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**President's memorandum**  
**Proposed additional financing**  
**Republic of Zambia**  
**Enhanced Smallholder Livestock Investment Programme**

Project ID: 2000000822

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**FOR: APPROVAL**

**Action:** The Executive Board is invited to approve the recommendation for the proposed additional financing contained in paragraph 71.

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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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### Programme delivery team

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## Financing summary

<b>Initiating institution:</b>	IFAD
<b>Borrower/recipient:</b>	Republic of Zambia
<b>Executing agency:</b>	Ministry of Fisheries and Livestock
<b>Total programme cost:</b>	US\$46.3 million
<b>Amount of original IFAD loan:</b>	SDR 9.3 million
<b>Amount of original IFAD grant:</b>	SDR 0.57 million
<b>Terms of original IFAD loan:</b>	Highly concessional
<b>Amount of additional IFAD loan:</b>	US\$7.87 million
<b>Terms of additional IFAD financing:</b>	Blend
<b>Cofinancier(s):</b>	OPEC Fund for International Development World Food Programme (WFP)
<b>Amount of cofinancing:</b>	US\$12 million – OPEC Fund (original financing) US\$0.233 million – WFP (additional financing)
<b>Terms of cofinancing:</b>	Loan
<b>Contribution of borrower/recipient:</b>	US\$10.7 million (original financing) and US\$2.7 million (additional financing)
<b>Contribution of beneficiaries:</b>	US\$8.6 million (original financing) and US\$0.2 million (additional financing)

## **I. Background and programme description**

### **A. Background**

1. The Enhanced Smallholder Livestock Investment Programme (E-SLIP) for the Republic of Zambia was approved by the Executive Board in September 2014 and became effective on 11 May 2015. Its current completion and closing dates are 31 December 2022 and 30 June 2023, respectively. The total programme cost is US\$46.3 million comprising: (i) IFAD financing of US\$15.1 million (32.6 per cent) – loan of US\$14.23 million and grant of US\$0.87 million; (ii) OPEC Fund for International Development (OPEC Fund) cofinancing of US\$12.0 million (25.9 per cent); (iii) Government contribution of US\$10.7 million (23.1 per cent); and (iv) beneficiary contribution of US\$8.5 million (18.4 per cent) in cash and in kind.
2. E-SLIP's implementing agency is the Ministry of Fisheries and Livestock (MFL), which works closely with other technical ministries, as well as the African Development Bank, the Lifelong Learning for Farmers (L3F) programme, Heifer International Zambia and the World Food Programme (WFP).
3. This memorandum seeks the Executive Board's approval for additional financing (AF) to scale up E-SLIP, with an IFAD loan of US\$7.87 million. The AF will be sourced from the cancelled balance from the Enhanced Smallholder Agribusiness Promotion Programme (E-SAPP), as per the Government's request.

### **B. Original programme description**

4. E-SLIP's goal is to sustainably improve incomes of rural poor households in targeted provinces and districts. Its development objective is to sustainably improve the production and productivity of key livestock systems of targeted women and men smallholder producers in selected provinces of Zambia.
5. The programme has national coverage and focuses on provinces prone to outbreaks of contagious bovine pleuropneumonia (CBPP) and/or east coast fever (ECF), or on areas in which these diseases are endemic. Direct beneficiaries are estimated at 180,000 livestock households (about 900,000 people, of which 50 per cent women and 25 per cent youth).
6. E-SLIP has two technical components, focusing on: (i) reducing the prevalence of CBPP and ECF; and (ii) improving livestock productivity. The third component is for programme management.

## **II. Rationale for additional financing**

### **A. Rationale**

7. As confirmed by the supervision mission of March 2022, E-SLIP has achieved moderately satisfactory implementation progress. Performance against key targets of the two technical components is as follows:
  - 37 per cent reduction in ECF incidence in target areas (target: 40 per cent);
  - 99.8 per cent vaccination rates for CBPP in eastern and western border areas (target: 95 per cent);
  - Forage production of 21,323 hectares (ha) (target: 20,000 ha);
  - 117 tons of forage seed produced (target: 45 tons);
  - Placement of livestock with 22,584 vulnerable households, including 14,584 female-headed households, 3,120 male-headed households and 4,880 households headed by young people (target: 28,000);
  - 85,291 households have established a minimum of 1 lima (equal to 2,500 m<sup>2</sup>) of improved forage (target: 80,000).
8. The AF will scale up some of the successful activities under the two technical components, while ensuring that certain targets, currently off track, are reached.

These targets are off track due to the outbreak of COVID-19, which affected the provision of training, extension and marketing of livestock products, and the war in Ukraine, which has increased the costs of inputs and farmers' production.

9. In terms of livestock health, activities to be scaled up include the infection and treatment method (ITM) for ECF vaccination, the herd health approach and livestock weather index insurance in collaboration with WFP. These activities will help to increase the number of beneficiary households, but also ensure that livestock disease does not affect the development gains of existing beneficiaries.
10. Regarding livestock productivity, the successful support for forage production will be scaled up and the range of forage types will also be diversified to improve livestock production and soil fertility.
11. To increase the resilience of livestock production systems, the AF will introduce livestock insurance by scaling up the Rural Poor Stimulus Facility (RPSF)-funded livestock weather index insurance to an additional 5,000 farmers. The AF will also facilitate the roll-out of the matching grant facility (MGF) to support value chain development and entrepreneurship in forage production and livestock.
12. The rationale for scaling up livestock insurance is based on its strong results under the RPSF, and high potential to secure E-SLIP's wider project objectives. Under the RPSF, 5,000 farmers received support to access the insurance and linked up directly with insurance companies. During the 2020/2021 farming season, a total of 1,200 farmers received a pay-out following the erratic rainfall. With such climatic stressors expected to continue, the ability of this insurance to protect against these risks, while also promoting conducive risk attitudes among farmers, can contribute to stronger overall impacts.
13. The MGF will be introduced in line with the request of the Government for E-SLIP to incorporate some of the farmers who were earmarked to receive financing through the facility under the cancelled E-SAPP. Building on lessons learned from E-SAPP, the MGF would provide the required resources to finance innovations promoted under E-SLIP, such as livestock processing and marketing, and to incentivize private sector engagement in agro-input supply, business development services and provision of extension services. After a delayed start-up, under E-SAPP, the MGF issued 66 grants in a short period, including 32 for bulking facilities out of a target of 35 grants, plus 11 grants for subprojects used for specialized training on mechanization, which have so far reached 1,941 out of 2,500 targeted beneficiaries. Of particular relevance to the livestock processing and marketing objectives of E-SLIP, grants have been used to construct 16 out of a targeted 48 pieces of production and marketing infrastructure, with 20 more ongoing.
14. The AF will be used to fund activities to meet the original targets, including securing additional certifications for the Central Veterinary Research Institute (CVRI) to produce certified stabilate<sup>1</sup> and to ensure the target for ECF annual immunizations can be reached (59,000 achieved so far out of a target of 140,000 calves per annum). Under component 2, some of the funds will be used to reinforce rangeland with appropriate legume species (79,925 ha achieved so far out of a target of 100,000 ha).

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

15. **Gender.** Poverty levels among female-headed households are estimated at 78.9 per cent compared to 76 per cent among male-headed households. Income distribution is disproportionate, with men often owning all major means of production, while women provide most of the labour.
16. **Youth.** Young people constitute over 36 per cent of Zambia's population and in rural areas are often informally employed in subsistence agriculture and

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<sup>1</sup> A stabilate is a population of organisms similar to but more stable than a strain and maintained in viable condition for a particular purpose.

family-based livelihood activities. Around 71 per cent of young men and 57 per cent of young women are illiterate, and access to credit is also a challenge.

