Reducing poverty through sustainable and equitable economic transformation: what can aid and government programmes contribute?

Rwanda Case Study

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EXECUTIVE SUMMARY

Rwanda is well known as a country that is making developmental progress. The national poverty rate has fallen from 59% in 2001 to 45% in 2011.[2] Progress on many social indicators related to health, education and wellbeing has often been both very positive and clearly equitable with the poorest and those living in rural areas catching up with wealthier, urban households. Poverty reduction has been higher in rural areas and agricultural growth is recognised as key in driving progress in Rwanda. The World Bank has calculated that together the increase in agricultural production and commercialisation accounted for about 45% of the reduction in poverty observed between 2001 and 2011.

It is, however, less clear what has happened over the last few years. Poverty data recently released in September 2015 (for the 2013/14 period) is, unfortunately, not comparable due to a change in the methodology applied. It is, therefore, not possible to draw firm conclusions on poverty reduction trends in recent years. It is also the case that the picture for agricultural progress looks somewhat less positive when the recent survey period (2010/11 - 2013/14) is compared to the previous survey period (2005/6 – 2010/11). Evidence shows there are less farming households selling crops and that particularly the poorest households are less involved in commercialisation. As a result, 'equity gaps related to commercialisation' - which were narrowing - have now widened again. Still, there is evidence agricultural productivity has improved greatly for many crops and that the benefits of key agricultural programmes are expanding to cover more of Rwanda's farming households.

Improvements in the agriculture sector can be clearly linked to policies and programmes implemented by the Ministry of Agriculture (MINAGRI). Programmes such as the Crop Intensification Programme and others have had many impressive results, improving yields, increasing the coverage of irrigation and soil erosion protection programmes and increasing fertiliser use significantly. While there are legitimate questions about whether the poor are under-represented in these programmes it is clear the poor are benefiting and some (though not all) of the Government of Rwanda's (GoR) interventions are both effective and efficient. Targets under the agriculture sector strategic plan are specific, ambitious and rigorously adhered to and the sector has consistently received an adequate budget allocation. Though MINAGRI has received between 5 and 6% of the national budget in recent years, the World Bank has estimated that other departmental and local level spending brings the agriculture budget up to the CAADP benchmark of 10%.

However, the picture is not all positive. Gender and agriculture is a notable weak point. It is well covered in policy terms and the commitment, on paper, is both strong and comprehensive. In practice it is a neglected area and survey data shows that women benefit less from agricultural programmes and public sector support, and are generally trailing behind their male counterparts in key areas such as access to irrigation, soil erosion protection programmes and in accessing inputs. Along with 'climate-smart agriculture', gender is one of topics that DFID is now seeking to bring to more prominence in the sector through the dedication of news funds in its technical assistance facility.

Private sector development and particularly the future of agro-processing in the country is a central concern. Rwanda is at a transitional stage having made large improvements on the production side but making slower progress when it comes to commercialisation and particularly the development of micro, small, medium and large agri-businesses. The manufacturing sector has grown rapidly - but from a very small base after the very large impacts of the genocide on manufacturing capacity. The number of micro-businesses in rural areas is also growing rapidly. A series of privatisations of public-owned agribusinesses since 2005 means processing businesses in coffee, tea, rice, sugar (and some others) are now privately owned, by either foreign investors (both international and regional), or one of a handful of Rwandan investor groups or large family-owned firms. A trend of consolidation of ownership at the top end of the manufacturing sector is visible given the capital necessary to either buy or start up a major agro-processing venture is significant.

At the same time Rwanda is essentially a country where the smallholder model dominates. Central to its agriculture policy is support for small farmers and cooperatives. Targets related to cooperatives' formation and operations are a key part of the sector plan. Rwanda has almost no agricultural plantations and most large firms are almost entirely reliant on small farmers to supply raw materials (or are obliged to input raw materials). Securing input supply has been assessed as *the* binding constraint of large manufacturing and agro-processing firms in Rwanda. This brings opportunities. One of the most notable characteristics of the agribusiness sector is the number of joint ventures either between foreign investors and farmer cooperatives or foreign investors and the GoR. As such there is great attention paid to how to keep the benefits of value chain development in country – whether through particular ownership structures or paying attention to the incomes generated for small farmers in different crop sectors. There are several examples of a willingness to experiment and 'lead' the private sector into new opportunities by the public sector taking a role either as regulator, co-investor or partner in seeking expanded business opportunities.

One of the questions that has not been answered yet in Rwanda is specifically what markets will work for the poor in terms of value addition and agro-processing. The industry is at too early a stage for this to be simple to determine. MINAGRI also appears to be struggling in practice with its transition from a ministry that can effectively support the production side to one that is successfully prioritizing commercialisation and agribusiness development. However, it is clear there is both huge potential for value addition and smallholder farmers and cooperatives are very well positioned with an enabling environment to increase their productivity and enable them to get involved in better-remunerated activities. Lessons learned from Rwanda's experience can be found in Section 7.

Box 1: A Note on Methodology

Most of the data presented in this report comes from the National Institute of Statistics of Rwanda (NISR). The data is presented in Rwanda's Integrated Household Living Condition Surveys – known as EICV for its French acronym. EICV data is available since 2000/01 in 4 EICV surveys. Data from EICV 1 is less consistent with the categorisation used since 2005/6 so EICV 1 is cited less. EICV 4 has just been published. Unfortunately poverty data in EICV 4 is not comparable with previous surveys. This is discussed more in **Section 1**. Also EICV 4 does not report some important categories such as a breakdown of urban and rural poverty rates. EICV 4 Thematic Reports – which normally cover

agriculture in depth – have also not yet been publicly released. Therefore there are limits to the analysis that can be presented here. The period 2000/1 – 2010/11 is well covered in the literature and there is comparable trend data and a strong consensus on the issue of poverty reduction and the role of the agriculture sector in achieving progress. More recent – though more limited - evidence from EICV 4 is presented to complement that story with the necessary caveats about comparability. Other information is taken from reports mainly produced by donors as part of their technical assistance packages, as well as information presented by the Ministry of Agriculture in its plans and reports.

1. INTRODUCTION

Rwanda is well known as a country that is making developmental progress. The national poverty rate has fallen significantly and inequality has also been reduced: the Gini coefficient fell from 0.52% to 0.49% between 2005/6 and 2010/11.[3] Tax revenues have increased significantly over the last decade contributing to a large increase in the Government of Rwanda's (GoR) budget and enabling strong investment in social sectors.

Rwanda's successful growth strategy and generally pro-poor expenditure policies have led to progress in many areas. The country's achievements in relation to child survival are well known, with infant and under-five mortality rates having decreased dramatically since 2005/6.[4] Improvements in the maternal mortality ratio are also notable and Rwanda has made strong progress reducing fertility rates, increasing access to contraception, expanding its successful immunisation programme and increasing the number of women having assisted deliveries in childbirth.[5] In many areas evidence also shows that health inequalities are reducing. There has also been a lot of progress in relation to education. Access to education is increasing, as demonstrated by rising enrolment and attendance rates. Rwanda was ranked one of the top three performing countries globally with regard to achieving universal primary education goals.[6] The quality of education, however, remains a huge challenge. [See Table A:1 in Annex A for all data related to improvements in health, education and other aspects of wellbeing].

The role of agricultural growth in poverty reduction has also been recognised, particularly for the period 2005/6-2010/11. Agriculture has been given huge priority as a sector within the country's 'Vision 2020' framework and its successive Economic Development and Poverty Reduction Strategies (EDPRS). The country is currently implementing EDPRS-2, which aims to accelerate progress towards middle-income status and reach a poverty rate of 30% by 2018.

2. POVERTY REDUCTION AND AGRICULTURE IN RWANDA

Rwanda has reduced poverty significantly from the beginning of the last decade. In 2000/1 the poverty rate was recorded as 58.9%. This fell to 44.9% in 2010/11. (It should be noted that Rwanda's national poverty line is below the international benchmarks. The World Bank has calculated with this survey data that in 2010/11 60.3% of the Rwandan population live below the US$1.90 international poverty line).[7] Progress from 2000/1 to 2005/6 was slow with poverty dropping only a few percentage points. With the growth in population the numbers living in poverty actually grew during this period. However, between 2005/6 and 2010/11 poverty fell with large reductions in the poverty headcount rate as well as reductions in the numbers of people living in poverty. Much of this progress coincided with the period of Rwanda's second Poverty Reduction

Strategy Plan (known as EDPRS-1 in Rwanda) that included a strong focus on extreme poverty and rural areas. As Table 1 shows it is the reduction in numbers living in *extreme poverty* that has been most dramatic.

Table 1: Poverty Reduction in Rwanda, 2005/6 – 2013/14

Indicator	2005/6	2010/11	% change
Poverty rate %	56.7%	44.9%	-21%
Extreme poverty rate %	35.8%	24.1%	-33%
Numbers of people living in poverty	5,386,500	4,849,200	-10%
Numbers of people living in extreme poverty	3,401,000	2,602,800	- 23%

Source: National Institute of Statistics Rwanda (NISR), Integrated Household Living Condition Surveys: EICV 2 (2005/6), EICV 3 (2010/11)

Note: Population figures used to work out the estimated numbers living in poverty are taken from the EICV surveys and are based on NISR population projections between the population censuses conducted.

In 2013/14 the poverty rate published in the new household survey was 39.1%, with 16.3% living in extreme poverty.[8] However, this poverty rate is not directly comparable with the poverty rates cited above. This is because the National Institute of Statistics in Rwanda (NISR) has changed its methodology, altering the items that are included in the food basket used to calculate the consumption poverty line. As this had not been altered since 2000 – and prices of many previously traditional food items had increased a lot – it was felt the food basket under the old methodology did not represent correctly the current consumption of the poor. These are legitimate reasons to adapt methodology. However, it has caused controversy as there is no clear explanation provided by NISR on the report or its website as to the fact that this data is specifically not comparable. There is, therefore, no way to conclude whether poverty has in fact decreased, increased or stayed around the same in this most recent period. The 39.1% figure can only be used as a baseline for future analysis.

While statistics for this most recent period are unclear, there is still no doubt that agriculture has been one of the main drivers of both growth and poverty reduction in the previous period. Even though the agricultural sector has decreased in importance with regard to its share of GDP,[9] it continues to serve as the backbone of the Rwandan economy providing income and employment for most households – and especially for women. The most recently published data shows that 70% of population declare their 'main, usual job' to be in the agriculture, forestry and fishing sector in Rwanda and in rural areas this rises to 79%.[10] A clear consensus emerges from the published data and literature on poverty reduction and agriculture. Key findings are that:

- Growth in rural areas was higher than urban areas between 2005/6 and 2010/11 and higher agricultural productivity has been the main driver of growth and poverty reduction.[11]
- Agricultural production at household level more than doubled between 2000/1 and 2010/11, with the increase being a lot higher in the second half of the decade. The increase in production was also accompanied by increased commercialisation on local markets. This increase in commercialisation has been

particularly important in driving the increase in incomes for the poorest.[12]

- Poverty fell faster in rural areas than urban areas between 2005/6 and 2010/11. It declined from 61.9% to 48.7% in rural areas, compared to 28.5% to 22.1% in urban areas.[13]

The World Bank has calculated that together the increase in production and commercialisation accounted for about 45% of the reduction observed in poverty between 2000/1 and 2010/11.[14] Other factors found important in explaining poverty reduction are the drop in fertility rates (and decreased dependency ratio providing more disposable income) and income and wages earned from non-farm activities. In addition, the World Bank finds that the consumption share of the bottom 20% of households increased substantially from 4.7% in 2005/6 to 5.4% in 2010/11, while the share of the richest 20% declined in this period.

