Republic of Rwanda

Ministry of Agriculture and Animal Resources (MINAGRI)

Rwanda,
2nd Agriculture Sector Investment Plan (ASIP-2)

Period:
01.07. 2013 – 30.06.2018
(Fiscal years 2013/14 to 2017/18)

CONTENT

LIST OF TABLES/BOXES

LIST OF ANNEXES

ACKNOWLEDGEMENTS

LIST OF ABBREVIATIONS

AfDB	African Development Bank
AgPER	Agricultural Public Expenditure Review
ALUCD	Agricultural Land Use Consolidation Decree
ASIP	Agricultural Sector Investment Plan
ASWG	Agricultural Sector Working Group
AU	African Union
BNR	National Bank of Rwanda
CAADP	Comprehensive Africa Agriculture Development Programme
CIC	Community Innovation Centre
CICA	Agricultural Information and Communication Centre
CIP	Crop Intensification Programme
COMESA	Common Market for Eastern and Southern Africa
DFID	Department for International Development (UK)
DHS	Demographic and Health Survey
e-Soko	Agriculture Market Information System in Rwanda
EDPRS	Economic Development and Poverty Reduction Strategy
EICV	Integrated Household Living Conditions Survey
EU	European Union
F&V	Fruit and Vegetables
FAO	Food and Agricultural Organisation of the United Nations
FDI	Foreign Direct Investment
FFS	Farmer Field School
FI	Financial (Services) Institutions
FY	Fiscal Year
GDP	Gross Domestic Product
GIRINKA	One Cow per Poor Family Program
Ha	Hectare
HRD	Human Resource Development
ICT	Information and Communication Technology
ict4ag	Information and Communication Technology for Agriculture
IFAD	International Fund for Agricultural Development
IFMIS	Integrated Financial Management Systems
JICA	Japan International Cooperation Agency
LODA	Local Development Agency
LUC	Land Use Consolidated
LWH	Land Husbandry, Water Harvesting and Hillside Irrigation Project
M&E	Monitoring and Evaluation
MCC	Milk Collection Centre
MIGEPROF	Ministry of Gender and Family Promotion

MINAGRI	Ministry of Agriculture and Animal Resources
MINALOC	Ministry of Local Government
MINICOM	Ministry of Trade and Industry
MINIRENA	Ministry of Natural Resources
MIS	Management Information System
MINECOFIN	Ministry of Finance and Economic Planning
SMEs	Small and Medium-sized Enterprises
MT	Metric tonnes
MTEF	Medium-Term Expenditure Framework
NAEB	National Agricultural Export Development Board
NCBS	National Capacity Building Secretariat
NEPAD	New Partnership for Africa's Development
NFNSP	National Food and Nutrition Strategic Plan
NGO	Non-Governmental Organisation
NISR	National Institute of Statistic Rwanda
P	Program
PFM	Public Financial Management
PfR	Program for Results
PPP	Public-Private Partnership
PSTA	Strategic Plan for the Transformation of Agriculture
RAB	Rwanda Agricultural Board
RCA	Rwanda Co-operative Agency
RDB	Rwanda Development Board
RF	Results Framework
RNRA	Rwanda Natural Resources Authority
RSSP	Rural Sector Support Program
RWF	Rwandan franc
SACCO	Savings and Credit Co-operative
SDC	Swiss Development Cooperation
SEA	Strategic Environmental Assessment
SP	Sub-Program
SPIU	Single Project Implementation Unit
SPPC	Strategic Planning and Program Coordination (MINAGRI Directorate)
SPS	Sanitary, Phytosanitary and Food Safety
TWIGIRE	Farmer-to-Farmer Extension Model
USAID	United States Agency for International Development
USD	United States dollar
USDA	US Department of Agriculture
WB	World Bank
WUA	Water User Association

1 Strategic framework of Rwanda's 2nd Agriculture Sector Investment Plan (ASIP-2)

Vision 2020 is the overall long-term strategic framework within which all other strategies operate. It is a long-term strategic document having originally been formulated in 2000, with targets set for 2010 and 2020. Agriculture is one of the six pillars of Vision 2020 with the goal of developing "productive high-value and market-orientated" agriculture by 2020. Vision 2020 expects diversification away from the agricultural sector to take place as services assume the role of the lead sector in the Rwandan economy. Agriculture is nevertheless viewed as important as it forms a base for strong forward linkages into manufacturing through the development of higher-value processing industries. The target GDP growth rate for agriculture was revised upward in 2010 to 8.5% per year.

The 2nd Economic Development and Poverty Reduction Strategy (**EDPRS-2, 2013-18**) targets annual GDP growth of 11.5% and an, an export growth of 28% per year and a reduction in poverty to less than 30% of the population. EDPRS-2 acknowledges that Rwanda's agriculture sectors has still as key role for the country's economy - it both provides the base for sustained economic growth and makes the greatest contribution to poverty reduction. The most important objectives for the sector under EDPRS-2 are to increase rural household incomes, to provide income from diversified sources, to increase food- and nutrition security and to enhance the generation of foreign exchange through the further development of agricultural exports. Public sector investments and incentive structures are expected to create an improved environment for agribusiness and agricultural private sector investment.

The Strategic Plan for the Transformation of Agriculture **(PSTA-3, 2013-18)** operationalises the contributions of Rwanda's agriculture to the above mentioned EDPRS-2 targets. **PSTA-3 goals** are:

- To transform Rwandan agriculture from a subsistence sector to a market-orientated, value-creating sector; and
- To grow as rapidly as possible in terms of both production and commercialisation in order to increase rural income and reduce poverty.

The **specific objectives of PSTA-3**, as revised and refined during the development of its results- and M&E Framework in 2014, read as follows:

- Specific Objective N°1: To support sustainable intensification and diversification of cropping and animal husbandry effectively.
- Specific Objective N° 2: To support for farmers and their organisations the accessibility, affordability and efficient use of quality inputs and agricultural support services).
- Specific Objective N° 3: To improve agricultural value addition and value chain development through an enabling environment for agricultural investment and the business of smallholder farming.
- Specific Objective N°4: To increase the institutional capacities at central- and local government to support the implementation of the sector strategy and ensure social and environmental sustainability.

2 Rwanda's agriculture sector after CAADP-1 implementation: Achievements and prospects

Under PSTA 2, both food production and food marketing were substantially increased, helping to drive poverty rates down. Agriculture was one of the main drivers of growth and poverty reduction in Rwanda, significantly lifting rural households out of poverty. Although the share of agriculture decreased over this period from 37.3 percent to 31.2 percent of GDP, the sector remained the backbone of the Rwandan economy in terms of employment and income-generation for the majority of households. If Rwanda can sustain increases in agricultural productivity over the medium term, poverty will continue to fall, especially if business activities related to trade, post-harvest storage, and processing increase along with the boom in agricultural production. Since virtually all of Rwanda's poor depend on agriculture to generate income, scaling up agricultural intensification and marketing in areas not currently covered by these business activities will be the quickest way to get significant numbers of rural poor out of poverty.

The targets set out in the Cabinet Paper for Revised Vision 2020 Indicators and Targets call for an 11.5 percent annual rate of economic growth, required to achieve lower middle-income status by 2020. The annual growth rate for agriculture and livestock to achieve this target is set at 8.5 percent, assuming that this sector's share of GDP will be 25 percent.

According to the national accounts, the value of food crop production in constant prices rose by 24 percent from 2008 to 2012. This substantially exceeded the target and was due largely to the success of the Crop Intensification Program (CIP) and the Land Use Consolidation Program (LUC). Between 2000 and 2010, agriculture GDP grew annually by 5.8%. The sector accounted for 33% of GDP in 2013 and generates 70% of export revenues.

Food crops account for 83-85% of agricultural GDP and even their modest growth will have much greater effect on agricultural and economic growth than rapid growth in the smaller subsectors of export crops and livestock, due to the size of the sub-sector and a strong multiplier effect on the rest of the economy. The growth contribution of food crops to the overall economic growth is not just because of its significant size in agriculture, but also because of strong multiplier effect through the consumption linkage effect where a 1 percent growth in food crops generates a 0.11 percent of growth in non-agriculture sector annually. Through linkage and multiplier effects, 1 USD of public investment in agricultural staples generates 3.63 USD agricultural 0.21 USD of non-agricultural GDP.

With 22% of annual growth rate in export crops as a subsector of agricultural GDP, additional annual growth rate in agricultural GDP and total GDP is 0.71 and 0.57 percentage points respectively. Considering its small share in GDP, growth impact of the export crop is impressive particularly for the overall economic growth. From its initial size of only 1.3 percent GDP and after tripling the growth rate of export agriculture, its size is still smaller than a single crop like maize in terms of the share of GDP.

Although Rwanda ranks high in general in the Doing Business Report, it is ranked low in the ease of trading across borders. Given the importance of trade for Rwanda in the future, it is essential to improve this performance. A joint public-private strategy should be developed

in cooperation with neighbouring countries to ease the requirements, lower the cost, and speed up the time for formal cross-border trade. This strategy should also involve improving transportation and storage infrastructure and maintaining grades and standards for the most important products.

However, achieving 8.5%/year growth in agricultural GDP requires not only yield increases for crops and livestock but also a shift to higher value products. Because projected yield increases for field crops together fall far short of 8.5%/year, a lot of the targeted 8.5%/year growth in agricultural GDP will have to come from other sources, including increase in production of high value crops, especially fruits and vegetables for local consumption (do not require a lot of land but labour); and increase in livestock products (do not take much land but labour and capital). Farmers with as little as .25 ha can make a good living with vegetables or livestock.

3 Background and iterative process of the ASIP-2 development

The CAADP Post Compact Guidelines describe the National Investment Plan as a comprehensive and wide ranging plan that covers all investment in the agriculture sector. The plan should be developed through a participatory process involving all stakeholders in the sector and be strongly led by the Ministries of Finance and Agriculture. Rwanda's has followed this guidance in the preparation of the present document.

Rwanda has demonstrated high-level political commitment to Africa-wide initiatives such as the Comprehensive Africa Agriculture Development Program (CAADP) by signing a CAADP compact in 2007 and has renewed its commitment with its partners in 2014. The commitment of adhering to the CAADP principles goes beyond the 2 most prominent targets to achieve annual agricultural sector growth of at least 6% and allocate at least 10% of the national budget to agriculture or agriculture-related spending of public resources. Rwanda's renewed commitment to the continental CAADP-process embraces in fact all 4 CAADP pillars, but gives particular emphasis to pillar N° 2 "Private sector development, rural infrastructure, improved trade and market access".

The Government of Rwanda has developed the ASIP-2 as a framework and guiding references for both public and private investment in agriculture through 2018. For the first time, Rwanda's ASIP quantifies the amount of private investment expected to support agriculture development over the medium term (2014-18). The ASIP-2 shows a clear shift towards private sector engagement in the PSTA-3 Programs 1, 2 and especially 3 (see below). This shift is expected to leverage the impact of public agriculture spending on Rwanda's GDP growth-, export growth and poverty reduction targets.

The preparation of the ASIP-2 document has been informed by the following key-inputs:

- The Strategic Plan for the Transformation of Agriculture in Rwanda Phase III (PSTA-3), approved in July 2013; the ASIP-2 has been based on the 4 Programs (see Chapter 8 for a detailed description of the 24 Sub-Programs) of PSTA-3, but has further developed the sector's strategic results- and M&E framework and the explanatory narrative for the chosen output priorities.
  - Sustainable agriculture and animal resource intensification (P 1)

- Research, technology transfer and professionalization of farmers (P 2)
- Value chain development, private sector investment and export promotion (P 3)
- Institutional strengthening and cross cutting issues (P 4)

- Numerous consultations (both bilateral and through the Agriculture Sector Working Group) were conducted along the preparation of the PSTA-3 Document between August 2012 and July 2013; they have been documented in Anne II.2 of the latter.
- MINAGRI commissioned in 2013 with the World Bank and USAID 2 CAADP-I review studies, namely the "Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study" and "The Role of Agriculture in the Fast Growing Rwandan Economy: Assessing Growth Alternatives". Both studies involved wide stakeholder consultations and their findings have substantially informed the PSTA-3's results-framework exercise. The same holds true for the regular consultations conducted by MINAGRI and its agencies along the budget planning cycle for Fiscal Year 2013/14 and 2014/15 with Districts, farmer federations, producer organisations, NGO's and the private sector.

Box 1: Key drivers for agricultural-driven growth and poverty reduction identified under PSTA-3

- Continued investment in land husbandry, irrigation and inputs;
- Expansion of the Crop Intensification Programme (CIP) to further increase productivity of staple crops;
- Expansion of the livestock sector, particularly small stock and fisheries;
- Investment in mechanisation, processing and post-harvest facilities to modernise production;
- Targeting of producers via extension for the development of a skill-based sector;
- Research that responds to farmers' needs and identifies optimal crop varieties;
- Aggregation of smallholder production to provide sufficient quantities for markets;
- Improvement of the quality of traditional export crops to generate higher premiums;
- Increased production of emerging export crops, including horticulture;
- Value chain development to strengthen supply and develop market demand;
- Encouragement of entrepreneurship through agricultural financing and insurance to manage risk;
- Attracting of investment through soft and hard market infrastructure;
- Building of institutional capacity across the sector;
- Facilitation of a participatory approach, including women and youth, for inclusive growth; and
- Environmental sustainability and climate change adaptation for the long-term prosperity of the sector.

- The ASIP-2 is based on the PSTA-3 results framework (see Chapter 7) that has been refined between March and August 2014. During the months of March and May 2014, all Directorates of MINAGRI and its agencies NAEB and RAB as well as all other public servants dealing with planning in M&E in Rwanda's agricultural sector did jointly analyse, review and refine the Results Framework for PTSA-3 during an iterative and intensive process with >10 consecutive work sessions. This exercise was facilitated and guided by MINAGRI and the World Bank and the outputs identified under each of the 24 PSTA-3 Sub-Programs became the core reference for the ASIP-2 costing exercise. In the

2nd semester of Fiscal Year 2014/15, an additional effort will be needed to review and specify the Metadata for several indicators presented in Chapter 7 and 13.

- The financial and economic analysis for the main capital investments (see Chapter 6), was informed to a large extent by the Economic and Financial Analysis models used in 2013 for the Land Husbandry, Water Harvesting and Hillside Irrigation Project (LWH) and the Rural Sector Support Project Phase 2 (RSSP2); both co-funded by MINAGRI and the World Bank.
- Ahead of the CAADP-2 Business Meeting in June 2014, several advanced drafts of the ASIP-2 document were e-mailed to all members of the Agriculture Sector Working Group with a request for review and comments. The received comments helped to identify omissions and improve the ASIP-2 document.
- The FAO Investment Centre conducted upon the request of MINAGRI and the FAO Country Representative a review of the Draft Agriculture Sector Investment Plan. The costing methodology was found to be sound but concerns were expressed regarding the consistence (results framework, lessons learned, budget allocation priorities) and explanatory detail (e.g. absorption and implementation capacity) of the document. These comments guided the preparation of an improved final ASIP-2 document.
- An Independent Technical Review of the ASIP document was also commissioned by MINAGRI and the AU's NEPAD agency. It took place in Rwanda from 28/05 to 02/06/2014 to enhance the quality of the ASIP and guide its post-Business Meeting operationalization. 2 key conclusions were drawn for improving the ASIP Draft document: (1) To increase the grading and investment allocation to institutional capacity development, and (2) the need for a more robust analysis and articulation of the strategies and interventions to harness the transformative role of the private sector for Rwanda's agricultural growth. The findings were presented to the plenary of the Rwanda CAADP II High-Level Stakeholders meeting (9-10 June 2014).

4 The methodology applied in the costing of the 2nd Agriculture Sector Investment Plan

- The costing methodology was output-based, i.e. based on the key-outputs (see Chapter 4) identified during the PSTA-3 results-framework planning exercise. Time- and resource constraints did not allow conducting a detailed activity-based costing. Unit costs, applied to each output, have been sourced from preparatory ASIP-2 costing studies in 2013 where available; otherwise they have been estimated.
- Costing was undertaken in RWF and converted to USD using projected exchange rates (Annex 1a). Costs are expressed in current prices. The projected inflation rates used to estimate costs for the various years are set out in Annex 1b. The projected exchange- and inflation rates were provided by MINECOFIN.

- Private sector and PPP cost estimates have been undertaken by costing lists of priority investment projects in agriculture and agribusiness as supplied by development corporations, banks and representative organisations of the private sector. An approach based on line items rather than outputs has been followed for private sector costs, whereby the implementation costs of each investment project are either taken from project profiles (if available) or estimated.
- A funding scenario was constructed whose credibility is based on a trend analysis of past governmental- and donor funding to the sector.

Key elements of the ASIP-2 document are:

- The strategic framework of the ASIP-2 (Chapter 1)
- Findings of the Agriculture Expenditure Review conducted in FY 2013/14 (Chapter 5)
- The economic justification (modelling) of the main capital investments (Chapter 6)
- Comments on key outputs and outcomes of the 24 PSTA-3 Sub-Program (Chapter 8)
- Public Sector- and Private Sector Costs under ASIP-2 (Chapter 10 and 11)
- Implementation responsibilities for public- & private sector ASIP- 2 costs (Chapter 9)
- Financing of the ASIP-2 costs (Chapter 12)
- Results- and M&E Framework (Chapter 7)
- M&E requirements for PSTA-3 and ASIP-2 (Chapter 13)

5 Findings of the 2014 Agriculture Public Expenditure Review (AgPER)

Main findings of the Mini Public Agriculture Expenditure Review (Mini AgPER) conducted during the preparation of the Agriculture Sector Investment Plan.

- MINAFGRI's total approved budget stands at 90.3 Rwanda Francs (RWF) billion in Fiscal Year (FY) 2014/15 (a 8.8% increase compared to FY 2013/14 and a 62.4% compared to Fiscal Year FY 2009/10).
- MINAGRI's share in the total national budget follows since FY 2009/10 a downward trend and reaches only 5,15% in FY 2014/15, i.e. the average annual increase of the National Budget is not matched by increases in the agriculture budget.
- 10% of public expenditure on agriculture - the CAADP (Comprehensive Africa Agriculture Development Programme) compact target - is reached if all natural resource management-, Cooperative-, SME-, investment- and trade- promotion as well as standard-compliance/quality-enhancement budgets are considered (see Table 1).
- The discrepancy above stresses the importance of a strengthened coordination during the ASIP-2 period between MINAGRI and the other involved governmental agencies so as to ensure maximum coherence and synergy of public agriculture-related

expenditures towards the common EDPRS-2 economic development-, export growth- and poverty reduction- targets.

- Budgetary allocations for investments in Rwanda's agriculture sector are spread across MINAGRI, its affiliated agencies (Rwanda Agriculture Board, National Agriculture Export Development Board), Single Project Implementation Units, Districts, the Ministry of Trade and Industry (Agro-processing, Trade promotion), the Rwanda Cooperative Agency (Cooperative Development), MINIRENA (Sustainable land and forestry management), RDB (Private Sector Investment) and the National Capacity Building Secretariat (NCBS).
- The share of MINAGRI's Development Budget has remained in recent years consistently around 90% as well as it's externally financed part which stands at 56% in FY 2014/15.Then share of the domestically financed Development Budget oscillates since Fiscal Year 2009/10 around 50%.
- Since Fiscal Year 2011/12, consistently 50-60% of the annual budget of MINAGRI and its agencies are allocated to Sub-Program 1.1 (Soil Conservation, Land Husbandry) and 1.2 (Irrigation). In recent years, the large increase in the area of land that was reported as protected against soil erosion was accomplished at relatively low cost.
- There is a need for an improved annual public expenditure reviews for the main capital investments in the sector (manky soil conservation, irrigation, feeder roads).
- In terms of budget execution, MINAGRI and its affiliated agencies exhibit adequate capacity to absorb their respective allocations with execution rates of close or even beyond 100% (if actual execution is compared with the original budget before the half-year revision/increase of the certain ceilings).
- Most of the agricultural allocations are still retained centrally, reflecting the large internal and donor funded SPIUs managed by MINAGRI.
- The development budget constitutes the largest share of MINAGRI's budget because of the continued emphasis on soil conservation, irrigation and market infrastructure investments.
- The share of the annual governmental contribution to the budget of MINAGRI and its agencies during PSTA-2 (2009-12) has been consistently around 50%. Program N° 1 (Intensification and development of sustainable production systems) and 3 (Promotion of commodity chains and agribusiness development) were given on average over 80%.
- In spite of a consistent upward trend of agricultural earmarked transfers (from USD 2 million in 2009/10 to 12 USD Million in FY 2014/15), the resources transferred to Districts are still low vis-a-vis the important role of Districts for soil conservation, the roll-out of the new public extension model, value chain development, oversight and facilitation.

Table 1: Trend of public budgets for agriculture-related spending in Rwanda between 2009/10 and 2014/15 (**in USD** and in proportion to total public spending)

* Applied RWF/USD Exchange rate = 1st July of the corresponding Fiscal Year (Source: BNR, National Bank of Rwanda)

Program / Sub-Program	Agency	2009/10	2010/11	FY 2011/12	FY 2012/13	FY 2013/14	FY 2014/15
Administrative and support services	MINAGRI/NAEB/RAB	0	0	0	0	9.787.913	10.253.529
Agriculture and animal resource intensification	MINAGRI/NAEB/RAB	64.733.515	87.625.829	90.309.497	105.010.462	99.789.577	92.432.024
Research, technological transfer, advisory services, professionalization	MINAGRI/NAEB/RAB	3.181.704	6.163.400	5.999.713	4.624.778	4.225.839	6.437.110
Value chain development and private sector investment	MINAGRI/NAEB/RAB	15.840.730	10.934.962	10.933.638	14.452.303	13.994.216	22.682.838
Institutional development and agricultural cross-cutting issues	MINAGRI/NAEB/RAB	9.189.497	9.172.346	5.006.166	3.923.175	1.146.773	463.461
RCA, Investment, trade and business facilitation, SME development, Standards/Certification/Quality and safety testing, Weather forecasting **(50%)**	MINICOM, RDB, MININFRA	5.276.675	11.487.817	14.546.625	9.554.498	12.692.216	7.832.957
Sustainable agriulture development	PRESIREP, RDB	0	0	0	422.866	714.176	209.465
Higher Institute of Agricultulture and Animal Husbandry	MINEDUC	0	0	0	228.657	226.149	0
Land administration and land use management	MINIRENA	5.269.992	5.595.481	5.974.182	3.657.375	1.449.266	4.085.927
Integrated water resource management	MINIRENA	3.478.699	1.156.638	2.000.462	628.023	1.703.338	3.413.386
Environment and Climate Change Resilience	MINIRENA	0	388.828	3.678.559	8.850.151	7.739.396	7.347.140
Terrestrial ecosystems and forest resource management	MINIRENA	4.125.992	4.794.702	7.104.901	3.136.290	4.665.355	5.619.810
Local development initiatives	MINALOC	18.340.293	9.588.052	3.610.929	3.040.308	566.388	914.487
Fight against malnutrition	LODA	0	0	0	0	0	2.636.629
Fight against malnutrition	MOH	130.312	509.307	712.677	644.502	383.065	345.402
Social Protection (Support to Vulnerable Groups)	DISTRICTS	2.161.123	2.088.629	2.095.369	12.510.080	29.028.092	31.330.315
Community Development	DISTRICTS	0	0	42.773.890	7.539.924	0	0
Forestry, Environmental	DISTRICTS	59.597	58.850	2.484.890	3.207.471	5.635.495	3.846.037
Market Infrastructure	DISTRICTS	0	0	0	720.279	9.110.875	17.777.757
Rural/Feeder Roads	DISTRICTS	0	0	7.665.038	22.116.960	13.552.751	28.043.724
Agric. intensification, Value chains, Support to prodcucers, Food Security	DISTRICTS	2.100.221	5.162.140	6.805.883	13.669.541	7.276.961	11.446.462
Total Agriculture Budget		**133.888.349**	**154.726.982**	**211.702.418**	**217.937.643**	**223.687.839**	**257.118.462**
Total National Budget		1.474.229.055	1.673.023.186	1.853.941.417	2.531.333.359	2.572.809.470	2.568.158.869
Agriculture Budget in % of Total National Budget		**9,08%**	**9,25%**	**11,42%**	**8,61%**	**8,69%**	**10,01%**

6 Economic analysis of the main capital investments under ASIP-2

A cash flow model is used to assess the ex-ante productivity, effectiveness, and efficiency of public investments in different PSTA-3 sub-programs (SPs), using the ASIP-2 scenario of RWF 0.6 billion over 5 years (Table 2). While the costs of all SPs are included in the analysis, the model only quantifies direct benefits for 8 of the 24 SPs (84% of public investment). Costs and benefits of private sector- and PPP investments are not quantified in the current analysis.

Table 2: ASIP public sector investments by sub-program as included in the analytical model

Investment costs for 5-year period	**ASIP-2 Cost Scenario**		**High Cost Scenario**	
Sub-program	**million RWF**	**share of total**	**million RWF**	**share of total**
1.1. Land Conservation	69,296	11%	183,567	15%
1.2. Irrigation	190,119	29%	388,242	32%
1.3. Mechanization	27,311	4%	210,252	18%
1.4. Improve soil fertility	45,968	7%	75,071	6%
1.5. Seed improvement	25,029	4%	29,091	2%
2.1. Research & technology tr.	23,250	4%	7,621	1%
2.2. Extension services	26,075	4%	11,299	1%
3.8. Market oriented infrast.	140,320	22%	189,170	16%
Sub Total	547,367	84%	1,094,314	91%
Remaining 20 sub-programs (1)	101,532	16%	104,881	9%
Total Public Sector Investment (2)	**648,900**	**100%**	**1,199,196**	**100%**

Note: (1) In the analysis costs are allocated proportionally between the other 8 sub-programs.
(2) Analysis excludes ASIP costs assigned to private sector and public private partnerships.

The analytical model estimates the impact of sub-program investments on revenues and costs in 6 different enterprise models: [1] 1) Cropping on irrigated hillside areas (command areas); 2) Cropping on non-irrigated hillside terraces; 3) Cropping on irrigated marshlands; 4) Post-harvest drying of crops on new drying floors; 5) Post-harvest storage of crops in new storage facilities; and 6) Post-harvest transport on improved feeder roads. The analysis quantifies also benefits from greater employment opportunities in agriculture and an estimate of the economic value of increased carbon sequestration. The key drivers of agricultural growth are quantified such that changes in public investment costs lead to an increase in the number or hectares with terracing or irrigation; the number of infrastructures built for post-harvest drying/storage; and the extent of improved feeder roads. The model captures also how SPs are designed to enhance farm-level yields and affect input use. The captured linkages can be summarized as follows:

[1] The analytical model and its assumptions are an amalgamation of the Economic and Financial Analysis models used in 2013 for the Land Husbandry, Water Harvesting and Hillside Irrigation Project (LWH, WB), and the Rural Sector Support Project Phase 2 (RSSP2, WB). Financial prices are converted to economic prices using adjustment factors. Net present value is calculated using a discount rate of 12% over a period of 25 years with constant RWF 2014 amounts (no inflation included).

- SP 1.1: Investments in terracing/soil conservation improve the farming practices on hill-sides by increasing yields, avoiding yield losses due to erosion, and generate employment.
- SP 1.2: Investments in irrigation improve yields on hillsides and marshlands and generate employment.
- SP 1.3: Mechanization investment reduce labour cost but also employment in cropping areas.
- SP 1.4: Soil fertility investments lead to increased yields and associated fertilizer use.
- SP 1.5: Seed development investments lead to increased yields and associated seed costs.
- SP 2.1: Research and technology transfer investments lead to increased yields.
- SP 2.2: Extension investments improve the adoption rates of new cropping practices.
- SP 3.8: Market infrastructure investments reduce yield and price losses through improved drying and storage. Improved feeder roads reduce costs of produce and farm inputs.

