and satisfactory manner. RDDP is audited by the Office of the Auditor General (OAG), as mandated under the government act/law. IFAD's review on the quality of the OAG reports for RDDP and other existing projects indicate satisfactory performance ratings.
47. **Counterpart-funding** is mainly made of in-kind contributions (IKC) and tax exemptions. Counterpart funding that is currently observed on RDDP is below

expectations, however this is more due to a lack of valuation and inclusion in the financial reporting than a lack of contributions. An action plan has been set-up at the portfolio level to achieve adequate inclusion of IKC in the financial reporting.

48. **Procurement arrangements.** The government procurement regulations require that the SPIU (as a procuring entity) undertakes procurement planning and stipulate the nature and responsibilities of the Tender Committee, as well as who is eligible to be in the tender committee. The Government has also undertaken the use of national Standard Bidding Documents (SBDs). The Rwanda Public Procurement Authority (RPPA) has prepared a Standard Manual for Public Procurement (Public Procurement User Guide) for the benefit of procuring entities. The manual sets out procurement methods to be used and the thresholds.
49. **Governance.** The project benefits from the strong experience and implementation capacity of the SPIU. The Project Steering Committee constituted by MINAGRI provides policy direction of the project, approve AWPBs, and provide oversight to the programme management team to ensure effectiveness. No changes are foreseen with the additional financing.

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

50. **Results-based management.** RDDP is based on a results-based management approach which aims to ensure that all processes, services and activities of implementing partners will contribute to the achievement of project targets within the framework of the project's theory of change.
51. **Monitoring & Evaluation (M&E).** The M&E system ensures the collection, analysis and communication of information on project progress and effectiveness for results-based management as well as provides for carrying out thematic studies and evaluations of pilot initiatives that can inform decision-making and risk management at both local and national levels. The completion reporting will be fully compliant with the IFAD Core Outcome Indicator guidelines.
52. **Learning and knowledge management (KM).** A KM strategy for the dairy sector (in alignment with the broad KM and communication strategy of MINAGRI) was developed and focused on people, processes and technology. Under the AF, quarterly review meetings with implementing partners will continue which will have a strong focus on incorporating lessons as they arise.

### **D. Proposed amendments to the financing agreement**

53. The project financing agreement will be amended to reflect the additional financing in the amount of US\$ 3,734,045.

### **V. Legal instruments and authority**

54. An amendment to the signed financing agreement between the Government of Rwanda and IFAD will constitute the legal instrument for extending the proposed additional financing to the borrower/recipient. The signed financing agreement will be amended following approval of the additional financing.
55. The Government of Rwanda is empowered under its laws to receive financing from IFAD.
56. 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**

57. According to the delegation of authority procedure approved by the Executive Board at its 126<sup>th</sup> session and detailed in document [EB 2019/126/R.48/Rev.2](#), the President is invited to approve the proposed financing in terms of the following resolution:

RESOLVED: that the Fund shall provide a loan on super highly concessional terms to the Republic of Rwanda in an amount of two million nine hundred and ninety thousand United States dollars (US\$2,990,000) and upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented herein.

RESOLVED FURTHER: that the Fund shall provide a loan on highly concessional terms to the Republic of Rwanda in an amount of seven hundred and fifty thousand United States dollars (US\$750,000) and upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented herein.

Donal Brown

Associate Vice-President, Programme Management Department

## Updated logical framework incorporating the additional financing

The missing targets of the new outcomes are going to be added after the Final Impact Assessment Study.