Agricultural improvements are linked to three key strategies – increased investments in agricultural inputs, land consolidation and investment in relevant infrastructure. The GoR's flagship programmes – the Crop Intensification Programme (CIP), the Land Husbandry programme and the Water Harvesting and Hillside Irrigation (LWH) programme are all relevant. (These programmes are described in **section 3**). The conclusion has been that during the period 2005/6 to 2010/11 growth in Rwanda was strongly pro-poor. What has happened since 2010/11 is less clear, particularly given the latest poverty data is not comparable. However, there is data available on the recent trends in the agriculture sector which provides more detail on more recent progress and challenges.

3. AN OVERVIEW OF TRENDS IN THE AGRICULTURE SECTOR

Rwandan agriculture is characterized by small production units – the average landholding size is 0.33 ha, reflecting the high population pressure.[15] The vast majority of the rural population is made up of subsistence farmers who use mostly rain-fed production systems. (Less than 6 percent of all cultivated land is irrigated).[16] Land is also difficult to cultivate due to the country's hilly topography. The majority of households are engaged in some sort of crop or livestock production activity: 87.4% of households were engaged in crop production in 2013/14. While this has reduced since 2010/11 the absolute numbers engaged in crop production have still increased slightly due to population growth. **Table 2** (see next page) gives a basic overview of how households are engaging in agriculture and how this has changed.

What this table and the main survey data shows is that:

- The proportion of households selling crops has reduced from 78.3% to 73% - a reduction of just under 7% between 2010/11 and 2013/14. (Reduction has occurred across all provinces and this trend is not driven by changes in particular locations).
- It is particularly women who are affected by this decline. The share of women who are engaged in crop production and selling their crops fell by 10%, while the comparable fall for men was only 5.5%. As a result, the share of female-headed household engaged in selling their production has now fallen behind male-headed households.

Table 2: Households engaged in crop production, selling and processing (%)

EICV 4 (2013/14)	% engaging in different agricultural activities			
	HH engages in crop production	HH engages in crop production and sells crops	HH processes agricultural products from own production	HH processes and sells agricultural products from own production
All Rwanda	87.4	73.0	78.7	18.6
Urban	43.9	29.8	34.0	3.0
Rural	96.3	81.9	87.9	21.9
Male	86.7	73.2	78.1	19.3
Female	89.4	72.6	80.6	16.6
EICV 3 (2010/11)	**% engaging in different agricultural activities**			
	HH engages in crop production	**HH engages in crop production and sells crops**	**HH processes agricultural products from own production**	**HH processes and sells agricultural products from own production**
All Rwanda	93.0	78.3	54.2	16.4
Urban	62.7	32.7	21.9	2.5
Rural	98.3	86.3	59.9	18.8
Male	92.4	77.5	54.6	17.3
Female	94.4	80.4	53.1	14.1

EICV 4, EICV 3 and EICV 2	Mean share of total household harvest sold (%)		
	EICV 4 (2013/14)	EICV 3 (2010/11)	EICV 2 (2005/6)
All Rwanda	21	21.1	19.4
Quintile 1	12.9	14.3	10.6
Quintile 2	17.9	19.0	16.4
Quintile 3	21.1	21.8	16.9
Quintile 4	25.1	24.6	29.5
Quintile 5	27.9	24.8	22.1

Source: National Institute of Statistics Rwanda (NISR), Integrated Household Living Condition Surveys: EICV 2 (2005/6), EICV 3 (2010/11) and EICV 4 (2013/14).

- The share of households processing agricultural products from their own production has increased sharply over the past few years. However, the share of households also selling these processed products has increased only marginally, meaning households are mainly processing – even to this greater extent - for their own consumption.
- Data shows, unsurprisingly, that the share of harvest sold increases with wealth (quintile). The poorest households are least involved with selling. However, the poor did see strong progress between 2005/6 and 2010/11, with the poorest three quintiles gaining most.
- While there was an increase in the share of households selling their harvest between 2005/6 and 2010/11 (and particularly for the poor) this progress has not continued over the next survey period. The share of harvest sold for the three poorest quintiles (the poorest 60% of the population) has dropped. As a result, 'equity gaps related to commercialisation' - which were narrowing - have now widened again.

BOX 2: A Note on Processing and Commercialisation

Processing is one the main ways households can add value to their agricultural production. More households are processing their agricultural raw materials, particularly in rural areas. The biggest recent increases in processing have occurred with regard to the production of maize flour, cassava leaves and sorghum flour – as well as more moderately for banana juice, banana beer and sorghum beer. However, only a small proportion of households processing different flour types and sorghum beer also sell these products. There has been no change recently, which implies the increased processing is simply for household consumption. The main product processed and sold is banana beer (82.4% of households which process this product also sell it) followed by banana juice (18.2%). Neither of these products saw an increase in selling in the recent period (2010/11 – 2013/14). In fact the percentage of households processing and selling both fell. Therefore, commercialisation still appears to be a weak spot for Rwandan agriculture.

The most prevalent crops – those produced by the highest number of households - are currently dry beans (89.5% of households), maize (80.9%), sweet potatoes (73.3%), potatoes (61.6%), cooking bananas (61%), cassava for cooking (58.7%) and sorghum (40.9%). Many fewer households are cultivating coffee, tea and rice (which involve 10.8%, 1.2% and 5.4% of crop-producing households respectively). The level of commercialisation of these crops is, of course, also a key difference. While coffee and tea is grown by very few farmers most of the crop is sold. Rice is also a strong commercial crop with just over half of households selling half or more of their harvest. Sorghum is the next most commercialised followed by maize while other crops are little marketed.[17]

There has not been a huge change, overall, in this crop profile. In the last survey period the % of households cultivating potatoes, cassava for cooking and maize has increased and there is a slightly lower percentage of households now cultivating sweet potatoes and sorghum. The percentage of households growing coffee, tea and rice has remained relatively stable. However, in terms of the poorest households and the crops they cultivate there are some changes in profile visible over the longer-term - between 2005/6 and 2013/14 as shown in the **Table A:2 in Annex A**. The biggest changes appear to be taking place with the growth in the number of poor households cultivating potatoes, cassava, cooking banana, maize, tea and rice (with the increases in tea and rice being from a very low base).

Survey data also shows consistent increases with regard to access to agricultural inputs and the number of farmers benefiting from agricultural programmes. For example, in 2005/6 only 18% of crop producing households had access to fertiliser. This had increased to 41.2% by 2013/14. The share of crop producing households using irrigation has also risen (although from a low base), as has the percentage of plots with protection from erosion (now measured at over 85%). The indicator showing the least successful results is 'use of improved seeds' something which has only been tracked since 2010/11 and which is acknowledged as a difficult area by stakeholders working in the sector. There is also clear evidence that crop production and productivity has been increasing consistently in Rwanda - **(see Table A:3 in Annex A** which shows crop data from 2006 to 2012). During this period yields for maize, wheat and cassava increased dramatically (by over 100%), with strong increases also for sweet potato (64% increase) and Irish potato (55%) and to a lesser extent for yams and taro (35%), bananas (31%), fruits (27%) and rice (24%). These improvements are all a result of the main land programmes and investments (described in the next section), which have contributed generally to a sustained, positive increase in agricultural productivity over time.

4. GoR POLICIES, PLANS AND INVESTMENT IN THE AGRICULTURE SECTOR

Under the national development strategy – EDPRS-2 – high-level targets include that agricultural growth reaches 8.5% annually and that the share of agriculture in GDP is reduced to 25%. The National Agricultural Policy (2004) also has several guiding principles. These include: achieving food security; developing a modern and professional agriculture sector; ensuring the sector is both market-oriented and socially responsible; ensuring a fair distribution of benefits from all products in relation to production and processing; and developing an integrated and diversified agriculture sector that is friendly to the environment. The sector is now in the Third Phase of the Transformation of Agriculture Sector Programme (known by its French acronym, PSTA 3). It runs for a five-year period from 2013/14 to 2017/18. PSTA 3 is guided by the Comprehensive Africa Agriculture Development Programme (CAADP), as was its predecessor PSTA 2. Rwanda was the first country to sign a CAADP Compact and to prepare an agriculture sector investment plan for implementation of PSTA 2 that was fully aligned with CAADP.

4.1 PSTA 2 and results to date

The previous plan - PSTA 2 - focused on food security, with its main aim being to intensify crop and livestock production to achieve self-sufficiency. As part of PSTA 2 (and now continued into PSTA 3) the GoR has implemented a number of major policies and programmes to deliver progress. These include the Crop Intensification Programme (CIP) launched in September 2007, the Land Husbandry programme and the Water Harvesting and Hillside Irrigation (LWH) programme. The main activities of the CIP include land use consolidation, improved seed and fertilizer use and extension services. Other interventions have focused on protection against soil erosion, increasing the area under irrigation and investments in terracing. PSTA 3 has largely continued these programmes, including expanding the CIP. PSTA 3 aims to accelerate improvements but also to focus on an expanded private sector role in production, processing, and value addition and the commercialisation of staple crops, export commodities, and livestock products.

These core programmes are recognised as having delivered results. There is no doubt the

CIP has improved yields significantly and the production of a large number of products has increased.[18] Land protection against soil erosion was achieved to a high level of coverage but also at very low cost.[19] There is also clear evidence in the survey data of these programmes achieving greater coverage (see **Table 5** in the next section for the growth in % of households reporting having any plot protected from erosion, any plot irrigated, any plot affected by land consolidation and those who have added or removed crops due to regionalisation policies. There is growth in all areas between 2010/11 and 2013/14 showing the benefits of programmes continue to be extended). Data comparing fertiliser application rates shows that in CIP areas the average annual rate was 29kg/ha/year in 2011/12, as compared to a prior national average of only 4.2kg/ha/year 1998-2005.[20] These large programme interventions are considered the '*bread and butter'* of the GoR's agriculture strategy and '*what the GoR is best at delivering'*.[21]

Even with these successes it is also well recognized that there is still a lot of room for improvement. Irrigation coverage is still small and there are increasingly questions about the high cost of the irrigation strategy and the benefits it gives (particularly as it's not always been linked to the viability of certain crops as a priority). Irrigation costs per hectare in Rwanda are one of the highest in the world and have been judged only worthwhile if linked to the production of a high value crop.[22] As a result there is now an increasing focus on more affordable, small-scale irrigation technologies. Terracing has also been a huge investment but again generally de-linked from any broader strategy (such as assessing soil fertility and ensuring improvement measures are taken). As a result, it is estimated that a high percentage of terracing investments have not resulted in production in these areas due to poor soil quality.[23] As these programmes are not properly assessed it is difficult to give definitive evidence here.

The CIP has also been quite directive – essentially telling farmers what to grow – and some feel these decisions could have been more market-driven. (One recent study did find that agricultural investment has been skewed towards crops with good growth potential, but not necessarily crops with the best market potential).[24] At the same time there is recognition that market potential is not the only factor. Equity concerns have fed into PSTA 3: the World Bank has noted that: *'some of the crops identified for intensification in PSTA 3 by the GoR do not share equal competitive and comparative advantage, the GoR is pursuing pro-poor crops that can generate immediate income, raise families out of poverty and build farmers' assets'*.[25]

The extension model is also still far from developed. The specific projects and programmes delivered under PSTA 2 (and to date under PSTA 3) have been supported by specific extension services. However, this more project-led approach has not resulted in the development of a national system of extension services. There is now a shift to a more programmatic, institutional approach to this service (and generally within the sector) but it remains to be seen what is affordable as this is a costly intervention if all extension workers are to receive some kind of payment/incentives and consistent, professional training and support for their work.