17. **Nutrition.** Approximately 40 per cent of children under five suffer from stunting, six per cent from wasting and about 53 per cent are anaemic. Zambia has one of the highest rates of undernourished people in the world (44.5 per cent). Consumption patterns and micronutrient intake are highly seasonal, especially in rural areas. For this reason, micronutrient deficiencies remain high (31.5 per cent<sup>2</sup> of women of childbearing age are anaemic).
18. **Climate and environment.** Zambia is divided into three agroecological regions, with Region I being the worst affected in terms of drought and low rainfall (<800 mm/year), as well as other climatic hazards. Soil fertility is generally poor in all the regions.
19. Climate-related vulnerabilities threaten agroecosystem resilience, given the heavy reliance on rainfed agriculture: only 6 per cent of agricultural land is currently under irrigation, of which 3 per cent is farmed by smallholders.
20. In line with IFAD's mainstreaming commitments, the programme has been validated as:
  - Including climate finance
  - Nutrition-sensitive

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

21. E-SLIP adopts a nationwide focus, but prioritizes districts with endemic CBPP and ECF or prone to outbreaks. Other provinces/districts are included in the event of new CBPP or ECF disease outbreaks. Specifically, CBPP eradication is to be pursued in Muchinga, Northern, North-Western and Southern provinces. ECF control and tick-borne disease management, depending on serosurveillance results, is implemented in Eastern, Southern, Central, Lusaka, Copperbelt, Northern and Muchinga provinces.
22. The forage development programme will be implemented in all 10 provinces. The restocking programme was initially implemented in selected districts within provinces, based on a needs and opportunities assessment. It has since been expanded to all provinces, following the Government's policy of "one household-one livestock". The AF will also be used to devote particular attention to restocking households affected by CBPP.
23. Under the AF, an additional 69,890 households (50 per cent women and 25 per cent youth) will be targeted, representing an additional 369,450 household members. This will include 24,640 additional households supported with scaled-up animal health activities under component 1, and 45,250 additional households supported with scaled-up livestock productivity support under component 2.

## **C. Components, outcomes and activities**

24. Under the AF, the original programme components will be maintained.

### **Component 1: Animal disease control sustainably improved**

25. The main outcomes under this component are: (i) the conditions mandated by the World Organization for Animal Health in order to declare freedom from CBPP have been met in areas outside the buffer vaccination zones; (ii) 40 per cent reduction in ECF incidence in the target areas; and (iii) the CVRI sustainably meeting Zambia's ECF stabilize requirements.

### **Subcomponent 1.1: Towards CBPP eradication**

26. Activities under the AF will scale up the CBPP control plan to ensure that CBPP can be eradicated in the remaining five districts (out of 30). Community sensitization

<sup>2</sup> Global Nutrition Report, 2019.

and mobilization will be intensified with an additional 12 task forces, bringing the total number to 100.

27. Testing and slaughter of CBPP-infected herds will be extended in infected areas to remove all detected infections. Cattle movement control and zoning will also be extended through branding of cattle in the CBPP endemic border areas.

#### **Subcomponent 1.2: ECF control**

28. Under the AF, E-SLIP will support the annual immunization of the targeted 140,000 calves. This will include a new sensitization and mobilization campaign, involvement of additional private veterinarians in ECF ITM and immunization, and additional efforts to promote sustained local production of ECF stabilate. During the implementation of the AF, ECF immunization will be extended to Muchinga and Northern provinces.
29. The CVRI has produced 324,100 doses of ECF stabilate through E-SLIP's support. Under the AF, E-SLIP will support the CVRI in obtaining certifications from the Zambia Medicines Regulatory Authority (ZAMRA) and the Zambia Bureau of Standards through the procurement of the equipment required for certification.
30. To strengthen the ECF serosurveillance programmes, the AF will be used to procure additional hardware for the National Livestock Epidemiology and Information Centre.

#### **Subcomponent 1.3: Control of diseases in stocked and restocked animals**

31. This is a new subcomponent to be financed through the AF to complement the livestock stocking and restocking activities under component 2. Specifically, herd/flock health programmes will be developed for cattle, goats, poultry, rabbits and pigs distributed under E-SLIP. Control and prevention programmes will be developed for Newcastle disease and infectious coryza in poultry, and African swine fever in pigs.

#### **Component 2: Livestock production and productivity systems sustainably improved**

32. Under this component, the main outcomes are: (i) at least 80,000 households have each established a minimum of 1 lima of improved forage; (ii) sustainable forage seed supply system established; (iii) 80 per cent beneficiary satisfaction with restocking and pass-on programme; and (iv) 90 per cent of restocked animals passed on to third-generation beneficiaries by programme end.

#### **Subcomponent 2.1: Sustainable forage and forage seed production and use**

33. Under the original financing, 79,925 ha of rangelands were over-sown/reinforced with mainly annual legumes and grasses, against the target of 100,000 ha. Reinforcement will continue under the AF to reach this target, with use of the appropriate perennial legumes multiplied at livestock-breeding centres. Rangeland nurseries will be established to continue multiplication of perennial legumes on each rangeland site.
34. E-SLIP has supported 85,291 households in establishing a minimum of 1 lima each of forage on arable lands totalling 21,323 ha of forage, with a resultant increase in cattle condition and milk yields. This successful support will be scaled up under the AF, with an additional 40,000 households supported in growing 1 lima each of forage on arable lands. Forage production will continue to target households receiving livestock packages from the restocking programme.
35. So far, a total of 55 seed growers have been trained and have since produced 117 tons of certified forage seed in 2021. Through the lead farmer (distributor) approach, the AF will expand the number of forage seed growers to 5,000 and the multiplication of seeds for perennial legume and grasses. In addition, seed

producers will continue to be linked to private sector companies and markets to establish a sustainable and viable forage seed value chain.

36. Under this component, thus far, 60 schools, 78 milk collection centres (MCCs) and 65 livestock service centres (LSCs) have participated in forage demonstration programmes. Training farmers in forage production, processing, conservation, and utilization techniques will continue under E-SLIP AF. The demonstration plots in schools, MCCs and LSCs, as well as cooperatives and some individual farmers will be supported to graduate into forage business entities and linked to markets through contract forage production.
37. E-SLIP has yet to establish the envisaged watering points. To be successful, the watering points must be linked with rangeland management and established in mapped rangelands. Identification of watering points will be informed by communities and groundwater availability.

#### **Subcomponent 2.2: Pro-poor stocking and restocking established**

38. Under this subcomponent, E-SLIP is supporting the MFL in distributing livestock packages to registered groups of smallholders to be paid for through a pass-on mechanism, as well as cattle stocking and restocking. Training on farm and livestock management and market-oriented production is also provided to beneficiaries, plus capacity-building for staff of the Department of Livestock Development (DLD). NGOs are supporting community mobilization.
39. A total of 22,584 households, including 14,584 female-headed households, 3,120 male-headed households and 4,880 households headed by young people have benefited from livestock packages under E-SLIP, against a target of 28,000 households. Reaching the target has been hindered by ongoing livestock disease issues, thus the AF will be used to provide further restocking in the Western and Southern provinces. It will also expand the coverage to include areas not previously covered under the programme. Other activities under the AF will include: (i) scaling up livestock asset protection through insurance; and (ii) increased support for enhanced livestock productivity and marketing through livestock value chain activities.
40. The scaling up of livestock weather index insurance builds on the lessons and successes realized under the RPSF. The scheme enables small-scale farmers to protect their livestock investments, which are highly vulnerable to climatic changes. It is an innovative solution that helps to address the inadequacies of traditional insurance products, since indemnity pay-outs are determined based not on actual losses experienced by policyholders, but on easily observable, objective weather or environmental parameters.