Results Hierarchy	Indicators					Means of Verification			Assumptions
	Name	Baseline	Mid-Term	Original Target	End Target	Source	Frequency	Responsibility	
Outreach	<b>1.b Estimated corresponding total number of households members</b>								
	Household members - Number of people			460 000	749 593				
	<b>1.a Corresponding number of households reached</b>								
	Women-headed households - Households			20 000	32 773				
	Non-women-headed households - Households			80 000	130 186				
	Households - Households			100 000	162 959				
	<b>1 Persons receiving services promoted or supported by the project</b>								
	Males - Males			54 000	112 377				
	Females - Females			46 000	50 582				
	Young - Young people			15 000	26 017				
Total number of persons receiving services - Number of people			100 000	162 959					
<b>Project Goal</b> Contribute to pro-poor national economic growth and improve the livelihoods of poor rural households	<b>Average income increased for direct beneficiaries</b>								Income from milk sales will be used on household improvements; Income from increased sales accompanied by nutrition
	Households, Male-headed - Number			10	18.7	National statistics, household surveys incl. poverty & gender	Baseline & completion	SPIU	
	Households, Female headed - Number			10	19.6				
	<b>Proportion of households that are food secure</b>								
Households, Male-headed - Number	39.8		48	71.8	National statistics, household surveys incl.	Baseline and completion	SPIU		



	Households, Female-headed - Number	42.2		51	72	poverty & gender			education and behaviour change will lead to greater availability of and access to a diversified diet and nutrient-rich crops/ food items.
<b>Development Objective</b> To increase competitiveness and profitability of the dairy sector for the provision of quality products from small-scale producers to domestic and regional consumers, thus improving their livelihoods, food security and nutrition whilst building overall resilience	<b>Volume and value of milk sold from targeted small-holder dairy farmers annually</b>					National Statistics	Baseline, mid-term, completion	SPIU	Increased production will lead to sales and domestic consumption; Export data for dairy products are more reliable (considering that most of the milk currently exported to Congo DRC and Burundi is not recorded); Incomes increase through a combined effect of increased milk production and improved market access
	Volume of milk sold in MT - Number	43560		76 500	77 500				
	Value of milk sold - Money (USD' 000)	9300		17 700	22 439				
	<b>Volume of milk exported and penetration in the East Africa Community dairy market</b>					National Statistics (NISR, Statistical Year Book)	Baseline, mid-term, completion	SPIU	
	Volume in litres per year - Number	15 038 406		28 800 000	28 800 000				
	<b>2.2.2 Supported rural enterprises reporting an increase in profit</b>							SPIU	
	Number of enterprises - Enterprises			20	20				
Percentage of enterprises - Percentage (%)									
<b>Outcome</b> 1. Smallholder dairy farming productivity and	<b>Average kg of milk produced per cow per day during one lactation period</b>					MCC records	Continuous	SPIU / RAB / MINAGRI	Improved dairy practices will improve milk productivity
	Milk production in kilograms per day - cross breeds - Number	5		9	9.5				

supply of quality milk enhanced and milk consumption at household level increased	Milk production in kilograms per day - local breeds - Number	2		2	2.6				regardless of breed purity; Increased and safer dairy production, consumption and education campaigns will lead to domestic consumption and education will lead to domestic consumption.
	Milk production in kilograms per day - pure breeds - Number			15	15				
	<b>Average consumption of milk at household level increased</b>								
	Average milk consumption in liters per person per year - Number	64		100	80				
	<b>1.2.4 Households reporting an increase in production</b>								
	Total number of household members - Number of people				8 017.8				
	Households - Percentage (%)			70	83				
	Households - Households				1 743				
	<b>1.2.8 Women reporting minimum dietary diversity (MDDW)</b>								
	Women (%) - Percentage (%)				74				
	Women (number) - Females								
	Households (%) - Percentage (%)				70.90				
	Households (number) - Households				107 306				
	Household members - Number of people				493 591				
Women-headed households - Households				21 311					
<b>Outcome 2. Improved</b>	<b>MCCs serving targeted farmers in milk collection and marketing, dairy input supply, animal health and extension services and financial services</b>								
Total MCCs - Number	65		71	72	MCC records Thematic study	Continuous Quarterly	Service provider SPIU / Rwanda	Well-functioning MCCs intend	