In addition, while productivity has increased, average farm sizes have declined in the face of steady population growth, putting pressure on household farm incomes.[26] And while marketable surpluses have increased, the long-standing problem of production being consumed mainly on the farm continues. This is clearly evidenced by recent survey data. Generally, a concern of donors to the

agriculture sector is that PSTA 2 constrained private sector activity by its fairly exclusive focus on the public sector's role in increasing agricultural production and productivity.[27] While PSTA 3 has moved on to combine this production focus with a focus on private sector development and agro-processing, it is still considered that Rwanda is at an early stage in this transformation.

As there have not been any formal, in-depth assessments of the flagship programmes questions also remain about '*who is benefiting.'* Clearly there is evidence in the national survey data that poor farmers are benefiting. However, there is no way to judge by how much they are benefiting from public sector investment in comparison to large farmers. One recent study does call this into question however, expressing a concern that '*agricultural research and extension as well as subsidization of fertilizer and seed is going towards crops with strong growth potential but are not necessarily the crops upon which the poor depend for most of their food*'.[28] The same study also refers to the fact that increases in production were greater for better off households than for those that were poor and that the poor are, in fact, under-represented in the CIP and the Land Use Consolidation Programme. It calls for more attention to be paid to the traditional foods consumed by the poor, such as cassava, beans, and bananas. As these are also crops with considerable export potential more investment in these crop value chains could bring multiple benefits.

4.2 PSTA 3

PSTA 3 has two strategic objectives:(i) intensify, commercialize, and transform the Rwandan agriculture sector to enhance food security and nutrition, reduce poverty, and drive rapid economic growth; and (ii) accelerate sustainable increases and an expanded private sector role in production, processing, and value addition and commercialization of staple crops, export commodities, and livestock products. It has four broad programme areas: (i) agriculture and animal resource intensification; (ii) research, technology transfer, and professionalization of farmers; (iii) value chain development and private sector investment; and (iv) institutional development and agricultural cross-cutting issues.

Some of the key targets adopted under PSTA 3 are related to: soil conservation, hectares of irrigated land, mechanisation, household food consumption, ratio of extension workers per farmer household (to move from 1/839 in 2012 to 1/600 by 2017/18), % loans for agricultural activities, % of farmers in cooperatives (to move from 23% in 2012 to 70% in 2017/18). There are also specific targets for the priority (food security) crops: maize, wheat, rice, beans, cassava, Irish potatoes, bananas and soybeans with baselines provided.

Discussions about the future of agricultural extension services are currently on-going within the Agriculture Sector Working Group. This theme was covered in the most recent Joint Sector Review (the bi-annual forms held between the GoR and major donors to coordinate sectoral interventions).[29] The model currently in use is called the *Twigire Muhunzi* model and includes both a Farmer Promoter and Farmer Field School (FFS) approaches. The basic strategy has been the formation of farmer groups that ultimately coalesce into agricultural cooperatives. Farmer Promoters supervise farmers organised into *Twigire* groups and are encouraged to consolidate land, plant in time, buy inputs such as improved seed and organic fertiliser as a group. Farmer Field Schools provide much more in-depth knowledge to farmers who are organised into FFS groups. The main role of the Ministry of Agriculture is -via the

Rwanda Agricultural Board (RAB) - to provide technical support, especially through the deployment of FFS Master Trainers, as well as other technical staff.

The financing of the system is a major issue. The FFS Facilitators of each district have now formed a cooperative that will work as a service provider for the district. Each cooperative has signed a 3-party contract with their district and RAB, in which the cooperatives have committed to creating more than 3,500 new FFS groups in 2016. Furthermore, the FFS Facilitators also commit to continue to train and provide backstopping to the farmer promoters. The payment of the cooperatives will be based on the results effectively achieved in the field, which are to be verified by a field assessment. At the same time the intention is to provide incentive payments for Farmer Promoters. This is being piloted this year and a framework for a nationwide incentive payment should be effective from 2016. By hiring the FFS facilitator cooperatives as professional service providers and by setting up an incentive payment system for the farmer promoters, it is hoped that the crucial role of the frontline extension workers is recognized and their services guaranteed. What the overall cost is, and what funding may be available, is not yet clear, though there is a new commitment by the EU to fund in this area.

Apart from this more intensified focus on extension, other priority areas for 2016/17 agreed upon by the Agriculture Sector Working Group include: promoting a private-sector led seed industry (including privatizing the seed processing plant in 2016), fast-tracking the development and adoption of small-scale irrigation technologies, the practice of climate-smart agriculture, the enforcement of contract farming arrangements, earmarking further land for horticulture development and new investment in industrial Stevia production.[30]

4.3 Spending on agriculture

The projected PSTA 3 expenditure over the five-year period is US$1.2bn. Projected expenditure across the 4 strategic programme areas is shown in Table 3. (This is the five-year total and is given in USD). Of the total required (US$1.2bn), the GoR is expected to provide around US$300m – 25% of the total budget required for this period.[31] The main donors to the agricultural sector are the World Bank (via the IDA facility), the EU, USAID, IFAD and DFID.

Annual budget data, available from the Ministry of Finance, shows that the GoR has allocated RwF103bn for the Ministry of Agriculture this year (2015/16).

Table 3: Projected PSTA 3 expenditure by programme (2013-2018)

Programme Area	US$ (million)	% of total
1. Agriculture and animal resources intensification	628	52.3
2. Research, technology transfer and professionalisation of farmers	86	7.2
3. Value chain development and private sector investment	382	31.8
4. Institutional development and agricultural cross cutting issues	104	8.7

Source: World Bank Group, 2014, *IDA Programme Appraisal Document on a Proposed Credit to the Republic of Rwanda for the Transformation of the Agriculture Sector Programme Phase 3, Programme for Results*, October.

The trend in agricultural spending is shown in **Table 4**. It should be noted that this only shows what is allocated to the Ministry of Agriculture itself. While it includes some donor spending via direct budget support it is unlikely that it shows all donor aid provided to the GoR as Ministry of Finance systems generally do not manage to reflect all aid in the original national budget law passed in June each year. Other related ministry investments are also not shown here. (MINIRENA has significant soil conservation programmes under its mandate to protect the environment and the Ministry of Infrastructure has investments in feeder roads). In addition, districts' allocations for agriculture spending are not shown here as these must be extracted district by district for full budget analysis. Therefore, this certainly underestimates spending. The World Bank estimates that if all relevant budget lines are combined Rwanda surpasses the CAADP target of 10% of government spending on agriculture.[32] What is notable is the trend is to a declining budget share for MINAGRI. However, over time this decline is minimal and is much less than that suffered by other important sectors such as education, which has seen its share drop dramatically over a similar time period. Agriculture is still a protected and prioritized sector in budget terms.

Table 4: Budget allocations to Ministry of Agriculture, 2010/11 – 2015/16, RwF

Budget	2011/12	2012/13	2013/14	2014/15	2015/16
MINAGRI budget allocation	68bn	79bn	83bn	90bn	103bn
Total GoR budget	1,117bn	1,385bn	1,653bn	1,753	1,955bn
% of national budget	*6.1%*	*5.7%*	*5%*	*5.1%*	*5.3%*

Source: Ministry of Finance, Original State Finance Laws, 2011/12 – 2015/16. Note: Original budget allocations and the original total budget are cited here. Detailed expenditure information is not provided publicly by the Ministry of Finance.

In general, the Agriculture Sector Working Group is not concerned with the overall budget allocation to agriculture. They believe the GoR contribution is solid, the ambition in terms of % of the national budget is sufficient and resources are available.[33] There is more concern, however, about the allocation of budget between the programme areas in PSTA 3. It was expected that Programme 1 - agriculture and animal resources intensification – would get just over 50% of the budget, with Programme 3 – related to value chain development and private sector investment – also getting a large share (32%). Expenditure data from 2014/15 shows this is not what is happening in reality.[34] Reports show a big preference for spending on Programme 1 and much less for the other programmes (including programme 4 which includes cross-cutting issues) which all fall far below their target shares.

The GoR is, in practice, prioritizing activities such as soil erosion reduction, sustainable land management, productivity of priority crops and intensification of animal productivity. These are all worthy activities – and as explained earlier this 'production-side' focus is something the GoR has excelled at. However, there is concern the 'newer' activities related to commercialization, agro-processing and private sector development

are being neglected and this is where the focus should be now to be able to generate increasing incomes.[35] It also appears that important complementary activities such as research, extension and advisory services, work with cooperatives, and work on issues such as gender and climate change are being neglected in practice when budget execution decisions are made. The consensus is the balance from PSTA 2 to PSTA 3 has not shifted fast enough into these new, important areas.

5. GENDER AND AGRICULTURE

Rwanda's national development plan makes a significant commitment to mainstreaming a number of cross-cutting issues across all sector strategic plans to ensure equitable, inclusive and sustainable development. These include the environment and climate change and gender. These are seen as of great importance for the agricultural sector. Both issues are mainstreamed across the agricultural sector strategic plan and have budget allocations. However, as mentioned in the previous section practice lags behind policy in these areas and budget allocations have been small. This section provides some data on women's role in agriculture and the progress – or lack of it – that has been made.

As in many African countries, the participation of women in the agriculture sector in Rwanda far exceeds that of men: 79% women vs 59% men are recorded as employed in agriculture, forestry and fishing in 2013/14 and the share of female-headed households engaged in crop production exceeds that of male-headed households.[36] Women provide the bulk of labour in the crop sector, but function mainly at subsistence level with insufficient skills, access to markets, and control over land and other agricultural services. It also appears that women benefit less from agricultural programmes and public sector support and are generally trailing behind their male counterparts. Table 5 provides a picture of progress for male and female-headed households.

Findings from survey data show:

- Female-headed households are less likely to be involved in programmes related to protection from erosion, irrigation, land consolidation and crop regionalisation. This was the case in 2010/11 (before which no data is publicly available) and continues to be the case today.
- Although this data is not over a long-time period there are preliminary indications that gender gaps are growing. In all cases, the gaps between male and female-headed households have grown in this period. This is particularly the case for land consolidation and crop regionalisation programmes.
- Survey data related to the purchase of agricultural inputs shows a similar story. Female-headed households are less likely than male-headed households to have access to improved seeds, fertiliser and insecticides and when it comes to the purchase of sacks and packing. Gender gaps are widest in relation to access to fertiliser. Again, there is also evidence showing that gender gaps are widening in all of these areas except when it comes to access to improved seeds which shows a (small) narrowing of the gap here.