As with all farm-level assumptions on revenue and costs, the relative contributions of each sub-program investment are based on assessments by the LWH and RSSP project teams. Table 3 illustrates sub-program investments that are estimated to affect the progress towards the maximum yield potential in 3 different production areas. If investments are reduced in one of the sub-programs, the maximum yield potential is not reached; e.g. if the soil fertility sub- program's share of the ASIP investment halves to from 7% to 3.5%, then 25% of the maximum with-program yield on irrigated marshlands will decrease by 50%, equal to a 12.5% reduction.

Table 3: Example of model drivers - yield impacts by sub-program

Share of max yield potential (1) / Sub-program (2)	W/P Yield on Irrigated hillside areas	W/P Yield on Non-irrigated hillside areas	W/P Yield on Irrigated marshlands
1.1. Land Conservation	10%	10%	
1.2. Irrigation	25%		25%
1.4. Improve soil fertility	22%	30%	25%
1.5. Seed improvement	22%	30%	25%
2.1. Research and technology transfer	**22%**	30%	25%
Total share of max yield potential (1)	100%	100%	100%

Note: (1) Each crop has its own assumed maximum yield potential in each cropping areas.
(2) Each sub-program contributes by a certain share of 100% to reach the max yield potential.

Estimates for the ASP cost scenario indicate that the planned RWF 0.6 billion 5-year investment yields a sound overall economic Net Present Value (NPV) of RWF 198 billion with an Economic Rate of Return (ERR) of 18%. Annual net benefits are shown in Annex 4 for the financial and economic values. These estimates are based on a 25 year model which includes recurrent investment costs in year 6 and onwards. Undiscounted, this is equivalent

to an average annual economic net benefit of RWF 82 billion. Using this estimate as a proxy for annual growth in the agriculture sector, this constitutes approximately 5% of the agricultural share of GDP.2 The analysis seems generally consistent with an 8.5% growth target for the sector, given that the 3.5% gap may be covered when quantifying net benefits from livestock production and other incremental benefits not captured in the analysis and those that extend beyond the program area. The ASIP cost scenario drives a change in cropping pattern and farm management practices that greatly improve farm-level income. Estimates (Table 3) indicate a 77% increase in per hectare gross margin on non-irrigated hillsides, and much larger increases on irrigated areas. With a farm size of 0.6 hectares, household incomes could increase by between RWF 208,000 and 1,430,000 per year.

Table 4: Increased annualized financial gross margins by cropping area with programme

1000 RWF/ha (Apr-2014 prices)	**Irrigated hillside areas**	**Non-irrigated hillside areas**	**Marshland areas**
Without Program	430	451	589
With Program	2,811	797	2,807
Incremental increase	2,382	347	2,218
% increase	554%	77%	376%

Note: Estimates based on annualized and weighted averages of crops harvested in each area.

Under the ASIP cost scenario, the net present value of increased agricultural employment due to changes in cropping practices only was estimated as RWF 9.6 billion. The average economic net benefit was RWF 1.6 billion per year, which (with a daily economic wage rate of RWF 634/day) is equivalent to 2.6 million work days and - assuming 260 (130) work days per year - almost 10,000 (20,000 person) years. This includes increases due to cropping intensification and decreases from mechanization. This is a conservative estimate of employment generation because it only includes direct effects on cropping labour. The estimate excludes employment generation in other agricultural production systems such as livestock, post-harvest infrastructures, and construction[3] and any multiplier effects on employment inside and outside the program area. Other than delay in developing areas with terraces and irrigation systems, returns to program investments are particularly sensitive to how many farmers ultimately adopt the new farming practices and how fast they do so. For example, the investment only breaks-even if new practices are adopted on 2/3 of the total developed area. The NPV also drops to zero if the annual adoption rate drops to 10% compared to the assumed 20%. Because large shares of total program returns are generated by crops on non-irrigated hillsides, the results are also sensitive to changes in the associated yields and output prices. Risk management strategies should increase farmer adoption rates through extension. Yield increases are supported particularly through SPs for soil fertility, seed development, research and technology transfer. Based on analyses in projects such as the LWH and RSSP, investments in terracing lead to increased livestock production due to increased farmer income and the availability of fodder. The increased availability of manure benefits the local cropping systems.

[2] National Institute of Statistics of Rwanda (March 2014). Gross Domestic Product - 2013. GDP for 2013 was estimated as RWF 4,819 billion of which 33% is value added by the agriculture sector.

[3] Note that, employment generation from new post-harvest infrastructures will be included in the final analysis.

7 Results- and Monitoring Framework of PSTA-3 / ASIP-2

The Results framework of PSTA-3 was improved in 2014 by the Directorates of all MINAGRI agencies and members of the Agriculture Sector Working Group so as to meet the economic development-, export growth-, and poverty/vulnerability- reduction targets of EDPRS-2. The list below highlights several of the most essential indicators under each of the 4 Programs.

Program 1: Agriculture and Animal Resource Intensification

- Ha of land developed with progressive and bench/radical terraces, based on agreed standards
- Hectares developed for hillside, marshland and small-scale irrigation
- Proportion of cultivable land with mechanized land cultivation
- % of farmers utilising fertilizer for strategic crops according to recommended standards
- % of farmers utilizing improved and certified seeds for strategic crops
- Production of milk, beef meat, goat meat, pork meat, poultry meat, eggs, honey, fish
- % of improved breeds of dairy cows, cattle and goats
- % of cattle held in intensive livestock keeping systems

Program 2: Research and Technology Transfer, Advisory Services and Professionalization of Farmers

- N of released technologies (food crops, export crops)
- N° of farmers benefitting from FFS according to established standards (disaggregated by sex)
- N° of farmers supported through TWIGIRE in horticulture-/export crop value chains
- % of farmers that are member of a cooperatives, association or self-help group
- % of farmers utilising cooperative services for input supplies and marketing
- % of total production marketed through cooperatives/farmer organizations
- % of cooperatives trained in management, organisation and entrepreneurial skills
- % of cooperatives trained in food safety, SPS and quality standards

Program 3: Value Chain Development and Private Sector Investment

- Investor Framework / Multi-sector agri-business strategic plan
- N° of SMEs involved in crop and livestock production (inputs, agro-processing, marketing)
- Capacities of agro-processing installations for food/staple crops
- Productivity of coffee, tea, pyrethrum, flowers and horticulture production
- % of coffee production that is fully washed; N° of ISO 2200-2005 certified tea factories
- Revenue of exports: coffee, tea, pyrethrum, flowers, horticulture
- Value of cottage industry (silk, essential and plant oils, dried fruit etc.) production
- % of annual exports of F&V audited against social and environmental standards
- N° of GlobalGAP and/or ISO 22000 certified abattoirs
- N° of certified milk collection centres (MCCs); Processing capacities for dairy products
- Total loans allocated to agricultural sector (production and value addition)
- % of rural households benefitting from agricultural group credits:
- N° of farmers benefitting from Warehouse Receipt System finance
- N° of farmers with crop and/or livestock insurance
- Postharvest losses (%): maize, beans, Irish potatoes, Rice
- Km of rural feeder roads rehabilitated and maintained according to the established standards

Program 4: Institutional Development and Agricultural Cross-Cutting Issues

- Total Volume of Public Spending on Agriculture by Districts
- Regulations and roles for agricultural finance clarified, established and communicated
- Agro-chemical registration system (agro-dealers) established
- MIS System is developed, and functional, and utilised across the sector
- N° of newly released crop growing protocols translated into Kinyarwanda
- % of women and youth enrolled in agricultural self-help groups, cooperatives and associations
- Joint agro-environmental plan and assessment (MINAGRI-REMA)
- Regulations for organic agriculture, pesticide- and lime use approved and communicated
- Proportion of cultivable agricultural land covered by multi- or single-purpose trees
- Average animal protein production (g/capita/day) in % of "safe consumption
- % of households (Ubudehe 1 and 2) with permanently used nutrition/kitchen gardens

Note: During the Metadata-refinement exercise in the 2nd half of Fiscal Year 2014/15, several baseline values, targets and metadata will still have to be refined / defined.

Results (Outcomes, Outputs)	#	Indicator	Unit	Data Source	Frequency	Baseline 2014 (or latest available data)	Target 2014/2015	Target 2015/2016	Target 2016/2017	Target 2017/2018
High-Level Indicators										
CAADP compact is complied with	0.1	% of public budget allocated to agriculture sector	%	MINECOFIN, Budget	Annual	8	9	10	10	10
Vision 2020 and EDPRS-2 targets for economic growth and poverty reduction are supported adequaetly by the agriculture sector	0.2	Agricultural GDP growth rate	%	BNR	Annual	3.9	+8.5%	+8.5%	+8.5%	+8.5%
	0.3	Agricultural export revenue growth rate	%	BNR	Annual	159.000.000 USD	+28%	+28%	+28%	+28%
	0.4	% of rural population under the national poverty line	%	EICV	Every 5 years	44,9	-	30,2	-	<30
	0.5	Average monetary income per rural household from cropping	RWF/ year	Annual agricult. household survey	Every 2 years					
	0.6	Average monetary income per rural household from livestock-keeping	RWF/ year	Annual agricult. household survey	Every 2 years					
Increased food- and nutrition security in Rwanda, especially among vulnerable households	0.7	% of households with acceptable food consumption score	%	CFSVA/FSNMS	Every 6 months	79	81	82	82	82
	0.8	% of stunting among children aged 6-59 months	%	DHS/Community-based screening	Annual	44				24,5
Sustained availability of land ressources for agricultural land use	0.9	% of arable land effectively protected against soil erosion and sustainably managed	%	RAB-Team/TF	Annual	73,0	80,2	83,2	87,0	90,7
	0.10	Area of cultivable land per agricultural household (Median)	ha	RNRA-Land Department	Annual	0,33				
Program 1: Agriculture and Animal Resource Intensification (Specific Objective N°1: To support sustainable intensification and diversification of cropping and animal husbandry effectively)										
Improved use of scarce land ressources through crop and livestock productivity gains	1.1	Agriculture land under modernized agricultur-al technologies (seeds, fertilizers, mechan.)	%	Seasonal Survey	Annual					
	1.2	Average yields of strategic crops: Maize	MT/ha	Seasonal Survey	Seasonal	2,45	3,83	4,80	6,00	7,50

Results (Outcomes, Outputs)	#	Indicator	Unit	Data Source	Frequency	Baseline 2014 (or latest available data)	Target 2014/2015	Target 2015/2016	Target 2016/2017	Target 2017/2018
	1.3	Average yields of strategic crops: Bush beans	MT/ha	Seasonal Survey	Seasonal	0,65	1,15	1,50	2,00	2,70
	1.4	Average yields of strategic crops: Climbing beans	MT/ha	Seasonal Survey	Seasonal	1,70	2,66	3,30	4,20	5,20
	1.5	Average yields of strategic crops: Cassava	MT/ha	Seasonal Survey	Seasonal	30,00				45,00
	1.6	Average yields of strategic crops: Irish Potatoes	MT/ha	Seasonal Survey	Seasonal	25,00				35,00
	1.7	Average yields of rice under marshland irrigation	MT/ha	Seasonal Survey	Seasonal	4,85	5,87	6,45	7,10	7,80
	1.8	Productivity of dairy cows	l/day	Annual livestock survey	Annual					
Sub-Program 1.1: Soil Conservation and Land Husbandry										
Increased coverage, efficiency and sustainability of soil conservation infrastructure and practices	1.1.1	Efficiency of soil protection infrastructure (= maintenance of terracing structure)	%	RAB-Team/TF	Every 2 years	57,2	61,2	66,6	73,4	80,1
	1.1.2	Ha of land developed with progressive terraces, based on agreed standards	Ha	Districts: Routine M&E	Annual	802.292	894.072	955.259	1.031.743	1.054.661
	1.1.3	Ha of land developed with bench/radical terraces, based on agreed standards	Ha	Districts: Routine M&E	Annual	46.246	74.528	84.528	94.984	104.731
	1.1.4	**Multi-sectoral** soil conservation and land husbandry policy and strategic plan	Docu-ment	ASWG	Single event		X			
Sub-Program 1.2: Irrigation and Water Management										
Increased land productivity and climate-change resilience through expanded access to	1.2.1	Proportion of households practicing irrigation	%	Seasonal Survey	Annual	2,1%				
	1.2.2	Hectares developed for hillside irrigation	Ha	Districts: Routine M&E	Annual	3.075	7.255	9.075	12.075	15.075

Results (Outcomes, Outputs)	#	Indicator	Unit	Data Source	Frequency	Baseline 2014 (or latest available data)	Target 2014/2015	Target 2015/2016	Target 2016/2017	Target 2017/2018
irrigation systems	1.2.3	Hectares developed for marshland irrigation	Ha	Districts: Routine M&E	Annual	24.721	31.636	34.093	37.550	39.721
	1.2.4	Hectares developed for small scale irrigation	Ha	Districts: Routine M&E	Annual	1.000	1.750	2.050	2.300	2.500
Increased self-reliance and technical capacity of Water User Associations	1.2.5	% of WUA trained in flood control, O&M and irrigation management	%	Districts: Routine M&E	Annual					
	1.2.6	N° of farmers enrolled in WUA that are legally established and pay their water user fees	#	Districts: Routine M&E	Annual					
Improved public spending on irrigation	1.2.7	National Irrigation policy and strategic plan	Docu-ment	ASWG	Single event	Policy	Strategic Plan			
Sub-Program 1.3: Agricultural Mechanisation										
Increased land- and labour productivity through the availability of agricultural mechanization technology and services	1.3.1	Proportion of cultivable land with mechanized land cultivation	%	Districts: Routine M&E	Every 2 years	12	18	20	23	25
	1.3.2	N° of cooperatives that offer mechanization (land cultivation) services	#	Districts: Routine M&E	Annual					
	1.3.3	N° of implements utilized for mechanised farming	#	MINAGRI, I&M Taskforce	Annual					
	1.3.4	National Agriculture Mechanization policy and strategic plan	Docu-ment	ASWG	Single event					
Sub-Program 1.4: Inputs to Improve Soil Fertility and Management										
Improved Integrated Soil Fertiliy Management by Rwandan farmers	1.4.1	Kg of inorganic fertilizer used per ha per year	kg/ha/ year	Seasonal Survey	Annual	29	35	39	42	45
	1.4.2	% of farmers utilising fertilizer for strategic crops according to recommended standards	%	Seasonal Survey	Annual	30	42	48	54	60
	1.4.3	MT of inorganic fertilizers imported	MT/ha	MINAGRI	Annual	36.000	48.000	54.000	62.000	70.000

Results (Outcomes, Outputs)	#	Indicator	Unit	Data Source	Frequency	Baseline 2014 (or latest available data)	Target 2014/2015	Target 2015/2016	Target 2016/2017	Target 2017/2018
	1.4.4	% of agricultural households utilising registered agro-dealers	#	MINAGRI	Annual					
	1.4.5	National Fertilizer Policy and regulatory framework	Docu-ment	ASWG	Single event		X			
Sub-Program 1.5: Seed Development										
Improved availability and utilization of seeds to increase agricultural productivity, diversification, quality and resilience	1.5.1	% of farmers utilizing improved and certified seeds for strategic crops	%	Seasonal Survey	Annual	30	46	54	62	70
	1.5.2	% of area planted with certified seed to total area of food crops (Seed Change Ratio)	%	Districts: Routine M&E	Annual					
	1.5.3	Output of commercial seed producers operating in the country	MT	RDB	Annual					
	1.5.4	Nat. Seed policy and strategic plan coherent with COMESA Trade Harmonized Regulations	Docu-ment	ASWG	Single event		X			
Sub-Program 1.6. Livestock Development										
Improved infrastructure of livestock production	1.6.1	Total area of established functional feedlots	#	RAB	Annual					
Increased and sustainable production of livestock commodities	1.6.2	Production of milk	MT	Annual livestock survey	Annual	6.510	16.430	21.031	26.919	34.457
	1.6.3	Production of beef meat	MT	Annual livestock survey	Annual	2.816	4.745	60.734	7.774	9.951
	1.6.4	Production of goat meat	MT	Annual livestock survey	Annual					
	1.6.5	Production of pork meat	MT	Annual livestock survey	Annual					
	1.6.6	Production of poultry meat	MT	Annual livestock survey	Annual					
	1.6.7	Production of eggs	MT	Annual livestock survey	Annual	6.324				tbd

Results (Outcomes, Outputs)	#	Indicator	Unit	Data Source	Frequency	Baseline 2014 (or latest available data)	Target 2014/2015	Target 2015/2016	Target 2016/2017	Target 2017/2018
	1.6.8	Production of honey	MT	Annual livestock survey	Annual	3.221				8.695
	1.6.9	Production of fish	MT	Annual livestock survey	Annual	21.400				112.000
	1.6.10	Production of hides and skins	MT	Annual livestock survey	Annual	12.927	16.546	21.179	27.109	34.700
Improved productivity of the national livestock herd	1.6.11	% of improved breeds (dairy cows)	%	Annual livestock survey	Annual	15	21	24	27	30
	1.6.12	% of improved breeds (cattle)	%	Annual livestock survey	Annual	5	9	11	13	15
	1.6.13	% of improved breeds (goats)	%	Annual livestock survey	Annual	2	3	4	5	6
Improved health of the national livestock herd	1.6.14	% of cells with at least one appointed and trained animal-health-worker (AHW)	%	Districts: Routine M&E	Annual					
	1.6.15	% reduction of incidence of brucellosis	%	Annual livestock survey	Annual	5	3	3	2	1
	1.6.16	% reduction of mastis of cattle	%	Annual livestock survey	Annual	10	6	4	4	3
Improved effectiveness of public spending in the livestock sector	1.6.17	% of cattle held in intensive livestock keeping systems	%	Annual livestock survey	Every 2 years	65	75	80	85	90
	1.6.18	Validation of Integrated Livestock Policy and corresponding Strategy document	Docu-ment	ASWG	Single event					
Program 2: Research and Technology Transfer, Advisory Services and Professionalization of Farmers (Specific Objective N° 2: To support for farmers and their organisations the accessibility, affordability and efficient use of quality inputs and agricultural support services)										
Sub-Program 2.1: Research and Technology Transfer										
Increased availability of technologies to increase the productivity, quality and resilience of food	2.1.1	N° of released technologies (food crops): e.g. Vit A enriched casssava, QPM maize	#	RAB Routine Monitoring	Annual					
	2.1.2	N° of released technologies (export crops)	#	RAB Routine Monitoring	Annual					

Results (Outcomes, Outputs)	#	Indicator	Unit	Data Source	Frequency	Baseline 2014 (or latest available data)	Target 2014/2015	Target 2015/2016	Target 2016/2017	Target 2017/2018
and export crops	2.1.3	Average N° of Farmer Field Schools per Zone to promote agricultural technologies	#	RAB Routine Monitoring	Annual					
	2.1.4	Updated National Agriculture Resarch and Extension Policy and Strategic Plan	Docu-ment	ASWG	Single event					
Sub-Program 2.2: Extension and Proximity Services for Producers										
Improved provision of proximity- and quality extension services according to local demand	2.2.1	Ratio of farmer households per extension agent (village level)	Ratio	Districts: Routine M&E	Annual	1/839	1/743	1/695	1/647	1/600
	2.2.2	N° of villages with maintained agricultural demonstration plots	#	Districts: Routine M&E	Annual					14.837
	2.2.3	N° of farmers benefitting from FFS according to established standards (disaggregated by sex)	#	Districts: Routine M&E	Annual	83.000	589.800	843.200	1.096.600	1.350.000
	2.2.4	N° of farmer promoters trained and posted in Imidugudus	#	Districts: Routine M&E	Annual					
	2.2.5	N° of farmers supported through TWIGIRE in horticulture production and marketing	#	Districts: Routine M&E	Annual					
Sub-Program 2.3: Farmer Cooperatives and Organisations										
Improved capacity of agricultural cooperatives to link farmers efficiently to input- and output markets	2.3.1	% of farmers that are member of a cooperatives, association or self-help group	%	Annual survey of agr. cooperatives	Annual	23				50
	2.3.2	% of agricuture cooperatives/farmer organizations graded "A" or "B" (audit rating)	%	Annual survey of agr. cooperatives	Annual					
	2.3.3	% of farmers utilising cooperative services for input supplies and marketing	%	Annual survey of agr. cooperatives	Annual					50
	2.3.4	% of total production marketed through cooperatives/farmer organizations	%	Annual survey of agr. cooperatives	Annual	40	56	64	72	80
	2.3.5	% of cooperatives trained in management, organisation and entrepreneurial skills	%	Annual survey of agr. cooperatives	Annual					
	2.3.6	% of cooperatives trained in food safety, SPS and quality standards	%	Annual survey of agr. cooperatives	Annual					

Results (Outcomes, Outputs)	#	Indicator	Unit	Data Source	Frequency	Baseline 2014 (or latest available data)	Target 2014/2015	Target 2015/2016	Target 2016/2017	Target 2017/2018
Program 3: Value Chain Development and Private Sector Investment (Specific Objective: To improve agricultural value addition and value chain development through an enabling environment for agricultural investment and the business of smallholder farming)										
Increased market-oriented production and value-addition of Rwandan farmers	3.1	Value of marketed food crop production	USD	Annual agricult. household survey	Annual					
	3.2	Value of marketed export crop production	USD	Annual agricult. household survey	Annual					
	3.3	Value of marketed livestock production	USD	Annual agricult. household survey	Annual					
	3.4	Agricultural value addition strategy	Docu-ment	ASWG	Single event					
	3.5	SPS and food safety policy framework and action plan	Docu-ment	ASWG	Single event					
Sub-Program 3.1: Creating an Environment to Attract Private Investment, Encourage Entrepreneurship and Facilitate Market Access										
An improved enabling environment for doing agribusiness and the business of smallholder farming	3.1.1	Investor Framework / Multi-sector agri-business strategic plan	Docu-ment	ASWG	Single event					
	3.1.2	Amount of private investment (domestic and foreign) in agricultural value chains	USD	RDB	Annual	64.700.000				
	3.1.3	Economic, social and environmental impact analysis of agriculture investment (FDI)	Docu-ment	ASWG	Every 2 years					
	3.1.4	Private sector perception of the “doing agri-business” enabling environment (scale 0-5)	Docu-ment	World Bank	Annual					
	3.1.5	N° of SMEs involved in crop production (by input supply, agro-processing, marketing)	#	MINICOM	Annual					
	3.1.6	N° of SMEs involved in livestock production (by input supply, agro-processing, marketing)	#	MINICOM	Annual					
Increased contract farming that meets sustainability and "Decent Work" criteria	3.1.7	N° of farmers benefitting from contract farming arrangements (MINAGRI = 3rd party signatory)	#	Annual survey of agr. cooperatives	Annual					
	3.1.8	% of produce of group-based production marketed through contract farming	%	Annual survey of agr. cooperatives	Annual					

Results (Outcomes, Outputs)	#	Indicator	Unit	Data Source	Frequency	Baseline 2014 (or latest available data)	Target 2014/2015	Target 2015/2016	Target 2016/2017	Target 2017/2018
Sub-Program 3.2: Development of Priority Value Chains: Food Crops										
Increased value addition of food crops by producer organisations	3.2.1	% of group-based production organisations running agro-processing facilities	%	Annual survey of agr. cooperatives	Annual					
	3.2.2	% of produce of group-based staple crop production processed in own facilities	%	Annual survey of agr. cooperatives	Annual					
	3.2.3	Capacities of agro-processing installations for food/staple crops	MT	Annual survey of agr. cooperatives	Annual					
	3.2.4	Number of farmers trained in agro processing	#	Annual survey of agr. cooperatives	Annual					
Sub-Program 3.3: Development of Priority Value Chains: Export Crops										
Reduced 'trading across borders' costs	3.3.1	Unit cost of 1 kg airfreight	USD	MINICOM	Annual	2,2	-	-	-	1,6
Increased production, productivity and quality of traditional agricultural export commodities	3.3.2	Productivity of coffee production	kg/tree/ year	NAEB: Routine M&E	Annual	2,4	2,7	2,8	3	3,1
	3.3.3	% of coffee production that is fully washed	%	NAEB: Routine M&E	Annual	31,7	43,0	50,0	59,0	71,0
	3.3.4	Revenue of exports - Coffee	USD	NAEB: Routine M&E	Annual	55.204.349	76.200.000	85.100.000	95.100.000	1.043.000.000
	3.3.5	Productivity of Tea production	MT/ha/ year	NAEB: Routine M&E	Annual	6,8	7	7,5	8	9
	3.3.6	N° of ISO 2200-2005 certified tea factories	#	NAEB: Routine M&E	Annual	7				16
	3.3.7	Revenue of exports - Tea	USD	NAEB: Routine M&E	Annual	68.600.000	73.400.000	81.000.000	89.300.000	94.900.000
Increased production, productivity and quality of non-traditional agricultural export commodities	3.3.8	Production of Fruit and Vegetables	MT	Annual horticult. survey	Annual	39.940	43.427	46.570	49.930	52.381
	3.3.9	Export Revenues of Fruit and Vegetables	USD	Annual horticult. survey	Annual	11.881.119	12.881.119	18.181.119	21.881.119	25.438.000

Results (Outcomes, Outputs)	#	Indicator	Unit	Data Source	Frequency	Baseline 2014 (or latest available data)	Target 2014/2015	Target 2015/2016	Target 2016/2017	Target 2017/2018
	3.3.10	Production of Flowers	Ha	Annual horticult. survey	Annual	10	70	205	355	650
	3.3.11	Revenue of exports - Flowers	USD	Annual horticult. survey	Annual	9.800.000	14.000.000	65.000.000	102.900.000	104.187.000
	3.3.12	Quantity of Pyrethrum production: Diluted Pale Extract (PY 50%), in MT	MT	NAEB: Routine M&E	Annual	20	33	63	122	173
	3.3.13	Productivity of Pyrethrum production	kg/ha/ year	NAEB: Routine M&E	Annual	250	375	563	844	1.276
	3.3.14	Revenue of exports - Pyrethrum	USD	NAEB: Routine M&E	Annual	9.095.000	9.400.000	16.302.000	30.976.000	46.206.000
Increased developmental impact of agricultural export value chains	3.3.15	Value of cottage industry (silk, essential and plant oils, dried frut etc.) production	USD	Annual horticult. survey	Annual					
	3.3.16	% of rural households participating in cottage (local agricultural value-addition) industry	%	Annual horticult. survey	Annual					
	3.3.17	% of annual exports of F&V audited against social and environmental standards	%	NAEB: Routine M&E	Annual					
Sub-Program 3.4: Development of Priority Value Chains: Dairy and Meat										
Increased livestock export revenues	3.4.1	Export revenues for livestock products (milk, meat, eggs, honey, hides and skins)	USD	Annual livestock survey	Annual	16.700.000				
Increased livestock value chain infrastructure that meets international quality standards	3.4.2	Capacities of agro-processing installations for meat products	MT/ month	Districts: Routine M&E	Annual					
	3.4.3	N° of GlobalGAP and/or ISO 22000 certified abattoirs	#	Districts: Routine M&E	Annual	4	4	5	6	7
	3.4.4	N° of certified milk collection centres (MCCs)	#	Districts: Routine M&E	Annual	90	100	105	110	116
	3.4.5	Capacities of agro-processing installations for dairy products	MT/ month	Districts: Routine M&E	Annual					