service delivery by dairy cooperatives	MCCs serving targeted farmers - Number	25		58			and completion	cooperatives agency	to provide multiple services to farmers beyond mere milk collection and marketing;	
	MCCs serving targeted farmers - Percentage (%)	38		82		65 90				
<b>Outcome</b> 3. Increased utilization of milk collection, processing and outlet facilities	<b>Dairy farmers using a formal milk collection system</b>						Thematic study	Mid-term and completion	Service provider SPIU / Rwanda cooperatives agency	Farmers have adequate incentive to supply to formal sector; Sufficient access to services is available, e.g. to technicians, facilities, etc.
	Men - Percentage (%)	30		80		80				
	Women - Percentage (%)	30		80		80				
	<b>Installed capacity of milk collection and processing facilities functional and utilized</b>						MCC reports	Quarterly	Service provider	
	Installed Capacity - Percentage (%)	45		80		80				
	<b>Value chain enterprises reporting an increase in milk sales</b>									
	SMEs - Number			48		48				
Cooperatives/MCCs - Number			52		52					
<b>Outcome</b> 4. Enhanced policy and institutional environment for development of the smallholder dairy industry	<b>Policy 3 Existing/new laws, regulations, policies or strategies proposed to policy makers for approval, ratification or amendment</b>								All relevant stakeholders are consulted and heard	
	Number - Number			5		55				
<b>Outcome</b> 5. Enhanced climate-smart dairy value chain and strengthened community resilience	<b>3.2.1 Greenhouse gas emissions (CO2) avoided and/or sequestered</b>								Climate-smart technologies will offset the carbon footprint of the dairy sector despite eventual increase in livestock population	
	Number of tons - Number			1.8		1.8				

<b>Outcome 6.</b> Enhanced improvement in empowerment	<b>CI IE.2.1:Percentage of individuals demonstrating an improvement in empowerment (estimated from COI survey)</b>								
	% Individual								
	% Females								
	% Males								
	Number Individual								
	Number Females								
	Number Males								
<b>Outcome 7.</b> Enhanced Employment Opportunities of Rural Producers' organizations	<b>Outcome Indicator 2.2.1 - Number of new jobs created</b>								
	New jobs -Number								
	Job owner - men								
	Job owner - women								
<b>Output</b> 1. Developing farmer capacity in good dairy production practices	<b>1.1.4 Persons trained in production practices and/or technologies</b>								L-FFS will lead to improved animal husbandry practices, leading to improved animal health, improved feeding and improved hygiene generally as well as natural resource base
	Total number of persons trained by the project - Number of people			82 075	65 662				
	Men trained in livestock - Males				38 267				
	Women trained in livestock - Females				7 395				
	Young people trained in livestock - Young people				8 785				
	Total persons trained in livestock - Number of people				65 662				
	<b>3.1.3 Persons accessing technologies that sequester carbon or reduce greenhouse gas emissions</b>								
	Males - Males			57 475	38 2672				
	Females - Females			24 600	27 395				
	Young - Young people			8 200	8 795				
	Total persons accessing technologies - Number of people			82075	65 662				
	<b>Households that have received improved dairy cows (Girinka)</b>								

	Total Households - Number			6 000	6 337				
	Households, Male-headed - Number				3 727				
	Households, Female-headed - Number				2 610				
	New distribution - Number			4 000	4 000				
	Pass on - Number			2 000	2 337				
	<b>Climate-smart investments made</b>								
	Investments - Number			7000	1 000				
	<b>Intercalving time</b>								
	Intercalving time - calving interval days - Number			410	479				
Output 2. Strengthening animal health services	<b>Households receiving facilitated animal health services, incl. AI and % of success</b>					Service provider report	Quarterly	Service provider	Strengthening animal health services will result in more people accessing services. Private vet and insemination services will improve animal genetic resources and sustainability of services
	Households - Percentage (%)			80	80				
	AI Conception Rate - Percentage (%)			60	60				
Output 3. Supporting informal sector to comply with milk quality standards	<b>Number of milk zones, kiosks and bars that have been established or upgraded and certified for milk handling</b>					Authority in charge of animal product inspection	Quarterly	Implementing partner	The ministerial order on milk standards will be effectively implemented and informal sector allowed to upgrade to the level of
	Milk Zones, kiosks, and bars - Number			1000	38				