Table 5: Overview of gender and agriculture, 2010/11-2013/14

EICV 4 (2013/14)	% of crop-producing households….				
	With any plot protected from erosion	With any irrigated plot in the last season	With any plot affected by land consolidation	Added a crop due to regionalisation	Removed a crop due to regionalisation
All Rwanda	85.4%	12.9%	29.6%	29.4%	24%
Male-headed household	86.5%	14.1%	31.6%	31.5%	25.9%
Female-headed household	82.2%	9.5%	24.1%	23.5%	18.6%
EICV 3 (2010/11)	**With any plot protected from erosion**	**With any irrigated plot in the last season**	**With any plot affected by land consolidation**	**Added a crop due to regionalisation**	**Removed a crop due to regionalisation**
All Rwanda	83.5%	9.6%	22.4%	21.1%	7.1%
Male-headed household	84.4%	10.6%	23.6%	22.1%	7.3%
Female-headed household	81.1%	7.0%	19.4%	18.4%	6.6%
EICV 4 (2013/14)	**% of crop-producing households having purchased inputs for production**				
	Improved seeds	**Sacks and packing**	**Organic fertilisers**	**Organic or chemical fertiliser**	**Insecticides**
All Rwanda	19.5	43.5	11.9	41.2	29.3
Male-headed household	21.3	46.0	13.4	45.4	32.3
Female-headed household	14.2	36.3	7.9	29.4	20.7
EICV 3 (2010/11)	**Improved seeds**	**Sacks and packing**	**Organic fertilisers**	**Organic or chemical fertiliser**	**Insecticides**
All Rwanda	18.8	48.2	9.3	33.3	30.5
Male-headed household	20.9	50.2	10.5	36.7	33.4
Female-headed household	13.2	43.0	6.2	24.6	23.1

Source: National Institute of Statistics Rwanda (NISR), Integrated Household Living Condition Surveys: EICV 4 (2013/14).

- Data showing the % of households selling half or more of their harvest, by crop, also shows gender gaps. Female-headed households were found to be less likely to sell half or more of their harvests of 9 out of 10 main crops surveyed in 2013/14.[37]

Rwanda's current agricultural sector strategic plan recognises gender disparities in agriculture as a major problem. The diagnosis of the problem rests mainly on the fact that women spend more time caring for the household than men and are generally over-burdened with longer working hours. While Rwanda is internationally recognised for its progress on gender – particularly the political participation of women at the highest levels - it is also accepted in country that progress at the top is not reflected by progress at the household level. Rwanda's Ministry of Gender and Family has developed policies to address this at community level but there is a lack of resources for this work and the Ministry is considered to have poor capacity to implement a transformative national programme on gender norms within the household.

The Ministry of Agriculture, for its part, has committed to addressing gender within its programmes and a comprehensive Gender Mainstreaming Strategy has been developed. However, it is difficult to assess properly what has been done to date. The gender component of the agriculture budget is small and there are generally large questions about whether the mainstreaming element in large programmes and projects is working. Certainly, recent data does not provide any evidence of progress. The bilateral donors active in the sector do not have a strong focus on gender and agriculture and it is one of the least highlighted areas within the bilateral-GoR coordination forums. DFID is the only donor that explicitly has a focus on gender and agriculture though this is quite recent with the creation of a Technical Assistance Facility that includes a focus on gender. There is still a lot to be done in this area.

6. ECONOMIC TRANSFORMATION, MANUFACTURING AND AGRI-BUSINESS

The progress made in agriculture has contributed to the economic transformation underway in Rwanda. The percentage of Rwandan households involved in non-farm activities is consistently growing. At the same time the percentage of households working as small-scale farmers is declining. This shift has been consistent over the last two survey periods with progress slowing between 2010/11 and 2013/14 (though this of course represents a shorter time period as the frequency of surveying has increased). **Table 6** gives details.

In all between 2001 and 2011 it has been reported that 939,000 jobs were created, a very significant growth in wage employment.[38] Of these 578,000 jobs were reported as being in the non-farm sector. This is of critical importance given land scarcity in Rwanda, which means the agriculture sector cannot absorb the growing workforce. There has been continued progress in job creation.

Table 6: Percentage of persons aged 16+ by main usual type of job, 2005/6-2013/14

Indicator	2005/6	2010/11	2013/14
% in wage farm	8.2%	9.8%	11.4%
% in wage non-farm	10.9%	16.8%	19.6%
% of independent / small scale farmers	71.3%	61.2%	58%
% of independent non-farm	8.1%	9.6%	9.9%

Source: NISR, Rwanda Poverty Profile Report (EICV 4, 2013/14)

Data from 2013/14 finds the number of establishments (businesses) created since 2011 was 29,106 in a three-year period.[39] Of these the vast majority were micro-businesses (26,835 new businesses were formed; in Rwanda micro refers to 1-3 employees). Overall the increase was much greater in rural areas (38.1%) compared with urban areas (7.3%), which reflects positively – in the most basic sense - on rural entrepreneurship activities. While the increase in the number of large establishments was only 108, this did account for a large share of the increase in jobs (27%). Micro businesses were responsible, however, for 50% of the increase in jobs.

The growth of the manufacturing sector and agribusinesses in Rwanda is of course part of this story. Manufacturing and agri-business experienced rapid growth in the last decade (2000/1 – 2010/11). However, the evolution of Rwanda's manufacturing sector has been a difficult one. Research has found that the impact of the genocide on manufacturing cost the country 20 years of industrialisation.[40] While recent growth rates have been remarkably high, when looked at in per capita terms the picture is less positive: real manufacturing output per capita in 2011 was only about half of what it had been at the end of the 1980s and Rwanda is only likely to achieve its pre-genocide maximum of US$41 per capita around 2025 with current trends. This statistic reflects the real extent of the impact of the genocide on Rwanda's industrialisation process. While the manufacturing sector is growing it is not keeping pace with the growth of the agriculture and service sectors (which took less time to recover from the genocide). The manufacturing sector also contributes less in Rwanda as a percentage of GDP compared to other countries in the region (Kenya, Uganda, Tanzania) as well as much less than lower-income countries as a whole. Rwanda's manufacturing and agri-business sector has been characterised as '*very young, with the majority of firms still in the start-up or growth phase and still in the process of developing optimal systems and organisational structures.*'[41] At the same time it is recognised that the investment in agriculture and infrastructure that has taken place in the last decade has created a strong position for this young manufacturing sector to achieve new growth.

The manufacturing sector has changed dramatically over the past several decades. The 1970s and 80s were characterised by a lot of GoR intervention whether through public ownership or joint ventures in strategic sectors. (There was full public ownership of coffee and tea, pyrethrum, and in the staple crop sectors with regard to wheat, maize, rice and sugar milling. The GoR also owned some manufacturing firms viewed as strategic, such as those producing banana wine and matches and had majority or minority stakes in other firms, such as a textile firm and Bralirwa, a beverages company). The GoR generally took a protectionist approach. Import duties and price controls were in place, as well as direct support for the local manufacturing sector via procurement policies.

The genocide represented not only a phase of destruction of manufacturing capacity but also a break from these economic policies towards increased liberalisation and privatisation. In the 1990s the GoR brought in market-determined exchange rates, removed price controls, liberalised the marketing of tea and coffee, reduced tariffs and sold off many public enterprises. The increased competition from cheaper imports consequently made it more difficult for local manufacturers to compete. The IMF has documented that this probably contributed to the slow pace of the recovery of the manufacturing sector.[42] Privatisation has really only accelerated after

2005. It has led to an increase in foreign investment, as well as increased investment by large private domestic investors groups (such as Crystal Ventures, the Rwanda Investment Group and the Horizon Group). The privatisation process is generally regarded as clean and although not always successful as a result of the first sale, the companies that were struggling are, in the main, now successful ventures.

BOX 3: Ownership and consolidation trends in the manufacturing sector

Foreign ownership is relatively common in Rwanda's manufacturing and agri-business sector (even though overall FDI figures are quite low). Foreign investors are mainly active in sub-sectors such as coffee, tea, staple crops, alcoholic beverages and construction materials. Bralirwa – the largest manufacturing firm in Rwanda – produces beer and soft drinks. It is the oldest company in Rwanda, is majority-owed by Heineken and has a licensing agreement with Coca-Cola. Other foreign investors include the Madhvani Group (one of the largest companies in Uganda and Uganda's largest sugar producer); ICM – an agribusiness investor from Australia which took a majority stake in 3 rice mills previously owned by the GoR; Pembe Flour Mills - a Tanzanian conglomerate; and Bakhresa Grain Milling - a Kenyan multinational. Pembe and Bakhresa are the largest wheat flour processors and large multinationals are now the biggest players in staple crop processing.

Large domestic investor groups are also a feature. Crystal Ventures Group has a (majority or minority) stake in Inyange (dairy and beverages), Mutara Enterprises (furniture), Ruliba Clay (clay products), East Africa Granite and NPD Cotraco (one of the largest construction companies). The Horizon Group has investments in construction – Horizon Construction - and the logistics sector – Horizon Logistics - as well as full ownership of the country's pyrethrum processor. One thing that is particular to Rwanda is the profile of domestic investor groups. Both Crystal Ventures and Horizon have grown out of the GoR. Crystal Ventures (originally known as Tri-Star Investments) is fully owned by the dominant party – the RPF. It is a venture capital concern and is described as *'operating with social objectives but under private sector rules'.*[43] The Horizon Group was started in 2007 by the Ministry of Defence and is currently owned by Zigama CSS, a microfinance cooperative bank and the Military Medical Insurance. Similarly its social and political purposes are seen as important with profitability strictly secondary. It has focused, for example, on rural construction to support agriculture and urban housing given the limited housing stock after the genocide. Its intervention in pyrethrum was necessary *'to avert the collapse of a privatised parastatal which would have had harmful employment and smallholder income effects in the still politically fragile mountain region of the North-West.'*[44]

These ownership structures have been criticised by some as *'partystatals that function as extractive economic institutions, concentrating power and opportunity in the hands of only a few.'*[45] Others assess these companies as having delivered benefits. Crystal Ventures was an early pioneer in activities for which the domestic private sector had no interest. (For example it largely funded the establishment of MTN in Rwanda bringing mobile phones to the country early and meaning the network established is partly owned by domestic interests).[46] The distinction between government operations and the private-sector operations of the RPF has also been assessed as *'clear and quite formalised'* [47] and the subsidiaries of Crystal Ventures and Horizon do not have dominant market power but often face high competition

from regional or internationally owned firms.[48] There are also certainly a number of subsidiaries that are not profitable but which continue to be supported by the groups for long-term social and economic objectives. ODI research concludes that these party-linked domestic investors have played the role associated elsewhere with an active industrial policy – *'absorbing the learning costs of pioneer firms, thereby creating opportunities for unsubsidised private investors in a second stage'.*[49]

Another notable trend is the growing consolidation in the manufacturing and agri-business sector. High investment levels have been necessary to participate in the privatisation process. Increasingly the sector is dominated by large companies or investment holding groups, which have had *'the capacity to raise the required financial resources and human capital to turn manufacturing and agribusiness firms around and invest in increasing production capacity'*.[50] Another major finding from recent research is that: *'firms owned by large groups are driving growth in Rwanda's manufacturing and agribusiness sectors and have been outperforming firms owned by individual investors'.*[51] It seems access to long-term is the critical difference. Large groups are simply in a much better position to raise capital to make the large upfront investments that are necessary to either upgrade facilities or set up new factories from scratch.

Within the manufacturing sector, employment creation impacts are still quite small. Estimates suggest Rwanda's largest manufacturing firms provide about 17,500 factory jobs (without taking into account any effects on agriculture). This is based on 2011 data.[52]

The export orientation of manufacturing in Rwanda is also quite limited. The tea, coffee and pyrethrum sectors are of course the exception. They are mostly sold on European and American markets and for tea and coffee foreign buyers are also strongly involved in local production, marketing and exporting. However, apart from these products, manufacturing firms in Rwanda are generally, not exporting. Generally, it is felt that Rwanda's manufacturing and agro-processing industries are not yet in a position to compete in regional and international markets. The only exception to this picture appears to be with products being exported to the DRC and Burundi. These are currently the only countries where the majority of Rwandan products are competitive. This does not mean, however, that there is no potential. Recent assessments of the competitiveness of Rwandan products – high-value export crops as well as processed agricultural products – found many opportunities.