### **D. Costs, benefits and financing**

#### **Programme costs**

41. The combined E-SLIP and incremental recurrent costs for both original and additional financing including price and physical contingencies are estimated at US\$57.4 million, including an IFAD original loan of US\$14.2 million and an IFAD grant of US\$0.87 million (1.4 per cent).
42. The AF, amounting to US\$7.87 million, will be allocated as follows: US\$2.03 million for component 1, US\$4.2 million for component 2, and US\$1.5 million for component 3. Recurrent costs represent 12 per cent of the total AF amount.



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	14 225	-	14 225
IFAD loan II	-	7 873	7 873
IFAD grant	868	-	868
OPEC Fund	11 997	-	11 997
Beneficiaries	8 621	217	8 838
WFP	-	233	233
Borrower/recipient	10 568	2 805	13 373
<b>Total</b>	<b>46 279</b>	<b>11 128</b>	<b>57 407</b>

Table 2  
**Additional financing: programme costs by component and subcomponent and financier**  
 (Thousands of United States dollars)

<i>Component/subcomponent</i>	<i>Government</i>		<i>IFAD loan II</i>		<i>WFP</i>		<i>Beneficiaries</i>		<i>Total</i>	
	<i>Amount</i>	<i>%</i>	<i>Amount</i>	<i>%</i>	<i>Amount</i>	<i>%</i>	<i>Amount</i>	<i>%</i>	<i>Amount</i>	<i>%</i>
<b>1. Animal disease control sustainably improved</b>										
1.1. Towards CBPP eradication	348	26	981	74	-	-	-	-	1 329	12
1.2. ECF control	567	32	1 049	59	-	-	157	9	1 773	16
1.3 Control of diseases in stocked and restocked animals	-	-	-	-	-	-	-	-	-	-
<b>2. Livestock production and productivity systems sustainably improved</b>										
2.1. Sustainable forage and forage seed production and use	723	49	683	47	-	-	60	4	1 466	13
2.2. Pro-poor stocking and restocking established	258	6	3 561	88	233	6	-	-	4 051	36
<b>3. Project management</b>	910	36	1 599	64	-	-	-	-	2 509	23
<b>Total</b>	<b>2 805</b>	<b>25</b>	<b>7 873</b>	<b>71</b>	<b>233</b>	<b>2</b>	<b>217</b>	<b>2</b>	<b>11 128</b>	<b>100</b>

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

<i>Expenditure category</i>	<i>Government</i>		<i>IFAD loan II</i>		<i>WFP</i>		<i>Beneficiaries</i>		<i>Total</i>	
	<i>Amount</i>	<i>%</i>	<i>Amount</i>	<i>%</i>	<i>Amount</i>	<i>%</i>	<i>Amount</i>	<i>%</i>	<i>Amount</i>	<i>%</i>
<b>I. Investment costs</b>										
A. Works	-	-	-	-	-	-	-	-	-	-
B. Equipment material	575	30	1 323	70	6	0.3	-	-	1 904	17
C. Vehicles	-	-	-	-	-	-	-	-	-	-
D. Training, workshops & studies	455	18	1 815	70	169	7	157	6	2 596	23
E. National consultancies	-	-	144	80	36	20	-	-	180	2
F. International consultancies	11	14	55	71	11	15	-	-	77	1
G. Contractual services	325	19	1 298	77	10	1	60	4	1 688	15
H. Matching grant	-	-	2 260	100	-	-	-	-	2 260	20
<b>Total investment costs</b>	<b>1 366</b>	<b>16</b>	<b>6 890</b>	<b>79</b>	<b>233</b>	<b>3</b>	<b>217</b>	<b>3</b>	<b>8 706</b>	<b>78</b>
<b>II. Recurrent costs</b>										
A. Operations & maintenance	57	17	287	83	-	-	-	-	345	3
B. Salaries & allowances	1 381	67	696	34	-	-	-	-	2 077	19
<b>Total recurrent costs</b>	<b>1 439</b>	<b>59</b>	<b>983</b>	<b>41</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2 422</b>	<b>22</b>
<b>Total</b>	<b>2 805</b>	<b>25</b>	<b>7 873</b>	<b>71</b>	<b>233</b>	<b>2</b>	<b>217</b>	<b>2</b>	<b>11 128</b>	<b>100</b>

Table 4

**Programme costs by component and project year (PY)**

(Thousands of United States dollars)

<i>Component/subcomponent</i>	<i>PY1</i>	<i>PY2</i>	<i>PY3</i>	<i>PY4</i>	<i>PY5</i>	<i>PY6</i>	<i>PY7</i>	<i>PY8</i>	<i>PY9</i>	<i>Total</i>
<b>1. Animal disease control sustainably improved</b>										
1.1 Towards CBPP eradication	1 175	788	749	791	678	875	601	778	596	7 031
1.2 ECF control	2 523	403	430	1 089	1 153	1 339	1 625	1 017	609	10 187
1.3 1.3 Control of diseases in stocked and restocked animals	365	785	338	62	-	15	-	-	-	1 565
<b>2. Livestock production and productivity systems sustainably improved</b>										
2.1. Sustainable forage and forage seed production and use	4 237	1 011	1 094	1 144	1 091	1 019	1 006	262	92	10 956
2.2. Pro-poor stocking and restocking established	2 396	1 489	2 072	3 457	3 803	4 315	2 650	3 445	491	24 118
<b>3. Project management</b>	1 558	966	986	864	783	799	926	1 330	770	8 982
<b>Total</b>	<b>12 255</b>	<b>5 442</b>	<b>5 668</b>	<b>7 407</b>	<b>7 508</b>	<b>8 362</b>	<b>6 808</b>	<b>6 830</b>	<b>2 559</b>	<b>62 839</b>

**Financing and cofinancing strategy and plan**

43. Total cofinancing increased from US\$31.1 million to US\$34.6 million under the AF, including US\$0.23 million from WFP, an increase in the Government's contribution to US\$13.5 million (both in cash and in kind) and an increase in the beneficiary contribution to US\$8.8 million. Cofinancing from the OPEC Fund has remained unchanged.

**Disbursement**

44. Disbursement arrangements will remain as per the original financing agreement. The disbursement of IFAD funds will flow through a designated account in United States dollars. Disbursements will be based on quarterly interim financial reports in accordance with updated IFAD disbursement procedures.

**Summary of benefits and economic analysis**

45. E-SLIP was designed to sustain and improve the production and productivity of key livestock systems of targeted smallholder producers and sustain the improved incomes of rural poor households in targeted provinces and districts in Zambia. The goal and the development objective have not changed as result of the AF. During the AF, it is estimated that E-SLIP will yield a higher economic internal rate of return (EIRR) of 27.5 per cent with a positive economic net present value of US\$27.5 million (at a 12 per cent discount rate). The programme will 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 24.6 per cent and 21.4 per cent if benefits were reduced by 10 per cent or 20 per cent, respectively.