									required standards	
<b>Output</b> 4. Increasing the capacity of the value chain to buy, transform and sell dairy products.	<b>Processors supported by project in improved processing, product diversification, packaging, certification and marketing</b>						Service provider report	Quarterly	Service provider	Dairy cooperatives and unions with category 1 MCCs will want to invest in processing. Existing processors are willing to engage with project.
	Supported Processors - Number			30	30					
	<b>2.1.6 Market, processing or storage facilities constructed or rehabilitated</b>									
	Total number of facilities - Facilities			20	66					
	Market facilities constructed/rehabilitated - Facilities			20	41					
	Processing facilities constructed/rehabilitated - Facilities				21					
	Storage facilities constructed/rehabilitated - Facilities				4					
<b>Output</b> 5. Supporting organizational development of cooperatives	<b>Cooperatives with new bankable enterprise development plans</b>						Service provider report	Quarterly	Service provider	Cooperatives are interested in operational and business development
	Cooperatives with Plans - Number			60	60					
<b>Output</b> 6. Improving access to financial services	<b>1.1.6 Financial service providers supported in delivering outreach strategies, financial products and services to rural areas</b>									Financial institutions are ready to invest in dairy cooperatives
	Service providers - Service Providers			10	10					
	<b>Value chain actors funded by financial institutions</b>									
	Cooperatives/SMEs - Number			40	40					
	Farmers - Number			23 000	5 000					
<b>Output</b> 7. Strengthening policy development	<b>Policy 1 Policy-relevant knowledge products completed</b>									Budget for policy implementation is availed by



## Updated summary of the economic and financial analysis

Table A  
Financial cash flow models

F I N A N C I A L S I S		DAIRY FARMER		MILK COLLECTION CENTRE			PROCESSOR	RETAIL POINT
		Farm models'net incremental benefits (in '000 of local currency)		MCC models'net incremental benefits (in '000 of local currency)			Processor model's net incremental benefits (in '000 of local currency)	Retail point model's net incremental benefits (in '000 of local currency)
		Local breed model	cross breed model	Category 1	Category 2	Category 3		
	PY1	-344	-525	-52,410	-52,858	-27,571	-783,421	-6,796
	PY2	-310	-490	-4,698	1,638	-4,750	-333,441	7,032
	PY3	-170	-358	-199	4,852	-1,537	89,250	7,225
	PY4	188	-36	1,728	5,493	-896	727,036	7,450
	PY5	482	220	18,125	18,039	11,650	729,148	7,450
	PY6	645	358	18,850	18,764	12,375	630,117	6,890
	PY7	820	507	15,636	15,550	9,161	734,594	7,450
	PY8	1,009	667	5,250	5,164	-1,225	670,567	7,450
	PY9	1,008	666	18,636	18,550	12,161	742,166	7,450
	PY10	1,007	665	18,195	18,109	11,720	698,375	7,450
	PY11	1,007	665	15,636	15,550	9,161	651,117	6,890
	PY12	1,007	665	18,850	18,764	12,375	759,293	7,351
	PY13	1,007	665	18,636	18,550	12,161	757,386	7,351
	PY14	1,007	665	18,850	18,764	12,375	755,289	7,351
	PY15	1,007	665	53,277	42,925	32,088	1,251,511	12,555
	PY16	1,007	665					
	PY17	1,007	665					
	PY18	1,007	665					
	PY19	1,007	665					
	PY20	1,007	665					
	NPV (@ 15.8%,	2,203.1	650.0	2,432	10,736	1,642	1,586,065	29,348
	NPV (@15.8@,	2.96	0.87	3.26	14.41	2.20	2,128.95	39.39
	FIRR	43.4%	22.6%	16.5%	19.3%	16.6%	37.6%	105.4%