The most binding constraint that has been identified for firms in Rwanda's manufacturing and agribusiness sector is access to raw materials both domestically and from abroad.[53] This is an area most of the large firms are actively trying to address. Low supply has been identified as a major problem for firms in relation to sugar, wheat, maize, dairy, pyrethrum, tomatoes, rice, tea and coffee. Rwanda is quite unique as most processors do not grow the crops themselves so their supply is dependent on the performance of farmers and farmer cooperatives. '*This constraint has forced processors to move upstream and explore ways of engaging with cooperatives and smallholder farmers'.*[54] Innovative models have included: joint ventures with cooperatives, service delivery models to smallholder farmers, mechanised farming supported by out-grower schemes, farmer demonstration research plots, support in the

procurement of chemicals and fertilizers and innovative finance models such as warrantage systems.

7. PRODUCT SECTORS, COOPERATIVES AND SMALL FARMER ACTIVITIES

In Rwanda, agricultural policies and strategies have specifically focused on the intensification and increased market orientation of smallholder agriculture. The model being promoted for agribusiness development is one that foresees a large role for smallholders – either through contract farming by smallholders, satellite farming,[55] or through activities by cooperatives. The number of agricultural cooperatives has expanded rapidly – from 645 in 2008 to 1,877 in 2013. PSTA 3 envisages increasing this to 2,500 by 2017/18 and there are a number of targets related to cooperative creation and their operations and management.[56]

While cooperatives are growing the picture of cooperative activity across product sectors is quite different. It is also true that processing on a large scale is only happening in relation to certain products. For staple crops the products being processed on a large scale are maize, rice, wheat and sugar only. Processing for Irish potato, cassava and beans at any scale is non-existent despite these staples being amongst the most cultivated crops and, of course, of great importance to poor farmers.

7.1 Coffee

Coffee is generally considered a big success story in Rwanda. In the last 2-3 decades it has been deeply affected by both global price crashes and the impact of the genocide on the sector. However, it has recovered (post-genocide there was large donor investment in coffee) and now Rwanda is increasingly sought after as a premium origin country by speciality coffee buyers. The sector has also seen a sustained shift towards fully washed (speciality) coffee.[57] Amongst the 450,000 farmers[58], cooperatives are also very active in coffee sector – both growing coffee and owning a large number of the wet mills. (Private traders/exporters handle about 70% of the volume exported with 30% being handled by the cooperatives).[59]

While growth has been positive and smallholders are in a good position to benefit there are still many challenges. Many coffee washing stations / wet mills are not used to capacity and there is need to improve pre- and post-harvest handling methods. (It has been estimated that there is potential to increase yields 2-3 times simply through improved crop and soil management in the sector).[60] Some washing stations are in financial distress and the general volatility of production and prices fluctuations cause many challenges for smallholders. Coffee processors and exporters are responding to these challenges by becoming more active in their relationships with wet mills. This has entailed businesses taking equity stakes or entering into exclusive contracts that include financial, technical and marketing assistance. These new business models are essentially aimed at securing a supply of higher quality coffee. Unlike with tea, the producer price for coffee is not set officially at a fixed level. Exporters and coffee millers meet regularly to determine a weekly reference price for parchment coffee. Farmers have no role or voice in fixing this reference price.[61] There is also no price differentiation based on quality, which is a barrier to improvements in this area.

While the coffee sector had previously been a large focus of donor support and GoR attention it is now seen as 'functioning' and most of the key investments and decisions are led by the private sector. There is still some small donor support – particularly from Technoserve – though this is often facilitated

directly by a particular buyer. The GoR's role – which is handled through the National Agricultural Export Board (NAEB) – is mainly limited to the policy level. For example, there is a tax incentive in place to encourage the production of fully washed coffee (the cess[62] is only charged on semi-washed coffee). The GoR through RAB (the Rwanda Agricultural Board) also provides farmer field school access to coffee farmers and is supporting a programme to replace coffee washing stations with stations that are smaller and closer to producers. NAEB has also entered into a joint venture with the Hunter Foundation[63] doing coffee roasting for export. A large facility for processing and export is within the NAEB complex in Kigali and this firm is now exporting to a hotel chain in the UK and to a manufacturer of coffee 'pods' in Europe.[64] However, generally it has been assessed that the GoR is not giving sufficient attention and support to this potentially valuable crop and investment should be increased to develop smaller coffee washing stations and particularly address the coffee pricing issue.[65]

7.2 Tea

Tea provides employment for about 70,000 farmers directly, with several thousand more as casual workers in tea season.[66] Although only a small percentage of households are engaged in tea production, tea-growing areas are mainly located in the poorest zones and there is a correlation between tea-growing areas and high rates of malnutrition.[67] There are 14 tea factories in operation today many of which were constructed by the GoR in the 70s and 80s but then privatised at some point after 2005. Generally tea factories will have limited plantations themselves but are surrounded by plots organised into farmer cooperatives or associations. Rwanda's tea is considered to be high quality and among the world's best. A major issue facing the tea sector, however, is the under-capacity of tea factories primarily due to limited supply and poor quality of green leaf production by farmers. Currently factories are investing with farmers to improve farming practices and increase yields from their existing low levels.

The tea cooperatives in Rwanda are all shareholders in the tea factories in Rwanda. This is a result of the particular approach that was taken to the privatisation of tea in the country. All tea companies purchasing factories were obliged to cede at least 10% of shares to local cooperatives and the level of share ownership of cooperatives now stands at between 10% and 45%.[68] The highest level of share ownership is in Mulindi and Shagasha tea factories – the last 2 tea factories to be privatised during 2012/13. These factories were sold to the Wood Foundation[69] which currently holds majority shares in both. In Mulindi tea factory the farmers have a 45% share and the Wood Foundation holds 55%. In Shagasha tea factory the GoR retained 10% in public ownership, the cooperatives have a 30% share and the Wood Foundation holds a 60% share. The Wood Foundation intends to hand over the factories to full farmer ownership after their initial investment has been recovered.

The privatisation of the industry is generally considered a success story but many challenges remain. The GoR has set targets for the tea industry including: raising average plot size, raising productivity levels, attaining higher price levels for tea, achieving more direct sales (ie. selling less in bulk through the Mombasa tea auction) and generally developing a high-quality Rwandan tea brand. Generally, the desire is to focus on better quality and better yields - raising tea growers' income levels – but also on an expansion of the number of factories and existing factory capacity.

A prospectus has been developed to attract private investors to build 5 new greenfield

factories and expand the coverage of tea production to an additional 18,000 hectares.[70] The land for expansion has been identified by the GoR: it is land where the soil is highly acidic and not suitable for other crops. Two tenders were awarded in January 2015 for two greenfield sites (to cover 6,000 ha) – both to Unilever which will build one large tea factory to serve both sites. Unilever has entered into partnership with Wood Foundation in this venture. The Wood Foundation will focus on smallholder development – supporting farmers to plant tea (and until these are mature), providing training on husbandry to ensure high quality, productivity and good yields, and brokering the relationship between farmers and Unilever to ensure fair prices are achieved. This development will involve 6-7,000 farming households and Unilever will employ around 2,600 people.[71] Private investors who own the existing tea factories are also being encouraged to expand to meet the 18,000 ha of new production target (eg. by providing new seedlings for free to farmers).

Given the large role of the private sector in the tea sector GoR investment directly is minimal. However, the GoR is an active agent working with stakeholders in the tea industry, agreeing targets and directing investments. This work is led by NAEB directly and there is no donor involvement in this industry - GoR forum. NAEB has also led a process related to achieving higher prices for smallholders after the World Bank Group (WBG) recommended that Rwanda introduce a price-share formula, with farmers paid a % of the final made-tea price earned by their factory. The WBG recommended the share be set at 35% in 2012 rising in increments to reach 50% in 2015.[72] This was somewhat watered down at Cabinet level and a directive was issued in October 2012, for a price-share of 30% for 2012 and directing the Ministry of Agriculture to implement annual increases in the formula with the target to reach a 50% price-share by 2017.

This price-share has been effective and resulted in an immediate 20%-50% increase in farmer incomes in 2012 and 2013.[73] However, contrary to the Cabinet instructions, no annual increments were implemented in 2013 or 2014. As prices declined in 2014 and farmers' real incomes risked dropping below their level in 2011, NAEB intervened with a short-term measure to protect farmer incomes.[74] NAEB requested the WBG again review the current system and recommend options for the future. The consultant has recommended immediately raising greenleaf prices to 40% of made-tea prices for 2016 with a further increase to 50% in 2017, as the best way to increase tea farmers' incomes to levels that meet the government's development targets. This has been presented to the industry by NAEB and they have secured a new agreement to increase the price-share to 40% of the factory's sales price (measured on a quarterly basis).[75] This agreement still has to be approved by Cabinet and will be implemented from the beginning of January 2016. While this progress on pricing is positive it should be noted that Rwanda is lagging behind other leading tea producers, where the greenleaf price is set automatically as a % of the made-tea price.[76]

7.3 Rice

Rice was selected as a priority crop for the CIP because it has high yield potential and allows for the exploitation of valleys prone to flooding, thereby alleviating the pressure on the hills where it is possible to produce other crops. There is also strong national demand for rice and virtually all rice production can be sold, generating cash revenues for farmers. As a CIP crop, rice production has been supported by the GoR through construction of community-based irrigation systems in the marshlands, introduction of new varieties,

subsidization of transport cost for fertilizer, and installation of mills in many of the main production districts.[77] Yields have increased fairly steadily and today are comparable to that achieved in Vietnam and higher than Thailand or Bangladesh.[78] Although the sector is growing the country is a net importer of rice and considerable volumes are imported from neighbouring countries and from Asia. Supply is the main constraint for the industry.

In the past, the low quality of domestically produced rice in Rwanda was due to the fact that most of this rice was milled either by hand or using small rice hullers. This situation is now changing. The GoR has recently begun purchasing and installing intermediate size mills of 1.0 to 3.5 metric tons an hour, which are able to produce good quality rice that competes well with imports.[79] Most of these mills have been licensed to cooperatives, which own 40% of the shares and have management responsibility. The GoR also invited ICM – an Australian agribusiness - to identify viable investment opportunities in Rwanda. The outcome of this was a decision to set up three joint ventures with rice cooperatives to take over government owned factories that were being privatised and to invest in extending rice production. ICM Rwanda Agribusiness is now the biggest player in the rice sector and around 14 farmer cooperatives (representing around 28,000 farmers)[80] have a 40% stake in ICM's three rice mills.

While it is considered that Rwanda has been successful in promoting intermediate-scale milling technology (and this rice can compete in terms of quality with rice imported from Asia), pricing within the value chain is a major issue.[81] Cooperatives generally set the prices at which they sell to the mills based on production costs. However, the mills have complained that they are unable to then cover their costs and meet the market price (which is heavily influenced by the price of imported rice). Some millers appear to be buying their paddy from neighbouring countries, especially Tanzania. The extent to which this is taking place, however, is not yet very clear but there is concern that this situation will pose a problem to the further development of the sector.

The World Bank has assessed that there is substantial potential to increase domestic production of rice due to increased area of marshlands for rice cultivation and the high number of cooperatives in the sector which could increase their capacity.[82] Opportunities also exist for exporting rice to Burundi and the DRC, which may be successfully exploited in future. The high development costs for rice production – due to the high cost of development of marshlands - are an issue though. However, the sector is still seen as promising – and likely to continue a priority - because of the substantial cash benefits for small farmers.

