

# **IRSP 2010-2011 I Results**

**International Research by Students Programme**

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**Publication by:**

The International Research by Students Programme (IRSP)

IRSP is a yearly initiative of Clio, Study Association of International Relations and International Organization at the University of Groningen, The Netherlands.

**Printer and Binder:**

Drukkerij van Dijk, Meppel

**Lay-out and design:**

V. Rekveld, R.T.G. Linders

**More information:**

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# Table of Contents

ACRONYMS .....	6
<b>INTRODUCTION .....</b>	<b>8</b>
<b>CHAPTER 1: RWANDA’S DEVELOPMENT STRATEGY AND INVESTMENT CLIMATE.....</b>	<b>12</b>
GOVERNMENT STRATEGIC VISION.....	12
<i>Implementation of the Strategies.....</i>	<i>15</i>
INVESTMENT CLIMATE ASSESSMENT .....	19
<i>Business Reforms.....</i>	<i>19</i>
<i>Business Performance.....</i>	<i>20</i>
<i>Business Constraints .....</i>	<i>21</i>
<i>Survey of General Investment Climate Rwanda .....</i>	<i>24</i>
Strengths .....	27
CONCLUSION .....	29
<b>CHAPTER 2: SECTOR ANALYSIS.....</b>	<b>30</b>
AGRICULTURE.....	31
<i>Sector Performance and its Factors.....</i>	<i>31</i>
<i>Opportunities.....</i>	<i>34</i>
Food Crops.....	35
Export Crops .....	35
Livestock.....	36
Agro-Processing.....	38
<i>Dutch Expertise.....</i>	<i>38</i>
Horticulture .....	39
Livestock.....	40
Agro-Processing.....	40
<i>Socio-Political Environment .....</i>	<i>41</i>
INFRASTRUCTURE .....	42
<i>Sector Performance and its Factors.....</i>	<i>42</i>
Factors Driving and Hindering Performance .....	43
<i>Opportunities.....</i>	<i>45</i>
Transport .....	45
Water and Sanitation .....	46
Water Irrigation Systems.....	47
Agricultural Infrastructure.....	48
Livestock Infrastructure.....	48
<i>Dutch Expertise.....</i>	<i>51</i>
Water and Waste Management .....	51
<i>Socio-Political Environment .....</i>	<i>52</i>
Costs and Benefits .....	52
Stakeholders, the State and Competition .....	53
CONSTRUCTION .....	54
<i>Sector Performance and its Factors.....</i>	<i>54</i>
<i>Opportunities.....</i>	<i>56</i>
Habitat and Urbanization .....	56
Post Harvest Management.....	57
Dairy Sector .....	57
Livestock Management .....	58
<i>Dutch Expertise.....</i>	<i>58</i>
<i>Socio-Political Environment .....</i>	<i>59</i>
Costs and Benefits .....	59
Stakeholders, the State and Competition .....	59
ENERGY.....	60
<i>Sector Performance and its Factors.....</i>	<i>61</i>
<i>Opportunities.....</i>	<i>62</i>
Hydro Power.....	62
Methane Gas .....	63

Peat .....	64
Geothermal .....	64
Dutch Expertise.....	64
Socio-Political Environment.....	68
INFORMATION & TELECOMMUNICATION TECHNOLOGY (ICT) .....	69
Sector Performance and its Factors.....	72
Opportunities.....	72
Dutch Expertise.....	74
Socio-Political Environment.....	75
Recommendations.....	76
FINANCIAL SERVICES .....	77
Sector Performance and its Factors.....	77
Opportunities.....	80
Dutch expertise.....	80
Socio-Political environment.....	81
Recommendations & Knowledge-Transfer .....	81
TOURISM .....	83
Sector Performance and its Factors.....	84
Opportunities.....	85
Dutch Expertise.....	86
Recommendations.....	86
CONCLUSION.....	87
<b>CHAPTER 3: COMMUNICATION STRATEGY.....</b>	<b>88</b>
THE DUTCH ECONOMY AND DUTCH POTENTIAL .....	88
Priority Sectors.....	90
Agro-Food.....	90
Horticulture .....	91
High Tech .....	93
Gas .....	93
Logistics .....	95
Creative Industry .....	95
Life Sciences .....	96
Chemicals .....	96
Water.....	96
Investments in Africa .....	97
A GOOD INVESTMENT CLIMATE AS A START .....	99
DUTCH POTENTIAL FOR RWANDAN OPPORTUNITIES.....	101
Agriculture.....	101
Infrastructure; Particularly in Water and Waste Management .....	101
Energy.....	102
ICT.....	103
Finance .....	103
Tourism.....	104
Construction .....	104
FURTHER RECOMMENDATIONS AND PROGRAMS .....	105
Programs .....	106
Private Sector Investment Program (PSI) .....	106
Match Making Facility .....	107
The Facility for Infrastructure Development (ORIO) .....	107
CONCLUSION.....	108
<b>CONCLUSION.....</b>	<b>109</b>
<b>BIBLIOGRAPHY .....</b>	<b>112</b>