Table B  
Project costs and log-frame targets

PROGRAMME COSTS AND INDICATORS FOR LOGFRAME					
TOTAL PROGRAMME COSTS (in million USD)					70.1
Beneficiaries (Dairy farmers)	730,213	people			128,387 Households
Cost per beneficiary	96	USD x person			546 USD
Components and Cost (USD million)		Average increase in Rural income per capita			
		Outcomes		Indicators	
Climate-smart Dairy Production	29.9	Smallholder dairy farming productivity and supply of	Average kgs of milk produced per cow per		
Producer Organization and Value Chain	31.7	Enhanced organizational capacity and enterpriser skills	MCCs serving targeted farmers/ Number of		
Policy and Institutional Strengthening	2.2	Enhanced policy and institutional environment for	Stakeholder satisfaction with policy and		
Project Coordination and Management	6.396				
Total	70.1				



Table C  
Main assumptions and shadow prices

MAIN ASSUMPTIONS & SHADOW PRICES			
Official Exchange rate (OER)	745	Discount rate	16%
Shadow Exchange rate (SER)	1,024	Social Discount rate	11%
Standard Conversion Factor	1.37	Output conversion factor	1.05
Labour Conversion factor	0.8	Input Conversion factor	0.8

Table D  
Beneficiary adoption rates and phasing

	Targeted HH		New adopting HH						Total adopting HH	
	%	Number	PY1	PY2	PY3	PY4	PY5	PY6 - PY20	Number	Adoption rate
<b>Local breed model</b>	<b>37%</b>	<b>47,856</b>	<b>0</b>	<b>2,393</b>	<b>2,393</b>	<b>6,726</b>	<b>6,790</b>	<b>3,921</b>	<b>22,223</b>	<b>46%</b>
<i>Cumulative adoption rate</i>			<i>0%</i>	<i>5%</i>	<i>10%</i>	<i>24%</i>	<i>38%</i>	<i>46%</i>		
<b>Cross breed model</b>	<b>63%</b>	<b>81,484</b>	<b>0</b>	<b>4,074</b>	<b>4,074</b>	<b>19,142</b>	<b>38,479</b>	<b>35,290</b>	<b>101,059</b>	<b>124%</b>
<i>Cumulative adoption rate</i>			<i>0%</i>	<i>5%</i>	<i>10%</i>	<i>33%</i>	<i>81%</i>	<i>124%</i>		
<b>Total</b>	<b>100%</b>	<b>129,340</b>	<b>0</b>	<b>6,467</b>	<b>6,467</b>	<b>25,868</b>	<b>45,269</b>	<b>39,211</b>	<b>123,282</b>	<b>95%</b>
			<b>PY1</b>	<b>PY2</b>	<b>PY3</b>	<b>PY4</b>	<b>PY5</b>	<b>PY6 - PY20</b>		
<b>MCC category 1</b>	<b>42%</b>	<b>30</b>	<b>0</b>	<b>3</b>	<b>6</b>	<b>9</b>	<b>9</b>	<b>0</b>	<b>27</b>	<b>90%</b>
<i>Cumulative adoption rate</i>			<i>0%</i>	<i>10%</i>	<i>30%</i>	<i>60%</i>	<i>90%</i>	<i>90%</i>		
<b>MCC category 2</b>	<b>54%</b>	<b>39</b>	<b>0</b>	<b>4</b>	<b>8</b>	<b>12</b>	<b>12</b>	<b>0</b>	<b>35</b>	<b>90%</b>
<i>Cumulative adoption rate</i>			<i>0%</i>	<i>10%</i>	<i>30%</i>	<i>60%</i>	<i>90%</i>	<i>90%</i>		
<b>MCC category 3</b>	<b>4%</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>80%</b>
<i>Cumulative adoption rate</i>			<i>0%</i>	<i>5%</i>	<i>10%</i>	<i>30%</i>	<i>50%</i>	<i>80%</i>		
<b>Total</b>	<b>100%</b>	<b>72</b>	<b>0</b>	<b>4</b>	<b>8</b>	<b>12</b>	<b>12</b>	<b>1</b>	<b>65</b>	<b>90%</b>
			<b>PY1</b>	<b>PY2</b>	<b>PY3</b>	<b>PY4</b>	<b>PY5</b>	<b>PY6 - PY20</b>		
<b>Milk retail point</b>		<b>200</b>	<b>0</b>	<b>10</b>	<b>10</b>	<b>20</b>	<b>60</b>	<b>40</b>	<b>140</b>	<b>70%</b>
<i>Cumulative adoption rate</i>			<i>0%</i>	<i>5%</i>	<i>10%</i>	<i>20%</i>	<i>50%</i>	<i>70%</i>		