7.4 Staple crops

Staple crops have been a focus of the GoR's agricultural programmes. Since 2007 there has been a strong push by the GoR to increase maize production through the CIP, given its importance as a cereal reserve as well as to increase wheat production. Both maize and wheat benefited from a 50% subsidy policy on fertiliser. Maize production has also benefited from irrigation (the costs of which are not borne by the farmers). Partly as a result of this maize yields increased from 0.85 MT/ha in 2006 to 2.26 MT/ha in 2012, while wheat yields increased from 0.86 MT/ha to 2.17MT/ha over the same period. (See **Table A:3 in Annex A**).

The largest maize miller (Minimex) is currently looking for ways to develop higher quality maize production including looking at out-grower schemes, the introduction of high yield

varieties, training for farmers and leasing of modern equipment. They have been sourcing a lot from countries such as Uganda, Zambia and Tanzania as domestic production has been far from meeting demand. A central part of their strategy is to form closer relationships with maize farmers and cooperatives. There are also many small maize mills which are active, though producing a low-quality form of maize flour. Wheat is seen as a more difficult crop. Due to the very poor quality of local wheat the largest millers in Rwanda import the majority of the wheat they use to produce flour from destinations such as Australia. Sugar has a similar picture with the main sugar factory importing through special duty-free waivers for sugar imports from outside the East African Community.

Cassava has quite a different profile. It is an important crop for the poor and it is grown widely throughout the country. It has the advantage that it can be grown on poorer soils, where other crops will not grow. It is also relatively drought-tolerant and has high calorie content. However, average yields in Rwanda are only about 15 MT/ha, which is far below its potential of 35-40 MT/ha.[83] Although cassava is a resilient crop to grow, it can be subject to a number of post-harvest problems (including bacterial and fungal decay).[84] As such cassava must be properly processed soon after harvest. This requires ready access to drying and milling facilities. Until recently, farmers producing cassava were not well-served with either processing capacity or market linkages. As a result, a substantial quantity of cassava is still consumed on the farm.

However, cassava is now included as a CIP crop and there are efforts to enhance milling capacity, develop new extension services and to encourage the use of crop inputs. The number of mills is increasing. The country now has a range of large and small hammer mills, working at low capacity in rural areas (where previously the sector was dominated by a multitude of small traders working with small millers). The sector is increasingly streamlined and rationalized as larger mills are constructed and clearer marketing channels become available for growers. Rwanda has been assessed as having significant export potential of cassava flour within the east Africa region, including particularly to Burundi but also other countries.[85] Investment in milling capacity is, however, necessary (both in large and small mills) as well as support for farmers and cooperatives to ensure an adequate supply for raw material to feed cassava mills as they develop.

7.5 Horticulture and high value export crops

The climate and soils in Rwanda are ideal for horticulture and it has the additional benefit that not much land is needed for production. Horticulture has been ranked the number one sector for investment potential within Rwanda.[86] This has led to a recent shift in focus from tea and coffee to more diverse horticultural (and high value export) crops such as: fresh fruits (avocados, passion fruit, pineapple etc.), vegetables (mushrooms, soybeans), spices, nuts, cut flowers and speciality plants (such as essential oils, pyrethrum, vanilla and silk).

There are some small-scale actors involved in processing in this sector. For example: Sosoma Industries which is a cooperative-based agro processing firms that processes sorghum flour, soya flour, maize flour; Kigali Farms – a social enterprise which provides assistance to farmers for mushroom production and which sells fresh and dried mushrooms and mushroom powder, and Shekina – a small business involved in drying and packaging products such as cassava, millet, sorghum, wheat, soya, fruits. (Shekina produces small volumes but has a niche

market in Rwandan diaspora and sources mainly from women's groups).

Pyrethrum is a natural botanical insecticide, produced by only a few countries in the world. It is Rwanda's second largest export crop after tea and coffee. In Rwanda there is one processing factory and exporter of pyrethrum. It had some difficulties and was taken over by a Rwandan investor group (Horizon). A large focus of work since the takeover has been to re-establish firm-farmer relationships, organising pyrethrum farmers into cooperatives and providing them with various support services (such as training, improved clones and free seedlings). Horizon Sopyrwa is now working with around 24 large producer cooperatives.[87] However, it is still operating below capacity and has significant growth potential. There are consequently plans under PSTA 3 to work with farmers to plant more, as well as to invest in research to develop higher quality planting materials and providing suitable training to farmers.

The GoR is also actively involved promoting trials on horticulture. There is a joint venture between the GoR and East African Growers (a large Kenyan agribusiness) trialling commercial avocado production for export.

8. Conclusions and lessons learned

When it comes to agriculture the country faces many constraints, including relatively fragile soils that have been severely depleted and eroded, a hilly or mountainous terrain that contributes to erosion, long distance and high transport costs to and from the sea and high and growing population density, which limits access by a large part of the rural population to enough land to sustain itself. At the same time Rwanda benefits from a diverse agro-ecological environment, which permits the production of a wide variety of agricultural and livestock products as well as reasonably favourable rainfall. Most important Rwanda has a strong state, very low corruption levels and a government with strong commitment to development and poverty reduction which has made the agriculture sector a genuine priority. This context is quite particular to Rwanda and not many countries will be in the same position, particularly with the same high-level commitment.

One of the questions that has not been answered yet in Rwanda is specifically what markets will work for the poor in terms of value addition and agro-processing. The industry is at too early a stage for this to be simple to determine. MINAGRI also appears to be struggling to fully make the transition from a ministry that can effectively support the production side to one that is prioritizing commercialisation and agribusiness development. However, there is clearly huge potential to add value and smallholder farmers and cooperatives are very well positioned with an enabling environment to increase their productivity and get involved in new activities. As the smallholder model is so dominant in Rwanda – and there are essentially no real plantation opportunities – there appears to be little concern that small farmers will not benefit from new agro-processing opportunities. This does merit future monitoring though as new businesses develop. Another area where progress in Rwanda is relatively limited and many questions remain is in relation to gender and agriculture. Agricultural progress does not show signs of being equitable in gender terms, though it has been, in the main, pro-poor.

A central principle has informed many elements of public policy in Rwanda – that is that it is critical to keep the benefits of private sector development in country and to ensure as many benefits as possible flow to the farmer level. First and foremost, the GoR believes that 'ownership matters'. This basic principle is visible in how the agriculture and

manufacturing sectors are organised. It can be seen in the unusual (and sometimes controversial) role played the *"partystatals"* which means that Rwandan investor groups have interests in many key businesses, thus ensuring the development of the domestic private sector. It can also be seen in the GoR's privatisation policies, which have resulted in farmer cooperatives having a share in ownership of large assets such as tea factories and rice mills, alongside foreign investors. And it is also evidenced by the willingness of the GoR to enter into joint ventures with foreign investors itself in certain circumstances. These experiences can offer lessons for other countries.

8.1 A summary of lessons learned:

- As a critical starting point agriculture as a sector must get the policy-level recognition that is needed. This entails a high-level commitment to agriculture evidenced in national policy documents and in budget allocations. In Rwanda the sector is a genuine priority and it is consistently allocated adequate budgets as a result.
- Together sufficient budget and a Ministry with a capacity to implement can deliver real results in important areas. In Rwanda MINAGRI is considered a 'strong' ministry, capable of delivering against the strategies developed. Strategies - and their targets - are also a real point of reference in Rwanda. Performance is rigorously assessed via the performance contracts used by both central and local government.
- A 'big push' to prioritise agriculture can – from a very low base – yield very positive results in terms of growth, productivity, small farmer incomes and poverty reduction even over a relatively short time period such as 5 years.
- While a lot can be achieved in a short time frame– with farmers coming into surplus and selling more - sustaining these improvements then becomes the more complicated challenge. The investment in this later stage has to be very strongly in value addition and in more commercial opportunities. This transition to more commercial activity is likely to be more complex than any production-oriented investment and can prove challenging for a ministry used to focusing on the production side.
- Keeping the issue of *'who benefits financially'* central to any agricultural investment and programme – including during privatisation - is important. This is relevant to both the ownership of (privatised and other) assets and with regard to income generation from activities. It implies thinking about the potential role of joint ventures where cooperatives enjoy share ownership, cooperatives' involvement in value-addition, the use of suitable pricing mechanisms to ensure farmers benefit and the importance of focusing on increasing incomes via improvements in the quality of production.
- Although consolidation in the hands of large investor groups is inevitable to some extent in agribusiness given the capital necessary to participate, there can still be a strong role for cooperatives and small business. This can be both as (organised and empowered) suppliers of raw materials and as cooperatives or small businesses involved in value addition through ownership of smaller coffee washing stations or smaller milling facilities. Public investment to directly facilitate this is relevant.
- Having targets for the creation, management and successful operations of cooperatives and agricultural lending to small farmers, cooperatives and small

agri-businesses are an important element of agriculture sector policy that can help drive results.

- While a focus on high value/volume export crops is inevitable for any country there must also be an equal priority given to agricultural programmes that support the crops most commonly produced by poor farmers. Improvements in these crop yields have high potential to reduce poverty. This implies considering carefully (and monitoring) who will be able to participate in and benefit from agriculture sector programmes whether these are related to extension or irrigation or input supply etc. This approach to ensure proper targeting should take into account both poverty levels (or, for example, size of landholding) and gender.
- Making the right partnerships for private sector development matters - especially in light of the consolidation that is likely to occur. The GoR appears to choose its partners carefully[88] and has now developed a track record of engaging with philanthropic investors who are interested in a different form of private sector development. This model is one that generates real benefits for smallholders – not just a 'fair price' but maximum benefits in terms of long-term asset ownership. It is also one where intensive capacity building and support programmes are directly built into the supply chain.
- The public sector can play a strategic role in creating new opportunities such as Rwanda is seeking to do for the horticulture industry or through its export of roasted coffee. Public private partnerships can be used when necessary – with the GoR, for example, often contributing land or facilities and helping to mobilise farmers, but with private investors bringing the lion's share of capital to the investment (thereby ensuring the greatest financial risk is not borne by the public sector).
- The public sector can successfully provide strategic guidance to the private sector setting targets to expand production, improve yields and to improve farmer incomes. Intervention in the tea industry in Rwanda will no doubt lead to expanded production as well as a fairer share of benefits in the value chain. Negotiating pricing agreements with the private sector can ensure that small farmers' incomes are increased.
- Strong donor and government coordination is essential to deliver results both by increasing budgets available and by the provision of relevant technical assistance. Forums for sectoral coordination are strong in Rwanda. There is a good use of technical assistance and overall openness to new approaches and best practice. Donors have been able to advance the debates regarding, for example, more affordable small-scale irrigation technology and the need for a greatly expanded private sector role in a more open seed sector.
- Some large infrastructural investments can be cost-effective. In Rwanda the large increase in the area of land reported as protected against soil erosion was accomplished at very low cost. This implies this is a feasible and proper focus of public investment.
- Cost-benefit analysis of investments will always be important. A relentless focus on meeting targets (such as the approach adopted in Rwanda) can sometimes obscure a deeper understanding of impact and value for money. Smaller scale, lower cost options may exist that would represent better value for the public purse.
- Making investments to improve production and productivity (from the perspective of commercialisation not food security) should take into account and balance two

key factors: (1) the market available and competitiveness of the product targeted for improvement and (2) the cash income generated for poor farmers. Without this balance there is a risk that either a market-driven focus will ignore equity and poverty concerns or that ultimately an investment will fail due to a lack of competitiveness in the market.