Results (Outcomes, Outputs)	#	Indicator	Unit	Data Source	Frequency	Baseline 2014 (or latest available data)	Target 2014/2015	Target 2015/2016	Target 2016/2017	Target 2017/2018
	3.4.6	Capacities of agro-processing installations for other animal products (e.g. tanneries)	MT/ month	Districts: Routine M&E	Annual					
Sub-Program 3.5: Development of Priority Value Chains: Fisheries										
Increased addtion of value to fisheries value chains	3.5.1	Proportion of processed fish products in total production	%	Annual livestock survey	Annual	0				20
Sub-Program: 3.6. Development of Priority Value Chains: Apiculture										
Increzased capacities for quality management in market-oriented apiculture	3.6.1	Proportion of bee populations kept in modern beehives (as opposed to traditional apiaries)	%	Districts: Routine M&E	Annual	1				30
	3.6.2	Volume of total honey production captured by honey collection centers	#	Districts: Routine M&E	Annual	21				
	3.6.3	N° of companies and cooperatives with certified honey	#	Districts: Routine M&E	Annual	9				15

Results (Outcomes, Outputs)	#	Indicator	Unit	Data Source	Frequency	Baseline 2014 (or latest available data)	Target 2014/2015	Target 2015/2016	Target 2016/2017	Target 2017/2018
Sub-Program 3.7: Agricultural Finance										
Increased availability and improved utlization of financial services in the agriculture sector	3.7.1	Total loans allocated to agricultural sector (production and value addition)	USD	BNR	Annual					
	3.7.2	N° of business plans of agric. cooperatives / SMEs approved and financed by FI's	#	BNR	Annual					
	3.7.3	% of rural households benefitting from agricultural group credits:	%	BNR	Annual					
	3.7.4	Average agricultural credit per SACCO member (production and marketing credit)	RWF	BNR	Annual					
	3.7.5	N° of farmers benefitting from Warehouse Receipt System finance	#	East Africa Exchange	Annual					
	3.7.6	N° of farmers with crop and/or livestock insurance	#	MINAGRI/IFC	Annual	20.238	92.140	128.000	165.000	200.000
Sub-Program 3.8: Market-oriented Infrastructure										
Reduced post-harvest lossess in staple food crops	3.8.1	% of households accessing services for post-harvest treatment and storage of food crops	%	Annual agricult. household survey	Annual					
	3.8.2	N° of farmers participating in post-harvest treatment and storage training	#	Districts: Routine M&E	Annual					
	3.8.3	Postharvest losses (%) - Maize	%	Seasonal Survey	Annual	10.4%				5%
	3.8.4	Postharvest losses (%) - Beans	%	Seasonal Survey	Annual	27.4%				5%
	3.8.5	Postharvest losses (%) - Irish potatoes	%	Seasonal Survey	Annual					
	3.8.6	Postharvest losses (%) - Rice	%	Seasonal Survey	Annual	8.3%				5%
	3.8.7	Capacity of storage facilities (warehouses, metalic silos)	MT	Districts: Routine M&E	Annual					116.500

Results (Outcomes, Outputs)	#	Indicator	Unit	Data Source	Frequency	Baseline 2014 (or latest available data)	Target 2014/2015	Target 2015/2016	Target 2016/2017	Target 2017/2018
Reduced transport costs to market agricultural produce	3.8.8	Km of rural feeder roads rehabilitated according to the established standards	km	MINAGRI SPIU	Annual					2.550
	3.8.9	Km of rural feeder roads maintained according to the established standards	km	MINAGRI SPIU	Annual					
Program 4: Institutional Development and Agricultural Cross-Cutting Issues (Specific Objective N°4: To increase the instutional capacities at central- and local goverment to support the implementation of the sector strategy and ensure social and environmental sustainability)										
Sub-Program 4.1: Institutional Capacity Building										
Strengthened capa-cities of agricultural public servants	4.1.1	Capacity building action plan	Docu-ment	MINAGRI SPPC	Annual					
Sub-Program 4.2: Decentralisation in Agriculture										
Increased fiscal- and technical agrciultural decentralization	4.2.1	Total Volume of Public Spending on Agriculture by Districts	RWF	MINECOFIN, Budget	Annual					
	4.2.2	Progress report by RAB, NAEB and Districts on implementation of TWIGIRE	Docu-ment	ASWG	Annual	-	X	X	X	X
	4.2.3	Proportion of Districts with functional (accor-ding to mandate) agricultural committees	Docu-ment	RAB/Districts						
	4.2.4	Annual Assessment of the effectiveness and efficiency of agricultural decentralziation	Docu-ment	MIS (LODA, MINAGRI), IFMIS	Annual	-	X	X	X	X
Sub-Program 4.3: Legal and Regulatory Framework										
Increased efficiency in provision of agric financial services	4.3.1	Regulations and roles for agricultural finance clarified, established and communicated	Docu-ment	ASWG	Single event		X			
Increased control on dissemination of agrochemicals	4.3.2	Agro-chemical registration system (agro-dealers) established	Registrar	Audit	Single event					
Sub-Program 4.4: Agricultural Communication, Statistical Systems, M&E and Management Information Systems										
Strengthened infor-mation manage-ment for improved sector	4.4.1	MIS System is developed, and functional, and utilised across the sector	MIS	MINAGR SPPC Directorate	Single event		X			

Results (Outcomes, Outputs)	#	Indicator	Unit	Data Source	Frequency	Baseline 2014 (or latest available data)	Target 2014/2015	Target 2015/2016	Target 2016/2017	Target 2017/2018
for improved sector performance assessment	4.4.2	Integrated framework for agricultural surveys and statistics	Document	MINAGR SPPC Directorate	Single event					
Increased accessibility of quality information by farmers and other agricultural sector stakeholders	4.4.3	N° of new agriculture communication products - radio spots	#	CICA	Annual					
	4.4.4	N° of newly released crop growing protocols translated into Kinyarwanda	#	CICA	Annual					
	4.4.5	Average monthly users of MINAGRI/CICA website (including E-Soko)	Retrieval	CICA	Monthly					
Sub-Program 4.5: Gender and Youth in Agriculture										
Youth integrated within agricultural growth strategies	4.5.1	A strategy to ensure the inclusion of youth in Rwanda's agriculture development	Document	ASWG	Single event					
	4.5.2	% of youth enrolled in agricultural self-help groups, cooperatives and associations	%	Annual survey of agr. cooperatives	Annual					
Women integrated within agricultural growth strategies	4.5.3	% of women enrolled in agricultural self-help groups, cooperatives or associations	%	Annual survey of agr. cooperatives	Annual					
Sub-Program 4.6: Environmental Mainstreaming in Agriculture										
Agro-environmental performance ass-essment improved	4.6.1	Joint action plan (MINAGRI-REMA)	Document	ASWG	Annual	No Assessment	X	X	X	X
Increased protec-tion of organic production systems	4.6.2	Regulations for organic agriculture, pesticide- and lime use approved and communicated	Document	ASWG	Single event					

Results (Outcomes, Outputs)	#	Indicator	Unit	Data Source	Frequency	Baseline 2014 (or latest available data)	Target 2014/2015	Target 2015/2016	Target 2016/2017	Target 2017/2018
Increased diversity and sustanability of production systems through agroforestry	4.6.3	Total plantlet production of tree nurseries (including fruit- and (agro-)forestry species)	%	Districts: Routine M&E	Annual					
	4.6.4	Proportion of cultivable agricultural land covered by multi- or single-purpose trees.	Ha	Districts: Routine M&E	Annual					
Improved protection of watershed areas	4.6.5	Total forestry area in watershed catchment basins	Ha	RNRA	Annual					
Sub-Program 4.7: Nutrition and Household Vulnerability										
Increased availa-bility and afforda-bility of animal protein for vulner-able households	4.7.1	Average animal protein production (g/capita/day) in % of "safe consumption	%	Annual livestock survey	Annual	14,2		18,0		
	4.7.2	Number of school children benefiting from “One cup of milk programme”	#	Districts: Routine M&E	Annual	84.700	120.000	150.000	175.000	200.000
Sustainaned preparednees for food emergencies	4.7.3	MT of maize and beans existing as food reserve	MT	MINAGRI	Annual	15.909	15.000	20.000	25.000	30.000
Increased house-hold capacities for dietary diversification and food utilization	4.7.4	% of households (Ubudehe 1 and 2) with permanently used kitchen gardens	%	Districts: Routine M&E	Annual	57				95
	4.7.5	N° of participants in trainings on kitchen gardens, food transformation and nutrition	#	Districts: Routine M&E	Annual					
Increased availability of micro-nutrient enriched staple food staffs	4.7.6	Production area of iron-fortified bean seeds	Ha	Districts: Routine M&E	Annual					
	4.7.7	Production area of vitamin A-enriched -sweet potatoes	Ha	Districts: Routine M&E	Annual					

8 Key outcomes, outputs and strategic considerations of the 24 PSTA-3 Sub-Programs

The following chapter describes in detail for each of the PSTA-3 Sub-Programs the key indicators (sourced from the results framework) and the corresponding key outputs costed in the presented Agriculture Sector Investment Plan.

Sub-Program 1.1: Soil Conservation and Land Husbandry

RESULTS-FRAMEWORK INDICATORS
- "Efficiency of soil protection infrastructure (= maintenance of terracing structure)"
- Ha of land developed with progressive terraces, based on agreed standards
- Ha of land developed with bench/radical terraces, based on agreed standards
- Multi-sectoral soil conservation and land husbandry policy and strategic plan

COSTED OUPUTS (PUBLIC SECTOR)
- Progressive Terrace Construction
- Progressive Terrace Maintenance
- Radical Terrace Construction
- Radical Terrace Maintenance
- Assessment of effectiveness of land conservation infrastructure
- Fertiliser recommendations for types of soils and crops
- Decision support tool for soil erosion monitoring and control
- Adapted agro-forestry tree species increased
- Updated soil conservation and land husbandry policy and strategy

Costed Ouputs (Private Sector)
- Rehabilitation and equipping of soil and plant testing laboratories

Improvements in progressive terraces, which have been maintained traditionally for many years, are much less expensive and quicker to implement than radical terracing. Although radical terracing does result in land capable of producing higher yields, and it provides quick injections of cash into the rural economy, its cost-effectiveness is not assured and needs to be compared with alternatives under the present ASIP-2. It will be pursued to share costs for terracing increasingly with farmers and ensure that annually the established soil conservation infrastructure is mapped in terms of coverage and assessed in its effectiveness. It is further planned to rehabilitate, equip and expand soil testing laboratories through PPP arrangements, to develop a decision support tool for soil erosion monitoring and control and to update Rwanda's soil conservation and land husbandry policy and strategy.

Sub-Program 1.2: Irrigation and Water Management

RESULTS-FRAMEWORK INDICATORS
- Proportion of households practicing irrigation
- Hectares developed for hillside irrigation
- Hectares developed for marshland irrigation
- Hectares developed for small scale irrigation
- % of WUA trained in flood control, O&M and irrigation management
- N° of farmers enrolled in WUA that are legally established and pay their water user fees

- National Irrigation policy and strategic plan

COSTED OUTPUTS (PUBLIC SECTOR)

- Approved National Irrigation Policy and Strategy
- Approved National Irrigation Law
- Established National Irrigation Board
- Hillside Irrigation Construction
- Hillside Irrigation Maintenance
- Marshland Irrigation Construction
- Marshland Irrigation Maintenance
- Small-scale Irrigation Construction
- Small-scale Irrigation Maintenance
- Increased numbers of Irrigation Technicians
- Increased hectares of irrigation schemes rehabilitated
- WUOs established and functional
- Transferred schemes to rural communities

COSTED OUTPUTS (PRIVATE SECTOR)

- Hillside Irrigation Construction
- Hillside Irrigation Maintenance
- Marshland Irrigation Construction
- Marshland Irrigation Maintenance

Hillside irrigation is an expensive form of infrastructure (at an average cost of USD 15,000 per hectare) and needs to be reserved for high-value crops and compared with other, lower cost methods of irrigation. The development of marshland irrigation has provided cash income for farmers and taken some of the pressure for growing food crops off of the hillsides. However, marshlands where this can be done at reasonable cost, are limited. As less suitable marshlands are developed, the cost is rising. Investment proposals under the 2nd ASIP are guided by pursuing lower costs and more efficient irrigation techniques for higher value crops. Government support to farmers investing in minor irrigation technologies of their choice can expand irrigated area faster and at less cost than if government continues to design all schemes and pay all costs. **.** Increased land will be developed with small-scale irrigation, alternative models for Water User Organisations (WUOs) established and around 80 irrigation schemes (10 in hillsides, 70 in marshlands) transferred to their operation by rural communities.

Sub-Program 1.3: Agricultural Mechanisation

RESULTS-FRAMEWORK INDICATORS

- Proportion of cultivable land with mechanized land cultivation
- N° of cooperatives that offer mechanization (land cultivation) services
- N° of implements utilized for mechanised farming
- National Agriculture Mechanization policy and strategic plan

COSTED OUTPUTS (PUBLIC SECTOR)

- Developed Agricultural Mechanisation Policy
- Tractors purchased
- Power Tillers purchased
- Attachments purchased
- Planting Machines purchased

- Crop Treatment Machines purchased
- Harvesters purchased
- Post Harvesting Machines purchased
- Agro-processing Machines purchased
- Agricultural Machinery Maintenance
- National Agricultural Mechanisation Centre established
- Training farmers and technicians in mechanisation

COSTED OUTPUTS (PRIVATE SECTOR)
- Establishment of Machinery Repair Workshops
- Establishment of local distribution selling point of farm equipment
- Power tiller assembly plant

Rwanda has a low rate of use of agricultural mechanisation and almost all machinery is imported. PSTA-3 sets a target for the rate of use of machinery in farm operations to more than double from 12% in 2012/13 to 25% in 2017/18. The provision of agricultural machinery needs to be appropriate for use by women, who undertake most farming activities. Innovative mechanisms of shared use need to be developed to ensure that the poor have access to agricultural machinery. MINAGRI will invest in agricultural mechanisation - but at a declining rate. The provision of agricultural machinery will progressively shift to the private sector. Investment by the private sector will be encouraged and facilitated to establish machinery repair workshops and local machinery distribution- and selling points in each district. The establishment of a power tiller assembly plant is envisioned to take place under a PPP arrangement. Maintenance of agricultural machinery is also an opportunity for the development of cottage industries that can be run by the poor. The possibilities for channelling public spending for mechanization into subsidies to farmers, buying equipment or investing in minor irrigation systems will be further analysed. Subsidizing farmers to buy machinery of their choice will reduce the risk to buy the wrong equipment. A lot of machinery is expected to be bought by smallholder farmers to sell services to neighbours and even travel across country to satisfy seasonal demands in other districts.

Sub-Program 1.4: Inputs to Improve Soil Fertility and Management

RESULTS-FRAMEWORK INDICATORS
- Kg of inorganic fertilizer used per ha per year
- % of farmers utilising fertilizer for strategic crops according to recommended standards
- MT of inorganic fertilizers imported
- % of agricultural households utilising registered agro-dealers
- National Fertilizer Policy and regulatory framework

COSTED OUTPUTS (PUBLIC SECTOR)
- Fertiliser policy in place
- Fertiliser regulatory framework developed
- Train fertiliser distributors and agro-dealers
- Train farmers in fertiliser and input use
- Farmers access smart subsidies for lime and fertiliser
- Lime producers access subsidies

COSTED OUTPUTS (PRIVATE SECTOR)

- Establish additional fertiliser storage capacity
- Establish a fertiliser blending plant

Increased fertiliser use by farmers is a principal factor behind the increase in agricultural productivity over the last decade. PSTA-3 sets a target for the rate of fertiliser use to increase to 45kg/ha/year by 2017/18. Increased uptake by farmers will be promoted through demonstration plots and training. The private sector will increasingly be involved in the marketing and distribution of fertiliser and other agricultural inputs. Fertiliser subsidies will be reduced. Estimates of economic rates of return are secondary matters for input subsidies – if inputs are available, farmers will buy if they see a return. Subsidies can make it easier for farmers to buy, but should not be so large or so targeted to specific technologies that they deflect farmers' decisions according to economic returns. Once farmer demand and market supply are established, government can cut subsidies. Fertiliser and lime subsidies are scheduled to be phased out by 2017/18. The Imports of fertiliser by the private sector, the uptake of loans by distributors and agro-dealers and the access of farmers to credit to purchase soil inputs will be increased. Training will be provided on soil inputs and logistics management to agro-dealers to increase the number of accredited dealers. Private sector investment in additional fertiliser storage capacity in each district and in a fertiliser blending plant will be pursued. Farmers will be trained to increase their use of inorganic and organic fertiliser and lime. Lime producing cooperatives will be organized to improve the production and distribution of lime. A fertiliser policy and regulatory framework will be developed.

Sub-Program 1.5: Seed Development

RESULTS-FRAMEWORK INDICATORS

- % of farmers utilizing improved and certified seeds for strategic crops
- % of area planted with certified seed to total area of food crops (Seed Change Ratio)
- Output of commercial seed producers operating in the country
- Nat. Seed policy and strategic plan coherent with COMESA Trade Harmonized Regulations

COSTED OUTPUTS (PUBLIC SECTOR)

- Develop a seed policy, strategy and action plan
- Train farmers to use improved seed
- Government decreases seeds subsidy
- Establish a Seeds Coordinating Unit
- Employ additional seed inspectors
- Establish the National Seeds Laboratory

COSTED OUTPUTS (PRIVATE SECTOR)

- Establish a seed production and processing plant

Historically, most yield growth has come from genetic improvement. If Rwandan farmers do not see at least 3-6 new varieties each year for major and minor field crops, the contribution of genetics to yield increases is unlikely to reach 1 - 2%/year. Introduction of enough new varieties to support rapid growth in crop yields can be achieved with private companies competing to identify and introduce varieties from foreign breeding, with RALIS enforcing phyto-sanitary controls on imported seed. Through the COMESA Seed Trade Harmonization process, the Government of Rwanda has agreed to the principle that

private companies will be allowed to introduce new varieties registered in any two COMESA countries and entered into a COMESA variety catalogue. Increased quantity and quality of pre-basic and basic seed production by the private sector for profitable crops (rice, maize, Irish potato) is expected as well as an increased production of pre-basic and basic seed for non-profitable food crops by the public sector. Private investment to increase the number of seed growers and seed production companies will be pursued. The establishment of a National Seed Laboratory and Seed Certification Service is foreseen and an increased in number of seed inspectors. It is further foreseen that the seed subsidy will be phased-out by 2017/18. Demonstration plots will be established and farmer field days held to promote the use of high yielding varieties of seeds.

Sub-Program 1.6. Livestock Development

RESULTS-FRAMEWORK INDICATORS

- Total area of established functional feedlots
- Production of milk
- Production of beef meat
- Production of goat meat
- Production of pork meat
- Production of poultry meat
- Production of eggs
- Production of honey
- Production of fish
- Production of hides and skins
- % of improved breeds (dairy cows)
- % of improved breeds (cattle)
- % of improved breeds (goats)
- % of cells with at least one appointed and trained animal-health-worker (AHW)
- % reduction of incidence of brucellosis
- % reduction of mastis of cattle
- % of cattle held in intensive livestock keeping systems
- Validation of Integrated Livestock Policy and corresponding Strategy document

COSTED OUTPUTS (PUBLIC SECTOR)

- Livestock policy developed
- Milk production increased
- Girinka Dairy Cow Programme
- Meat production increased
- Fish production increased
- Honey production increased
- Honey collection centres operational
- Increase production of hides and skins

COSTED OUTPUTS (PRIVATE SECTOR)

- Feedlots installed and operational
- Fingerling production centres installed
- Hatcheries installed and operational
- MCCs built equipped and renovated

Livestock intensification through greater use of corralling, crop residues, agricultural by-products, and assistance in the establishment of feed mills is vital to the expansion of this

sector, given the shortage of land available for pasture or forage. However, as long as there is available pasture, forage, and crop residues without good alternative uses, it is economically profitable to convert these low cost resources to calories and proteins in the milk and meat of animal ruminants. The introduction of livestock genetics through private import (with RALIS blocking introduction of livestock diseases) is also key for faster productivity growth in the livestock sector.. Increased production (milk, meat, eggs, fish, honey, hides and skins) will be pursued through improved organisations and training of breeders, improved animal nutrition and veterinary services and infrastructure. Private sector investment is expected in feedlots, collection- and production (fingerlings), hatcheries) centres. The development of a comprehensive and integrated national livestock policy and strategy is planned.

Sub-Program 2.1: Research and Technology Transfer

RESULTS-FRAMEWORK INDICATORS

- "N° of released technologies (food crops):
- e.g. Vit A enriched casssava, QPM maize "
- "N° of released technologies
- (export crops)"
- Average N° of Farmer Field Schools per Zone to promote agricultural technologies
- Updated National Agriculture Resarch and Extension Policy and Strategic Plan

COSTED OUTPUTS (PUBLIC SECTOR)

- MINAGRI crop based research programmes
- MINAGRI livestock based research programmes
- MINAGRI agro-forestry based research programmes
- MINAGRI value chain research

Over 5 years Rwanda could move decisively to establish world class capabilities in agricultural science. This involves regulations, e.g. allowing a modern seed industry to develop. A strong agricultural faculty - managing public research along with degree training – will be another key element. RAB and NAEB research priorities will be assessed in relation to their links with poverty reduction and economic profitability. Agricultural education will be strengthened by cultivating links with international universities (e.g. Wageningen in the Netherlands). Laboratories will be upgraded for phyto-sanitary analyses and for soil testing. Publically funded research programs will focus on improved varieties of staple food crops, improved livestock breeds, pasture agronomy, agro-forestry tree varieties to combat soil erosion and increase on-farm income, and staff training in research skills and techniques. Farmer demonstration plots will be established and supported by local research stations to demonstrate higher productivity from improved varieties. Jointly funded research programs with the private sector will concentrate on varieties for high value crops (coffee, tea, horticulture), post-harvest storage and processing technology, and crop and livestock value chain analysis. An improved collaboration for joint research programs with international research organisations and universities will be pursued.

Sub-Program 2.2: Extension and Proximity Services for Producers

RESULTS-FRAMEWORK INDICATORS

- Ratio of farmer households per extension agent (village level)
- N° of villages with maintained agricultural demonstration plots

- N° of farmers benefitting from FFS according to established standards (disaggregated by sex)
- N° of farmer promoters trained and posted in Imidugudus
- N° of farmers supported through TWIGIRE in horticulture production and marketing

COSTED OUTPUTS (PUBLIC SECTOR)
- Development of National Extension Policy
- Expansion of Farmer Field Schools
- Expansion and support to Farmer Promoters
- Expansion and support to Agricultural Committees

COSTED OUPUTS (PRIVATE SECTOR)
- Provision of extension services for high value crops

MINAGRI has developed in 2014 a new Farmer-to-Farmer Extension System (TWIGIRE), a decentralized approach to empower districts and devolve decision-making management and implementation of agricultural activities to the village level. Farmers are organized into groups of 15- 20 farmers. Farmer promoters are selected at one per village and trained in practical and soft skills. Facilitators who are trained through the FFS approach are mapped out at cell level. Agriculture committees are established at all levels. The National Extension Policy will be updated, including a costed strategic implementation plan for TWIGRE. A key activity will be the training of Farmer-Field School (FFS) facilitators. It is envisaged to increase the number of farmers reached by FFS groups from 83,000 in 2012/13 to 1,350,000 in 2017/18 and the number of village-level promoters trained in sustainable agricultural intensification from 11,127 in 2012/13 to 14,837 in 2017/18. It is further planned to establish Agricultural at the level of all Districts (30) and Sectors (416). Private sector investment will be needed and facilitated in particular for the provision of extension services for high value export crops, including coffee, tea, pyrethrum and horticulture.

Sub-Program 2.3: Farmer Cooperatives and Organisations

RESULTS-FRAMEWORK INDICATORS
- % of farmers that are member of a cooperatives, association or self-help group
- % of agriculture cooperatives/farmer organizations graded "A" or "B" (audit rating)
- % of farmers utilising cooperative services for input supplies and marketing
- % of total production marketed through cooperatives/farmer organizations
- % of cooperatives trained in management, organisation and entrepreneurial skills
- % of cooperatives trained in food safety, SPS and quality standards

COSTED OUTPUTS (PUBLIC SECTOR)
- Expansion and support to farmer cooperatives
- Training and capacity building of farmer cooperatives

Rwanda's 2007 Agricultural Land Use Consolidation Decree (ALUCD) provides for cooperative farming, facilitated contract farming, and joint corporate farming. Government policy is to support and increase rapidly the establishment and coverage of agricultural cooperatives. For example for horticulture, led by NAEB and RCA, this effort has been highly successful. Over 90% of the horticultural cooperatives and associations enumerated in a 2014 country-wide census had been established since 2000 and more than half since 2010. A strong cooperative of contracted farmers is a vital component of contract farming involving small-scale producers. It will be necessary for cooperatives to be involved in

most contract farming arrangements in Rwanda, because of the exceptionally small size of farms that means large numbers of farmers are likely to be supplying the buying enterprise. Policy will be to encourage existing and new cooperatives to engage in contract farming arrangements and to support and strengthen the ability of cooperatives to perform their functions within such arrangements effectively. NAEB, RAB, MINICOM and the Rwanda Cooperative Agency (RCA) will support the management capacities of cooperatives to ensure that they can participate effectively and on equal terms with the buying enterprise. It is further envisaged that an increasing proportion of cooperatives will procure farm inputs for their members and access agricultural finance through improved business planning skills.

Sub-Program 3.1: Creating an Environment to Attract Private Investment, Encourage Entrepreneurship and Facilitate Market Access

RESULTS-FRAMEWORK INDICATORS

- Investor Framework / Multi-sector agri-business strategic plan
- Amount of private investment (domestic and foreign) in agricultural value chains
- Economic, social and environmental impact analysis of agriculture investment (FDI)
- Private sector perception of the "doing agri-business" enabling environment (scale 0-5)
- N° of SMEs involved in crop production (by input supply, agro-processing, marketing)
- N° of SMEs involved in livestock production (by input supply, agro-processing, marketing)
- N° of farmers benefitting from contract farming arrangements (MINAGRI = 3rd party signatory)
- % of produce of group-based production marketed through contract farming

COSTED OUTPUTS (PUBLIC SECTOR)

- Training of entrepreneurs
- Creation of a farm management unit to facilitate private sector development
- Finalise the PPP law
- Establish the Agriculture Investment Task Force
- Develop an export certification programme with RBS
- Develop a programme to protect organic certification
- Improve SPS measures and train exporters
- Increase airport cold storage space
- Marketing and logistics studies

The fact that the enabling environment for private business is supportive suggests that one should look elsewhere to see why the volume of agricultural FDI is still low. For example, although Rwanda ranks high in general in the Doing Business Report, it is ranked low in the ease of trading across borders. Given the importance of trade for Rwanda in the future, it is essential to improve this performance which will require continuing the efforts with neighbouring countries to ease the requirements, lower the cost, and speed up the time for formal cross-border trade. The Investor Framework which MINAGRI will develop with support from USAID and in partnership with RDB, other concerned governmental agencies (e.g. MININFRA, RRA, MINIRENA, MINALOC) and representatives of the private sector will tackle all bottlenecks required to translate Rwanda's overall conducive doing business environment into increased agricultural investment, trade and entrepreneurship in both export-oriented and food-crop value chains. Capacity building under this sub-program will strengthen different private sector driven mechanisms for bulking up production, including contract farming, satellite farming and land leasing. MINAGRI's Agriculture Investment Task

Force will facilitate agri-business investment, training for the private sector and provide support to identify and/or strengthen PPPs (e.g. airport cold storage space). A Catalytic Fund is envisaged to provide venture capital for new agri-business enterprises and innovation in new product markets. Program-type support will strengthen capacities for export certification, increase awareness of export standards amongst farmers and the private sector, protect existing organic certification and encourage the private sector to pursue organic- and other certification schemes for which a business case exist. Producer organizations and agricultural SME's will be trained in entrepreneurial skills and business plan development (see also Sub-Programs 2.3 and 3.7).