**Exit strategy and sustainability**

46. The components were developed with the objective of strengthening the programme's delivery mechanisms and interventions, which were identified at design to guarantee the continued economic and social benefits to programme beneficiaries after E-SLIP's completion. Activities financed through the AF will continue to focus on key elements of sustainability through building community institutions and using participatory approaches that build ownership and continuity of service delivery beyond E-SLIP.
47. The AF will continue to be delivered through government institutions to ensure integration of E-SLIP activities in the planning and budget framework at all levels. Strengthening the local production of ECF stabilate at the CVRI, and engagement of the private sector in the delivery of vaccines will facilitate sustainable access by farmers to the vaccine. The emphasis on linking forage producers with markets will build sustainable partnership and ensure business continuity beyond E-SLIP, so that E-SLIP beneficiaries can continue their activities in the long term.

### III. Risk management

#### A. Risks and mitigation measures

48. The main risks under the AF continue to be in the area of government commitment to the livestock sector and gender-sensitive approaches, private sector engagement and beneficiary participation. To mitigate these risks, the AF design takes a minimalist approach to essential institutional strengthening at the national and local levels, while providing for full-time dedicated technical assistance, comprehensive beneficiary participation and post-programme institutional and technical sustainability. Programme financing is also structured such that the Government and beneficiaries take increasing responsibility for component financing.

#### B. Environment and social category

49. The environmental and social categorization of the original E-SLIP activities was B, recognizing that project activities result in site-specific environmental and social impacts during implementation that can be addressed or mitigated with appropriate measures. The impact on the environment comes from activities such as restocking and livestock productivity improvement. In areas where vaccinations are concentrated, the pressure on natural resources may increase.
50. Measures to safeguard against or minimize impact include improved rangeland management, sustainable livestock productivity improvement and disease control activities with adequate handling and disposal of chemicals. Community health risks resulting from the use of chemicals can be managed through sensitization of the smallholders. For the AF, the category will be maintained at B given that there are no changes in geographic scope and that additional finance resources will be used to scale up rangeland management, forage production and improved environmental management during the animal disease control activities.
51. The Social, Environmental and Climate Assessment Procedures (SECAP) review note for E-SLIP will be updated following the analysis of the potential scope of works for the rehabilitation of nitrogen production and cold-storage facilities. Further consideration should be given to activities such as gully control to help address land degradation in E-SLIP target areas.

#### C. Climate risk classification

52. E-SLIP's original climate risk classification was moderate, considering the livestock sector's climate-related vulnerability. Climatic risks for E-SLIP beneficiaries, based on programme activities include: increasing temperatures, water stress in some areas and incidence of pests and diseases, as well as heat stress on livestock. E-SLIP is not likely to increase the vulnerability of the target group as it incorporates climate change adaptation measures such as the improved rangeland management and provision of water points, particularly in the drought-prone areas.
53. Climate risk analysis informs the selection of the pasture seed varieties distributed. The farmers are also trained in conservation agriculture techniques. The adaptation actions for rangeland management have strong synergies with mitigation actions (updated Nationally Determined Contribution 2021, and the Eighth National Development Plan). In addition, a greenhouse gas balance has been conducted on E-SLIP, illustrating that the project is a sink overall. Further consideration should be given to incorporating multi-purpose water-harvesting activities to address the projected increase in frequency and intensity of droughts in some E-SLIP locations.

### IV. Implementation

- A. **Compliance with IFAD policies** In April 2018, E-SLIP received cofinancing from the OPEC Fund of US\$12,000,000, as a loan to cofinance interventions under component 2. The first disbursement for the OPEC Fund loan was made in November 2019. The E-SLIP financing agreement was also amended in November

2020 and September 2021 to include the RPSF grant and repurposing resources, amounting to US\$560,000 and US\$894,832, respectively, to finance the COVID-19 Smart Livestock Production and Productivity Project.

55. To address the implementation delays in the early years, E-SLIP underwent restructuring in 2019, which resulted in improved programme performance and relevance.
56. The original completion and closure dates of E-SLIP were extended to 30 June 2022 and 31 December 2022, respectively, in accordance with the provisions of IFAD's Policy on Project Restructuring. Subsequently, in March 2022, the Ministry of Finance and National Planning, representing the borrower, in agreement with the Ministry of Agriculture and the MFL, requested the cancellation of the undisbursed IFAD financing from E-SAPP and recommitment of the cancelled funds as AF for E-SLIP. The request was approved by IFAD in September 2022.
57. E-SLIP will be extended for 24 months to enable implementation of this AF, with new completion and closing dates of 31 December 2024 and 30 June 2025, subject to the Executive Board's approval of this additional financing. This was determined based on the required timeline for the new activities and the need to ensure feasibility under the disbursement envelopes for Zambia envisioned for the coming years. A seamless transition is foreseen between the current E-SLIP completion date of 31 December 2022 and the AF extension period starting on 1 January 2023. AF activities will be jointly funded by IFAD and the Government.

## **B. Organizational framework**

### **Management and coordination**

58. **Lead implementation agency.** The lead programme implementing agency is the MFL. The Ministry's Department of Veterinary Services (component 1) and DLD (component 2) have direct responsibility for overseeing implementation. These arrangements will continue under the AF.
59. **Oversight.** A programme steering committee (PSC), led by the Permanent Secretary of MFL, with relevant public and private sector representation at national level, will provide oversight, policy direction and coordination between key government institutions and ministries. The World Bank and African Development Bank livestock project task managers will be observers to the PSC. The PSC will approve the programme implementation manual, and the annual workplan and budget (AWPB). The PSC will meet on a quarterly basis to coordinate implementation.
60. **Programme coordination.** A programme coordination office (PCO) will assist the Government in coordinating the E-SLIP components implemented by MFL. The programme coordinator will report to the MFL Permanent Secretary, through the DLD Director, and act as a secretariat of the PSC. The PCO's mandate will remain the same, but specialists will be added to strengthen CBPP disease control, roll out the herd health programmes, and support value addition and entrepreneurship interventions.

### **Financial management, procurement and governance**

61. Financial management (FM) arrangements comply with government systems and IFAD's rules and regulations. These arrangements will continue under the AF. Based on latest assessments, FM and external audit are rated moderately satisfactory and satisfactory respectively. FM risk is assessed to be moderate. E-SLIP will be required to submit interim financial reports, which will be the basis for disbursement.
62. **Procurement.** Procurement of goods, works and consulting services financed by IFAD under E-SLIP will be carried out in compliance with IFAD's Project Procurement Guidelines. The national procurement procedures, processes and

regulations under the Procurement Law will be applied to the extent that they are consistent with IFAD's procurement guidelines.

63. **Transparency, governance, anticorruption.** The Government will maintain a governance and anticorruption framework throughout the programme implementation period to mitigate the risk of fraud and/or corruption and promote effective use of programme funds.

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

64. The existing monitoring and evaluation (M&E) plan – which meets MFL's and IFAD's requirements – will be maintained. The M&E unit will conduct a completion survey compliant with IFAD's core outcome indicator guidelines. The camp extension officers will continue collecting the data using the Kobo Toolbox, which will enhance the mapping of beneficiaries through the use of GPS.
65. Each AWPB will be validated by the E-SLIP coordination office and MFL, and transmitted to IFAD for approval. An annual progress report will be prepared by the PCO to guide the design of the AWPB for the following year.
66. The knowledge management manager will document lessons and innovations through field data collection, reports and case studies, with a focus on the added activities on gender, nutrition and climate change issues. These will be uploaded on the E-SLIP website, which is being developed.