<b>A NON-EXHAUSTIVE LIST OF DUTCH COMPANIES AND INSTITUTIONS .....</b>	<b>118</b>
MEMBERS OF THE NETHERLANDS AFRICAN BUSINESS COUNCIL .....	137
COMPANIES EITHER EXPORTING TO RWANDA, OR HAVE DONE SO, OR HAVE AN INTEREST IN DOING SO.....	142
<b>APPENDIX I: INTERVIEWS CONDUCTED.....</b>	<b>144</b>
AGENCIES .....	144
FIRMS .....	145
<b>APPENDIX II: NEXUSES.....</b>	<b>146</b>
AGENCIES AND INSTITUTIONS INTERVIEW NEXUS.....	146
FIRM INTERVIEW NEXUS .....	153
<b>APPENDIX III: DOCUMENTATION OF INTERVIEWS.....</b>	<b>159</b>
GENERAL FINDINGS.....	159
AGENCIES & INSTITUTIONS.....	160
FIRMS .....	169

## Acronyms

ASC	African Studies Centre
BCEG	Beijing Construction Engineering Group
BCR	Banque Commercial du Rwanda
BPR	Banque Populaire du Rwanda
CC	Chamber of Commerce
CEPGL	Community for the Great Lakes Region
CESTRAR	Rwandan Trade Union Confederation
COMESA	Common Market of Eastern and Southern Africa
EAC	East African Community
EASSy	East African Submarine Cable System
EDPRS	Economic Development and Poverty Reduction Strategy
E&Y	Ernst & Young
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GIZ	Gesellschaft für Internationale Zusammenarbeit
GoR	Government of Rwanda
HEC	Centre of Expertise
HIPC	Heavily Indebted Poor Countries
ICT	Information and Communications Technologies
IEA	International Energy Agency
ILO	International Labor Organization
IMF	International Monetary Fund
ISAR	Institut des Sciences Agronomiques du Rwanda
IT	Information Technology
KLM	Royal Dutch Airlines
KvK	Kamer van Koophandel
LNG	Liquefied Natural Gas
LNV	Ministry of Agriculture, Nature and Food Quality, The Netherlands
MCC	Milk Collection Center
MDG	Millennium Development Goals
MIGEPROF	Ministry of Gender and Family Promotion, Rwanda
MINAGRI	Ministry of Agriculture and Animal Resources, Rwanda
MINALOC	Ministry of Local Government, Community Development and Social Affairs, Rwanda
MINECOFIN	Ministry of Finance and Economic Planning, Rwanda
MINEDUC	Ministry of Education, Science and Technology, Rwanda

MININFRA	Ministry of Infrastructure, Rwanda
MINITERE	Ministry of Lands, Environment, Forestry, Water and Natural Resources, Rwanda
MMF	Match Making Facility
MT	Million Tons
MW	Megawatt
NABC	Netherlands Africa Business Council
NBR	National Bank of Rwanda
NICI	National Information and Communication Technology Plan
NIRICT	Netherlands Institute for Research on ICT
NLC	National Land Center
NLG	Dutch Guilders
NWP	Dutch Water Partnership
OCIR-CAFE	Rwanda Coffee Development Authority
OCIR-THE	Rwanda tea Authority
ORIO	Facility for Infrastructure Development
PPP	Public Private Partnership
PPU	Public Private Partnership Unit
PSF	Private Sector Federation, Rwanda
PSI	Private Sector Investment Programme
PWN	Puur Water & Natuur
RADA	Rwanda Agriculture Development Authority
RARDA	Rwanda Animal Resources Development
REMA	Rwanda Environment Management Authority
RGC	Rock Global Consulting
RHODA	Rwanda Horticulture Development Authority
RIEPA	Rwanda Investment and Export Promotion Agency
RURA	Rwanda Utilities Regulatory Agency
RWF	Rwandan Franc
R&D	Research and Development
SME	Small and Medium Enterprise
SNV	Stichting Nederlandse Vrijwilligers/ Netherlands Development Organization
SSA	Sub-Saharan Africa
SWOT	Strengths and Weaknesses, Opportunities and Threats
UPEG	Unité de Promotion et d'Exploitation du Gaz du Lac Kivu
VUP	Vision 2020 Umurenge Program
WEF	World Economic Forum