Table E  
Economic cash flow

	NET INCREMENTAL ECO. BENEFITS				NET INCREMENTAL ECO. COSTS			Cash Flow ('RwF million)	
	Total local breed Net Incremental Benefits ('RwF million)	Total cross breed Net Incremental Benefits ('RwF million)	Total MCCs Net Incremental Benefits ('RwF million)	Total processors Net Incremental Benefits ('RwF million)	Total retail points Net Incremental Benefits ('RwF million)	Total Net Inc. Benefits	Total Economic Costs ('RwF million)		
<b>E C O N O M I C  A N A L Y S I S</b>	PY1	0	0	-322	0	0	-322	6,415	-6,736
	PY2	292	240	-667	0	-96	-231	9,151	-9,382
	PY3	588	485	-1,037	-1,040	-91	-1,097	7,939	-9,036
	PY4	1,455	1,689	-1,073	-642	-183	1,246	8,486	-7,240
	PY5	2,423	4,198	-49	930	-558	6,945	6,832	113
	PY6	3,175	6,912	205	4,999	-338	14,953	8,039	6,914
	PY7	3,634	8,496	477	7,627	59	20,292	845	19,448
	PY8	4,171	11,084	692	8,861	59	24,866	845	24,022
	PY9	4,620	13,623	728	8,855	53	27,879	845	27,035
	PY10	4,914	15,251	644	8,703	27	29,539	845	28,695
	PY11	5,131	16,423	675	8,913	40	31,183	845	30,338
	PY12	5,264	17,327	886	8,801	59	32,337	845	31,492
	PY13	5,314	17,770	869	8,719	59	32,731	845	31,886
	PY14	5,317	17,789	879	8,709	53	32,746	845	31,901
	PY15	5,317	17,793	1,133	8,802	27	33,071	845	32,226
	PY16	5,317	17,794	0	0	0	23,112	845	22,267
	PY17	5,317	17,796	0	0	0	23,114	845	22,269
	PY18	5,318	17,798	0	0	0	23,116	845	22,271
	PY19	5,318	17,801	0	0	0	23,118	845	22,274
	PY20	5,318	17,803	0	0	0	23,121	845	22,276
NPV@ 11 % ('RwF million)				77,348					
NPV@ 14 % ('USD million)				75.5					
EIRR				31.3%					

Table F  
Sensitivity analysis

SENSITIVITY ANALYSIS				
	Δ%	Link with the risk matrix	IRR (%)	NPV @12% (USD M)
Base scenario			31.3%	75.5
Project benefits	-10%	Combination of risks affecting output prices, milk productivity and adoption rates	29.1%	64.4
Project benefits	-30%		24.3%	42.3
Project benefits	-50%		18.2%	20.1
Project costs	10%	Increase of equipment and material prices	29.3%	72.0
Project costs	20%		27.6%	68.5
Project costs	50%		23.3%	57.9
1 year lag in ben.		Risks affecting adoption rates and low implementation capacity	26.4%	62.0
2 years lag in ben.			22.8%	49.9