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

67. The financing agreement will be amended to include the AF and relevant adjustments to the various clauses and schedules. This will include: (i) revision of the programme completion and closing dates; (ii) revision of schedule 1 to update the target area, target population and other key indicators; and (iii) revision of schedule 2 to reflect the AF and lending terms for the AF.

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

68. An amendment to the financing agreement between the Government of the Republic of Zambia and IFAD will constitute the legal instrument for extending the proposed financing to the borrower/recipient. The signed financing agreement will be amended following approval of the additional financing.
69. The Republic of Zambia is empowered under its laws to receive financing from IFAD.
70. 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**

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

RESOLVED: that the Fund shall provide a loan on blend terms to the Republic of Zambia in an amount of seven million eight hundred and seventy thousand United States dollars (US\$7,870,000) 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 incorporating the additional financing**

Results Hierarchy	Indicators				Actual results (as of Oct 2022)	Extension Yrs. (2023-24)	Final target with AF	Source	Frequency	Responsibility	Assumptions/notes
	Name	Baseline	Midterm	Endline							
Outreach	<b>1.b Estimated corresponding total number of household's members</b>							Lists of individual beneficiaries compiled by the programme	Annually	PCO, MFL	Project is able to implement annual work plans without interference
	Household members - Number of people	0	450000	900 000	1,221,183	423,825	1,645,008				
	<b>1.a Corresponding number of households reached</b>							Lists of individual beneficiaries compiled by the programme	Annually	0	
	Households - Households	0	90 000	180 000	244237	84765	329002				
	<b>1 Persons receiving services promoted or supported by the project</b>							Lists of individual beneficiaries compiled by the programme	Annually	0	
	Males - Number	0	54 000	108 000	146896	52805	199701				
	Females - Number	0	36 000	72 000	97341	31960	129301				
	Youth - Number					20967	20967				
	Total number of persons receiving services - Number of people	0	90 000	180 000	244237	84765	329002				
<b>Project Goal</b> Sustainably improved incomes of rural poor households in targeted	<b>Increase in average household income of beneficiaries in the programme targeted districts (by gender)</b>							Baseline, periodic and impact evaluation	Annually	PCO, MFL	Political stability maintained (A)Macro-economy

provinces and districts in Zambia							surveys. Statistics and other data from government institutions, NGOs and other			continues to improve (A) Social, political and economic environments remain conducive to market based livestock development (A)	
	Increase baseline household income - Percentage (%)	0		25		5	15				
	<b>Number of households that have reached an increase in household income of at least 25% (by gender)</b>							Baseline, periodic and impact evaluation surveys. Statistics and other data from government institutions, NGOs and other	Annually	PCO, MFL	
	Households - Number			95 000	69813	12500	82,313				
	FH-Households - Number				31310	5000	36,310				
	MH-Households - Number				43157	7500	50,657				
<b>Development Objective</b> Sustainable and improved the production and productivity of key livestock systems of targeted smallholder producers	<b>1.2.4 Households reporting an increase in production</b>							Baseline, Annual outcome/impact surveys, COI survey, final survey	Annually		Business regulatory system remains favourable (A) Sustained Government commitment to livestock sector development (A)
	Total number of household members - Number of people	0	45 000	90 000	360937	72000	432937				
	Households - Percentage (%)				75		75				

	Households - Number				79335		79335				
	<b>Cattle offtake rate in programme targeted districts increased by 25%</b>							Baseline survey, annual outcome/impact surveys, final survey	Annually		
	Increase rate - Percentage (%)		10	25	44	5	49				
	<b>Cattle offtake rate in programme targeted districts (sub-indicator to provide data for the indicator above)</b>							Baseline survey, annual outcome/impact surveys, final survey	Annually		
	Cattle offtake rate - Percentage (%)			30	36	15	15				
	<b>Livestock assets of poorest quintile of rural households in programme-targeted districts increased by 30%</b>							Baseline survey, annual outcome/impact surveys, final survey	Annually		
	Increase rate - Percentage (%)			30	231	30	261				
<b>Outcome</b> Outcome 1. Component 1. Animal Disease Control Sustainability Improved. Reduction in the prevalence of CBPP and ECF to levels that allow smallholders' cattle herds to grow	<b>Districts where OIE mandated conditions for declaration of freedom from CBPP has been achieved in areas outside the maintained buffer vaccination zones</b>								Annually	DVS, MFL	Private veterinarians do not participate in the delivery of publicly funded animal health services @ Government supports full cost recovery for ECF infection and treatment method (ITM)(A) CVRI vaccine production has financial independence (A)
	Conditions achieved - Percentage (%)	0	50	100	83	100	100				



	<b>40% reduction in ECF incidence in the target districts</b>								Annually	DVS, MFL	
	Reduction - Percentage (%)	0	10	40	37	40	40				
	<b>CVRI sustainably meeting Zambia's ECF stabilize requirements (number of doses produced annually)</b>								Annually	DVS, MFL	
	Doses - Number	0	150 000	150 000	54500	200 000	200000				
	<b>ECF incidence rates in the target districts (sub-indicator to provide data for the indicator above)</b>								Annually	DVS, MFL	
	ECF incidence - Percentage (%)	0	15	10	17	15	15				
<b>Output</b> Output 1.1.1 CBPP border vaccination program operational in Muchinga, Northern, and North-Western provinces	<b>Percentage of cattle vaccinated in CBPP- designated border areas in Muchinga, Northern, and North-western provinces</b>							Aggregate district-level data on control measures (CBPP) in NALEIC database	Annually	DVS, MFL	Local service providers used for animal vaccination
	Cattle vaccination - Percentage (%)	0	95	95	0	95	95				
<b>Output</b> Output 1.1.2 CBPP sero-surveillance operational in Muchinga, Northern, North-Western and Southern Provinces	<b>At least 80% of community CBPP Task Forces operational in each CBPP district</b>							Collect data from DVOs / PVOs about operational task forces	Annually	DVS, MFL	Local service providers used for animal vaccination
	Community Task Forces Operational - Percentage (%)	0	40	80	100	100	100				
<b>Output</b> Output 1.2.1 Sustainable ECF immunization programs operating in Central, Copperbelt, Eastern, Lusaka, Muchinga, Northern and Southern Provinces;	<b>At least 140,000 animals receive ECF ITM treatment annually by Programme end</b>							Aggregate district-level data on control measures (ECF) in NALEIC database	Annually	MFL DVS	CVRI does not have the necessary technical and managerial capacity for sustainable ECF stabilize production (R) The use of other tick-borne disease control measures (R) Animal movement control and traceability
	Animals (calves) treated annually - Number	0	140 000	140 000	46,664	100 000	100000				

											systems are operational and effective (A) Absence of cordon line (R) Farmer ability to pay (R) Government willingness to increase ECF immunisation fee
	<b>Cost recovery level for ECF ITM from livestock owners</b>							Collect data from DVS/MFL on ITM charges and actual cost and calculate cost recovery level	Annually	MFL DVS	
	Cost recovery level - Percentage (%)	0	25	50	40	50	50				
	<b>Number of provinces with operational surveillance databases</b>										
<b>Output</b> Output 1.2.2 ECF zero-surveillance programs operational in Central, Copperbelt, Eastern, Lusaka, Muchinga, Northern and Southern provinces;	Districts - Number	0	10	10	10	10	10	NALEIC database (provinces for which updated information is available)	Annually	MFL DVS	CVRI does not have the necessary technical and managerial capacity for sustainable ECF stabilate production (R) The use of other tick-borne disease control measures (R) Animal movement control and traceability systems are operational and effective (A) Absence of cordon line (R) Farmer ability to pay (R) Government willingness to increase ECF immunisation fee
<b>Output</b> Output 1.2.3 GMP and ZAMRA-certified ECF	<b>CVRI has GMP certification and ZAMRA registration for ECF stabilate production and can show compliance from records</b>										