## Introduction

This report is a culmination of seven months research and was commissioned by the Embassy of Rwanda in the Netherlands in conjunction with the International Research for Students Program (IRSP) of the University of Groningen. The research was conducted by six senior students of the program International Relations and International Organization; four of whom travelled to Rwanda for a three-week intensive data collection fieldtrip in March 2011.

It took quite some time to get familiarized with the topic and it was not until the fieldtrip that the team got a clear understanding of what Rwanda is like. We thank the Rwandan Embassy for the Netherlands and the IRSP, for availing the opportunity, to learn about this part of the world, as well as for the opportunity of putting our research skills to the test.





Rwanda is in the midst of an intensive process of transformation in which private sector development and attraction of Foreign Direct Investments (FDI) have been identified as critical components that play a central role in the development of the country.

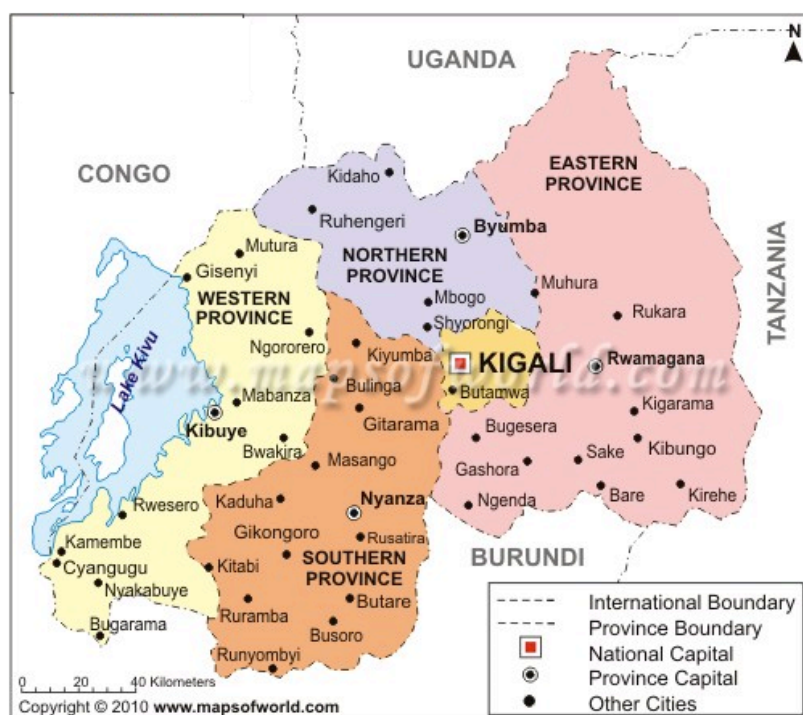
The former, because the Government of Rwanda (GoR) believes that the private sector operating in a market economy is best suited to efficiently allocate- and effectively utilize resources to boost production. As such, the GoR recognizes the need to stimulate the private sector, and to put a physical and soft infrastructure in place as preconditions for its proper functioning.

The latter, because the country does not possess sufficient capital, expertise, and equipment to achieve the level of development as laid out in the *Vision 2020* document (which charts out a roadmap to transform Rwanda into a middle-income country by the year 2020). Therefore, the GoR emphasizes the need for FDI in order to enable the momentum required to transform the country from its predominantly agricultural base into a knowledge-based economy dominated by a service industry with a focus on ICT.