Currently, Rwanda is at a transitional stage. There has been strong investment in agricultural production and there is a strong foundation for future agricultural and agri-business growth. The future is likely to see more diversification of products of both a higher value and with higher value added. Investment in the development of value chains and agro-processing and increased commercialisation is the way forward. To ensure the poorest benefit the strong investment in the sector must continue alongside targeted support to build rural infrastructure where it is most needed, to continue to raise the skills and productivity of small farmers, to promote small scale business activities in agro-processing and to generally ensure small farmers and cooperatives continue to benefit as more modern agriculture and manufacturing industries develop

Annex A: Data

Table A.1: Evidence of progress: trends in key indicators of wellbeing

Indicator	2005/6	2010/11	2013/14 2014/15
Infant mortality rate	86	50	32
Infant mortality rate (Quintile 1)	*114*	*70*	*n.a*
Infant mortality rate (Quintile 5)	*73*	*50*	*n.a*
Under-five mortality rate	152	76	50
U5 mortality rate (Quintile 1)	*211*	*119*	*n.a*
U5 mortality rate (Quintile 5)	*122*	*75*	*n.a*
Maternal mortality rate	750	476	210
Malnutrition: stunted	51	44	38
Malnutrition: stunted (Quintile 1)	*55.1*	*54*	*48.6*
Malnutrition: stunted (Quintile 5)	*29.7*	*25.8*	*n.a*
Malnutrition: wasted	5	3	2
Malnutrition: underweight	18	11	9
Average time in minutes to reach a health centre	95.1	61.4	56.5
Average time to reach a health centre (urban)	*52.6*	*29.9*	*30.7*
Average time to reach a health centre (rural)	*103.5*	*66.6*	*61.4*
Prevalence of health insurance	43.3	68.8	70.0
Net attendance rate, primary	86.6	89.6	87.9
Net attendance rate, primary (Quintile 1)	*79.9*	*86.9*	*82.2*
Net attendance rate, primary (Quintile 5)	*91.2*	*95.7*	*92.5*
Net attendance rate, secondary	10.4	17.8	23.0
Net attendance rate, secondary (Quintile 1)	*2.2*	*6.7*	*10.1*
Net attendance rate, secondary (Quintile 5)	*21.3*	*34.8*	*39.8*
Literacy rate among people aged 15-24	76.9	83.1	86.2
% of households with thatch or leaves roof	9.8	2.2	0.4
% of households with cement floor	13.3	17.1	21.1
% of households with electricity as main source of lighting	4.3	10.8	19.8
% of households with electricity (urban)	*23.1*	*58.2*	*71.8*
% of households with electricity (rural)	*0.7*	*2.5*	*9.1*
% of households with improved drinking water source	70.3	74.2	84.8
% of HH with improved drinking water (Quintile 1)	*66.6*	*68.4*	*81.1*
% of HH with improved drinking water (Quintile 5)	*79.6*	*84.0*	*89.3*
% of households with improved sanitation	58.5	74.5	83.4
% of households with improved sanitation (Quintile 1)	*42.4*	*64.7*	*70.4*
% of households with improved sanitation (Quintile 5)	*76.6*	*85.6*	*94.4*
% of households owning mobile phone	6.2	45.2	63.6
% of households with at least one savings account	18.9	36.1	54.1

Source: NISR, Integrated Household Living Condition Surveys: EICV 2 (2005/6), EICV 3 (2010/11) and EICV 4 (2013/14) and NISR, Rwanda Demographic and Health Survey (DHS), 2014/15

Note: Health data related to mortality rates and malnutrition comes from Rwanda's Demographic and Health Surveys (DHS) which were released in 2005, 2010 and 2014/15 (slightly different dates than the EICV surveys). Many more health indicators are of course available for analysis. DHS data is normally available disaggregated per quintile but the most recent quintile data has, in the main, not been published as only the preliminary, summary data has been published. Hence some variables are recorded as n.a. - not available. Data shows many indicators for which equity gaps are narrowing – both based on quintiles (poorest 20% vs richest 20%) and based on locational inequalities (urban vs rural). For the infant mortality rate, under-five mortality rate, time to reach a health centre, access to improved source of drinking water and access to improved sanitation gaps are narrowing. Malnutrition (stunting) has been more difficult to address for the poorest, but the full latest data is not available to check more recent progress and the current equity gap. Indicators for attendance rates at primary and secondary education and for access to electricity are notable as they mainly show growing gaps over this time period.

Table A.2: Crops grown by the poor

	% of households cultivating….											
	Potatoes		Cassava		Cooking Banana		Maize		Tea		Rice	
	EICV 2 (2005/6)	EICV 4 (2013/14)	EICV 2 (2005/6)	EICV 4 (2013/14)	EICV 2 (2005/6)	EICV 4 (2013/14)	EICV 2 (2005/6)	EICV 4 (2013/14)	EICV 2 (2005/6)	EICV 4 (2013/14)	EICV 2 (2005/6)	EICV 4 (2013/14)
Quintile 1	32.3	49.3	44.0	52.6	44.9	53.0	46.6	73.5	0.4	1.1	2.4	4.6
Quintile 2	43.3	61.9	53.0	59.6	54.8	60.8	56.9	81.5	0.6	1.3	2.5	6.0

Source: National Institute of Statistics Rwanda (NISR), Integrated Household Living Condition Surveys: EICV 2 (2005/6) and EICV 4 (2013/14

Table A.3: Increases in the production and yields of selected food crops

Crop	2006		2007		2008		2009		2010		2011		2012	
	Yield (MT/ha)	Production (MT)	Yield (MT/ha)	Production (MT)	Yield (MT/ha)	Production (MT)	Yield (MT/ha)	Production (MT)	Yield (MT/ha)	Production (MT)	Yield (MT/ha)	Production (MT)	Yield (MT/ha)	Production (MT)
Sorghum	1.10	187,380	1.03	166,769	1.01	144,418	1.19	174,562	1.20	160,736	1.40	181,534	1.43	138,695
Maize	0.85	96,662	0.73	102,447	1.15	166,853	1.94	286,943	2.48	438,739	2.27	508,123	2.26	573,038
Wheat	0.86	18,978	0.89	24,633	1.30	67,869	1.71	72,479	1.62	87,453	2.00	85,812	2.17	75,913
Rice	4.61	60,446	4.11	61,701	4.44	82,025	4.12	81,076	4.91	93,902	5.53	81,402	5.72	84,079
Beans	0.82	296,724	0.92	331,107	0.92	308,563	0.94	327,727	1.03	320,361	0.97	332,892	0.94	452,829
Banana	7.26	2,658,232	7.62	2,698,176	7.47	2,603,949	8.67	2,993,468	8.30	2,770,317	8.82	3,057,895	9.50	3,219,466
Irish Potato	9.17	1,275,585	7.76	967,283	9.13	1,161,943	10.20	1,289,613	13.04	1,965,999	12.85	2,177,164	14.19	2,337,706
Sweet Potato	5.61	776,640	5.73	845,133	5.52	826,440	6.49	803,234	7.46	830,172	8.05	853,071	9.19	1,005,305
Yam & Taro	4.94	129,275	5.31	151,513	4.58	144,919	5.18	152,383	6.16	168,791	6.65	186,168	6.67	172,974
Cassava	6.44	765,198	5.44	776,943	10.31	1,681,823	11.17	2,019,721	11.67	2,287,473	12.45	2,616,424	14.90	2,716,421
Vegetables	10.24	510,100	10.78	534,428	10.66	557,103	10.46	542,891	10.47	541,900	11.25	537,061	12.00	460,816
Fruits	9.98	335,904	10.57	369,005	10.77	404,542	10.55	407,237	11.18	451,900	11.74	591,229	12.69	472,278

Source: Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD)

Table A.4: Rwanda's ten largest manufacturing and agribusiness firms

Rank	Company	Year incorporated	Main product	Reported turnover (2010/11)	Ownership
1	Bralirwa	1963	Beer and soft drinks	US$130-135m	Heineken
2	Pembe Flour Mills	2007	Wheat flour	US$25-30m	Kenyan multinational (individual family has controlling interest)
3	Bakhresa Grain Mills	2009	Wheat flour	US$20-25m	Tanzanian conglomerate (individual family has controlling interest)
4	Cimerwa	1984/2006	Cement	US$20-25m	GoR, Rwanda Social Security Fund, Rwanda Development Bank and Rwanda Investment Group
5	Rwanda Mountain Tea	2006	Black and green tea	US$14-16m	Individual/family owned firm (Rwanda)
6	Sulfo Industries	1962	Soaps, detergent, personal care products etc.	US$14-16m	Individual/family owned firm (Rwanda)
7	Rwacof	1997	Coffee	US$12-15m	Sucafina Group, Switzerland
8	ICM Rwanda Agribusiness	2005	Rice	US$11-15m	Australian agribusiness firm, ICM, entered into a joint venture with rice cooperatives (60%-40%)
9	Coffee Business Centre	2003	Coffee	US$11-13m	Individual/family-owned firm (Rwanda)
10	Safintra	2007	Roofing sheets	US$10-12m	Safal group, founded in Tanzania, headquartered in Mauritius

Source: Sachin Gathani and Dimitri Stoelinga, 2013, Understanding Rwanda's Agribusiness and Manufacturing Sectors, International Growth Centre and Lateright.

Endnotes

[1] This disclaimer informs readers that the views, thoughts, and opinions expressed in the text belong solely to the authors, and not necessarily to the author's employer, organization, committee or other group or individual.
[2] NISR, *Integrated Household Living Conditions Survey* (*EICV 2) 2005/6* and NISR, *Integrated Household Living Conditions Survey (EICV 3) 2010/11*.
[3] NISR, *Integrated Household Living Conditions Survey* (*EICV 2) 2005/6* and NISR, *Integrated Household Living Conditions Survey (EICV 4) 2013/14*.
[4] NISR, Rwanda's Demographic and Health Surveys 2005 and 2014/15.
[5] See Rwanda's Demographic and Health Surveys 2005 and 2014/15.
[6] UNESCO, 2014, *Education for All Global Monitoring Report 2013/14, Teaching and Learning: Achieving Quality for All*.

[7] See World Bank, World Development Indicators
[8] National Institute of Statistics of Rwanda (NISR), *Integrated Household Living Conditions Survey: EICV 4 2013/14*. This was published in September 2015.
[9] The share of agriculture in GDP was 45% in 2001. (See: World Bank, 2013, *Maintaining Momentum: With a special focus on Rwanda's pathway out of poverty*, Rwanda Economic Update, Edition No. 4). This fell to around a third of GDP most recently. See: EICV 4 which cites MINECOFIN data from 2013 and NISR data from 2015.
[10] National Institute of Statistics of Rwanda (NISR), *Integrated Household Living Conditions Survey: EICV 4 2013/14*. This was published in September 2015.
[11] World Bank, 2013, *Maintaining Momentum: With a special focus on Rwanda's pathway out of poverty*, Rwanda Economic Update, Edition No. 4
[12] Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD)
[13] National Institute of Statistics of Rwanda (NISR), *Integrated Household Living Conditions Survey: EICV 3 2010/11*.
[14] See: World Bank, 2013, *Maintaining Momentum: With a special focus on Rwanda's pathway out of poverty*, Rwanda Economic Update, Edition No. 4. The World Bank calculates that increased agricultural production accounted for 35% of the drop in poverty, while increased agricultural commercialization accounted for an additional 10%. Taken together they find these 2 factors explain more than 6 percentage points of the 14 percentage point drop in poverty over the previous decade (2000/1 – 2010/11).
[15] World Bank Group, 2014, *IDA Programme Appraisal Document on a Proposed Credit to the Republic of Rwanda for the Transformation of the Agriculture Sector Programme Phase 3, Programme for Results*, October.
[16] World Bank Group, 2014, *IDA Programme Appraisal Document on a Proposed Credit to the Republic of Rwanda for the Transformation of the Agriculture Sector Programme Phase 3, Programme for Results*, October.
[17] This data is all provided in: National Institute of Statistics of Rwanda (NISR), *Integrated Household Living Conditions Survey: EICV 4 2013/14* - published in September 2015.
[18] MINAGRI, 2013, *Strategic Plan for the Transformation of Agriculture in Rwanda Phase 3,* July. The strategy document lists maize, wheat, roots and tubers, soybeans, rice, cassava, horticultural products and meat and milk as having increased. The World Bank also finds that improvements in the agriculture sector in the last five years have principally been driven by improvements in sustainable land management, input provision, and irrigation delivered by the GoR's flagship programmes. See: World Bank Group, 2014, *IDA Programme Appraisal Document on a Proposed Credit to the Republic of Rwanda for the Transformation of the Agriculture Sector Programme Phase 3, Programme for Results*, October.