Sub-Program 3.2: Development of Priority Value Chains: Food Crops

RESULTS-FRAMEWORK INDICATORS

- % of group-based production organisations running agro-processing facilities
- % of produce of group-based staple crop production processed in own facilities
- Capacities of agro-processing installations for food/staple crops
- Number of farmers trained in agro processing

COSTED OUTPUTS (PUBLIC SECTOR)

- Training of food crop entrepreneurs
- Banana market support and facilitation
- Wheat market support and facilitation
- Maize market support and facilitation
- Rice market support and facilitation
- Irish potato market support and facilitation
- Cassava market support and facilitation
- Beans market support and facilitation
- Food crop production and marketing strategies

COSTED OUTPUTS (PRIVATE SECTOR)

- Upgrade of maize milling capacity
- Rice milling plant
- Establishment of cassava plantations
- Cassava processing plants
- Establishment of banana plantations
- Banana wine processing plant
- Beans processing and canning
- Soybean processing
- Irish potato plant established

Staple food crops have great importance for food security and nutrition. There are also possibilities for regional trade for some food staples Better quality planting materials provided to banana growers and a market study will be commissioned dried apple bananas and chips. Banana disease control programmes, extension and research will be strengthened. Contract farming relationships will be facilitated between processors and farmers. Grant mechanisms will be utilized to endow cooperatives with appropriate post-harvest facilities, including storage. The number of farmers trained in storage and agro-processing will be up-scaled country-wide to reinforce the impact of TWIGIRE. Private sector investment will be pursued to upgrade maize roller mill capacity to produce finer grade maize which has export potential and for building up rice milling capacities. An increased

number of potato growers will be sensitized and trained to register and become seed growers. Public and private aeroponic screen houses will be constructed and rehabilitated and private sector investment facilitated for Irish Potato and Cassava processing plants. Soya Bean production will be promoted under the CIP and research strengthened (see also Sub-Program 2.1) to introduce new bean varieties appropriate for each agro ecological zone.

Sub-Program 3.3: Development of Priority Value Chains: Export Crops

RESULTS-FRAMEWORK INDICATORS

- Unit cost of 1 kg airfreight
- Productivity of coffee production
- % of coffee production that is fully washed
- Revenue of exports - Coffee
- Productivity of Tea production
- N° of ISO 2200-2005 certified tea factories
- Revenue of exports - Tea
- Production of Fruit and Vegetables
- Export Revenues of Fruit and Vegetables
- Production of Flowers
- Revenue of exports - Flowers
- Quantity of Pyrethrum production: Diluted Pale Extract (PY 50%), in MT
- Productivity of Pyrethrum production
- Revenue of exports - Pyrethrum
- Value of cottage industry (silk, essential and plant oils, dried frut etc.) production
- % of rural households participating in cottage (local agricultural value-addition) industry
- % of annual exports of F&V audited against social and environmental standards

COSTED OUTPUTS (PUBLIC SECTOR)

- Training of export crop entrepreneurs
- Coffee market support and facilitation
- Tea market support and facilitation
- Pyrethrum market support and facilitation
- Horticulture and floriculture market support and facilitation
- Sericulture market support and facilitation
- Export crop production and marketing strategies

COSTED OUTPUTS (PRIVATE SECTOR)

- Establishment of coffee plantations
- Coffee hulling plant
- Coffee washing stations
- Coffee roasting plants
- Expansion of tea estates
- Establishment of tea estates and factories
- Tea bag processing
- Floriculture estates
- Horticulture estates
- Essential oils production
- Macadamia nuts
- Sericulture production
- Establishment of an avocado estate
- Sugar plantation and mill
- Stevia processing

- Fruit juice processing plant
- Pineapple processing plant
- Expansion of chilli production
- Expansion of passion fruit production
- Expansion of pyrethrum production
- Gishari Flower Park
- Kigali Wholesale Market

Given transport costs to import fertilizer and export produce, Rwanda has little opportunity to export bulk commodities out of the region. Programs to promote new high value exports (horticulture, herbs, spices, essential oils) will offer modest support to companies demonstrating an ability to export products that fit the definition (high value, non-perishable). Overall, value chain logistics will be strengthened to ensure shipping space is fully used and that appropriate packing methods are used to maintain product quality in shipping. The program currently in place to replace existing coffee washing stations with those that are smaller will be continued and strengthened until these smaller stations are available to all coffee producers. TWIGIRE/FFS will be utilized to improve on-farm management of coffee crops through pest management, fertiliser application, high yielding varieties and the potential for intercropping. Private sector investment will be required for coffee hulling and roasting plants and washing stations. An appellation program will be developed to link unique taste profile to specific growing areas. Cooperatives will be assisted in certification processes. Tea yields and quality will be improved by expanding FFS (TWIGIRE) to tea producing areas. Private sector investment will be promoted towards expanding the area under tea cultivation and tea processing/packaging facilities. Support to the Pyrethrum value chain will involve SOPYRWA and SACCOs to develop contract farming and facilitate loans and also the measures to increase the quality of the distillates to increase market share and revenue. Horticulture value chains with export potential will be developed based on research into niche markets, improved planting material, suitability of agro-climatic zones and investor interest. Private sector investment will be needed (PPP) for the Kigali Wholesale Market and the Flower Park. Private sector investment in processing facilities will also be promoted in the value chains of macadamia, avocado estates, pineapple and silk and for the expansion of the production of chilli and passion fruit.

Sub-Program 3.4: Development of Priority Value Chains: Dairy and Meat

RESULTS-FRAMEWORK INDICATORS

- Export revenues for livestock products (milk, meat, eggs, honey, hides and skins)
- Capacities of agro-processing installations for meat products
- N° of GlobalGAP and/or ISO 22000 certified abattoirs
- N° of certified milk collection centres (MCCs)
- Capacities of agro-processing installations for dairy products
- Capacities of agro-processing installations for other animal products (e.g. tanneries)

COSTED OUTPUTS (PUBLIC SECTOR)

- Training of dairy and meat entrepreneurs
- Dairy market support and facilitation
- Meat market support and facilitation
- Dairy and meat production and marketing strategies

COSTED OUTPUTS (PRIVATE SECTOR)

- Animal feeds plant established
- Establishment of modern meat processing plants
- Establishment of modern tanneries
- Dairy processing plant

Dairy and meat production both increased significantly over the last decade. There remains however a need to improve product quality and to invest in modernised processing facilities. Dairy markets will be promoted through raising consumer awareness of milk consumption benefits, making milk more consistently available and producing innovative products. Milk quality will be improved through modernising the supply chain, including support to MCCs to increase their utilisation and productivity and linking MCCs to cooperatives and processors. The involvement of all concerned stakeholders in the dairy sub-sector within the Rwanda National Dairy Board will be pursued. Private sector investment will be needed to modernise the meat supply chain through rehabilitating and establishing new abattoirs and meat processing facilities under PPP arrangements as well as an animal feeds factory. Sanitary control will be improved to develop hygienic slaughterhouse facilities. Technical staff will be trained in applying the guidelines for good hygiene practices.

Sub-Program 3.5: Development of Priority Value Chains: Fisheries

RESULTS-FRAMEWORK INDICATORS
- Proportion of processed fish products in total production

COSTED OUTPUTS (PUBLIC SECTOR)
- Training of fishery entrepreneurs
- Fish market support and facilitation
- Fish production and marketing strategies

COSTED OUTPUTS (PRIVATE SECTOR)
- Fish farming

Rwanda has many lakes and rivers that can potentially provide a rich harvest of fish. The problem in recent years has been the over-exploitation of this resource and the need for fish farmers to apply more sustainable harvesting techniques. Cage and tank fish farming is possible on many sites and provide investment opportunities for the private sector. Private sector investment will be needed for cage and tank aquaculture and an envisaged PPP arrangement for an aquaculture park. The feasibility of processing fish waste into animal feeds and fertilisers investigated. Training of fishery entrepreneurs in production, post-harvest handling, and marketing will help to raise the quality of fish production. The same applies to the strengthening of inspection capacities to verify the compliance with harvesting-, packaging- and transportation standards. The proportion of processed fish versus the total production is expected to have increased significantly by 2018.

Sub-Program: 3.6. Development of Priority Value Chains: Apiculture

RESULTS-FRAMEWORK INDICATORS
- Proportion of bee populations kept in modern beehives (as opposed to traditional apiaries)
- Volume of total honey production captured by honey collection centres
- N° of companies and cooperatives with certified honey

COSTED OUTPUTS (PUBLIC SECTOR)
- Training of apiculture entrepreneurs
- Honey market support and facilitation
- Honey production and marketing strategies

COSTED OUTPUTS (PRIVATE SECTOR)
- Honey production

Honey production is as yet on a small scale but provides an important source of household income for farmers on marginal land for agriculture, especially in forested areas in the south-west of the country. It is planned to increase honey production through the training of apiculture entrepreneurs and farmer groups and also facilitate their access to (and the importation of) honey processing equipment. Demonstration apiaries will be established to promote honey production and improved management practices. Cooperative members will be trained in quality standards and hygiene practices. An inspection programme is envisaged to ensure that quality standards are met and national and international quality certification obtained, including organic certification. The use of modern beehives, the volume of honey captured by collection centres and the number of cooperatives /SMEs with certified honey are expected to have increased significantly by 2018.

Sub-Program 3.7: Agricultural Finance

RESULTS-FRAMEWORK INDICATORS
- Total loans allocated to agricultural sector (production and value addition)
- N° of business plans of agric. cooperatives / SMEs approved and financed by FI's
- % of rural households benefitting from agricultural group credits:
- Average agricultural credit per SACCO member (production and marketing credit)
- N° of farmers benefitting from Warehouse Receipt System finance
- N° of farmers with crop and/or livestock insurance

COSTED OUTPUTS (PUBLIC SECTOR)
- Agricultural Cooperative Bank established
- Creation of new SACCOs in new sectors
- Improve access to agricultural finance and insurance
- Catalytic fund established

The availability of rural finance has increased in recent years, notably through growth in the network of Savings and Credit Cooperatives (SACCOs) which are now present in all districts and in many sectors. The SACCO network will further expand to ensure farmers are close to a source of finance. SACCOs at the district level consolidated under an Agricultural Cooperative Bank as an apex organisation that will strengthen SACCO organisation, re-financing capacities and reduce risk. The expansion of the SACCO network into new administrative sectors is required. Warehouse credit schemes will be expanded in close coordination with the East Africa Exchange and allow farmers to obtain financing based on harvests stored in certified facilities (expanding the traded crops beyond maize and beans). Value chain (triangular) finance facilitation will involve a financial institution and two agents in the sector, such as a cooperative and an exporter. Overall it is expected that agricultural finance for production and value addition, the N° of bankable business plans of agricultural cooperatives and SMEs, the N° of households benefitting from agricultural group credits and

the N° of households covered through crop- and/or livestock insurance schemes will have increased significantly by 2018.

Sub-Program 3.8: Market-oriented Infrastructure

RESULTS-FRAMEWORK INDICATORS

- % of households accessing services for post-harvest treatment and storage of food crops
- N° of farmers participating in post-harvest treatment and storage training
- Postharvest losses (%) - Maize
- Postharvest losses (%) - Beans
- Postharvest losses (%) - Irish potatoes
- Postharvest losses (%) - Rice
- Capacity of storage facilities (warehouses, metallic silos)
- Km of rural feeder roads rehabilitated according to the established standards
- Km of rural feeder roads maintained according to the established standards

COSTED OUTPUTS (PUBLIC SECTOR)

- Expanded storage facilities
- Post-harvest equipment distributed to farmers
- Drying grounds constructed
- Rural feeder roads constructed
- Rural feeder roads maintained

COSTED OUTPUTS (PRIVATE SECTOR)

- Expanded storage and post-harvest facilities

Good rural roads and sufficient storage, warehousing and processing facilities are vital for minimising post-harvest losses. The 2013 Post Harvest Loss Survey found significant losses and also showed high returns to training farmers in loss prevention. Both the public and private sector are expected to invest in increased storage and warehousing capacity. MINAGRI in close coordination with RTDA will continue its programme of rural feeder rehabilitation and maintenance (in exceptional cases also construction), including rural bridges. Private sector investment will be needed for expanding storage capacities and warehouse receipt systems respectively. Districts will be key agencies to ensure the efficient and effective spending on feeder roads, based on District-level master plans but they will also continue their spending on rural market- and post-harvest (e.g. drying grounds) basic infrastructure. Overall it is expected that post-harvest losses of staple crops (especially maize, beans, rice, Irish potatoes) will drop significantly during the ASIP-2 period, crosses and that at the same time improved market access and market infrastructure will allow farmers to raise the marketed share and value of their production commensurate to the annual growth targets established under EDPRS-2 and PSTA-3.

Sub-Program 4.1: Institutional Capacity Building

RESULTS-FRAMEWORK INDICATORS

- Capacity building action plan

COSTED OUTPUTS (PUBLIC SECTOR)

- Comprehensive human resource needs assessment and development plan
- Approved capacity building action plan

- Capacity of MINAGRI staff improved
- Experts recruited and counterparts trained

MINAGRI will implement a Human Resource Development (HRD) plan, based on the outcome of the 2014 public sector restructuration which has been oriented towards an accelerated agricultural decentralization and a progressive transfer of SPIUs to its agencies (RAB, NAEB). The development and implementation of a comprehensive HRD will include sub-national administrations (Districts, Sectors) and a functional review of the institutional roles and capacities to implement the sector's 24 sub-programs. The latter will also include other agencies with key roles conducive to Rwanda's agricultural development, i.e. RDB and MININFRA (private sector investment), MINICOM (agro-processing, cooperative development), MINALOC (decentralization), LODA-MINECOFIN (fiscal decentralization), RTDA (feeder roads), RNRA (land use planning and consolidation), REMA (agro-environmental compliance, use of packaging materials).

Sub-Program 4.2: Decentralisation in Agriculture

RESULTS-FRAMEWORK INDICATORS

- Total Volume of Public Spending on Agriculture by Districts
- Progress report by RAB, NAEB and Districts on implementation of TWIGIRE
- Proportion of Districts with functional (accor-ding to mandate) agricultural committees
- Annual Assessment of the effectiveness and efficiency of agricultural decentralization

COSTED OUTPUTS (PUBLIC SECTOR)

- Strategy and action plan for capacity development at a local level
- All district staff trained according to the plan
- Community Innovation Centres established

Districts are responsible for local service delivery and their responsibilities for local economic development include agriculture. Implementation of the decentralisation strategy has increased their technical and PFM capacity to plan, procure and monitor agriculture capital investments and support services. The success of the roll-out of TWIGIRE, the sector's efforts to create an enabling agri-business environment, the agriculture sector's contribution to the community-based 1000 Days campaign (fight against chronic malnutrition) will depend significantly on the capacities of local governments to leverage these efforts. Rwanda's administrative sectors are the level of government that is closest to farmers and have a particular role in coordinating the provision of technical advice and extension. The strategic and day-to-day alignment of activities between RAB, NAEB and SPIUs and local government agronomists and veterinaries will defined to a large extent the success of agricultural decentralisation during the ASIP-2 period. Community Innovation Centres (CICs) will be established in each district by 2017/18 and the continued increase of the volume and discretion in agricultural earmarked transfers will entrust Districts with greater responsibility and flexibility to meet local level priorities.

Sub-Program 4.3: Legal and Regulatory Framework

RESULTS-FRAMEWORK INDICATORS

- Regulations and roles for agricultural finance clarified, established and communicated
- Agro-chemical registration system (agro-dealers) established

COSTED OUTPUTS (PUBLIC SECTOR)
- Policy reviews in the agriculture sector
- Comprehensive national SPS policy, strategy and action plan
- Registration system for agrochemicals and seeds
- Border control system to regulate agricultural exports and imports

A strong legal and regulatory framework for agriculture is vital to create stability in the sector. For each of the 4 main Programs under PSTA-3/ASIP-2, the regulatory framework will significantly leverage or constrain progress through 2018. This refers to land use regulations (P. 1), the privatization of the seed- and fertilizer market and extension services (P. 2), the Investor Framework (P.3), as well as to agro-environmental regulations and the provisions for re-structured institutional roles and competences (P.4). MINAGRI will invest during the ASIP-2 period to strengthen its capacities for Policy Analysis commensurate to the implementation of a new advanced Management Information System but also to identify and monitor regulations issued by other governmental agencies that affect the sector's performance. Policy reviews are needed in many agriculture sub-sectors to establish whether new laws and regulations are needed. Some measures whose importance has been identified at the onset of the ASIP-2 period are (i) a comprehensive national sanitary, phyto-sanitary and safety (SPS) policy, (ii) a registration system for agrochemicals, seeds and plant breeder's rights, (iii) a well-functioning system of border controls for the regulation and certification of agricultural exports and imports, (iv) regulations for a value chain guarantee fund and a catalytic fund, and (v) regulations for contract farming .

Sub-Program 4.4: Agricultural Communication, Statistical Systems, M&E and Management Information Systems

RESULTS-FRAMEWORK INDICATORS
- MIS System is developed, and functional, and utilised across the sector
- Integrated framework for agricultural surveys and statistics
- N° of new agriculture communication products - radio spots
- N° of newly released crop growing protocols translated into Kinyarwanda
- Average monthly users of MINAGRI/CICA website (including E-Soko)

COSTED OUTPUTS (PUBLIC SECTOR)
- Agricultural information communicated to users
- Publish regular agricultural surveys and statistics
- Implement a strengthened M&E system

During Fiscal Year 2014/15 MINAGRI will conclude the design, development of a web-based Agricultural Management Information System that will include also its agencies, SPIUs and Districts. The sector's M&E, MIS and Market Information Systems will harness increasingly the benefits of 'ICT for Agriculture (ict4ag)' approaches. The functionality of e-Soko will be expanded into new areas to inform farmers more effectively. A strengthened cooperation with NISR will improve the quality of surveys, sampling frames and agricultural statistics in general. MINAGRI will invest into an up-to-date statistical program to be aligned to Rwanda's National Statistical System. A communication strategy will be developed for the agricultural sector and an ict4ag strategic plan will be developed to increase the effectiveness and efficient use of ICT solutions addressing different challenges in agricultural

sector. A more regular interaction with farmers in forms that they can easily access will leverage the impact of the TWIGIRE extension system.

Sub-Program 4.5: Gender and Youth in Agriculture

RESULTS-FRAMEWORK INDICATORS
- A strategy to ensure the inclusion of youth in Rwanda's agriculture development
- % of youth enrolled in agricultural self-help groups, cooperatives and associations
- % of women enrolled in agricultural self-help groups, cooperatives or associations

COSTED OUTPUTS (PUBLIC SECTOR)
- MINAGRI programmes are gender sensitive
- Young farmers trained in agricultural entrepreneurship

Women need equitable access to farm inputs and agricultural services. Preparation for self-employment for both youth and women will be partially based on the cottage industry (high-value addition activities in the immediate proximity of the rural household; e.g. silk, essential oils) model of small self-employment businesses to increase income. MINAGRI staff will be further trained in gender-sensitive approaches of agricultural value chain development, especially local extension staff that are generally the first point of contact with farmers. Outcome and output data in MINAGRI's M&E system related to the access to agricultural technology, inputs and services will be increasingly disaggregated by gender. A TVET curriculum will be developed for technical agricultural technical skills in food processing, post-harvest management, mechanisation and irrigation. Training in entrepreneurship and business skills will be provided to young farmers. An agricultural leadership programme will be developed to for youth to spread appealing hands-on experience and opportunities in Rwanda's agricultural transformation processes. Overall a substantial increase in the proportion of women and youth enrolled in agricultural self-help groups, cooperatives and associations is expected by 2018.

Sub-Program 4.6: Environmental Mainstreaming in Agriculture

RESULTS-FRAMEWORK INDICATORS
- Joint action plan (MINAGRI-REMA)
- Regulations for organic agriculture, pesticide- and lime use approved and communicated
- Total plantlet production of tree nurseries (including fruit- and (agro-)forestry species)
- Proportion of cultivable agricultural land covered by multi- or single-purpose trees
- Total forestry area in watershed catchment basins

COSTED OUTPUTS (PUBLIC SECTOR)
- Train district environmentalists and agronomists
- Strengthen MINAGRI environmental focal point

The outputs of Sub-Program 4.6 (as well as most of agro-environmental considerations in the sub-programs of Program 1) have been derived from the findings of the 2011 Strategic Environmental Assessment of the Agriculture Sector (SEA) in Rwanda which will guide all measures required to ensure the environmental sustainability of ASIP investments. During the ASIP-2 period, MINAGRI and REMA will conduct annually a joint assessment with stakeholders to measure progress towards the implementation of the SEA recommend-

dations and at the same time update the SEA findings. To promote good environmental practice in soil and water conservation is a fundamental feature of Sub-Program 1.1 above. Under sub-program 2.2, farmers will be trained in integrated soil fertility and pest management. Regulatory activities under the present SP will ensure the regular publication of list of approved and banned agro-chemicals, that all agro-chemical products are plastic-tagged with Kinyarwanda instruction. The development of hydrological information systems to better assess water balance and water use efficiency for the planning and operating irrigation systems will require a close collaboration between MINAGRI and agencies of MINIRENA. Water catchment structures will be constructed to reduce flood damage and provide water in drought. Marshland development designs need to ensure that the land's flood mitigation properties are not compromised. Climate-proofed rural feeder road standards and specifications will be developed and applied. Risk assessments and vulnerability mapping will be conducted vis-a-vis the local impact of climate change. District and sector agronomists and village promoters will be trained in sound agro-environmental management.

Sub-Program 4.7: Nutrition and Household Vulnerability

RESULTS-FRAMEWORK INDICATORS

- Average animal protein production (g/capita/day) in % of "safe consumption
- Number of school children benefiting from "One cup of milk programme"
- MT of maize and beans existing as food reserve
- % of households (Ubudehe 1 and 2) with permanently used kitchen gardens
- N° of participants in trainings on kitchen gardens, food transformation and nutrition
- Production area of iron-fortified bean seeds
- Production area of vitamin A-enriched -sweet potatoes

COSTED OUTPUTS (PUBLIC SECTOR)

- Finalise the Food and Nutrition Policy
- Training in the use of kitchen gardens
- Increase One Cow uptake by poor families
- Increase One Cup of Milk uptake by poor schoolchildren
- Establish a food information system

Food security and nutritional status in Rwanda has improved over the last decade with greater availability of food and increased rural incomes from increased agricultural production. A significant number of households however remain food insecure with 460,000 households (21%) having poor or borderline food consumption in 2012 and 44% of children under the age of 5 years chronically malnourished as of 2010. Poor rural households with very small or no plots of land are the most food and nutrition insecure households and also the most vulnerable to shocks that disrupt food production. It is foreseen to continue the support to the "One Cup of Milk per Child" and "One Cow per Poor Family (GIRINKA)" Programs and to increase support towards small livestock ownership and nutritious food production and consumption by vulnerable households. The approach of the interventions under this SP will be 4-fold: (1) to increase the availability and affordability of animal protein; (2) to increase the number of households producing year-round nutritious food in their backyards; (3) to contribute to the elimination of micronutrient deficiencies through fortified staple crops; and (4) to facilitate a coordination between community health workers and agriculture village promoters within the context of Rwanda's community-based nutrition programming and 1000 Days campaign respectively. In line with the priorities

outlined under SP 4.4 above, it is expected to further strengthen Rwanda's Food and Nutrition Security Monitoring and Information System.