With the above in mind, numerous projects and programs were and are initiated through different bodies from all governmental levels in order to foster private sector development and to attract FDI. This research project commissioned by the Rwandan Embassy in the Netherlands, specifically attempts to explore mutually beneficial FDI opportunities that could be brought to bear, outbound from the Netherlands. It thus combines investment opportunities in Rwanda with the existing expertise and comparative advantage of Dutch firms into a synergistic advantage for both countries. The findings of the research boil down to the following:

Rwanda is on a steep development slope, heading upwards with remarkable speed. Since the country's development is only recently really taking off, there are abundant business opportunities ready to be exploited by any foreign firm with the right spirit to do business in Rwanda. Additionally, there is a government in place which is vigorously encouraging and facilitating such investments - as long as the projected activities are in line with the aims of *Vision 2020*. Dutch firms have a particular expertise in the areas of agriculture and related infrastructure, as well as in horticulture and wet infrastructure. Other opportunities exist in sustainable energy, and in the ICT- and financial services sectors.

Rwanda is one of the first Sub Saharan countries to embark on a new, comprehensive private sector-focused model of development, thereby functioning as a model for other (Sub Saharan) countries to follow. Any company with the slightest interest to expand its business and activities into Africa had better be there soon. It is the informed opinion of this research project that Rwanda is the perfect location to start a business in SSA: it provides a small and stable base to set up activities and get familiar with the region, from which to expand into the wider East African Community (EAC) market, and from there, possibly to the rest of Africa.



In a generalized fashion, this opinion is shared by Leslie Rance, General Manager East Africa Markets of British American Tobacco. Quoted in Ernst & Young's Africa attractiveness survey of 2011, he says: *'So when asked what the biggest attraction of doing business in Africa is, it has got to be growth. Many industries in developed markets are getting saturated. It's much easier to identify growth in Africa. So the point really as I see it is not whether you should be doing business in Africa, but rather how.'*<sup>1</sup>

<sup>1</sup> Ernst & Young's 2011 Africa attractiveness survey, "It's time for Africa", 32.

This report aims to chart out a strategy to enhance Dutch FDI in Rwanda. The methodology used to compile this report starts with an assessment of Rwanda's development strategy and envisioned goals, and of its general investment climate. This is followed by an analysis in the second chapter of seven of Rwanda's core economic sectors in order to identify opportunities for investment contained therein. The third and last part of the report analyzes the Dutch economy - focusing on the Dutch 'top sectors' - and continues by relating Dutch investment potential and expertise to business opportunities in Rwanda, thus discovering potential areas of synergy.

Most of the currency figures used in the report which were originally in Rwandan Francs (FRW) have been converted to Euro at a rate of 0.00115 Euro/Franc, and vice versa: 870 Franc/Euro.<sup>2</sup>

During the course of the research, one of the observations made while in Rwanda is the pride the country takes in itself and in its development. This particular characteristic is a cause to the drive for further development, because it motivates the Rwandan people to strive to overcome obstacles and to continue to be an example for other countries. We carry the hope that this report will help enhance Rwanda's socio-economic development, whose sweet fruits will be harvested to benefit the people of Rwanda.

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<sup>2</sup> <http://www.bnr.rw/currencyrates.aspx?code=EUR>

# Chapter 1: Rwanda's Development Strategy and Investment Climate

The aim of this chapter is to provide the reader with an assessment of Rwanda's development strategy and its general investment climate. The first part of this chapter is devoted to the development strategy employed by the government of Rwanda. In the next section the general investment climate will be discussed by looking at business reforms, business performance and specific constraints to business for all types of businesses. In the recent past, various surveys have been conducted to analyze Rwanda's general business environment. In this section some of the key findings of the World Bank's Investment Climate Assessment on Rwanda<sup>3</sup> and its Doing Business reports<sup>4</sup> will be explored, complemented with findings from Rwanda's Private Sector Federation<sup>5</sup> (PSF). In the third section of this chapter the specific constraints for doing business in Rwanda, as perceived by foreign investors, will be discussed by presenting results of a survey taken during the field trip in Rwanda on a number of Kigali-based firms.

## Government Strategic Vision

After having recovered from the severe destructions of the genocide<sup>6</sup> of 1994 that brought the Rwandan economy all but to a complete stand-still, the government of Rwanda (GoR) took a new course, away from focusing on post-conflict policies, to focusing on economic sustainability.<sup>7</sup> The new strategy consists of two components: a medium- and a long-term economic framework. The latter, *Vision 2020*, was developed in 1998 and introduced in 2000. It envisions to boost Rwanda's economy in order to develop from a low- to a middle income country (annual per capita income of \$900), to reduce poverty (to 30% of Rwandans living on less than \$1 per day), and

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<sup>3</sup> World Bank, "The Republic of Rwanda Investment Climate Assessment: Strategy for Sustainable Employment and Export Growth", February 2009.