[19] Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD)
[20] World Bank Group, 2014, *IDA Programme Appraisal Document on a Proposed Credit to the Republic of Rwanda for the Transformation of the Agriculture Sector Programme Phase 3, Programme for Results*, October.
[21] Stakeholder interview
[22] Hillside irrigation techniques used in Rwanda cost an extremely expensive US$23,000 per hectare. This compares to the cost of small-scale irrigation of about US$1,500 per hectare. See: Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD).

[23] Stakeholder interview

[24] Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD)
[25] World Bank Group, 2014, *IDA Programme Appraisal Document on a Proposed Credit to the Republic of Rwanda for the Transformation of the Agriculture Sector Programme Phase 3, Programme for Results*, October.
[26] World Bank Group, 2014, *IDA Programme Appraisal Document on a Proposed Credit to the Republic of Rwanda for the Transformation of the Agriculture Sector Programme Phase 3, Programme for Results*, October.
[27] Stakeholder interview
[28] Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD)
[29] All information presented here on the extension model is taken from: MINAGRI, 2015, *Backward Looking Joint Sector Review Report for FY 2014-15,* November.
[30] MINAGRI, 2015, *Backward Looking Joint Sector Review Report for FY 2014-15,* November.
[31] World Bank Group, 2014, *IDA Programme Appraisal Document on a Proposed Credit to the Republic of Rwanda for the Transformation of the Agriculture Sector Programme Phase 3, Programme for Results*, October.
[32] World Bank Group, 2014, *IDA Programme Appraisal Document on a Proposed Credit to the Republic of Rwanda for the Transformation of the Agriculture Sector Programme Phase 3, Programme for Results*, October.
[33] Stakeholder interview
[34] MINAGRI, 2015, *Backward Looking Joint Sector Review Report for FY 2014-15,* November.
[35] Stakeholder interview
[36] National Institute of Statistics of Rwanda (NISR), *Integrated Household Living Conditions Survey: EICV 4 2013/14*.
[37] This data is not in table 5 but equally can be found in EICV 4
[38] World Bank, 2013, *Maintaining Momentum: With a special focus on Rwanda's pathway out of poverty*, Rwanda Economic Update, Edition No. 4.
[39] This data is reported in: National Institute of Statistics of Rwanda (NISR), *Integrated Household Living Conditions Survey: EICV 4 2013/14*: *Rwanda Poverty Profile Report.* However, it comes from NISR's establishment census.
[40] Unless otherwise stated all information on the manufacturing sector is taken from: Sachin Gathani and Dimitri Stoelinga, 2013, *Understanding Rwanda's Agribusiness and Manufacturing Sectors*, International Growth Centre and Lateright. Data presented refers to manufacturing and agri-business but excludes mining.
[41] See: Sachin Gathani and Dimitri Stoelinga, 2013, *Understanding Rwanda's Agribusiness and Manufacturing Sectors*, International Growth Centre and Lateright, pg. 5.
[42] IMF, 2000, *Rwanda: recent economic developments*, IMF Staff Country Report 4 (January)
[43] David Booth and Frederick Golooba-Mutebi, 2011, *Developmental Patrimonialism: The case of Rwanda*, ODI Africa Power and Politics Programme, Working Paper 16, pg. 7.
[44] David Booth and Frederick Golooba-Mutebi, 2011, *Developmental Patrimonialism: The case of Rwanda*, ODI Africa Power and Politics Programme, Working Paper 16, pg. 13.
[45] Katrina Manson, 2015, State-backed corporations vie to dominate Rwanda's business landscape, *Financial Times,* April 24th 2015
[46] David Booth and Frederick Golooba-Mutebi, 2011, *Developmental Patrimonialism: The case of Rwanda*, ODI Africa Power and Politics Programme, Working Paper 16
[47] David Booth and Frederick Golooba-Mutebi, 2011, *Developmental Patrimonialism: The case of Rwanda*, ODI Africa Power and Politics Programme, Working Paper 16, pg. 14.
[48] This Financial Times article refers to the findings of a World Bank assessment of the role of partystatals and their impact on completion in certain sectors. See: Katrina Manson, 2015, State-backed corporations vie to dominate Rwanda's business landscape, *Financial Times,* April 24th 2015
[49] David Booth and Frederick Golooba-Mutebi, 2011, *Developmental Patrimonialism: The case of Rwanda*, ODI Africa Power and Politics Programme, Working Paper 16.
[50] Sachin Gathani and Dimitri Stoelinga, 2013, *Understanding Rwanda's Agribusiness and Manufacturing Sectors*, International Growth Centre and Lateright, pg. 34.
[51] Sachin Gathani and Dimitri Stoelinga, 2013, *Understanding Rwanda's Agribusiness and Manufacturing Sectors*, International Growth Centre and Lateright, pg. 48.
[52] See: Sachin Gathani and Dimitri Stoelinga, 2013, *Understanding Rwanda's Agribusiness and Manufacturing Sectors*, International Growth Centre and Lateright.
[53] Sachin Gathani and Dimitri Stoelinga, 2013, *Understanding Rwanda's Agribusiness and Manufacturing Sectors*, International Growth Centre and Lateright, pg. 48.
[54] Sachin Gathani and Dimitri Stoelinga, 2013, *Understanding Rwanda's Agribusiness and Manufacturing Sectors*, International Growth Centre and Lateright, pg. 110.
[55] This is described as a variant of contract farming under which a larger farm produces a high-value production and serves as a demonstration for surrounding smaller farms (out-growers) which over time agree to plant the same crop and agree to follow the same cultivation procedure and sell to the same buyer.

[56] Cooperative numbers are given in: World Bank Group, 2014, *IDA Programme Appraisal Document on a Proposed Credit to the Republic of Rwanda for the Transformation of the Agriculture Sector Programme Phase 3, Programme for Results*, October.
[57] The share of speciality coffee has increased substantially in the last decade rising from less than 1% in 2002 to 29% in 2012. See: Sachin Gathani and Dimitri Stoelinga, 2013, *Understanding Rwanda's Agribusiness and Manufacturing Sectors*, International Growth Centre and Lateright and Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD).
[58] World Bank Group, 2014, *IDA Programme Appraisal Document on a Proposed Credit to the Republic of Rwanda for the Transformation of the Agriculture Sector Programme Phase 3, Programme for Results*, October.
[59] Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD).
[60] Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD).
[61] Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD).
[62]The cess is a tax paid that goes to NAEB not the revenue authority. It is ring-fenced for investment in the coffee sector.
[63]This foundation is based in the UK and was started by a Scottish billionaire turned 'venture philanthropist'. They have worked in Rwanda for several years, in partnership with the Clinton Foundation at some point and now doing more investments in the agriculture sector in partnership with the GoR.
[64]Stakeholder interview
[65] Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD)
[66] Sachin Gathani and Dimitri Stoelinga, 2013, *Understanding Rwanda's Agribusiness and Manufacturing Sectors*, International Growth Centre and Lateright
[67] NAEB, 2015, *Review of Options for Improving Rwanda's Greenleaf Pricing Mechanism*, Recommendations prepared by the World Bank Group Trade and Competitiveness Unit, October
[68] Stakeholder interview. The GoR also kept up to 30% of shares in public ownership for the first few years of operations. This continued interest was mainly driven by a desire to monitor the management and success of the privatized venture given some privatisations had not been successful and the GoR has had to step back in. Normally after a few years of successful operations the GoR has sold their minority stake to the private investor involved.
[69] The Wood Foundation is an Aberdeen-based foundation started by Scottish billionaire Ian Woods. This foundation operates only in the tea sector and only in Africa (Tanzania and Rwanda only to date).
[70] World Bank Group, 2014, *IDA Programme Appraisal Document on a Proposed Credit to the Republic of Rwanda for the Transformation of the Agriculture Sector Programme Phase 3, Programme for Results*, October.
[71] Stakeholder interview
[72] Stakeholder interview
[73] NAEB, 2015, *Review of Options for Improving Rwanda's Greenleaf Pricing Mechanism*, Recommendations prepared by the World Bank Group Trade and Competitiveness Unit, October
[74] NAEB asked factories to retain their 2014 greenleaf prices during 2015. As a result, in 2015 factories are paying between 35-45% of their average 2014 made-tea price – in line with the 40% target for 2015 implied by the original Cabinet instructions

[75] Stakeholder interview
[76] In Sri Lanka the price-share is set at 68%, in India at 65% and in Tanzania at 35%. In Kenya there is no national pricing system. However, the Kenyan Tea Development Agency (KTDA) – previously a parastatal – currently manages 67 factories, all of which are smallholder-owned. KTDA gives greenleaf suppliers 60-70% of made-tea revenues. They are the largest single exporter of tea in the world.

[77] Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD)
[78] MINAGRI, Rural Sector Support Project II, *Rwanda Rice Commodity Chain: Strategic Options to Maximize Growth and Poverty Reduction*, Final Report, J. Dirck Stryker, Associates for International Resources and Development, August 2010, pp. 6-7.

[79] Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD)
[80] Numbers of cooperatives and farmers are taken from: Sachin Gathani and Dimitri Stoelinga, 2013, *Understanding Rwanda's Agribusiness and Manufacturing Sectors*, International Growth Centre and Lateright
[81] Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD)
[82] World Bank Group, 2014, *IDA Programme Appraisal Document on a Proposed Credit to the Republic of Rwanda for the Transformation of the Agriculture Sector Programme Phase 3, Programme for Results*, October.
[83] Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD)
[84] Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD)
[85] Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD)
[86] This is according to an IFC assessment. This is referenced in: Dirck Stryker, Mukhtar Amin, Jonas Munyurangabo, 2014, *Rwanda Agricultural Markets, Private Sector Development, Supply and Competitiveness Study: Rwanda CAADP 2 Background Paper #1*, Associates for International Resources and Development (AIRD)
[87] David Booth and Frederick Golooba-Mutebi, 2011, *Developmental Patrimonialism: The case of Rwanda*, ODI Africa Power and Politics Programme, Working Paper 16
[88] Without interviewing well-placed staff within the government it is hard to know exactly why these decisions were made. However, it is certainly the case that the GoR has other options. When Mulindi and Shagasha tea factories were privatised for example, there was interest from several of the larger (domestic and international) tea plantation companies including Rwanda Mountain Tea and Macleod Russel – an Indian multinational and one of largest plantations companies in the world.