9 Implementation arrangements for PSTA-3 / ASIP-2

Table 6: Indicative implementation responsibilities by Sub-Program of PSTA-3

	MINAGRI	RAB	NAEB	Districts	Other agency	Private Sector
P 1: Agriculture and Animal resource Intensification						
SP 1.1 Soil Conservation and Land Husbandry		X		X	REMA, RNRA	
SP 1.2 Irrigation and Water Management		X		X	REMA	(X)
SP 1.3 Agricultural Mechanization		X			RBS	X
SP 1.4 Inputs to Improve Soil Fertility and Management		X			IFDC, One Acre Fund	X
SP 1.5 Seed Development		X	X		NSL	X
SP 1.6 Livestock Development		X			MINICOM	X
SP 1.7 Nutrition and Household Vulnerability	X			X	MOH, MINALOC	
P 2: Research and Technology Transfer, and Professionalization of Farmers Advisory Services						
SP 2.1 Research and Technology Transfer		X			RBS	
SP 2.2 Extension and Proximity Services for Producers		X		X	MINALOC, Districts	X
SP 2.3 Farmer Cooperatives and Organizations	X			X	RCA	
P 3: Value Chain Development and Private Sector Investment						
SP 3.1 Creating an environment to attract priv. inv./entrepreneurship	X		X		RDB	X
SP 3.2 Development of Priority Value Chains: Food Crops		X			RBS, MINICOM	
SP 3.3 Development of Priority Value Chains: Export Crops			X		RBS, MINICOM	X
SP 3.4 Development of Priority Value Chains: Dairy and Meat		X			Land O' Lakes	
SP 3.5 Development of Priority Value Chains: Fisheries		X			NUR, FAO	
SP 3.6 Development of Priority Value Chains: Apiculture		X	X		UNICO-APIGI	
SP 3.7: Agricultural Finance	X		X	X	BRD	X
SP 3.8: Market-oriented Infrastructure			X	X	MINICOM	X
P 4: Institutional Development and Agricultural Cross-Cutting Issues						
SP 4.2 Decentralization in Agriculture	X			X	MINALOC	
SP 4.3 Legal and Regulatory Framework	X				RDB	
SP 4.4 Agricultural Communication, Statistical Systems, M&E, MIS	X			X	NISR	
SP 4.5 Gender and Youth	X				MIGEPROF	
SP 4.6 Environmental Mainstreaming in Agriculture	X				REMA	

Table 7: Ranking of public sector outputs according to their total cost (covering 95% of ASIP-2 costs)

ASIP-2 Output	in 1000' USD	% of ASIP	Main Implementing agency
Marshland Irrigation Construction	168.579	13,89%	RAB, SPIUs, I&M TF
Rural feeder roads constructed	147.363	26,04%	SPIU, RTDA, Districts
Hillside Irrigation Construction	112.386	35,30%	RAB (Private Sector)
Radical Terrace Construction	91.290	42,82%	RAB, LODA, District
Food crop* market support and facilitation	72.842	48,82%	RAB
Training in the use of kitchen gardens	52.031	53,11%	RAB (partnering NGOs)
Smart subsidies for lime and fertiliser	48.381	57,10%	MINAGRI (Private Sector)
Seeds subsidy	30.291	59,59%	MINAGRI (Private Sector
Expansion of Farmer Field Schools	27.800	61,88%	MINAGRI / Districts
Girinka Dairy Cow Programme	26.998	64,11%	MIAGRI – MINALOC
Coffee market support and facilitation	26.015	66,25%	NAEB
Tea market support and facilitation	26.015	68,40%	NAEB
Horticulture/floriculture market support/facilitation	26.015	70,54%	NAEB
Rural feeder roads maintained	24.315	72,54%	Districts, SPIU, RTDA
Milk production increased	23.836	74,51%	RAB
Expanded storage facilities	23.566	76,45%	RAB (Private Sector)
MINAGRI crop based research programmes	20.012	78,10%	RAB
Increase One Cow uptake by poor families	16.730	79,48%	MINALOC – MINAGRI
Harvesters purchased	13.556	80,59%	MINAGRI, Banks, P. Sector
Progressive Terrace Construction	13.131	81,68%	RAB / LODA / Districts
Lime producers access subsidies	13.052	82,75%	MINAGRI
Meat production increased	11.073	83,66%	RAB
Fish production increased	10.878	84,56%	RAB
Expansion of/support to Agricultural Committees	8.871	85,29%	MINAGRI
MINAGRI livestock based research programmes	8.005	85,95%	RAB
One Cup of Milk (poor schoolchildren)	7.858	86,60%	RAB, MINEDUC
Marshland Irrigation Maintenance	6.809	87,16%	Water User Associations
Agro-processing Machines purchased	6.724	87,71%	MINAGRI, Banks, P. Sector
Train farmers in fertiliser and input use	6.504	88,25%	RAB
Train farmers to use improved seed	6.504	88,79%	RAB
Publish regular agricultural surveys and statistics	6.244	89,30%	MINAGRI
Attachments purchased	6.215	89,81%	MINAGRI, Banks, P. Sector
Agricultural Machinery Maintenance	6.004	90,31%	RAB (Private Sector)
MINAGRI value chain research	6.004	90,80%	RAB
Experts recruited and counterparts trained	5.603	91,26%	MINAGRI / SCBI Secretariat
Expansion and support to farmer cooperatives	5.539	91,72%	RAB, MINICOM, RCA
Expansion and support to Farmer Promoters	5.363	92,16%	RAB, Districts
Community Innovation Centres established	5.206	92,59%	RAB, Districts
Hillside Irrigation Maintenance	4.539	92,96%	Water User Associations
Planting Machines purchased	4.178	93,31%	MINAGRI, Banks, P. Sector
Transferred schemes to rural communities	4.162	93,65%	Water User Associations
Post-harvest equipment distributed to farmers	4.002	93,98%	MINAGRI, Banks, P. Sector
Radical Terrace Maintenance	3.687	94,29%	Districts / Farmers
Drying grounds constructed	3.362	94,56%	Districts
MINAGRI agro-forestry based research programmes	3.202	94,83%	RAB, RNRA, REMA
All district staff trained according to the plan	3.202	95,09%	MINAGRI, LODA, Districts

Table 8: Ranking of private sector outputs according to total cost (covering 100% of ASIP-2 costs)

ASIP-2 Output	in 1000' USD	% of ASIP	Main government. partner
Expanded storage and post-harvest facilities	62.916	13,58%	RAB
Establishment of coffee plantations	42.425	22,74%	NAEB
Expansion of tea estates	42.425	31,89%	NAEB
Establishment of tea estates and factories	34.271	39,29%	NAEB
Provision of extension services for high value crops	33.940	46,62%	NAEB, Districts
Coffee washing stations	20.364	51,01%	NAEB
Marshland Irrigation Construction	19.855	55,30%	RAB
Hillside Irrigation Construction	13.237	58,16%	RAB
Establishment of Machinery Repair Workshops	13.237	61,01%	MINAGRI, I&M TF
Coffee roasting plants	10.182	63,21%	NAEB
Beans processing and canning	9.688	65,30%	RAB, MINICOM
Dairy processing plant	9.688	67,39%	RAB
Establishment of an avocado estate	8.666	69,26%	NAEB
Sugar plantation and mill	8.666	71,13%	MINAGRI, RDB, MINICOM
Macadamia nuts	8.279	72,92%	NAEB
MCCs built equipped and renovated	7.942	74,64%	RAB, Districts
Pineapple processing plant	7.065	76,16%	NAEB
Tea bag processing	6.999	77,67%	NAEB
Cassava processing plants	6.864	79,15%	NAEB
Establishment of selling point of farm equipment	6.618	80,58%	MINAGRI, RAB
Upgrade of maize milling capacity	5.983	81,87%	RAB, MINICOM
Honey production	5.453	83,05%	RAB, MINICOM
Feedlots installed and operational	5.337	84,20%	RAB
Horticulture estates	5.198	85,32%	NAEB
Expansion of chilli production	4.248	86,24%	NAEB
Expansion of passion fruit production	4.248	87,16%	NAEB
Establishment of modern meat processing plants	4.194	88,06%	MINAGRI, RDB, MINICOM
Establishment of modern tanneries	4.194	88,97%	MINAGRI, RDB, MINICOM
Fruit juice processing plant	4.139	89,86%	NAEB
Expansion of pyrethrum production	4.139	90,76%	NAEB
Animal feeds plant established	4.007	91,62%	MINAGRI, RAB, RDB
Gishari Flower Park	3.892	92,46%	MINAGRI, NAEB, RDB
Sericulture production	3.532	93,22%	NAEB
Stevia processing	3.532	93,99%	NAEB
Soybean processing	3.532	94,75%	MINAGRI, RDB, MINICOM
Establish additional fertiliser storage capacity	3.309	95,46%	MINAGRI
Kigali Wholesale Market	3.287	96,17%	MINAGRI, RDB, MININFRA
Fish farming	3.206	96,86%	RAB
Hatcheries installed and operational	2.669	97,44%	RAB
Coffee hulling plant	1.656	97,80%	NAEB
Power tiller assembly plant	1.614	98,15%	MINAGRI, RBS
Establishment of cassava plantations	1.272	98,42%	RAB
Fingerling production centres installed	1.103	98,66%	RAB
Rice milling plant	974	98,87%	MINAGRI, RDB, MINICOM
Banana wine processing plant	850	99,05%	MINAGRI, RDB, MINICOM
Marshland Irrigation Maintenance	802	99,22%	RAB
Establish a fertiliser blending plant	552	99,34%	MINAGRI, RDB
Hillside Irrigation Maintenance	535	99,46%	RAB
Establishment of banana plantations	509	99,57%	RAB
Floriculture estates	507	99,68%	NAEB
Irish potato plant established	497	99,79%	MINAGRI, RDB, MINICOM
Establish a seed production and processing plant	427	99,88%	MINAGRI, RDB
Essential oils production	350	99,95%	NAEB
Rehab./ Equipping soil and plant testing laboratories	215	100,00%	MINAGRI, RAB

10 Public Sector Investment Costs

- The total public sector cost for the implementation of Rwanda's 2nd Agriculture Sector Investment Plan is 1,213 USD Million, thereof 52.14% Capital Costs and 47.86% Recurrent Costs.
- 52.74% of the public sector investment costs correspond to Program N° 1 of PSTA-3: "Agriculture and Animal Resource Intensification".
- 7.09% of the public sector investment costs correspond to Program N° 2 of PSTA-3: "Research and Technology Transfer, Advisory Services and Professionalization of Farmers".
- 31.52% of the public sector investment costs correspond to Program N° 3 of PSTA-3: "Value Chain Development and Private Sector Investment".
- 8.65% of the public sector investment costs correspond to Program N° 4 of PSTA-3: "Institutional Development and Agricultural Cross-Cutting Issues".
- As regards the 9.15% of ASIP-2 public sector costs allocated to Sub-Program 1.1 (Soil Conservation and Land Husbandry), by far the largest share (7.83% of ASIP-2 public sector costs) corresponds to the construction and maintenance of radical/bench terraces. This underscores the importance of monitoring closely that all radical/bench terraces are utilized (i) sustainability and (ii) with crops whose value creation per ha does justify this disproportionate (as compared to progressive terracing) investment.
- Sub-Program 1.2 (Irrigation and Water Management) requires by far the largest share (25.09%) of the total ASIP-2 public sector costs, which underscores the necessity to monitor closely effectiveness and efficiency of public spending on irrigation during the ASIP-2 period. 13.89% of all ASIP-2 public sector costs correspond to "Marshland Irrigation Construction" (see also Table 9). The remark made in the paragraph above about the necessity to justify with high-value crops the investment in radical/bench terracing applies under this Sub-Program even more to the construction of hillside irrigation investments, characterized by per ha investment costs of up to 15.000 – 20.000 USD.
- Only 3.47% of the ASIP-2 public sector costs correspond to Sub-Program 2.2 (Extension and Proximity Services for Producers). However, it is expected that once the costing of the agriculture sector's new 'Farmer-to-Farmer (TWIGIRE)' extension model has been validated by the end of FY 2014/15, that this proportion will have to be increased substantially.
- 16.70% of the ASIP-2 public sector costs correspond to Sub-Program 3.8 (Market-oriented Infrastructure), the largest share of it being related to the rehabilitation/ construction of rural feeder roads.
- The total of subsidies (fertilizer, lime, seeds) under ASIP-2 (see also Table 7) reaches 6.48% of all ASIP-2 public sector costs and a decreasing trend as MINAGRI intends to phase out of most of its input subsidies by 2018. At the same time, new subsidy schemes are considered (not yet validated) to promote agricultural technology (small-scale irrigation, mechanization, post-harvest/processing equipment).

	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**Capital**	**Recurrent**	**Total**	
Program 1: Agriculture and Animal Resource Intensification	**133.326**	**141.426**	**131.122**	**121.434**	**112.650**	**430.167**	**209.791**	**639.957**	**52,74%**
Sub-Program 1.1: Soil Conservation and Land Husbandry	20.519	21.852	22.424	22.874	23.311	105.982	4.998	110.980	9,15%
Sub-Program 1.2: Irrigation and Water Management	56.280	59.958	61.630	62.707	63.904	286.429	18.050	304.478	25,09%
Sub-Program 1.3: Agricultural Mechanisation	10.016	10.330	8.573	7.715	6.867	37.288	6.212	43.500	3,58%
Sub-Program 1.4: Inputs to Improve Soil Fertility and Management	18.186	24.026	16.103	8.423	1.367	0	68.105	68.105	5,61%
Sub-Program 1.5: Seed Development	13.874	10.536	7.336	4.357	1.549	0	37.652	37.652	3,10%
Sub-Program 1.6. Livestock Development	14.451	14.724	15.056	15.359	15.652	468	74.773	75.242	6,20%
Program 2: Research, Technology Transfer, Advisory Services, Professionalization of Farmers	**12.157**	**15.647**	**18.060**	**19.701**	**20.482**	**0**	**86.046**	**86.046**	**7,09%**
Sub-Program 2.1: Research and Technology Transfer	7.154	7.263	7.453	7.603	7.748	0	37.222	37.222	3,07%
Sub-Program 2.2: Extension and Proximity Services for Producers	3.837	7.129	9.247	10.638	11.234	0	42.084	42.084	3,47%
Sub-Program 2.3: Farmer Cooperatives and Organisations	1.166	1.254	1.359	1.460	1.500	0	6.740	6.740	0,56%
Program 3: Value Chain Development and Private Sector Investment	**65.075**	**70.046**	**74.915**	**84.099**	**88.360**	**202.608**	**179.888**	**382.495**	**31,52%**
Sub-Program 3.1: Private Investment, Encourage Entrepreneurship, Facilitate Market Access	600	914	625	638	650	0	3.426	3.426	0,28%
Sub-Program 3.2: Development of Priority Value Chains: Food Crops	14.500	14.722	15.107	15.410	15.705	0	75.444	75.444	6,22%
Sub-Program 3.3: Development of Priority Value Chains: Export Crops	16.650	16.905	17.347	17.695	18.033	0	86.631	86.631	7,14%
Sub-Program 3.4: Development of Priority Value Chains: Dairy and Meat	1.200	1.218	1.250	1.275	1.300	0	6.244	6.244	0,51%
Sub-Program 3.5: Development of Priority Value Chains: Fisheries	250	254	260	266	271	0	1.301	1.301	0,11%
Sub-Program: 3.6. Development of Priority Value Chains: Apiculture	120	122	125	128	130	0	624	624	0,05%
Sub-Program 3.7: Agricultural Finance	1.195	1.213	1.245	1.270	1.294	0	6.217	6.217	0,51%
Sub-Program 3.8: Market-oriented Infrastructure	30.560	34.698	38.955	47.418	50.978	202.608	0	202.608	16,70%
Program 4: Institutional Development and Agricultural Cross-Cutting Issues	**18.831**	**20.186**	**21.079**	**21.980**	**22.941**	**0**	**105.018**	**105.018**	**8,65%**
Sub-Program 4.1: Institutional Capacity Building	1.615	1.742	1.683	1.717	1.750	0	8.506	8.506	0,70%
Sub-Program 4.2: Decentralisation in Agriculture	1.065	1.437	1.683	1.982	2.291	0	8.459	8.459	0,70%
Sub-Program 4.3: Legal and Regulatory Framework	100	305	365	319	325	0	1.413	1.413	0,12%
Sub-Program 4.4: Agricultural Communication, Statistical Systems, M&E and MIS	1.400	1.421	1.459	1.488	1.516	0	7.284	7.284	0,60%
Sub-Program 4.5: Gender and Youth in Agriculture	320	325	333	340	347	0	1.665	1.665	0,14%
Sub-Program 4.6: Environmental Mainstreaming in Agriculture	115	117	120	123	125	0	600	600	0,05%
Sub-Program 4.7: Nutrition and Household Vulnerability	14.215	14.839	15.436	16.011	16.588	0	77.089	77.089	6,35%
TOTAL	**229.389**	**247.305**	**245.175**	**247.215**	**244.433**	**632.775**	**580.742**	**1.213.517**	**100,00%**
thereof: CAPITAL COSTS	114.901	120.492	124.913	134.124	138.345	632.775	0	0	52,14%
thereof: RECURRENT COSTS	114.488	126.813	120.262	113.091	106.088	0	580.742	0	47,86%

11 Private sector investment costs

- The total private sector cost envisaged for the implementation of Rwanda's 2nd Agriculture Sector Investment Plan is 543 USD Million, thereof 86.39% Capital Costs and 13.61% Recurrent Costs. The latter reflects the high costs involved in establishing the agricultural processing facilities which form the bulk of the private sector investments.
- Private sector investment accounts for just over 40% of public sector investment costs as the private sector takes on an increasingly important role in the development and prospects of Rwanda's agricultural sector.
- Particular areas in which private sector involvement is expected to increase during the years ahead are: (i) the provision of agricultural mechanisation, (ii) extension services for high-value crops and (iii) the production and processing of export crops.
- 14.25% of the private sector investment costs correspond to Program N° 1 of PSTA-3: "Agriculture and Animal Resource Intensification".
- 13.61% (in fact all the recurrent costs) of the private sector investment costs correspond to Program N° 2 of PSTA-3: "Research and Technology Transfer, Advisory Services and Professionalization of Farmers".
- By far the largest share, namely 72.13% of the private sector investment costs correspond to Program N° 3 of PSTA-3: "Value Chain Development and Private Sector Investment".
- No private sector investment costs are foreseen to support Program N° 4 of PSTA-3: "Institutional Development and Agricultural Cross-Cutting Issues".
- Whereas as much as 49.34% of all private sector costs to implement the ASIP-2 correspond to Sub-Program 3.3 (Development of Export Crops Value Chains), only 5.55% relate to Sub-Program 3.4 (Development of Food Crop Value Chains). This proportion underscores the importance of a close coordination between MINAGRI, RAB and MINICOM in the promotion of local value addition capacities for food crops and it might be considered to raise the proportion of SP 3.4 in subsequent years.
- PPP opportunities were identified from the investment project profiles provided by RDB. The following PPP costs have been identified at 139.6 USD Million (25.% of private sector costs):
    - Rehabilitation and equipping of soil and plant testing laboratories
    - Hillside irrigation construction and maintenance
    - Marshland irrigation construction and maintenance
    - Power tiller assembly plant
    - Milk Collection Centres built, equipped and renovated
    - Research collaboration with the private sector
    - Coffee-, Tea-, and Horticulture PPP projects; Gishari Flower Park
    - Kigali Wholesale Market
    - Establishment of modern meat processing plants and tanneries

	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 Private Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Program 1: Agriculture and Animal Resource Intensification	**14.352**	**16.660**	**15.550**	**15.299**	**15.591**	**77.452**	**0**	**77.452**	**14,25%**
Sub-Program 1.1: Soil Conservation and Land Husbandry	0	215	0	0	0	215	0	215	0,04%
Sub-Program 1.2: Irrigation and Water Management	6.360	6.780	6.958	7.097	7.233	34.428	0	34.428	6,34%
Sub-Program 1.3: Agricultural Mechanisation	3.816	5.489	3.976	4.056	4.133	21.469	0	21.469	3,95%
Sub-Program 1.4: Inputs to Improve Soil Fertility and Management	636	646	1.215	676	689	3.861	0	3.861	0,71%
Sub-Program 1.5: Seed Development	212	215	0	0	0	427	0	427	0,08%
Sub-Program 1.6. Livestock Development	3.328	3.315	3.402	3.470	3.536	17.051	0	17.051	3,14%
Program 2: Research and Technology Transfer, Advisory Services and Professionalization of Farmers	**14.215**	**14.433**	**14.811**	**15.108**	**15.396**	**0**	**73.964**	**73.964**	**13,61%**
Sub-Program 2.1: Research and Technology Transfer	7.692	7.810	8.014	8.175	8.331	0	40.024	40.024	7,37%
Sub-Program 2.2: Extension and Proximity Services for Producers	6.523	6.623	6.796	6.933	7.065	0	33.940	33.940	6,25%
Program 3: Value Chain Development and Private Sector Investment	**49.811**	**79.745**	**79.568**	**102.350**	**80.447**	**391.921**	**0**	**391.921**	**72,13%**
Sub-Program 3.2: Development of Priority Value Chains: Food Crops	1.957	3.063	7.856	13.761	3.532	30.169	0	30.169	5,55%
Sub-Program 3.3: Development of Priority Value Chains: Export Crops	32.933	61.531	49.833	63.042	60.754	268.093	0	268.093	49,34%
Sub-Program 3.4: Development of Priority Value Chains: Dairy and Meat	1.631	1.656	5.610	11.421	1.766	22.084	0	22.084	4,06%
Sub-Program 3.5: Development of Priority Value Chains: Fisheries	0	0	3.206	0	0	3.206	0	3.206	0,59%
Sub-Program: 3.6. Development of Priority Value Chains: Apiculture	1.060	1.076	1.042	1.127	1.148	5.453	0	5.453	1,00%
Sub-Program 3.8: Market-oriented Infrastructure	12.231	12.418	12.022	12.999	13.247	62.916	0	62.916	11,58%
TOTAL	**78.379**	**110.838**	**109.928**	**132.757**	**111.434**	**469.373**	**73.964**	**543.336**	**100,00%**
thereof: CAPITAL COSTS	64.163	96.405	95.118	117.649	96.038	469.373	0	0	86,39%
thereof: RECURRENT COSTS	14.215	14.433	14.811	15.108	15.396	0	73.964	0	13,61%

Table 11: Projection of ASIP-2 costs versus funding by government and development partners

	ANNUAL COSTS (in USD Million)					Total Costs (in USD Million)			in % of ASIP-2 Public Costs
Cost / Donor	2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Program 1: Agriculture and Animal Resource Intensification	133	141	131	121	113	430	210	640	52,74%
Program 2: Research and Technology Transfer, Advisory Services	12	16	18	20	20	0	86	86	7,09%
Program 3: Value Chain Development and Private Sector Investment	65	70	75	84	88	203	180	382	31,52%
Program 4: Institutional Development and Agricultural Cross-Cutting Issues	19	20	21	22	23	0	105	105	8,65%
TOTAL	**229**	**247**	**245**	**247**	**244**	**633**	**581**	**1.214**	**100,00%**
thereof: CAPITAL COSTS	115	120	125	134.124	138.345	272.829		272.829	52,14%
thereof: RECURRENT COSTS	114	127	120	113	106		581	581	47,86%
Government Funds	**60,0**	**60,0**	**60,0**	**60,0**	**60,0**			**300,0**	24,72%
Sector Budget Support / Program-for-Results	**40,6**	**77,7**	**83,7**	**106,0**	**71,0**			**379,0**	31,23%
IDA (Program-for-Results)		33,0	33,0	34,0				100,0	8,24%
DFID	15,6	19,7	14,7	14,0	13,0			77,0	6,35%
IFAD				21,0	21,0			42,0	3,46%
European Union (EU)	25,0	25,0	36,0	37,0	37,0			160,0	13,18%
Project Support	**76,9**	**161,7**	**135,3**	**83,8**	**63,3**			**521,0**	42,93%
World Bank Projects	33,6	80,5	52,1	18,0	9,8			194,0	15,99%
Swiss Development Cooperation (SDC)	2,0	2,0	2,0					6,0	0,49%
Netherlands Embassy	3,6	3,6	1,4	1,4				10,0	0,82%
USAID (includes 40 USD Million for PfR)	14,5	36,5	33,5	28,5	25,0			138,0	11,37%
JICA		4,0	9,0	11,0	8,0			32,0	2,64%
AfDB	3,5	9,5	7,0					20,0	1,65%
DFID	0,0	1,6	5,0	3,2	3,2			13,0	1,07%
IFAD Projects	17,7	20,0	19,3	13,7	7,3			78,0	6,43%
FAO	2,0	4,0	6,0	8,0	10,0			30,0	2,47%
Total Development Partner Funds	**117,5**	**239,4**	**219,0**	**189,8**	**134,3**			**900,0**	74,16%
DEFICIT / SURPLUS	-52	52	34	3	-50			-14	-1,11%

- Table 11 above illustrates that the total of the projected ASIP-2 public sector costs is largely covered (a deficit of 1.11%, equivalent to 14 USD Million) by the aggregate of the projected governmental- and development partner funding to the sector.
- However, the projected governmental share (domestically financed recurrent and development budgets) in the total ASIP-2 public sector costs amounts to only 24.72%. This value however increases to 55.95% if sector budget support and the Program-for-Results funding are included.
- Key measures to monitor if the ASIP-2 financing is "on-track" will be (a) the annual analytical breakdown of the Project Support by Sub-Program, (b) the implementation of the Agriculture Management Information System (and its integration with IFMIS), and (c) the annual assessment of private sector investments (including FDI, domestic investors and farmer/cooperative investments). Templates are provided in Annex 3.

13 M&E arrangements for PSTA-3 / ASIP-2

During the implementation of PSTA-3/ASIP-2, strengthening of the following M&E capacities in the agriculture sector is envisaged:

- Implementation of an Agriculture Management Information System integrated with IFMIS, the quarterly progress reporting of local government administrations and other governmental agencies closely related to Rwanda's agriculture sector prospects (RDB, MINICOM and RCA, MINALOC (LODA), and MINIRENA (RNRA, REMA).
- Review and strengthening (in close coordination with NISR, FAO and USDA), of Rwanda's Integrated Survey Framework for Agricultural Statistics.
- Increased investments in agriculture routine (annual, quarterly) and periodical (3-5 years) data collection, data processing and data and policy analysis capacities (see also Annex 2a).
- Improved and regular (at least twice annually) information on the off-budget funding to the sector by development partners (see Template in Annex 3).

To ensure the feasibility to monitor the results-framework (see Chapter 7) of PSTA-3 /ASIP-2, a thorough review and refinement of the Metadata for all indicators that were not previously monitored (PSTA-2) needs to be conducted before the end of Fiscal Year 2014/15.

This refinement of the Metadata will also clarify to what extent the different 'monitoring/survey areas' specified in Table 12 below can be covered through the existing mechanisms and capacities or instead require additional investments. The projected ASIP-2 public investments for this purpose (see Annex 2a and 2b) are about 6.7 USD Million through 2018.

Table 12: Indicative order of the Results-Framework indicators by type of survey/monitoring

Expanded Seasonal Agriculture Survey	▪ Agriculture land under modernized agricultural technologies
	▪ Average yields of Maize, Bush Beans, Climbing Beans, Cassava, Irish Potatoes
	▪ Average yields of rice under marshland irrigation
	▪ Area planted with certified seed
	▪ Output of commercial seed producers
	▪ Productivity: Coffee, Tea, Pyrethrum
	▪ Production: Fruits and Vegetables, Flowers
	▪ Postharvest losses (%): Maize, Beans, Irish Potatoes, Rice
	▪ Capacity of storage facilities (warehouses, metallic silos)
	▪ N° of released technologies (food crops): e.g. Vit A enriched casssava, QPM maize
	▪ N° of released technologies (export crops)
	▪ Production area of iron-fortified bean seeds
	▪ Production area of vitamin A-enriched -sweet potatoes

Annual Assessment of **Agricultural Land**	▪ % of cultivable land effectively protected against soil erosion & sustainably managed
	▪ Area of cultivable land per agricultural household (Median)
	▪ Efficiency of soil protection infrastructure
	▪ Ha of land developed with progressive, bench/radical terraces (based on standards)
	▪ Hectares developed for hillside-, marshland- and small scale irrigation
	▪ Proportion of cultivable land with mechanized land cultivation
	▪ Km of rural feeder roads rehabilitated and maintained according to standards
	▪ Total plantlet production of tree nurseries (fruit- and (agro-)forestry species)
	▪ Proportion of cultivable agricultural land covered by multi- or single-purpose trees
	▪ Total forestry area in watershed catchment basins

Annual Agricultural **Household** Survey	▪ Average monetary income per rural household from cropping / livestock-keeping
	▪ Proportion of households practicing irrigation
	▪ N° of implements utilized for mechanised farming
	▪ Kg of inorganic fertilizer used per ha per year
	▪ % of farmers utilising fertilizer for strategic crops according to standards
	▪ % of agricultural households utilising registered agro-dealers
	▪ % of farmers utilizing improved and certified seeds for strategic crops
	▪ % of farmers utilising cooperative services for input supplies and marketing
	▪ N° of farmers benefitting from contract farming arrangements
	▪ % of rural households benefitting from agricultural group credits
	▪ N° of farmers benefitting from Warehouse Receipt System finance
	▪ N° of farmers with crop and/or livestock insurance
	▪ % of HH accessing services for post-harvest treatment and storage of food crops
	▪ % of youth/women enrolled in agricultural self-help groups/cooperatives/associations
	▪ % of households (Ubudehe 1 and 2) with permanently used kitchen gardens

Annual **Livestock** Survey	▪ Productivity of dairy cows
	▪ Total area of established functional feedlots
	▪ Production of milk, beef meat, goat meat, pork meat, poultry meat, eggs, honey, fish
	▪ Production of hides and skins
	▪ % of improved breeds (dairy cows), (cattle), (goats)
	▪ % of cells with at least one appointed and trained animal-health-worker (AHW)

	▪ % reduction of incidence of brucellosis and mastis
	▪ % of cattle held in intensive livestock keeping systems
	▪ Capacities of agro-processing installations for meat products
	▪ N° of GlobalGAP and/or ISO 22000 certified abattoirs
	▪ N° of certified milk collection centres (MCCs)
	▪ Capacities of agro-processing installations for dairy- and other animal products
	▪ Proportion of processed fish products in total production
	▪ Proportion of bee populations kept in modern beehives
	▪ Volume of total honey production captured by honey collection centres
	▪ Average animal protein production (g/capita/day) in % of "safe consumption

Annual survey of agricultural farmer **cooperatives and associations**	▪ N° of farmers enrolled in WUA that are legally established and pay water user fees
	▪ N° of cooperatives that offer mechanization (land cultivation) services
	▪ % of farmers that are member of a cooperatives, association or self-help group
	▪ % of agriculture cooperatives/farmer organizations graded "A" or "B" (audit rating)
	▪ % of total production marketed through cooperatives/farmer organizations
	▪ Value of marketed food crop production
	▪ Value of marketed export crop production
	▪ Value of marketed livestock production
	▪ % of produce of group-based production marketed through contract farming
	▪ % of group-based production organisations running agro-processing facilities
	▪ % of produce of group-based staple crop production processed in own facilities
	▪ Capacities of agro-processing installations for food/staple crops
	▪ % of coffee production that is fully washed
	▪ N° of ISO 2200-2005 certified tea factories
	▪ Quantity of Pyrethrum production: Diluted Pale Extract (PY 50%), in MT
	▪ Value of cottage industry (silk, essential and plant oils, dried frut etc.) production
	▪ % of rural households participating in agricultural/horticultural cottage industries
	▪ % of annual exports of F&V audited against social and environmental standards
	▪ N° of companies and cooperatives with certified honey
	▪ N° of business plans of agric. cooperatives / SMEs approved and financed by FI's