stabilate production at CVRI	GMP certification attained - Percentage (%)	0	100	100	0	100	100	Check with CVRI whether they have certification, registration and compliance	Annually	MFL DVS, CVRI	
	ZAMRA Registration - Percentage% - Percentage (%)	0	100	100	0	100	100				
<b>Outcome</b> Outcome 2: Component 2: Livestock Production Systems Sustainably Improved. Sustainable systems for improved smallholder livestock production and productivity operational.	<b>Number of households that have established a minimum of one lima of improved forage each</b>							Data collected and submitted by DLD (districts through provincial level) (E-SLIP form under development)	Annually, periodically	PCO, MFL DLD	Smallholder farmers have adequate access to land for forage production (A) NGO's have capacity to support community mobilization in restocked areas (A) Adverse climatic events or pest outbreaks don't impact component activities (R) Livestock product demand and prices remain strong
	Households - Number	0	20 000	80 000	85291	40 000	125291				
	Persons - Number	0	20 000	80 000	85291	40 000	125291				
	Males - Number	0	12 000	48 000	46468	21 793	68261				
	Females - Number	0	8 000	32 000	38823	18 207	57030				
	Youth- Number					12,000	12000				
	<b>1.2.9 Households with improved Knowledge, Attitudes, and Practices (KAP)</b>							COI/impact surveys, final impact survey		PCO, MFL DLD	
	Total number of household members - Number of people						11 000	11 000			
	Households - Percentage (%)										
	Households- Number						2000	2000			
	Male - Number						7000	7000			
	Female- Number						4000	4000			
Youth - Number						3600	3600				

<b>1.2.8: Percentage of women reporting minimum dietary diversity (Minimum Women's Food Diversity, MDDW)</b>																		
Women (number)																		
Women (%)																		
Households (number)																		
Total number of household members - Number of people										2000	2000							
Youth										500	500							
<b>3.2.2 Households reporting adoption of environmentally sustainable and climate – resilient technologies and practices</b>													Annual COI/impact surveys, final impact survey					
Households- Number										2000	2000							
Households - Percentage (%)																		
Total number of household members - Number of people										10 000	10 000							
Male - Number										5000	5000							
Female - Number										5000	5000							
Youth - Number										3000	3000							
<b>80% beneficiary satisfaction with restocking and pass-on Programme</b>													Annual outcome/impact surveys, final impact survey	Annually, periodically	PCO, MFL DLD			
Beneficiary satisfaction - Percentage (%)	0	20	80	80	80	80												
<b>90% of re-stocked animals passed-on to second generation beneficiaries by programme end</b>													Annual outcome/impact surveys, final impact survey	Annually, periodically	PCO, MFL DLD			
re-stocked animal succession - Percentage (%)	0	35	90	24	60	84												
<b>Output</b> Output 2.1.1 Household and community-based forage reinforcement of farming systems and rangeland	<b>Number of hectares of rangeland reinforced with legume (sub-indicator to provide data for the indicator above) and utilized</b>												Data collected and submitted by DLD (districts through provincial level) (E-SLIP form under development	Annually	PCO, MFL DLD	MFL maintains strong support for iterative program (A) Households willing and able to adopt appropriate technologies and innovations (A) Inadequate access to all-season water		

	Rangeland - Area (ha) - Area (ha)	0	21 000	100 000	79925	30 000	109925				points for forage production and livestock (R)
	<b>Number of hectares of farmlands with forage established (sub-indicator to provide data for the indicator above) and utilized</b>							Data collected and submitted by DLD (districts through provincial level) (E-SLIP form under development)	Annually	PCO, MFL DLD	Range of well adapted forage legumes introduced and available from startup (A) Appropriate technologies and innovations are technically & financially viable and available for uptake by households (A) Quick start-up on wide array of sites using diverse delivery mechanisms (A). Inadequate emphasis on seed production (R)
	Farmlands - Area (ha)	0	10 000	20 000	21323	10 000	31323				Seed prices increase to level that precludes extensive oversowing of rangeland
	<b>3.1.4 Land brought under climate-resilient practices</b>							Based on total of rangeland reinforced and farmlands with forage (below)	Annually	PCO, MFL DL	
	Hectares of land - Area (ha)	0	60 000	120 000	101248	40 000	141248				
<b>Output</b> Output 2.1.2 Sustainable forage seed production program with private sector participation	<b>Seed growers participating in sustainable forage seed supply system</b>							E-SLIP Component 2 / DLD records on seed growers contracted	Annually	PCO, MFL DLD	MFL maintains strong support for iterative program (A) Households willing and able to adopt appropriate technologies and innovations (A) Inadequate access to all-season water points for forage production and livestock (R) Range of well adapted forage legumes introduced and available from startup (A) Appropriate technologies and innovations are technically &

											financially viable and available for uptake by households (A) Quick start-up on wide array of sites using diverse delivery mechanisms (A). Inadequate emphasis on seed production (R) Seed prices increase to level that precludes extensive over sowing of rangeland
	Total number - Number	0	50	45	55	55500	555				
	Male - Number				35	200	235				
	Female- Number				20	300	320				
	Youth - Number				1	250	251				
Output Output 2.1.3 Schools-based forage learning and demonstration programme	<b>At least 60 schools, 40 milk collection centres and 100 LSCs participating in forage demonstration</b>							Data from AWPB implementation / district level progress reports	Quarterly	PCO, MFL DLD	MFL maintains strong support for iterative program (A) Households willing and able to adopt appropriate technologies and innovations (A)
	schools - Number	0	30	60	60	50	110				Inadequate access to all-season water points for forage production and livestock (R)
	milk centres - Number	0	39	78	78	50	128				Range of well adapted forage legumes introduced and available from startup (A) Appropriate technologies and
	LSC - Number	0	30	65	65	50	115				
	<b>1.1.4 Persons trained in production practices and/or technologies</b>							Data from E-SLIP training attendance forms	Quarterly	PCO, MFL DLD	

											innovations are technically & financially viable and available for uptake by households (A) Quick start-up on wide array of sites using diverse delivery mechanisms (A). Inadequate emphasis on seed production (R) Seed prices increase to level that precludes extensive oversowing of rangeland
Total number of persons trained by the project - Number of people	0	7000	14 410	21378	12 500	33878					
Total persons trained in crop - Number of people	0	7 000	14 410	21378	12 500	33878					
Males trained at least once by the project - Males	0	4 125	8 646	11787	6 892	18679					
Females trained at least once by the project - Females	0	2 875	5 764	9591	5 608	15199					
Youth trained at least once by the project - Number				6,413	3750	10163					
<b>1.1.8 Households provided with targeted support to improve their nutrition</b>					400	400	Data from AWPB implementation / district level				

								progress reports/ training records			
	Total number of persons reached - Number of people			230	2000	2230					
	Total Households targeted			230							
	Males - Number			75	200	275					
	Females - Number			155	1800	1955					
	Youth - Number			195	600	795					
<b>Output</b> Output 2.1.4 Access by livestock to water	<b>50 water points established in targeted areas</b>							Data from AWPB implementation / district level progress reports	Quarterly	PCO, MFL DLD	
	water points established - Number	0	3	0	0						
<b>Output</b> Output 2.2.1 Community mobilization and capacity building for stocking and restocking	<b>2.1.3 Rural producers' organizations supported</b>							Farmer Groups and Cooperatives entered in Beneficiary Organizations Register - data collected using ESLIP Group Membership Form	Quarterly	PCO, MFL DLD, partners	Communities can identify stocking/restocking beneficiaries without moral hazards, and beneficiaries are willing to make matching contributions (A).
	Rural POs supported - Organizations	0	320	640	2078	175	2253				
	<b>2.1.4 Supported rural producers that are members of a rural producers' organization</b>							Farmer Groups and Cooperatives entered in Beneficiary Organizations Register - data collected using ESLIP Group Membership Form	Quarterly	PCO, MFL DLD, partners	



	Total number of persons - Number of people	0	1 030	28 000	39820	5 250	45070				
	Males - Number	0	607	16 500	14432	1 903	16335				
	Females - Number	0	423	11 500	25388	3 347	28735				
	Youth - Number				8377	1 575	9952				
<b>Output</b> Output 2.2.2 Stocking and Restocking of poor female-headed households and youth	<b>At least 14,000 female-headed households and 5,000 youth receive poverty alleviating livestock packages</b>							Records of implementing partners involved in restocking	Quarterly	PCO, MFL DLD, partners	Communities can identify restocking beneficiaries without moral hazards, and beneficiaries are willing to make matching contributions (A) MAL maintains strong support for iterative program (A) Households willing and able to adopt appropriate technologies and innovations (A) Inadequate access to all-season water points for forage production and livestock (R) Range of well adapted forage legumes introduced and available from start up. Appropriate technologies and innovations are technically & financially viable and available for uptake by households (A) Quick start-up on wide array of sites using diverse delivery mechanisms (A) Inadequate emphasis on seed
	Youth - Number	0	1000	5 000	8377	1257	9634				
	Female headed households - Number	0	2 800	14 000	22584	3 388	25972				

										production (R) Seed prices increase to level that precludes extensive over sowing of rangeland (R) Excessive seed slippage into commercial sector and across borders
<b>1.1.3 Rural producers accessing production inputs and/or technological packages</b>							Farmer Groups and Cooperatives entered in Beneficiary Organizations Register - data collected using ESLIP Group Membership Form	Quarterly	PCO, MFL DLD, partners	
Total rural producers - Number of people		3 800	28 000	34051	5 250					
Male- Number					1 903					
Female- Number					3 347					
Youth- Number					1 575					
<b>1.1.4 Persons trained in production practices and/or technologies</b>							Data from E-SLIP training attendance forms	Quarterly	PCO, MFL DLD	
Total number of persons trained by the project - Number of people	0	1 030	28 000	39833	5 250	45083				

	Males trained at least once by the project - Males	0	607	16 500	15137	1903	17040				
	Females trained at least once by the project - Females	0	423	11 500	24696	3347	28043				
	Youth trained at least once by the project - Number				11,949	1575	13524				
	<b>Gender Mainstreaming</b>							Data from E-SLIP training attendance forms	Quarterly	PCO, MFL DLD	
	Number of livestock groups sensitized in gender concepts					175					
SF.2.2: Households reporting they can influence decision-making of local authorities and project-supported service providers	Number of households reporting that they can influence decision making of local authorities and project supported service providers										
	Households										
	Households (%)										

	Household members										
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## Updated summary of the economic and financial analysis

Table A

### Financial cash flow models

		Enterprise models' net incremental benefits							
		Amount in ZK'							
		Forage production	Cattle keeping, CBPP control	Cattle keeping, ECF control	Cattle restocking and pass-on	Goat restocking and pass-on	Pig restocking and pass-on	Rabbit restocking and pass-on	Poultry restocking and pass-on
	PY1	(1,560)	(2,282)	(20,873)	(2,827)	(2,648)	-4,260	(3,366)	(110,697)
	PY2	3,095	1,858	(17,725)	(4,572)	(308)	-6,350	(4,265)	17,385
	PY3	4,060	5,013	(15,694)	23,031	(377)	88	(1,174)	20,004
	PY4	5,025	6,339	(15,732)	400	(150)	850	(71)	19,219
	PY5	5,025	12,906	(12,193)	10,078	212	967	(1,659)	20,004
	PY6	5,025	15,746	(4,340)	11,706	417	534	(760)	19,219
	PY7	7,920	21,664	(398)	11,119	625	908	575	20,004
	PY8	7,920	28,188	5,792	13,420	890	1,630	142	19,219
	PY9	7,920	34,003	10,272	12,857	1,132	1,308	451	20,004
	PY10	7,920	41,033	15,709	12,751	1,359	1,308	1,513	19,219
	PY11	7,920	48,381	20,958	12,757	1,598	1,308	1,778	20,004
	PY12	7,920	55,376	25,513	12,363	1,837	1,308	2,090	19,219
	PY13	7,920	63,460	30,785	11,827	2,070	1,308	2,960	20,004
	PY14	7,920	72,345	36,403	11,254	2,303	1,308	3,604	19,219
	PY15	7,920	82,338	44,408	10,590	2,536	1,308	4,144	20,004
	PY16	7,920	93,677	52,364	9,786	2,767	1,308	3,604	19,219
	PY17	7,920	106,524	61,123	12,053	2,996	1,308	4,144	20,004
	PY18	7,920	121,068	70,792	17,347	3,224	1,308	5,017	19,219
	PY19	7,920	137,547	83,311	20,404	3,451	1,308	5,929	20,004
	PY20	7,920	156,226	96,223	24,355	3,675	1,308	6,792	19,219
	IRR/**	224%	164%	16%	136%	20%	7%	11%	16%
	NPV (ZK)	55,283	354,178	89,688	93,651	6,955	-1,042	3,271	68,665
	B/C ratio	2.33	1.12	0.79	1.54	1.73	0.98	0.75	1.07

Table B

### Programme costs and logframe targets

PROGRAMME COSTS AND INDICATORS FOR						
TOTAL PROGRAMME COSTS (USD 'million)				57		
Beneficiaries	1,221,183	people	244,237	Households		
Cost per beneficiary	47	USD x person		235	USD	
Components			Average increase in Rural income		WOP (ZK)	WP
A. Animal Disease	17,055	Average increase in income per HH per				
B. Livestock	31,370					
C. Project Management	8,982					
Total	57,407					

Table C

### Main assumptions and shadow prices

C)		MAIN ASSUMPTIONS & SHADOW PRICES				
Output		land Size	Yields (Annually)		Price (ZK)	
			WOP	WP		
FINANCIAL	Forage production	Tone/ha	-	2	1,600	
	Cattle keeping, CBPP control	Ltrs/year	1,469	2,286	4	
	Cattle keeping, ECF control	Ltrs/year	1,469	2,286	5	
	Cattle restocking and pass-on		-	720	5	
	Goat restocking and pass-on	Kw/head	-	9	230	
	Pig restocking and pass-on	Kw/head	-	100	240	
Economic	Official Exchange rate (OER)	13	Discount rate on saving/deposit accounts		12%	
	Shadow exchange rate (SER)					
	Labour Conversion factor \3					

Table D  
Beneficiary adoption rates and phasing

Latest		Cumulated					
Activity		2018	2019	2020	2021	2022	2023
ECF ITM Immunization	Calves to immunized	17,133	76,707	122,720	180,782	280,782	380,782
	Farmers to be reached	2,721	12,181	19,487	28,707	44,587	60,467
CBPP Vaccination	Cattle to be vaccinated	165,600	332,100	501,300	680,940	930,940	1,180,940
	Farmers to be reached	7,036	14,109	21,298	28,930	39,551	50,172
Sub-component		2018	2019	2020	2021	2022	2023
Forage		3,967	3,473	23,898	52,164	83,502	83,502
Restocking		20	612	9,949	19,263	29,844	29,844
							Total