Annual assessment of **TWIGIRE** and other agricultural **training** records	▪ % of WUA trained in flood control, O&M and irrigation management
	▪ Average N° of Farmer Field Schools per Zone to promote agricultural technologies
	▪ Ratio of farmer households per extension agent (village level)
	▪ N° of villages with maintained agricultural demonstration plots
	▪ N° of farmers benefitting from FFS according to established standards
	▪ N° of farmer promoters trained and posted in Imidugudus
	▪ N° of farmers supported through TWIGIRE in horticulture production and marketing
	▪ % of cooperatives trained in management, organisation and entrepreneurial skills
	▪ % of cooperatives trained in food safety, SPS and quality standards
	▪ Number of farmers trained in agro processing
	▪ N° of farmers participating in post-harvest treatment and storage training
	▪ N° of participants in trainings on kitchen gardens, food transformation and nutrition

Source: **MINECOFIN and RDB**	▪ Amount of private investment (domestic and foreign) in agricultural value chains
	▪ N° of SMEs involved in crop production (input supply, agro-processing, marketing)
	▪ N° of SMEs involved in livestock product. (input supply, agro-processing, marketing)
	▪ % of public budget allocated to agriculture sector
	▪ Total Volume of Public Spending on Agriculture by Districts

Annual Accounts of **BNR and NAEB**	▪ Agricultural GDP growth rate
	▪ Agricultural export revenue growth rate
	▪ Unit cost of 1 kg airfreight
	▪ Revenue of exports - Coffee
	▪ Revenue of exports - Tea
	▪ Export Revenues of Fruit and Vegetables
	▪ Revenue of exports - Flowers
	▪ Revenue of exports - Pyrethrum
	▪ Export revenues for livestock products (milk, meat, eggs, honey, hides and skins)
	▪ Total loans allocated to agricultural sector (production and value addition)
	▪ Average agricultural credit per SACCO member (production and marketing credit)

MINAGRI **SPPC**	▪ MT of inorganic fertilizers imported
	▪ Proportion of Districts with functional agricultural committees
	▪ Regulations and roles for agricultural finance clarified, established and communicated
	▪ Agro-chemical registration system (agro-dealers) established
	▪ A strategy to ensure the inclusion of youth in Rwanda's agriculture development
	▪ Number of school children benefiting from "One cup of milk programme"
	▪ MT of maize and beans existing as food reserve
	▪ N° of new agriculture communication products - radio spots
	▪ Average monthly users of MINAGRI/CICA website (including E-Soko)
	▪ Regulations for organic agriculture, pesticide and lime use approved & communicated

Strategic Documents (Policies, Strategies, Annual Plans and Progress Reports)	▪ Multi-sectoral soil conservation and land husbandry policy and strategic plan
	▪ National Irrigation policy and strategic plan
	▪ National Agriculture Mechanization policy and strategic plan
	▪ National Fertilizer Policy and regulatory framework
	▪ Nat. Seed policy and strategic plan coherent with COMESA Trade Regulations
	▪ Validation of Integrated Livestock Policy and corresponding Strategy document
	▪ Updated National Agriculture Research and Extension Policy and Strategic Plan
	▪ Agricultural value addition strategy
	▪ SPS and food safety policy framework and action plan
	▪ Investor Framework / Multi-sector agri-business strategic plan
	▪ Capacity building action plan
	▪ Progress report by RAB, NAEB and Districts on implementation of TWIGIRE
	▪ Annual Assessment of effectiveness and efficiency of agricultural decentralization
	▪ MIS System is developed, and functional, and utilised across the sector
	▪ Integrated framework for agricultural surveys and statistics
	▪ N° of newly released crop growing protocols translated into Kinyarwanda
	▪ Joint action plan (MINAGRI-REMA)

External Surveys	▪ % of rural population under the national poverty line
	▪ % of households with acceptable food consumption score
	▪ % of stunting among children aged 6-59 months
	▪ Economic, social and environmental impact analysis of agriculture investment (FDI)
	▪ Private sector perception of the "doing agri-business" enabling environment

ANNEXES

1A: Projected Exchange Rates: RWF / USD

1B: Inflation rates used in ASIP-2 costing

2.1A: Detailed (by output) public sector costs by Sub-Program

2.1B: Detailed (by output) public sector costs by Sub-Program

2.2A: Detailed (by output) private sector costs by Sub-Program

2.2B: Detailed (by output) private sector costs by Sub-Program

2.3: Public Private Partnership (PPP) costs of the Private Sector by Sub-Program

3: Templates for the monitoring of Public and Private Investments/Financing during the ASIP-2 period

4A: Net Financial Benefit by Year
(calculation based on ASIP-2 public costs)

4B: Net Economic Benefit by Year

(calculation based on ASIP-2 public costs)

ANNEX 1A: PROJECTED EXCHANGE RATES: RWF / USD

Fiscal Year	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**
Exchange rate	650	679	699	720	742

NOTE: Costing was undertaken in RWF and converted to USD, using the projected exchange rates above that were provided by MINECOFIN.

ANNEX 1B: INFLATION RATES USED IN ASIP-2 COSTING

Fiscal Year	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**
Inflation rate	-	6.0%	5.7%	5.1%	5.0%

NOTE: Costs are expressed in current prices. The projected inflation rates used to estimate costs for the fiscal years 2013/14 – 2017/18 were provided by MINECOFIN.

	ANNUAL TARGETS (INCREASE)					Unit Cost (in RWF)	ANNUAL COSTS (RWF Millions)					Total Costs (RWF Millions)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Program 1: Agriculture and Animal Resource Intensification							86.662	95.971	91.654	87.457	83.591	300.402	170.755	445.335	**52,53%**
Sub-Program 1.1: Soil Conservation and Land Husbandry							13.337	14.829	15.674	16.474	17.297	74.070	3.542	77.612	9,16%
Progressive Terrace Construction	50.474	50.474	50.474	50.474	50.474	32.500	1.640	1.739	1.838	1.932	2.028	9.177		9.177	1,08%
Progressive Terrace Maintenance		50.474	50.474	50.474	50.474	1.625	0	87	92	97	101		377	377	0,04%
Radical Terrace Construction	11.697	11.697	11.697	11.697	11.697	975.000	11.405	12.089	12.778	13.430	14.101	63.802		63.802	7,53%
Radical Terrace Maintenance		11.697	11.697	11.697	11.697	48.750	0	604	639	671	705		2.620	2.620	0,31%
Assessment of effectiveness of land conservation infrastructure	1	1	1	1	1	97.500.000	98	103	109	115	121		545	545	0,06%
Fertiliser recommendations for types of soils and crops	1	1	1	1	1	32.500.000	33	34	36	38	40	182		182	0,02%
Decision support tool for soil erosion monitoring and control	1	1	1	1	1	97.500.000	98	103	109	115	121	545		545	0,06%
Adapted agro-forestry tree species increased	1	1	1	1	1	32.500.000	33	34	36	38	40	182		182	0,02%
Updated soil conservation and land husbandry policy and strategy	1	1	1	1	1	32.500.000	33	34	36	38	40	182		182	0,02%
Sub-Program 1.2: Irrigation and Water Management							36.582	40.687	43.079	45.161	47.419	200.182	12.747	212.929	25,12%
Approved National Irrigation Policy and Strategy		1				32.500.000	0	34	0	0	0		34	34	0,00%
Approved National Irrigation Law			1			32.500.000	0	0	36	0	0		36	36	0,00%
Established National Irrigation Board			1			65.000.000	0	0	73	0	0		73	73	0,01%
Hillside Irrigation Construction	2160	2.160	2.160	2.160	2.160	6.500.000	14.040	14.882	15.731	16.533	17.360	78.546		78.546	9,27%
Hillside Irrigation Maintenance		2.160	2.160	2.160	2.160	325.000	0	744	787	827	868		3.225	3.225	0,38%
Marshland Irrigation Construction	2700	2.700	2.700	2.700	2.700	7.800.000	21.060	22.324	23.596	24.799	26.039	117.819		117.819	13,90%
Marshland Irrigation Maintenance		2.700	2.700	2.700	2.700	390.000	0	1.116	1.180	1.240	1.302		4.838	4.838	0,57%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in RWF)	ANNUAL COSTS (RWF Millions)					Total Costs (RWF Millions)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Small-scale Irrigation Construction	300	300	300	300	300	975.000	293	310	328	344	362	1.636		1.636	0,19%
Small-scale Irrigation Maintenance		300	300	300	300	48.750	0	16	16	17	18		67	67	0,01%
Increased numbers of Irrigation Technicians	3	3	3	3	3	6.500.000	20	21	22	23	24		109	109	0,01%
Increased hectares of irrigation schemes rehabilitated	1000	1.000	1.000	1.000	1.000	390.000	390	413	437	459	482	2.182		2.182	0,26%
WUOs established and functional	4	4	4	4	4	65.000.000	260	276	291	306	321		1.455	1.455	0,17%
Transferred schemes to rural communities	16	16	16	16	16	32.500.000	520	551	583	612	643		2.909	2.909	0,34%
Sub-Program 1.3: Agricultural Mechanisation							6.510	7.010	5.992	5.556	5.096	25.823	30.164	30.164	3,56%
Developed Agricultural Mechanisation Policy			1			32.500.000	0	0	36	0	0		36	36	0,00%
Tractors purchased	50	40	30	20	10	11.841.900	592	502	398	279	146	1.918		1.918	0,23%
Power Tillers purchased	100	80	60	40	20	2.001.629	200	170	135	94	49	648		648	0,08%
Attachments purchased	1000	800	600	400	200	1.311.891	1.312	1.112	882	618	324	4.249		4.249	0,50%
Planting Machines purchased	400	320	240	160	80	2.205.000	882	748	593	415	218	2.856		2.856	0,34%
Crop Treatment Machines purchased	300	300	300	300	300	315.000	95	100	106	111	117	529		529	0,06%
Harvesters purchased	200	200	200	200	200	8.467.308	1.693	1.795	1.897	1.994	2.094	9.474		9.474	1,12%
Post Harvesting Machines purchased	150	150	150	150	150	843.471	127	134	142	149	156	708		708	0,08%
Agro-processing Machines purchased	4	4	4	4	4	210.000.000	840	890	941	989	1.039	4.699		4.699	0,55%
Agricultural Machinery Maintenance	1	1	1	1	1	750.000.000	750	795	840	883	927		4.196	4.196	0,49%
National Agricultural Mechanisation Centre established	0	1	0	0	0	700.000.000	0	742	0	0	0	742		742	0,09%
Training farmers and technicians in mechanisation	600	600	600	600	600	32.500	20	21	22	23	24		109	109	0,01%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in RWF)	ANNUAL COSTS (RWF Millions)					Total Costs (RWF Millions)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Sub-Program 1.4: Inputs to Improve Soil Fertility and Management							11.821	16.304	11.256	6.066	1.015	0	46.462	46.462	5,48%
Fertiliser policy in place		1				32.500.000	0	34	0	0	0		34	34	0,00%
Fertiliser regulatory framework developed			1			32.500.000	0	0	36	0	0		36	36	0,00%
Train fertiliser distributors and agro-dealers	250	250	250	250	250	32.500	8	9	9	10	10		45	45	0,01%
Train farmers in fertiliser and input use	25000	25.000	25.000	25.000	25.000	32.500	813	861	910	957	1.005		4.545	4.545	0,54%
Farmers access smart subsidies for lime and fertiliser							9.000	11.900	8.000	4.000	0	0	32.900	32.900	3,88%
Lime producers access subsidies							2.000	3.500	2.300	1.100	0	0	8.900	8.900	1,05%
Sub-Program 1.5: Seed Development							9.018	7.150	5.128	3.138	1.149	0	25.583	25.583	3,02%
Develop a seed policy, strategy and action plan		1				32.500.000	0	34	0	0	0		34	34	0,00%
Train farmers to use improved seed	25000	25.000	25.000	25.000	25.000	32.500	813	861	910	957	1.005		4.545	4.545	0,54%
Government decreases seeds subsidy							8.173	6.130	4.087	2.043	0	0	20.433	20.433	2,41%
Establish a Seeds Coordinating Unit	1	1	1	1	1	32.500.000	33	34	36	38	40		182	182	0,02%
Employ additional seed inspectors		8	8	8	8	6.500.000	0	55	58	61	64		239	239	0,03%
Establish the National Seeds Laboratory		1	1	1	1	32.500.000	0	34	36	38	40		149	149	0,02%
Sub-Program 1.6. Livestock Development							9.393	9.991	10.524	11.061	11.614	327	52.257	52.585	6,20%
Livestock policy developed		1				32.500.000	0	34	0	0	0		34	34	0,00%
Milk production increased	49628,2	49.628	49.628	49.628	49.628	60.000	2.978	3.156	3.336	3.506	3.682		16.658	16.658	1,97%
Girinka Dairy Cow Programme	42159,2	42.159	42.159	42.159	42.159	80.000	3.373	3.575	3.779	3.972	4.170		18.869	18.869	2,23%
Meat production increased	18444	18.444	18.444	18.444	18.444	75.000	1.383	1.466	1.550	1.629	1.710		7.739	7.739	0,91%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in RWF)	ANNUAL COSTS (RWF Millions)					Total Costs (RWF Millions)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Fish production increased	18120	18.120	18.120	18.120	18.120	75.000	1.359	1.441	1.523	1.600	1.680		7.603	7.603	0,90%
Honey production increased	1094,8	1.095	1.095	1.095	1.095	75.000	82	87	92	97	102		459	459	0,05%
Honey collection centres operational	1,8	2	2	2	2	32.500.000	59	62	66	69	72	327		327	0,04%
Increase production of hides and skins	325	325	325	325	325	492.308	160	170	179	188	198		895	895	0,11%
Program 2: Research and Technology Transfer, Advisory Services and Professionalization of Farmers							7.902	10.618	12.624	14.189	15.198	0	60.531	60.531	**7,14%**
Sub-Program 2.1: Research and Technology Transfer							4.650	4.929	5.210	5.476	5.749	0	26.014	26.014	3,07%
MINAGRI crop based research programmes	1	1	1	1	1	2.500.000.000	2.500	2.650	2.801	2.944	3.091		13.986	13.986	1,65%
MINAGRI livestock based research programmes	1	1	1	1	1	1.000.000.000	1.000	1.060	1.120	1.178	1.236		5.594	5.594	0,66%
MINAGRI agro-forestry based research programmes	1	1	1	1	1	400.000.000	400	424	448	471	495		2.238	2.238	0,26%
MINAGRI value chain research	3	3	3	3	3	250.000.000	750	795	840	883	927		4.196	4.196	0,49%
Sub-Program 2.2: Extension and Proximity Services for Producers							2.494	4.838	6.464	7.662	8.336	0	29.793	29.793	3,51%
Development of National Extension Policy		1				32.500.000	0	34	0	0	0		34	34	0,00%
Expansion of Farmer Field Schools	12000	30.000	40.000	45.000	45.000	100.000	1.200	3.180	4.482	5.299	5.564		19.725	19.725	2,33%
Expansion and support to Farmer Promoters	11877	12.627	13.377	14.127	14.837	50.000	594	669	749	832	917		3.761	3.761	0,44%
Expansion and support to Agricultural Committees	7000	9.000	11.000	13.000	15.000	100.000	700	954	1.232	1.531	1.855		6.272	6.272	0,74%
Sub-Program 2.3: Farmer Cooperatives and Organisations							758	851	950	1.052	1.113	0	4.724	4.724	0,56%
Expansion and support to farmer cooperatives	2027	2.177	2.327	2.477	2.500	300.000	608	692	782	875	927		3.885	3.885	0,46%
Training and capacity building of farmer cooperatives	500	500	500	500	500	300.000	150	159	168	177	185		839	839	0,10%
Program 3: Value Chain Development and Private Sector Investment							42.299	47.533	52.366	60.568	65.567	142.617	125.716	268.333	**31,65%**