Table E  
Economic cash flow

Project year	BENEFITS			COSTS			CASH FLOW
	Incremental economic benefit from improvement of animal disease control	Incremental economic benefits from improvement of livestock production and productivity	Total Net Inc. Benefits ('000)	Project Economic Costs	Recurrent Costs	Total Incremental Costs	
PY1	-	-	-	4,290		4,290	(4,290)
PY2	-	-	-	4,960		4,960	(4,960)
PY3	(4)	1	(5)	5,121		5,121	(5,126)
PY4	3,704	5	3,699	6,653		6,653	(2,954)
PY5	9,652	54	4,799	6,638		6,638	(1,839)
PY6	12,818	468	13,286	7,190		7,190	6,096
PY7	17,614	255	17,870	5,748		5,748	12,122
PY8	17,614	951	18,565	8,505		8,505	10,060
PY9	17,614	1,461	19,075	2,574		2,574	8,251
PY10	17,614	834	18,449		2,574	2,574	15,875
PY11	17,614	645	18,259		2,574	2,574	15,685
PY12	17,614	595	18,209		2,574	2,574	15,635
PY13	17,614	556	18,171		2,574	2,574	15,597
PY14	17,614	554	18,168		2,574	2,574	15,595
PY15	17,614	550	18,164		2,574	2,574	15,795
PY16	17,614	544	18,158		2,574	2,574	15,584
PY17	17,614	536	18,150		2,574	2,574	15,576
PY18	17,614	563	18,177		2,574	2,574	15,604
PY19	17,614	647	18,261		2,574	2,574	15,687
PY20	17,614	696	18,310		2,574	2,574	15,736
NPV@ 12% (ZK '000)							413,176
NPV@ 12 % ('000 USD)							27,545
EIRR							27.5%

BCR

Benefits

277,765 costa

79,988 BCR

3.5

**Table F  
Sensitivity analysis**

Year	PY1	PY2	PY3	PY4	PY5	PY6	PY7	PY8	PY9	PY10+20	IRR	NPV
<b>Additional benefits</b>	-	-	4,141,902	3,699,164	4,799,072	13,285,998	17,869,572	24,630,846	18,547,811	24,504,455		
benefits +10%	-	-	4,556,092	4,069,080	5,278,979	14,614,598	19,656,529	27,093,931	20,402,592	26,954,901		
benefits +20%	-	-	4,970,282	4,438,997	5,758,886	15,943,198	21,443,487	29,557,016	22,257,373	29,405,347		
benefits -10%	-	-	3,727,711	3,329,247	4,319,164	11,957,399	16,082,615	22,167,762	16,693,030	22,054,010		
benefits -20%	-	-	3,313,521	2,959,331	3,839,257	10,628,799	14,295,658	19,704,677	14,838,249	19,603,564		
benefits -50%	-	-	2,899,331	2,589,415	3,359,350	9,300,199	12,508,700	17,241,592	12,983,468	17,153,119		
<b>Project costs</b>	4,289,763	4,959,530	5,121,083	6,652,687	6,637,686	7,190,219	5,747,675	8,505,438	2,573,648	2,573,648		
costs +10%	4,718,739	5,455,483	5,633,191	7,317,956	7,301,455	7,909,241	6,322,443	9,355,982	2,831,013	2,831,013		
costs +20%	5,147,715	5,951,436	6,145,300	7,983,225	7,965,224	8,628,263	6,897,210	10,206,526	3,088,378	3,088,378		
costs +50%	6,434,644	7,439,295	7,681,624	9,979,031	9,956,530	10,785,328	8,621,513	12,758,157	3,860,472	3,860,472		
<b>Net cash flow</b>												
base scenario	-4,289,763	-4,959,530	-9,262,985	-2,953,523	-1,838,615	6,095,779	12,121,897	16,125,408	15,974,163	21,930,808	<b>27.5%</b>	<b>27,545,077</b>
costs +10%	-4,718,739	-5,455,483	-9,775,093	-3,618,792	-2,502,383	5,376,758	11,547,129	15,274,864	15,716,798	21,673,443	24.9%	23,991,081
costs +20%	-5,147,715	-5,951,436	-10,287,201	-4,284,061	-3,166,152	4,657,736	10,972,362	14,424,320	15,459,433	21,416,078	22.5%	20,437,086
costs +50%	-6,434,644	-7,439,295	-11,823,526	-6,279,867	-5,157,458	2,500,670	9,248,059	11,872,689	14,687,339	20,643,984	16.5%	9,775,100
benefits +10%	-4,289,763	-4,959,530	-9,677,175	-2,583,607	-1,358,708	7,424,379	13,908,854	18,598,493	17,828,944	24,381,253	30.2%	33,853,580
benefits +20%	-4,289,763	-4,959,530	-10,091,365	-2,213,691	-878,800	8,752,979	15,695,811	21,051,577	19,683,725	26,831,699	32.6%	40,162,083
benefits -10%	-4,289,763	-4,959,530	-8,848,794	-3,323,440	-2,318,522	4,767,180	10,334,940	13,662,323	14,119,382	19,480,362	24.6%	21,236,574
benefits -20%	-4,289,763	-4,959,530	-8,434,604	-3,693,356	-2,798,429	3,438,580	8,547,983	11,199,239	12,264,601	17,029,916	21.4%	14,928,071
benefits -50%	-4,289,763	-4,959,530	-8,020,414	-4,063,273	-3,278,336	2,109,980	6,761,025	8,736,154	10,409,820	14,579,471	17.8%	8,619,568
benefits postipated 1 yr	-4,289,763	-4,959,530	-5,121,083	-10,794,589	-2,938,523	-2,391,147	7,538,323	9,364,134	22,057,198	15,974,163	21.9%	19,719,224
benefits postipated 2 yrs	-4,289,763	-4,959,530	-5,121,083	-6,652,687	-10,779,588	-3,491,055	-948,604	4,780,560	15,295,924	22,057,198	17.9%	12,736,387

**Summary of sensitivity analysis**

Sensitivity analysis				
	%	IRR	NPV (US\$)	Link between EFA and IPRM
<b>Base Scenario</b>		<b>27.5%</b>	<b>27,545,077</b>	
<b>Decrease of Project benefits</b>	-10%	24.6%	21,236,574	<b>Vulnerability to climate change impacts</b> Adverse climatic events or pest outbreaks that impact to the reduction of benefits. The issue of private veterinarians not participating in the delivery of publicly funded animal health services. Inadequate access to all-season water points for forage production and livestock
	-20%	21.4%	14,928,071	
	-50%	17.8%	8,619,568	
<b>Cost Increase</b>	10%	25%	23,991,081	Seed prices increase to level that precludes extensive oversowing of rangeland
	20%	23%	20,437,086	
	50%	17%	9,775,100	
<b>Delay of benefits</b>	1 Year	22%	19,719,224	Delay of funds from other co-financiers/domestic financing.
	2 Years	18%	12,736,387	
<b>Increase of benefits</b>	10%	30%	33,853,580	The possibility of communities to identify stocking/restocking beneficiaries without moral hazards, willingness to make matching contributions and households willing and able to adopt appropriate technologies and innovations
	20%	33%	40,162,083	