	ANNUAL TARGETS (INCREASE)					Unit Cost (in RWF)	ANNUAL COSTS (RWF Millions)					Total Costs (RWF Millions)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Sub-Program 3.1: Creating an Environment to Attract Private Investment, Encourage Entrepreneurship and Facilitate Market Access							390	620	437	459	482	0	2.389	2.389	0,28%
Training of entrepreneurs	1000	1.000	1.000	1.000	1.000	32.500	33	34	36	38	40		182	182	0,02%
Creation of a farm management unit to facilitate private sector development	1	1	1	1	1	65.000.000	65	69	73	77	80		364	364	0,04%
Finalise the PPP law		1				32.500.000	0	34	0	0	0		34	34	0,00%
Establish the Agriculture Investment Task Force	1	1	1	1	1	32.500.000	33	34	36	38	40		182	182	0,02%
Develop an export certification programme with RBS	1	1	1	1	1	32.500.000	33	34	36	38	40		182	182	0,02%
Develop a programme to protect organic certification	1	1	1	1	1	32.500.000	33	34	36	38	40		182	182	0,02%
Improve SPS measures and train exporters	1	1	1	1	1	32.500.000	33	34	36	38	40		182	182	0,02%
Increase airport cold storage space		1				162.500.000	0	172	0	0	0		172	172	0,02%
Marketing and logistics studies	5	5	5	5	5	32.500.000	163	172	182	191	201		909	909	0,11%
Sub-Program 3.2: Development of Priority Value Chains: Food Crops							9.425	9.991	10.560	11.099	11.653	0	52.727	52.727	6,22%
Training of food crop entrepreneurs	2500	2.500	2.500	2.500	2.500	65.000	163	172	182	191	201		909	909	0,11%
Banana market support and facilitation	1	1	1	1	1	1.300.000.000	1.300	1.378	1.457	1.531	1.607		7.273	7.273	0,86%
Wheat market support and facilitation	1	1	1	1	1	1.300.000.000	1.300	1.378	1.457	1.531	1.607		7.273	7.273	0,86%
Maize market support and facilitation	1	1	1	1	1	1.300.000.000	1.300	1.378	1.457	1.531	1.607		7.273	7.273	0,86%
Rice market support and facilitation	1	1	1	1	1	1.300.000.000	1.300	1.378	1.457	1.531	1.607		7.273	7.273	0,86%
Irish potato market support and facilitation	1	1	1	1	1	1.300.000.000	1.300	1.378	1.457	1.531	1.607		7.273	7.273	0,86%
Cassava market support and facilitation	1	1	1	1	1	1.300.000.000	1.300	1.378	1.457	1.531	1.607		7.273	7.273	0,86%
Beans market support and facilitation	1	1	1	1	1	1.300.000.000	1.300	1.378	1.457	1.531	1.607		7.273	7.273	0,86%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in RWF)	ANNUAL COSTS (RWF Millions)					Total Costs (RWF Millions)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Food crop production and marketing strategies	5	5	5	5	5	32.500.000	163	172	182	191	201		909	909	0,11%
Sub-Program 3.3: Development of Priority Value Chains: Export Crops							10.823	11.472	12.126	12.744	13.381	0	60.546	60.546	7,14%
Training of export crop entrepreneurs	4.000	4.000	4.000	4.000	4.000	65.000	260	276	291	306	321		1.455	1.455	0,17%
Coffee market support and facilitation	1	1	1	1	1	3.250.000.000	3.250	3.445	3.641	3.827	4.018		18.182	18.182	2,14%
Tea market support and facilitation	1	1	1	1	1	3.250.000.000	3.250	3.445	3.641	3.827	4.018		18.182	18.182	2,14%
Pyrethrum market support and facilitation	1	1	1	1	1	325.000.000	325	345	364	383	402		1.818	1.818	0,21%
Horticulture and floriculture market support and facilitation	1	1	1	1	1	3.250.000.000	3.250	3.445	3.641	3.827	4.018		18.182	18.182	2,14%
Sericulture market support and facilitation	1	1	1	1	1	325.000.000	325	345	364	383	402		1.818	1.818	0,21%
Export crop production and marketing strategies	5	5	5	5	5	32.500.000	163	172	182	191	201		909	909	0,11%
Sub-Program 3.4: Development of Priority Value Chains: Dairy and Meat							780	827	874	918	964	0	4.364	4.364	0,51%
Training of dairy and meat entrepreneurs	1.500	1.500	1.500	1.500	1.500	65.000	98	103	109	115	121		545	545	0,06%
Dairy market support and facilitation	1	1	1	1	1	260.000.000	260	276	291	306	321		1.455	1.455	0,17%
Meat market support and facilitation	1	1	1	1	1	260.000.000	260	276	291	306	321		1.455	1.455	0,17%
Dairy and meat production and marketing strategies	5	5	5	5	5	32.500.000	163	172	182	191	201		909	909	0,11%
Sub-Program 3.5: Development of Priority Value Chains: Fisheries							163	172	182	191	201	0	909	909	0,11%
Training of fishery entrepreneurs	500	500	500	500	500	65.000	33	34	36	38	40		182	182	0,02%
Fish market support and facilitation	1	1	1	1	1	65.000.000	65	69	73	77	80		364	364	0,04%
Fish production and marketing strategies	2	2	2	2	2	32.500.000	65	69	73	77	80		364	364	0,04%
Sub-Program: 3.6. Development of Priority Value Chains: Apiculture							78	83	87	92	96	0	436	436	0,05%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in RWF)	ANNUAL COSTS (RWF Millions)					Total Costs (RWF Millions)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Training of apiculture entrepreneurs	200	200	200	200	200	65.000	13	14	15	15	16		73	73	0,01%
Honey market support and facilitation	1	1	1	1	1	32.500.000	33	34	36	38	40		182	182	0,02%
Honey production and marketing strategies	1	1	1	1	1	32.500.000	33	34	36	38	40		182	182	0,02%
Sub-Program 3.7: Agricultural Finance							777	823	870	915	960	0	4.345	4.345	0,51%
Agricultural Cooperative Bank established	1	1	1	1	1	108.170.398	108	115	121	127	134		605	605	0,07%
Creation of new SACCOs in new sectors	10	10	10	10	10	32.500.000	325	345	364	383	402		1.818	1.818	0,21%
Improve access to agricultural finance and insurance	1	1	1	1	1	93.506.622	94	99	105	110	116		523	523	0,06%
Catalytic fund established	1	1	1	1	1	250.000.000	250	265	280	294	309		1.399	1.399	0,16%
Sub-Program 3.8: Market-oriented Infrastructure							19.864	23.546	27.229	34.150	37.828	142.617	0	142.617	16,82%
Expanded storage facilities	23.300	23.300	23.300	23.300	23.300	126.352	2.944	3.121	3.299	3.467	3.640	16.470		16.470	1,94%
Post harvest equipment distributed to farmers	1	1	1	1	1	500.000.000	500	530	560	589	618	2.797		2.797	0,33%
Drying grounds constructed	30	30	30	30	30	14.000.000	420	445	471	495	519	2.350		2.350	0,28%
Rural feeder roads constructed	1.400	1.400	1.400	1.400	1.400	20.000.000	13.000	16.250	19.500	26.000	29.250	104.000		104.000	12,27%
Rural feeder roads maintained	597	597	597	597	597	10.000.000	3.000	3.200	3.400	3.600	3.800	17.000		17.000	2,01%
Program 4: Institutional Development and Agricultural Cross-Cutting Issues							12.240	13.698	14.734	15.830	17.023	0	73.526	73.526	**8,67%**
Sub-Program 4.1: Institutional Capacity Building							1.050	1.182	1.176	1.236	1.298	0	5.943	5.943	0,70%
Comprehensive human resource needs assessment and development plan		1				32.500.000	0	34	0	0	0		34	34	0,00%
Approved capacity building action plan		1				32.500.000	0	34	0	0	0		34	34	0,00%
Capacity of MINAGRI staff improved	1	1	1	1	1	350.000.000	350	371	392	412	433		1.958	1.958	0,23%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in RWF)	ANNUAL COSTS (RWF Millions)					Total Costs (RWF Millions)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Experts recruited and counterparts trained	1	1	1	1	1	700.000.000	700	742	784	824	866		3.916	3.916	0,46%
Sub-Program 4.2: Decentralisation in Agriculture							693	975	1.176	1.428	1.700	0	5.972	5.972	0,70%
Strategy and action plan for capacity development at a local level		1				32.500.000	0	34	0	0	0		34	34	0,00%
All district staff trained according to the plan	1	1	1	1	1	400.000.000	400	424	448	471	495		2.238	2.238	0,26%
Community Innovation Centres established	9	15	20	25	30	32.500.000	293	517	728	957	1.206		3.700	3.700	0,44%
Sub-Program 4.3: Legal and Regulatory Framework							65	207	255	230	241	0	997	997	0,12%
Policy reviews in the agriculture sector	2	2	2	2	2	32.500.000	65	69	73	77	80		364	364	0,04%
Comprehensive national SPS policy, strategy and action plan			1			32.500.000	0	0	36	0	0		36	36	0,00%
Registration system for agrochemicals and seeds		1	1	1	1	65.000.000	0	69	73	77	80		299	299	0,04%
Border control system to regulate agricultural exports and imports		1	1	1	1	65.000.000	0	69	73	77	80		299	299	0,04%
Sub-Program 4.4: Agricultural Communication, Statistical Systems, M&E and Management Information Systems							910	965	1.020	1.072	1.125	0	5.091	5.091	0,60%
Agricultural information communicated to users	1	1	1	1	1	65.000.000	65	69	73	77	80		364	364	0,04%
Publish regular agricultural surveys and statistics	1	1	1	1	1	780.000.000	780	827	874	918	964		4.364	4.364	0,51%
Implement a strengthened M&E system	1	1	1	1	1	65.000.000	65	69	73	77	80		364	364	0,04%
Sub-Program 4.5: Gender and Youth in Agriculture							208	220	233	245	257	0	1.164	1.164	0,14%
MINAGRI programmes are gender sensitive	1	1	1	1	1	143.000.000	143	152	160	168	177		800	800	0,09%
Young farmers trained in agricultural entrepreneurship	2000	2.000	2.000	2.000	2.000	32.500	65	69	73	77	80		364	364	0,04%
Sub-Program 4.6: Environmental Mainstreaming in Agriculture							75	80	84	88	93	0	420	420	0,05%
Train district environmentalists and agronomists	100	100	100	100	100	100.000	10	11	11	12	12		56	56	0,01%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in RWF)	ANNUAL COSTS (RWF Millions)					Total Costs (RWF Millions)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Strengthen MINAGRI environmental focal point	1	1	1	1	1	65.000.000	65	69	73	77	80		364	364	0,04%
Sub-Program 4.7: Nutrition and Household Vulnerability							9.240	10.070	10.790	11.531	12.309	0	53.940	53.940	6,36%
Finalise the Food and Nutrition Policy		1				32.500.000	0	34	0	0	0		34	34	0,00%
Training in the use of kitchen gardens	100000	100.000	100.000	100.000	100.000	65.000	6.500	6.890	7.283	7.654	8.037		36.364	36.364	4,29%
Increase One Cow uptake by poor families	32153,4	32.153	32.153	32.153	32.153	65.000	2.090	2.215	2.342	2.461	2.584		11.692	11.692	1,38%
Increase One Cup of Milk uptake by poor schoolchildren	100000	125.000	150.000	175.000	200.000	6.500	650	861	1.092	1.339	1.607		5.551	5.551	0,65%
Establish a food information system		1	1	1	1	65.000.000	0	69	73	77	80		299	299	0,04%
TOTAL							**149.103**	**167.821**	**171.378**	**178.044**	**181.379**	**443.019**	**430.528**	**847.724**	**100,00%**
thereof: CAPITAL COSTS							74.686	81.766	87.314	96.596	102.657	443.019			52,26%
thereof: RECURRENT COSTS							74.417	86.055	84.063	81.448	78.721		404.705		47,74%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in USD)	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**		**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**Capital**	**Recurrent**	**Total**	
Program 1: Agriculture and Animal Resource Intensification							**133.326**	**141.426**	**131.122**	**121.434**	**112.650**	**430.167**	**209.791**	**639.957**	**52,74%**
Sub-Program 1.1: Soil Conservation and Land Husbandry							20.519	21.852	22.424	22.874	23.311	105.982	4.998	110.980	9,15%
Progressive Terrace Construction	50.474	50.474	50.474	50.474	50.474	50	2.524	2.562	2.629	2.682	2.733	13.131		13.131	1,08%
Progressive Terrace Maintenance	0	50.474	50.474	50.474	50.474	3	0	128	131	134	137		530	530	0,04%
Radical Terrace Construction	11.697	11.697	11.697	11.697	11.697	1.500	17.546	17.814	18.280	18.647	19.003	91.290		91.290	7,52%
Radical Terrace Maintenance	0	11.697	11.697	11.697	11.697	75	0	891	914	932	950		3.687	3.687	0,30%
Assessment of effectiveness of land conservation infrastructure	1	1	1	1	1	150.000	150	152	156	159	162		780	780	0,06%
Fertiliser recommendations for types of soils and crops	1	1	1	1	1	50.000	50	51	52	53	54	260		260	0,02%
Decision support tool for soil erosion monitoring and control	1	1	1	1	1	150.000	150	152	156	159	162	780		780	0,06%
Adapted agro-forestry tree species increased	1	1	1	1	1	50.000	50	51	52	53	54	260		260	0,02%
Updated soil conservation and land husbandry policy and strategy	1	1	1	1	1	50.000	50	51	52	53	54	260		260	0,02%
Sub-Program 1.2: Irrigation and Water Management							56.280	59.958	61.630	62.707	63.904	286.429	18.050	304.478	25,09%
Approved National Irrigation Policy and Strategy	0	1	0	0	0	50.000	0	51	0	0	0		51	51	0,00%
Approved National Irrigation Law	0	0	1	0	0	50.000	0	0	52	0	0		52	52	0,00%
Established National Irrigation Board	0	0	1	0	0	100.000	0	0	104	0	0		104	104	0,01%
Hillside Irrigation Construction	2.160	2.160	2.160	2.160	2.160	10.000	21.600	21.931	22.505	22.956	23.394	112.386		112.386	9,26%
Hillside Irrigation Maintenance	0	2.160	2.160	2.160	2.160	500	0	1.097	1.125	1.148	1.170		4.539	4.539	0,37%
Marshland Irrigation Construction	2.700	2.700	2.700	2.700	2.700	12.000	32.400	32.897	33.757	34.434	35.092	168.579		168.579	13,89%
Marshland Irrigation Maintenance	0	2.700	2.700	2.700	2.700	600	0	1.645	1.688	1.722	1.755		6.809	6.809	0,56%
Small-scale Irrigation Construction	300	300	300	300	300	1.500	450	457	469	478	487	2.341		2.341	0,19%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in USD)	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**		**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**Capital**	**Recurrent**	**Total**	
Small-scale Irrigation Maintenance	0	300	300	300	300	75	0	23	23	24	24		95	95	0,01%
Increased numbers of Irrigation Technicians	3	3	3	3	3	10.000	30	30	31	32	32		156	156	0,01%
Increased hectares of irrigation schemes rehabilitated	1.000	1.000	1.000	1.000	1.000	600	600	609	625	638	650	3.122		3.122	0,26%
WUOs established and functional	4	4	4	4	4	100.000	400	406	417	425	433		2.081	2.081	0,17%
Transferred schemes to rural communities	16	16	16	16	16	50.000	800	812	834	850	866		4.162	4.162	0,34%
Sub-Program 1.3: Agricultural Mechanisation							10.016	10.330	8.573	7.715	6.867	37.288	6.212	43.500	3,58%
Developed Agricultural Mechanisation Policy	0	0	1	0	0	50.000	0	0	52	0	0		52	52	0,00%
Tractors purchased	50	40	30	20	10	18.218	911	740	569	387	197	2.805		2.805	0,23%
Power Tillers purchased	100	80	60	40	20	3.079	308	250	193	131	67	948		948	0,08%
Attachments purchased	1.000	800	600	400	200	2.018	2.018	1.639	1.262	858	437	6.215		6.215	0,51%
Planting Machines purchased	400	320	240	160	80	3.392	1.357	1.102	848	577	294	4.178		4.178	0,34%
Crop Treatment Machines purchased	300	300	300	300	300	485	145	148	151	155	157	756		756	0,06%
Harvesters purchased	200	200	200	200	200	13.027	2.605	2.645	2.714	2.769	2.822	13.556		13.556	1,12%
Post Harvesting Machines purchased	150	150	150	150	150	1.298	195	198	203	207	211	1.013		1.013	0,08%
Agro-processing Machines purchased	4	4	4	4	4	323.077	1.292	1.312	1.346	1.373	1.400	6.724		6.724	0,55%
Agricultural Machinery Maintenance	1	1	1	1	1	1.153.846	1.154	1.172	1.202	1.226	1.250		6.004	6.004	0,49%
National Agricultural Mechanisation Centre established	0	1	0	0	0	1.076.923	0	1.093	0	0	0	1.093		1.093	0,09%
Training farmers and technicians in mechanisation	600	600	600	600	600	50	30	30	31	32	32		156	156	0,01%
Sub-Program 1.4: Inputs to Improve Soil Fertility and Management							18.186	24.026	16.103	8.423	1.367	0	68.105	68.105	5,61%
Fertiliser policy in place	0	1	0	0	0	50.000	0	51	0	0	0		51	51	0,00%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in USD)	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**		**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**Capital**	**Recurrent**	**Total**	
Fertiliser regulatory framework developed	0	0	1	0	0	50.000	0	0	52	0	0		52	52	0,00%
Train fertiliser distributors and agro-dealers	250	250	250	250	250	50	13	13	13	13	14		65	65	0,01%
Train farmers in fertiliser and input use	25.000	25.000	25.000	25.000	25.000	50	1.250	1.269	1.302	1.328	1.354		6.504	6.504	0,54%
Farmers access smart subsidies for lime and fertiliser	0	0	0	0	0	0	13.846	17.536	11.445	5.554	0		48.381	48.381	3,99%
Lime producers access subsidies	0	0	0	0	0	0	3.077	5.158	3.290	1.527	0		13.052	13.052	1,08%
Sub-Program 1.5: Seed Development							13.874	10.536	7.336	4.357	1.549	0	37.652	37.652	3,10%
Develop a seed policy, strategy and action plan	0	1	0	0	0	50.000	0	51	0	0	0		51	51	0,00%
Train farmers to use improved seed	25.000	25.000	25.000	25.000	25.000	50	1.250	1.269	1.302	1.328	1.354		6.504	6.504	0,54%
Government decreases seeds subsidy	0	0	0	0	0	0	12.574	9.033	5.846	2.837	0		30.291	30.291	2,50%
Establish a Seeds Coordinating Unit	1	1	1	1	1	50.000	50	51	52	53	54		260	260	0,02%
Employ additional seed inspectors	0	8	8	8	8	10.000	0	81	83	85	87		336	336	0,03%
Establish the National Seeds Laboratory	0	1	1	1	1	50.000	0	51	52	53	54		210	210	0,02%
Sub-Program 1.6. Livestock Development							14.451	14.724	15.056	15.359	15.652	468	74.773	75.242	6,20%
Livestock policy developed	0	1	0	0	0	50.000	0	51	0	0	0		51	51	0,00%
Milk production increased	49.628	49.628	49.628	49.628	49.628	92	4.581	4.651	4.773	4.869	4.962		23.836	23.836	1,96%
Girinka Dairy Cow Programme	42.159	42.159	42.159	42.159	42.159	123	5.189	5.268	5.406	5.515	5.620		26.998	26.998	2,22%
Meat production increased	18.444	18.444	18.444	18.444	18.444	115	2.128	2.161	2.217	2.262	2.305		11.073	11.073	0,91%
Fish production increased	18.120	18.120	18.120	18.120	18.120	115	2.091	2.123	2.178	2.222	2.264		10.878	10.878	0,90%
Honey production increased	1.095	1.095	1.095	1.095	1.095	115	126	128	132	134	137		657	657	0,05%
Honey collection centres operational	2	2	2	2	2	50.000	90	91	94	96	97	468		468	0,04%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in USD)	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**		**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**Capital**	**Recurrent**	**Total**	
Increase production of hides and skins	325	325	325	325	325	757	246	250	256	262	267		1.281	1.281	0,11%
Program 2: Research and Technology Transfer, Advisory Services and Professionalization of Farmers							**12.157**	**15.647**	**18.060**	**19.701**	**20.482**	**0**	**86.046**	**86.046**	**7,09%**
Sub-Program 2.1: Research and Technology Transfer							7.154	7.263	7.453	7.603	7.748	0	37.222	37.222	3,07%
MINAGRI crop based research programmes	1	1	1	1	1	3.846.154	3.846	3.905	4.007	4.088	4.166		20.012	20.012	1,65%
MINAGRI livestock based research programmes	1	1	1	1	1	1.538.462	1.538	1.562	1.603	1.635	1.666		8.005	8.005	0,66%
MINAGRI agro-forestry based research programmes	1	1	1	1	1	615.385	615	625	641	654	667		3.202	3.202	0,26%
MINAGRI value chain research	3	3	3	3	3	384.615	1.154	1.172	1.202	1.226	1.250		6.004	6.004	0,49%
Sub-Program 2.2: Extension and Proximity Services for Producers							3.837	7.129	9.247	10.638	11.234	0	42.084	42.084	3,47%
Development of National Extension Policy	0	1	0	0	0	50.000	0	51	0	0	0		51	51	0,00%
Expansion of Farmer Field Schools	12.000	30.000	40.000	45.000	45.000	154	1.846	4.686	6.412	7.358	7.498		27.800	27.800	2,29%
Expansion and support to Farmer Promoters	11.877	12.627	13.377	14.127	14.837	77	914	986	1.072	1.155	1.236		5.363	5.363	0,44%
Expansion and support to Agricultural Committees	7.000	9.000	11.000	13.000	15.000	154	1.077	1.406	1.763	2.126	2.499		8.871	8.871	0,73%
Sub-Program 2.3: Farmer Cooperatives and Organisations							1.166	1.254	1.359	1.460	1.500	0	6.740	6.740	0,56%
Expansion and support to farmer cooperatives	2.027	2.177	2.327	2.477	2.500	462	936	1.020	1.119	1.215	1.250		5.539	5.539	0,46%
Training and capacity building of farmer cooperatives	500	500	500	500	500	462	231	234	240	245	250		1.201	1.201	0,10%
Program 3: Value Chain Development and Private Sector Investment							**65.075**	**70.046**	**74.915**	**84.099**	**88.360**	**202.608**	**179.888**	**382.495**	**31,52%**
Sub-Program 3.1: Creating an Environment to Attract Private Investment, Encourage Entrepreneurship and Facilitate Market Access							600	914	625	638	650	0	3.426	3.426	0,28%
Training of entrepreneurs	1.000	1.000	1.000	1.000	1.000	50	50	51	52	53	54		260	260	0,02%
Creation of a farm management unit to facilitate private sector development	1	1	1	1	1	100.000	100	102	104	106	108		520	520	0,04%
Finalise the PPP law	0	1	0	0	0	50.000	0	51	0	0	0		51	51	0,00%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in USD)	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**		**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**Capital**	**Recurrent**	**Total**	
Establish the Agriculture Investment Task Force	1	1	1	1	1	50.000	50	51	52	53	54		260	260	0,02%
Develop an export certification programme with RBS	1	1	1	1	1	50.000	50	51	52	53	54		260	260	0,02%
Develop a programme to protect organic certification	1	1	1	1	1	50.000	50	51	52	53	54		260	260	0,02%
Improve SPS measures and train exporters	1	1	1	1	1	50.000	50	51	52	53	54		260	260	0,02%
Increase airport cold storage space	0	1	0	0	0	250.000	0	254	0	0	0		254	254	0,02%
Marketing and logistics studies	5	5	5	5	5	50.000	250	254	260	266	271		1.301	1.301	0,11%
Sub-Program 3.2: Development of Priority Value Chains: Food Crops							14.500	14.722	15.107	15.410	15.705	0	75.444	75.444	6,22%
Training of food crop entrepreneurs	2.500	2.500	2.500	2.500	2.500	100	250	254	260	266	271		1.301	1.301	0,11%
Banana market support and facilitation	1	1	1	1	1	2.000.000	2.000	2.031	2.084	2.126	2.166		10.406	10.406	0,86%
Wheat market support and facilitation	1	1	1	1	1	2.000.000	2.000	2.031	2.084	2.126	2.166		10.406	10.406	0,86%
Maize market support and facilitation	1	1	1	1	1	2.000.000	2.000	2.031	2.084	2.126	2.166		10.406	10.406	0,86%
Rice market support and facilitation	1	1	1	1	1	2.000.000	2.000	2.031	2.084	2.126	2.166		10.406	10.406	0,86%
Irish potato market support and facilitation	1	1	1	1	1	2.000.000	2.000	2.031	2.084	2.126	2.166		10.406	10.406	0,86%
Cassava market support and facilitation	1	1	1	1	1	2.000.000	2.000	2.031	2.084	2.126	2.166		10.406	10.406	0,86%
Beans market support and facilitation	1	1	1	1	1	2.000.000	2.000	2.031	2.084	2.126	2.166		10.406	10.406	0,86%
Food crop production and marketing strategies	5	5	5	5	5	50.000	250	254	260	266	271		1.301	1.301	0,11%
Sub-Program 3.3: Development of Priority Value Chains: Export Crops							16.650	16.905	17.347	17.695	18.033	0	86.631	86.631	7,14%
Training of export crop entrepreneurs	4.000	4.000	4.000	4.000	4.000	100	400	406	417	425	433		2.081	2.081	0,17%
Coffee market support and facilitation	1	1	1	1	1	5.000.000	5.000	5.077	5.209	5.314	5.415		26.015	26.015	2,14%
Tea market support and facilitation	1	1	1	1	1	5.000.000	5.000	5.077	5.209	5.314	5.415		26.015	26.015	2,14%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in USD)	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**		**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**Capital**	**Recurrent**	**Total**	
Pyrethrum market support and facilitation	1	1	1	1	1	500.000	500	508	521	531	542		2.602	2.602	0,21%
Horticulture and floriculture market support and facilitation	1	1	1	1	1	5.000.000	5.000	5.077	5.209	5.314	5.415		26.015	26.015	2,14%
Sericulture market support and facilitation	1	1	1	1	1	500.000	500	508	521	531	542		2.602	2.602	0,21%
Export crop production and marketing strategies	5	5	5	5	5	50.000	250	254	260	266	271		1.301	1.301	0,11%
Sub-Program 3.4: Development of Priority Value Chains: Dairy and Meat							1.200	1.218	1.250	1.275	1.300	0	6.244	6.244	0,51%
Training of dairy and meat entrepreneurs	1.500	1.500	1.500	1.500	1.500	100	150	152	156	159	162		780	780	0,06%
Dairy market support and facilitation	1	1	1	1	1	400.000	400	406	417	425	433		2.081	2.081	0,17%
Meat market support and facilitation	1	1	1	1	1	400.000	400	406	417	425	433		2.081	2.081	0,17%
Dairy and meat production and marketing strategies	5	5	5	5	5	50.000	250	254	260	266	271		1.301	1.301	0,11%
Sub-Program 3.5: Development of Priority Value Chains: Fisheries							250	254	260	266	271	0	1.301	1.301	0,11%
Training of fishery entrepreneurs	500	500	500	500	500	100	50	51	52	53	54		260	260	0,02%
Fish market support and facilitation	1	1	1	1	1	100.000	100	102	104	106	108		520	520	0,04%
Fish production and marketing strategies	2	2	2	2	2	50.000	100	102	104	106	108		520	520	0,04%
Sub-Program: 3.6. Development of Priority Value Chains: Apiculture							120	122	125	128	130	0	624	624	0,05%
Training of apiculture entrepreneurs	200	200	200	200	200	100	20	20	21	21	22		104	104	0,01%
Honey market support and facilitation	1	1	1	1	1	50.000	50	51	52	53	54		260	260	0,02%
Honey production and marketing strategies	1	1	1	1	1	50.000	50	51	52	53	54		260	260	0,02%
Sub-Program 3.7: Agricultural Finance							1.195	1.213	1.245	1.270	1.294	0	6.217	6.217	0,51%
Agricultural Cooperative Bank established	1	1	1	1	1	166.416	166	169	173	177	180		866	866	0,07%
Creation of new SACCOs in new sectors	10	10	10	10	10	50.000	500	508	521	531	542		2.602	2.602	0,21%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in USD)	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**		**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**Capital**	**Recurrent**	**Total**	
Improve access to agricultural finance and insurance	1	1	1	1	1	143.856	144	146	150	153	156		748	748	0,06%
Catalytic fund established	1	1	1	1	1	384.615	385	391	401	409	417		2.001	2.001	0,16%
Sub-Program 3.8: Market-oriented Infrastructure							30.560	34.698	38.955	47.418	50.978	202.608	0	202.608	16,70%
Expanded storage facilities	23.300	23.300	23.300	23.300	23.300	194	4.529	4.599	4.719	4.814	4.906	23.566		23.566	1,94%
Post harvest equipment distributed to farmers	1	1	1	1	1	769.231	769	781	801	818	833	4.002		4.002	0,33%
Drying grounds constructed	30	30	30	30	30	21.538	646	656	673	687	700	3.362		3.362	0,28%
Rural feeder roads constructed	1.400	1.400	1.400	1.400	1.400	30.769	20.000	23.946	27.897	36.101	39.418	147.363		147.363	12,14%
Rural feeder roads maintained	597	597	597	597	597	15.385	4.615	4.716	4.864	4.999	5.121	24.315		24.315	2,00%
Program 4: Institutional Development and Agricultural Cross-Cutting Issues							**18.831**	**20.186**	**21.079**	**21.980**	**22.941**	**0**	**105.018**	**105.018**	**8,65%**
Sub-Program 4.1: Institutional Capacity Building							1.615	1.742	1.683	1.717	1.750	0	8.506	8.506	0,70%
Comprehensive human resource needs assessment and development plan	0	1	0	0	0	50.000	0	51	0	0	0		51	51	0,00%
Approved capacity building action plan	0	1	0	0	0	50.000	0	51	0	0	0		51	51	0,00%
Capacity of MINAGRI staff improved	1	1	1	1	1	538.462	538	547	561	572	583		2.802	2.802	0,23%
Experts recruited and counterparts trained	1	1	1	1	1	1.076.923	1.077	1.093	1.122	1.145	1.166		5.603	5.603	0,46%
Sub-Program 4.2: Decentralisation in Agriculture							1.065	1.437	1.683	1.982	2.291	0	8.459	8.459	0,70%
Strategy and action plan for capacity development at a local level	0	1	0	0	0	50.000	0	51	0	0	0		51	51	0,00%
All district staff trained according to the plan	1	1	1	1	1	615.385	615	625	641	654	667		3.202	3.202	0,26%
Community Innovation Centres established	9	15	20	25	30	50.000	450	761	1.042	1.328	1.625		5.206	5.206	0,43%
Sub-Program 4.3: Legal and Regulatory Framework							100	305	365	319	325	0	1.413	1.413	0,12%
Policy reviews in the agriculture sector	2	2	2	2	2	50.000	100	102	104	106	108		520	520	0,04%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in USD)	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**		**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**Capital**	**Recurrent**	**Total**	
Comprehensive national SPS policy, strategy and action plan	0	0	1	0	0	50.000	0	0	52	0	0		52	52	0,00%
Registration system for agrochemicals and seeds	0	1	1	1	1	100.000	0	102	104	106	108		420	420	0,03%
Border control system to regulate agricultural exports and imports	0	1	1	1	1	100.000	0	102	104	106	108		420	420	0,03%
Sub-Program 4.4: Agricultural Communication, Statistical Systems, M&E and Management Information Systems							1.400	1.421	1.459	1.488	1.516	0	7.284	7.284	0,60%
Agricultural information communicated to users	1	1	1	1	1	100.000	100	102	104	106	108		520	520	0,04%
Publish regular agricultural surveys and statistics	1	1	1	1	1	1.200.000	1.200	1.218	1.250	1.275	1.300		6.244	6.244	0,51%
Implement a strengthened M&E system	1	1	1	1	1	100.000	100	102	104	106	108		520	520	0,04%
Sub-Program 4.5: Gender and Youth in Agriculture							320	325	333	340	347	0	1.665	1.665	0,14%
MINAGRI programmes are gender sensitive	1	1	1	1	1	220.000	220	223	229	234	238		1.145	1.145	0,09%
Young farmers trained in agricultural entrepreneurship	2.000	2.000	2.000	2.000	2.000	50	100	102	104	106	108		520	520	0,04%
Sub-Program 4.6: Environmental Mainstreaming in Agriculture							115	117	120	123	125	0	600	600	0,05%
Train district environmentalists and agronomists	100	100	100	100	100	154	15	16	16	16	17		80	80	0,01%
Strengthen MINAGRI environmental focal point	1	1	1	1	1	100.000	100	102	104	106	108		520	520	0,04%
Sub-Program 4.7: Nutrition and Household Vulnerability							14.215	14.839	15.436	16.011	16.588	0	77.089	77.089	6,35%
Finalise the Food and Nutrition Policy	0	1	0	0	0	50.000	0	51	0	0	0		51	51	0,00%
Training in the use of kitchen gardens	100.000	100.000	100.000	100.000	100.000	100	10.000	10.153	10.419	10.628	10.831		52.031	52.031	4,29%
Increase One Cow uptake by poor families	32.153	32.153	32.153	32.153	32.153	100	3.215	3.265	3.350	3.417	3.482		16.730	16.730	1,38%
Increase One Cup of Milk uptake by poor schoolchildren	100.000	125.000	150.000	175.000	200.000	10	1.000	1.269	1.563	1.860	2.166		7.858	7.858	0,65%
Establish a food information system	0	1	1	1	1	100.000	0	102	104	106	108		420	420	0,03%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in USD)	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 Public Costs
Project/Output (= Unit)	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**		**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**Capital**	**Recurrent**	**Total**	
TOTAL							**229.389**	**247.305**	**245.175**	**247.215**	**244.433**	**632.775**	**580.742**	**1.213.517**	**100,00%**
thereof: CAPITAL COSTS							114.901	120.492	124.913	134.124	138.345	632.775			52,14%
thereof: RECURRENT COSTS							114.488	126.813	120.262	113.091	106.088		580.742		47,86%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in RWF)	ANNUAL COSTS (RWF Millions)					Total Costs (RWF Millions)			in % of ASIP-2 Private Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Program 1: Agriculture and Animal Resource Intensification							9.329	11.306	10.869	11.018	11.569	51.611	0	51.611	**13,82%**
Sub-Program 1.1: Soil Conservation and Land Husbandry							0	146	0	0	0	146	0	146	0,04%
Rehabilitation and equipping of soil and plant testing laboratories		1				137.800.000	0	146	0	0	0	146		146	0,04%
Sub-Program 1.2: Irrigation and Water Management							4.134	4.601	4.863	5.111	5.367	21.597	0	21.597	5,78%
Hillside Irrigation Construction	240	240	240	240	240	6.890.000	1.654	1.753	1.853	1.947	2.045	9.251		9.251	2,48%
Hillside Irrigation Maintenance		240	240	240	240	344.500	0	88	93	97	102	380		380	0,10%
Marshland Irrigation Construction	300	300	300	300	300	8.268.000	2.480	2.629	2.779	2.921	3.067	11.396		11.396	3,05%
Marshland Irrigation Maintenance		300	300	300	300	413.400	0	131	139	146	153	570		570	0,15%
Sub-Program 1.3: Agricultural Mechanisation							2.480	3.725	2.779	2.921	3.067	14.972	0	14.972	4,01%
Establishment of Machinery Repair Workshops	12	12	12	12	12	137.800.000	1.654	1.753	1.853	1.947	2.045	9.251		9.251	2,48%
Establishment of local distribution selling point of farm equipment	12	12	12	12	12	68.900.000	827	876	926	974	1.022	4.625		4.625	1,24%
Power tiller assembly plant	1	1				1.033.500.000	0	1.096	0	0	0	1.096		1.096	0,29%
Sub-Program 1.4: Inputs to Improve Soil Fertility and Management							413	438	849	487	511	2.699	0	2.699	0,72%
Establish additional fertiliser storage capacity	6	6	6	6	6	68.900.000	413	438	463	487	511	2.313		2.313	0,62%
Establish a fertiliser blending plant	0		1			344.500.000	0	0	386	0	0	386		386	0,10%
Sub-Program 1.5: Seed Development							138	146	0	0	0	284	0	284	0,08%
Establish a seed production and processing plant	1	1				137.800.000	138	146	0	0	0	284		284	0,08%
Sub-Program 1.6. Livestock Development							2.163	2.249	2.378	2.499	2.624	11.913	0	11.913	3,19%
Feedlots installed and operational	5	5	5	5	5	137.800.000	689	701	741	779	818	3.728		3.728	1,00%
Fingerling production centres installed	1	1	1	1	1	137.800.000	138	146	154	162	170	771		771	0,21%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in RWF)	ANNUAL COSTS (RWF Millions)					Total Costs (RWF Millions)			in % of ASIP-2 Private Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Hatcheries installed and operational	5	5	5	5	5	68.900.000	345	351	371	389	409	1.864		1.864	0,50%
MCCs built equipped and renovated	12	12	12	12	12	82.680.000	992	1.052	1.112	1.168	1.227	5.551		5.551	1,49%
Program 2: Research and Technology Transfer, Advisory Services and Professionalization of Farmers							9.240	9.794	10.353	10.881	11.425	0	51.692	51.692	**13,84%**
Sub-Program 2.1: Research and Technology Transfer							5.000	5.300	5.602	5.888	6.182	0	27.972	27.972	7,49%
Research collaboration with the private sector (PPP)	1	1	1	1	1	5.000.000.000	5.000	5.300	5.602	5.888	6.182		27.972	27.972	7,49%
Sub-Program 2.2: Extension and Proximity Services for Producers							4.240	4.494	4.751	4.993	5.243	0	23.720	23.720	6,35%
Provision of extension services for high value crops	1	1	1	1	1	4.240.000.000	4.240	4.494	4.751	4.993	5.243		23.720	23.720	6,35%
Program 3: Value Chain Development and Private Sector Investment							32.377	54.115	55.618	73.713	59.695	270.218	0	270.218	**72,34%**
Sub-Program 3.2: Development of Priority Value Chains: Food Crops							1.272	2.079	5.491	9.911	2.621	21.374	0	21.374	5,72%
Upgrade of maize milling capacity	1	1	1			1.272.000.000	1.272	1.348	1.425	0	0	4.045		4.045	1,08%
Rice milling plant			1			607.941.217	0	0	681	0	0	681		681	0,18%
Establishment of cassava plantations		1	1	1		265.000.000	0	281	297	312	0	890		890	0,24%
Cassava processing plants			1	1		2.120.000.000	0	0	2.375	2.496	0	4.872		4.872	1,30%
Establishment of banana plantations		1	1	1		106.000.000	0	112	119	125	0	356		356	0,10%
Banana wine processing plant			1			530.000.000	0	0	594	0	0	594		594	0,16%
Beans processing and canning				1		5.925.400.000	0	0	0	6.978	0	6.978		6.978	1,87%
Soybean processing					1	2.120.000.000	0	0	0	0	2.621	2.621		2.621	0,70%
Irish potato plant established		1				318.000.000	0	337	0	0	0	337		337	0,09%
Sub-Program 3.3: Development of Priority Value Chains: Export Crops							21.406	41.755	34.833	45.403	45.082	183.179	0	183.179	49,04%
Establishment of coffee plantations	1	1	1	1	1	5.300.000.000	5.300	5.618	5.938	6.241	6.553	24.350		24.350	6,52%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in RWF)	ANNUAL COSTS (RWF Millions)					Total Costs (RWF Millions)			in % of ASIP-2 Private Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Coffee hulling plant		1				1.060.000.000	0	1.124	0	0	0	1.124		1.124	0,30%
Coffee washing stations	4	4	4	4	4	636.000.000	2.544	2.697	2.850	2.996	3.146	14.232		14.232	3,81%
Coffee roasting plants	2	2	2	2	2	636.000.000	1.272	1.348	1.425	1.498	1.573	7.116		7.116	1,91%
Coffee PPP projects (PPP)	1	1	1	1	1	2.000.000.000	2.000	2.120	2.241	2.355	2.473	11.189		11.189	3,00%
Expansion of tea estates	1	1	1	1	1	5.300.000.000	5.300	5.618	5.938	6.241	6.553	29.650		29.650	7,94%
Establishment of tea estates and factories		1	1	1	1	5.300.000.000	0	5.618	5.938	6.241	6.553	24.350		24.350	6,52%
Tea bag processing				1	1	2.120.000.000	0	0	0	2.496	2.621	5.118		5.118	1,37%
Tea PPP projects (PPP)	1	1	1	1	1	2.000.000.000	2.000	2.120	2.241	2.355	2.473	11.189		11.189	3,00%
Floriculture estates		50	150	200	250	477.000	0	25	80	112	147	365		365	0,10%
Horticulture estates	200	500	2.000	2.000	2.000	477.000	95	253	1.069	1.123	1.180	3.720		3.720	1,00%
Horticulture PPP projects (PPP)	1	1	1	1	1	1.000.000.000	1.000	1.060	1.120	1.178	1.236	5.594		5.594	1,50%
Essential oils production		50	100	150	150	477.000	0	25	53	84	88	251		251	0,07%
Macadamia nuts		1				5.300.000.000	0	5.618	0	0	0	5.618		5.618	1,50%
Sericulture production					1	2.120.000.000	0	0	0	0	2.621	2.621		2.621	0,70%
Establishment of an avocado estate				1		5.300.000.000	0	0	0	6.241	0	6.241		6.241	1,67%
Sugar plantation and mill				1		5.300.000.000	0	0	0	6.241	0	6.241		6.241	1,67%
Stevia processing					1	2.120.000.000	0	0	0	0	2.621	2.621		2.621	0,70%
Fruit juice processing plant		1				2.650.000.000	0	2.809	0	0	0	2.809		2.809	0,75%
Pineapple processing plant					1	4.240.000.000	0	0	0	0	5.243	5.243		5.243	1,40%
Expansion of chilli production			1			2.650.000.000	0	0	2.969	0	0	2.969		2.969	0,79%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in RWF)	ANNUAL COSTS (RWF Millions)					Total Costs (RWF Millions)			in % of ASIP-2 Private Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Expansion of passion fruit production			1			2.650.000.000	0	0	2.969	0	0	2.969		2.969	0,79%
Expansion of pyrethrum production		1				2.650.000.000	0	2.809	0	0	0	2.809		2.809	0,75%
Gishari Flower Park	0,5	1				1.669.500.000	835	1.770	0	0	0	2.604		2.604	0,70%
Kigali Wholesale Market	1	1				1.060.000.000	1.060	1.124	0	0	0	2.184		2.184	0,58%
Sub-Program 3.4: Development of Priority Value Chains: Dairy and Meat							1.060	1.124	3.921	8.226	1.311	15.641	0	15.641	4,19%
Animal feeds plant established			1			2.650.000.000	0	0	2.801	0	0	2.801		2.801	0,75%
Establishment of modern meat processing plants	1	1	1	1	1	530.000.000	530	562	560	624	655	2.931		2.931	0,78%
Establishment of modern tanneries	1	1	1	1	1	530.000.000	530	562	560	624	655	2.931		2.931	0,78%
Dairy processing plant				1		5.925.400.000	0	0	0	6.978	0	6.978		6.978	1,87%
Sub-Program 3.5: Development of Priority Value Chains: Fisheries							0	0	2.241	0	0	2.241	0	2.241	0,60%
Fish farming			1			2.120.000.000	0	0	2.241	0	0	2.241		2.241	0,60%
Sub-Program: 3.6. Development of Priority Value Chains: Apiculture							689	730	728	811	852	3.811	0	3.811	1,02%
Honey production	1	1	1	1	1	689.000.000	689	730	728	811	852	3.811		3.811	1,02%
Sub-Program 3.8: Market-oriented Infrastructure							7.950	8.427	8.403	9.362	9.830	43.971	0	43.971	11,77%
Expanded storage and post-harvest facilities	25000	25.000	25.000	25.000	25.000	318.000	7.950	8.427	8.403	9.362	9.830	43.971		43.971	11,77%
TOTAL							**50.946**	**75.215**	**76.840**	**95.611**	**82.689**	**321.828**	**51.692**	**373.521**	**100,00%**
thereof: CAPITAL COSTS							41.706	65.420	66.487	84.731	71.264	329.609			88,24%
thereof: RECURRENT COSTS							9.240	9.794	10.353	10.881	11.425		51.692		13,84%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in USD)	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 Private Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Program 1: Agriculture and Animal Resource Intensification							**14.352**	**16.660**	**15.550**	**15.299**	**15.591**	**77.452**	**0**	**77.452**	**14,25%**
Sub-Program 1.1: Soil Conservation and Land Husbandry							0	215	0	0	0	215	0	215	0,04%
Rehabilitation and equipping of soil and plant testing laboratories (PPP)	0	1	0	0	0	212.000	0	215	0	0	0	215		215	0,04%
Sub-Program 1.2: Irrigation and Water Management							6.360	6.780	6.958	7.097	7.233	34.428	0	34.428	6,34%
Hillside Irrigation Construction (PPP)	240	240	240	240	240	10.600	2.544	2.583	2.651	2.704	2.755	13.237		13.237	2,44%
Hillside Irrigation Maintenance (PPP)	0	240	240	240	240	530	0	129	133	135	138	535		535	0,10%
Marshland Irrigation Construction (PPP)	300	300	300	300	300	12.720	3.816	3.874	3.976	4.056	4.133	19.855		19.855	3,65%
Marshland Irrigation Maintenance (PPP)	0	300	300	300	300	636	0	194	199	203	207	802		802	0,15%
Sub-Program 1.3: Agricultural Mechanisation							3.816	5.489	3.976	4.056	4.133	21.469	0	21.469	3,95%
Establishment of Machinery Repair Workshops	12	12	12	12	12	212.000	2.544	2.583	2.651	2.704	2.755	13.237		13.237	2,44%
Establishment of local distribution selling point of farm equipment	12	12	12	12	12	106.000	1.272	1.291	1.325	1.352	1.378	6.618		6.618	1,22%
Power tiller assembly plant (PPP)	1	1	0	0	0	1.590.000	0	1.614	0	0	0	1.614		1.614	0,30%
Sub-Program 1.4: Inputs to Improve Soil Fertility and Management							636	646	1.215	676	689	3.861	0	3.861	0,71%
Establish additional fertiliser storage capacity	6	6	6	6	6	106.000	636	646	663	676	689	3.309		3.309	0,61%
Establish a fertiliser blending plant	0	0	1	0	0	530.000	0	0	552	0	0	552		552	0,10%
Sub-Program 1.5: Seed Development							212	215	0	0	0	427	0	427	0,08%
Establish a seed production and processing plant	1	1	0	0	0	212.000	212	215	0	0	0	427		427	0,08%
Sub-Program 1.6. Livestock Development							3.328	3.315	3.402	3.470	3.536	17.051	0	17.051	3,14%
Feedlots installed and operational	5	5	5	5	5	212.000	1.060	1.033	1.060	1.081	1.102	5.337		5.337	0,98%
Fingerling production centres installed	1	1	1	1	1	212.000	212	215	221	225	230	1.103		1.103	0,20%
Hatcheries installed and operational	5	5	5	5	5	106.000	530	517	530	541	551	2.669		2.669	0,49%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in USD)	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 Private Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
MCCs built equipped and renovated (PPP)	12	12	12	12	12	127.200	1.526	1.550	1.590	1.622	1.653	7.942		7.942	1,46%
Program 2: Research and Technology Transfer, Advisory Services and Professionalization of Farmers							**14.215**	**14.433**	**14.811**	**15.108**	**15.396**	**0**	**73.964**	**73.964**	**13,61%**
Sub-Program 2.1: Research and Technology Transfer							7.692	7.810	8.014	8.175	8.331	0	40.024	40.024	7,37%
Research collaboration with the private sector (PPP)	1	1	1	1	1		7.692	7.810	8.014	8.175	8.331		40.024	40.024	7,37%
Sub-Program 2.2: Extension and Proximity Services for Producers							6.523	6.623	6.796	6.933	7.065	0	33.940	33.940	6,25%
Provision of extension services for high value crops	1	1	1	1	1	6.523.077	6.523	6.623	6.796	6.933	7.065		33.940	33.940	6,25%
Program 3: Value Chain Development and Private Sector Investment							**49.811**	**79.745**	**79.568**	**102.350**	**80.447**	**391.921**	**0**	**391.921**	**72,13%**
Sub-Program 3.2: Development of Priority Value Chains: Food Crops							1.957	3.063	7.856	13.761	3.532	30.169	0	30.169	5,55%
Upgrade of maize milling capacity	1	1	1			1.956.923	1.957	1.987	2.039	0	0	5.983		5.983	1,10%
Rice milling plant	0		1			935.294	0	0	974	0	0	974		974	0,18%
Establishment of cassava plantations	0	1	1	1		407.692	0	414	425	433	0	1.272		1.272	0,23%
Cassava processing plants	0		1	1		3.261.538	0	0	3.398	3.466	0	6.864		6.864	1,26%
Establishment of banana plantations	0	1	1	1		163.077	0	166	170	173	0	509		509	0,09%
Banana wine processing plant	0		1			815.385	0	0	850	0	0	850		850	0,16%
Beans processing and canning	0			1		9.116.000	0	0	0	9.688	0	9.688		9.688	1,78%
Soybean processing	0				1	3.261.538	0	0	0	0	3.532	3.532		3.532	0,65%
Irish potato plant established	0	1				489.231	0	497	0	0	0	497		497	0,09%
Sub-Program 3.3: Development of Priority Value Chains: Export Crops							32.933	61.531	49.833	63.042	60.754	268.093	0	268.093	49,34%
Establishment of coffee plantations	1	1	1	1	1	8.153.846	8.154	8.279	8.495	8.666	8.831	42.425		42.425	7,81%
Coffee hulling plant	0	1				1.630.769	0	1.656	0	0	0	1.656		1.656	0,30%
Coffee washing stations	4	4	4	4	4	978.462	3.914	3.974	4.078	4.160	4.239	20.364		20.364	3,75%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in USD)	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 Private Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Coffee roasting plants	2	2	2	2	2	978.462	1.957	1.987	2.039	2.080	2.119	10.182		10.182	1,87%
Coffee PPP projects (PPP)	1	1	1	1	1	3.076.923	3.077	3.124	3.206	3.270	3.333	16.009		16.009	2,95%
Expansion of tea estates	1	1	1	1	1	8.153.846	8.154	8.279	8.495	8.666	8.831	42.425		42.425	7,81%
Establishment of tea estates and factories	0	1	1	1	1	8.153.846	0	8.279	8.495	8.666	8.831	34.271		34.271	6,31%
Tea bag processing	0			1	1	3.261.538	0	0	0	3.466	3.532	6.999		6.999	1,29%
Tea PPP projects (PPP)	1	1	1	1	1	3.076.923	3.077	3.124	3.206	3.270	3.333	16.009		16.009	2,95%
Floriculture estates	0	50	150	200	250	734	0	37	115	156	199	507		507	0,09%
Horticulture estates	200	500	2.000	2.000	2.000	734	147	373	1.529	1.560	1.590	5.198		5.198	0,96%
Horticulture PPP projects (PPP)	1	1	1	1	1	1.538.462	1.538	1.562	1.603	1.635	1.666	8.005		8.005	1,47%
Essential oils production	0	50	100	150	150	734	0	37	76	117	119	350		350	0,06%
Macadamia nuts	0	1				8.153.846	0	8.279	0	0	0	8.279		8.279	1,52%
Sericulture production	0				1	3.261.538	0	0	0	0	3.532	3.532		3.532	0,65%
Establishment of an avocado estate	0			1		8.153.846	0	0	0	8.666	0	8.666		8.666	1,59%
Sugar plantation and mill	0			1		8.153.846	0	0	0	8.666	0	8.666		8.666	1,59%
Stevia processing	0				1	3.261.538	0	0	0	0	3.532	3.532		3.532	0,65%
Fruit juice processing plant	0	1				4.076.923	0	4.139	0	0	0	4.139		4.139	0,76%
Pineapple processing plant	0				1	6.523.077	0	0	0	0	7.065	7.065		7.065	1,30%
Expansion of chilli production	0		1			4.076.923	0	0	4.248	0	0	4.248		4.248	0,78%
Expansion of passion fruit production	0		1			4.076.923	0	0	4.248	0	0	4.248		4.248	0,78%
Expansion of pyrethrum production	0	1				4.076.923	0	4.139	0	0	0	4.139		4.139	0,76%
Gishari Flower Park (PPP)	0,5	1				2.568.462	1.284	2.608	0	0	0	3.892		3.892	0,72%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in USD)	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 Private Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Kigali Wholesale Market (PPP)	1	1				1.630.769	1.631	1.656	0	0	0	3.287		3.287	0,60%
Sub-Program 3.4: Development of Priority Value Chains: Dairy and Meat							1.631	1.656	5.610	11.421	1.766	22.084	0	22.084	4,06%
Animal feeds plant established	0	0	1	0	0	4.076.923	0	0	4.007	0	0	4.007		4.007	0,74%
Establishment of modern meat processing plants (PPP)	1	1	1	1	1	815.385	815	828	801	867	883	4.194		4.194	0,77%
Establishment of modern tanneries (PPP)	1	1	1	1	1	815.385	815	828	801	867	883	4.194		4.194	0,77%
Dairy processing plant	0	0	0	1	0	9.116.000	0	0	0	9.688	0	9.688		9.688	1,78%
Sub-Program 3.5: Development of Priority Value Chains: Fisheries							0	0	3.206	0	0	3.206	0	3.206	0,59%
Fish farming	0	0	1	0	0	3.261.538	0	0	3.206	0	0	3.206		3.206	0,59%
Sub-Program: 3.6. Development of Priority Value Chains: Apiculture							1.060	1.076	1.042	1.127	1.148	5.453	0	5.453	1,00%
Honey production	1	1	1	1	1	1.060.000	1.060	1.076	1.042	1.127	1.148	5.453		5.453	1,00%
Sub-Program 3.8: Market-oriented Infrastructure							12.231	12.418	12.022	12.999	13.247	62.916	0	62.916	11,58%
Expanded storage and post-harvest facilities	25000	25.000	25.000	25.000	25.000	489	12.231	12.418	12.022	12.999	13.247	62.916		62.916	11,58%
TOTAL							**78.379**	**110.838**	**109.928**	**132.757**	**111.434**	**469.373**	**73.964**	**543.336**	**100,00%**
thereof: CAPITAL COSTS							64.163	96.405	95.118	117.649	96.038	469.373			86,39%
thereof: RECURRENT COSTS							14.215	14.433	14.811	15.108	15.396		73.964		13,61%

	ANNUAL TARGETS (INCREASE)					Unit Cost (in USD)	ANNUAL COSTS (in USD Thousands)					Total Costs (in USD Thousands)			in % of ASIP-2 PPP Costs
Project/Output (= Unit)	2013/14	2014/15	2015/16	2016/17	2017/18		2013/14	2014/15	2015/16	2016/17	2017/18	Capital	Recurrent	Total	
Program 1: Agriculture and Animal Resource Intensification							**7.886**	**10.160**	**8.548**	**8.719**	**8.886**	**44.200**	**0**	**44.200**	**0**
Sub-Program 1.1: Soil Conservation and Land Husbandry							0	215	0	0	0	215	0	215	0,15%
Rehabilitation and equipping of soil and plant testing laboratories (PPP)	0	1	0	0	0	212.000	0	215	0	0	0	215		215	0,15%
Sub-Program 1.2: Irrigation and Water Management							6.360	6.780	6.958	7.097	7.233	34.428	0	34.428	24,62%
Hillside Irrigation Construction (PPP)	240	240	240	240	240	10.600	2.544	2.583	2.651	2.704	2.755	13.237		13.237	9,47%
Hillside Irrigation Maintenance (PPP)	0	240	240	240	240	530	0	129	133	135	138	535		535	0,38%
Marshland Irrigation Construction (PPP)	300	300	300	300	300	12.720	3.816	3.874	3.976	4.056	4.133	19.855		19.855	14,20%
Marshland Irrigation Maintenance (PPP)	0	300	300	300	300	636	0	194	199	203	207	802		802	0,57%
Sub-Program 1.3: Agricultural Mechanisation							0	1.614	0	0	0	1.614	0	1.614	1,15%
Power tiller assembly plant (PPP)	1	1	0	0	0	1.590.000	0	1.614	0	0	0	1.614		1.614	1,15%
Sub-Program 1.6. Livestock Development							1.526	1.550	1.590	1.622	1.653	7.942	0	7.942	5,68%
MCCs built equipped and renovated (PPP)	12	12	12	12	12	127.200	1.526	1.550	1.590	1.622	1.653	7.942		7.942	5,68%
Program 2: Research and Technology Transfer, Advisory Services and Professionalization of Farmers							**7.692**	**7.810**	**8.014**	**8.175**	**8.331**	**0**	**40.024**	**40.024**	**28,63%**
Sub-Program 2.1: Research and Technology Transfer							7.692	7.810	8.014	8.175	8.331	0	40.024	40.024	28,63%
Research collaboration with the private sector (PPP)	1	1	1	1	1		7.692	7.810	8.014	8.175	8.331		40.024	40.024	28,63%
Program 3: Value Chain Development and Private Sector Investment							**12.238**	**13.730**	**9.617**	**9.908**	**10.098**	**55.591**	**0**	**55.591**	**0**
Sub-Program 3.3: Development of Priority Value Chains: Export Crops							10.607	12.074	8.014	8.175	8.331	47.202	0	47.202	33,76%
Coffee PPP projects (PPP)	1	1	1	1	1	3.076.923	3.077	3.124	3.206	3.270	3.333	16.009		16.009	11,45%
Tea PPP projects (PPP)	1	1	1	1	1	3.076.923	3.077	3.124	3.206	3.270	3.333	16.009		16.009	11,45%
Horticulture PPP projects (PPP)	1	1	1	1	1	1.538.462	1.538	1.562	1.603	1.635	1.666	8.005		8.005	5,73%
Gishari Flower Park (PPP)	0,5	1				2.568.462	1.284	2.608	0	0	0	3.892		3.892	2,78%
Kigali Wholesale Market (PPP)	1	1				1.630.769	1.631	1.656	0	0	0	3.287		3.287	2,35%
Sub-Program 3.4: Development of Priority Value Chains: Dairy and Meat							1.631	1.656	1.603	1.733	1.766	8.389	0	8.389	6,00%
Establishment of modern meat processing plants (PPP)	1	1	1	1	1	815.385	815	828	801	867	883	4.194		4.194	3,00%
Establishment of modern tanneries (PPP)	1	1	1	1	1	815.385	815	828	801	867	883	4.194		4.194	3,00%
TOTAL							**27.817**	**31.699**	**26.180**	**26.803**	**27.315**	**99.791**	**40.024**	**139.814**	**100,00%**

Monitoring of Domestic and Foreign PUBLIC Investments/Financing during the ASIP-2 period	Domestic Investment					Foreign Investment			**TOTAL**
	Private Domestic: Credit	Private Domestic: Private Equity	Public Domestic: GoR expenditure	Farmer investments/ contributions*	Total Domestic Investment	Public Foreign: Sector Support/P4R	Public Foreign: Project Support	Total Foreign Investment	
Subsidies - Fertilizer					0			0	**0**
Subsidies - Seeds					0			0	**0**
Subsidies - Small-scale Irrigation					0			0	**0**
Subsidies - "One Cow", "One Cup", "Nutrition Gardens"					0			0	**0**
Subsidies - Other (e.g. mechanization, post-harvest)					0			0	**0**
Terracing - Radical					0			0	**0**
Terracing - Progressive					0			0	**0**
Irrigation - Marshland					0			0	**0**
Irrigation - Hillside					0			0	**0**
Irrigation - Small-scale					0			0	**0**
Agriculture research					0			0	**0**
Support to TWIGIRE (extension)					0			0	**0**
Training of agriculture cooperatives					0			0	**0**
Agricultural Mechanization					0			0	**0**
Feeder Roads - Rehabilitation					0			0	**0**
Feeder Roads - Maintenance					0			0	**0**
Food crop value chains - Storage					0			0	**0**
Food crop value chains - Processing					0			0	**0**
Food crop value chains - Market facilitation					0			0	**0**
Export crop value chains - Plantation					0			0	**0**
Export crop value chains - Processing					0			0	**0**
Export crop value chains - Market facilitation					0			0	**0**
Dairy, meat, fish and honey value chains					0			0	**0**
Homestead gardening					0			0	**0**
Training of staff (MINAGRI, RAB, NAEB)					0			0	**0**
Training of staff (District and Sectors)					0			0	**0**
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

* Note: The corresponding assessment methodology will be developed during Fiscal Year 2014/15

Monitoring of Domestic and Foreign PRIVATE Investments/Financing during the ASIP-2 period	Domestic Investment				Foreign Investment				**TOTAL**
	Private Domestic: Credit	Private Domestic: Private Equity	PPP Contributions	Total Domestic Investment	Private Foreign: FDI	PPP Contributions	Impact / Social Investment	Total Foreign Investment	
Irrigation infrastructure				0				0	**0**
Agricultural mechanization (assembly, workshops)				0				0	**0**
Input (fertilzer, seeds) supply chain				0				0	**0**
Extension services, Training				0				0	**0**
Food crops (without processing)				0				0	**0**
Food crops processing				0				0	**0**
Export crops (without processing)				0				0	**0**
Export crops processing				0				0	**0**
Livestock value chains (meat, dairy, fish, honey)				0				0	**0**
Market infrastructure				0				0	**0**
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Annex 4-A: Net FINANCIAL Benefit by Year (calculation based on ASIP-2 public costs)

RWF billion	Irrigated Hillside Areas	Non-irrigated Hillside Areas	Marshland Areas	Drying Floors	Storage Facilities	Feeder Roads	Employment	Total Financial Net Benefits
2014	(20)	(48)	(29)	(0)	(4)	(22)	-	(122)
2015	(20)	(50)	(30)	1	(3)	(25)	0	(127)
2016	(19)	(34)	(26)	1	(3)	(25)	0	(105)
2017	(15)	(12)	(20)	2	(2)	(27)	1	(73)
2018	(8)	18	(12)	2	(2)	(23)	1	(23)
2019	14	60	19	3	2	15	2	115
2020	19	65	19	3	2	15	2	125
2021	22	66	19	3	2	15	2	130
2022	22	68	19	3	2	15	2	131
2023	22	70	19	3	2	15	2	134
2024	28	158	19	3	2	15	2	227
2025	22	73	19	3	2	15	2	136
2026	22	74	19	3	2	15	2	137
2027	22	75	19	3	2	15	2	137
2028	21	76	19	3	2	15	2	138
2029	21	77	19	3	2	15	2	139
2030	23	82	19	3	2	15	2	145
2031	23	83	19	3	2	15	2	147
2032	23	85	19	3	2	15	2	149
2033	23	87	19	3	2	15	2	151
2034	28	168	19	3	2	15	2	238
2035	23	89	19	3	2	15	2	153
2036	23	90	19	3	2	15	2	153
2037	22	90	19	3	2	15	2	153
2038	22	91	19	3	2	15	2	154
							Financial Net Benefits (average/year)	**102**
							Financial NPV (12%)	**257**
							Financial IRR	**19%**

Note: (1) Amounts are shown in constant RWF 2014 amounts (i.e. no inflation is included).
(2) Net benefits from feeder roads and employment only include incremental benefits from crop production.
(3) Net Benefits (average/year) are not discounted. Financial Net Present Value is calculated using a discount rate of 12% over a period of 25 years.
(4) Rounding errors may occur.

Annex 4-B: Net ECONOMIC Benefit by Year (calculation based on ASIP-2 public costs)

RWF billion	Irrigated Hillside Areas	Non-irrigated Hillside Areas	Marshland Areas	Drying Floors	Storage Facilities	Feeder Roads	Employment	Total Direct Net Benefits	Carbon Sequestration	Total Economic Net Benefits
2014	(18)	(43)	(26)	(0)	(4)	(19)	-	(110)	-	(110)
2015	(18)	(45)	(27)	0	(3)	(22)	0	(115)	0	(115)
2016	(17)	(31)	(24)	1	(3)	(23)	0	(97)	0	(96)
2017	(13)	(12)	(19)	1	(3)	(24)	1	(70)	1	(69)
2018	(7)	13	(13)	1	(3)	(21)	1	(28)	2	(27)
2019	13	49	13	2	1	12	2	92	2	94
2020	18	53	13	2	1	12	2	101	5	106
2021	20	55	13	2	1	12	2	105	5	110
2022	20	56	13	2	1	12	2	107	5	112
2023	20	58	13	2	1	12	2	109	5	114
2024	25	137	13	2	1	12	2	193	5	198
2025	20	61	13	2	1	12	2	111	5	116
2026	20	61	13	2	1	12	2	112	5	117
2027	20	62	13	2	1	12	2	112	5	117
2028	19	63	13	2	1	12	2	113	5	118
2029	19	64	13	2	1	12	2	114	5	119
2030	21	68	13	2	1	12	2	119	5	125
2031	21	70	13	2	1	12	2	121	5	126
2032	21	71	13	2	1	12	2	122	5	128
2033	21	73	13	2	1	12	2	124	5	129
2034	26	147	13	2	1	12	2	203	5	208
2035	21	75	13	2	1	12	2	126	5	131
2036	20	76	13	2	1	12	2	126	5	132
2037	20	76	13	2	1	12	2	127	5	132
2038	20	77	13	2	1	12	2	127	5	133
							Economic Net Benefits (average/year)	**82**	**4**	**86**
							Economic NPV (12%)	**176**	**22**	**198**
							Economic IRR	**17%**		**18%**

Note: (1) Amounts are shown in constant RWF 2014 amounts (i.e. no inflation is included).
(2) Financial prices are converted to economic prices using adjustment factors
(3) Net benefits from feeder roads and employment only include incremental benefits from crop production.
(4) Net Benefits (average/year) are not discounted. Financial Net Present Value is calculated using a discount rate of 12% over a period of 25 years.
(5) Rounding errors may occur.