<sup>4</sup> World Bank, "Doing Business 2010. Reforming Through Difficult Times", 2010.  
<http://www.doingbusiness.org/~media/FPDKM/Doing%20Business/Documents/Annual-Reports/English/DB10-FullReport.pdf> (accessed 20 April World Bank); "Doing Business 2011", 2011.  
<http://www.doingbusiness.org/~media/FPDKM/Doing%20Business/Documents/Annual-Reports/English/DB11-FullReport.pdf> (accessed 20 April 2011).

<sup>5</sup> Private Sector Federation Rwanda, "Business & Investment Climate Survey 2008", 2008.

<sup>6</sup> Although some scientists rightly argue that the murder of thousands of Hutu opposition members warrants the use of double notion geno-politicide, for simplicity, the term genocide has been maintained in this report.

<sup>7</sup> The Republic of Rwanda, "Rwanda Vision 2020", 4.

to raise average life expectancy to 55 years by 2020.<sup>8</sup>

In order to place Rwanda's Vision into its context: when *Vision 2020* started in the year 2000, Rwanda's per capita income was \$220, the poverty rate was 60.4% and average life expectancy was 49 years.<sup>9</sup> *Vision 2020* is based on six pillars:

1. Good Governance and a capable state
2. Human resource development and a knowledge-based economy
3. A private sector-led economy
4. Infrastructure development
5. Productive and market-oriented agriculture
6. Regional and international economic integration

The first pillar, good governance and a capable state refers to a broader capacity and a more effective public sector.<sup>10</sup> Besides, there is a focus on accountability, transparency and the efficient coordination of the exploitation of scarce resources.<sup>11</sup> The second pillar is more concrete and is linked to the Millennium Development Goals (MDG) (improving health, introducing universal education, reducing mortality rates etc). However, the GoR also emphasizes the long-term goal of transforming Rwanda into a knowledge-based economy. This requires government support in the provision of different trainings and higher education. The third pillar, enhancing a private sector-led development, has limited the role of the state to a facilitator that provides infrastructural and legal frameworks for private investment.<sup>12</sup> Furthermore, the state facilitates foreign businesses to link with local businesses. The fourth pillar is focused on Rwanda's infrastructural development, including the management of land, the regulation of urban development, the improvement of transport possibilities, the development of communication and ICT networks, the availability of energy, the availability of water and the management of waste; all in order to lower the price of doing business.<sup>13</sup> The fifth pillar envisions transforming Rwanda's agriculture into a high-value and market-oriented agriculture, increasing output of production and

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<sup>8</sup> Ibid. 8.

<sup>9</sup> Ibid.

<sup>10</sup> Ibid. 12.

<sup>11</sup> Ibid.

<sup>12</sup> Ibid. 14.

<sup>13</sup> Ibid. 15-16.

replacing subsistence farming with commercialized agriculture.<sup>14</sup> Finally, the last pillar is focused on the integration of Rwanda in the three major regional organizations; the East African Community (EAC), the Common Market of Eastern and Southern Africa (COMESA) and the Community for the Great Lakes Region (CEPGL).

The medium-term framework, known as the *Economic Development and Poverty Reduction Strategy* (EDPRS), was initiated in 2008 and entails government plans between 2008 and 2012. The EDPRS includes *Vision 2020 Umurenge 2020* (VUP, not to be confused with the long-term framework *Vision 2020*) and the MDGs.<sup>15</sup> The goal of this strategy is to consolidate and extend achievements in human development by means of promoting three ‘flagship’ programs. These flagships programs are the means by which public spending is prioritized and the coordination across sectors improved. They aspire to a comprehensive agenda of economic growth favoring the poor, which is underpinned by good governance.

The first flagship program is *Sustainable growth for Jobs and Exports*. It aims at systematically decreasing operational business costs, increasing the capacity to innovate, and widening and intensifying the financial sector. Private sector credit is planned to be expanded from 10% of GDP in 2007 to 15% in 2012. Simultaneously, broad money as a share of GDP (a measure for financial depth), is scheduled to rise from 20% to 22.5%.

The second flagship - *Vision 2020 Umurenge* – is aimed at promoting poverty reduction by advancing ‘pro-poor’ components of the national growth agenda. More specifically, this aim will be achieved by utilizing the productive capacity of the poor in rural areas. This goal will be facilitated by a large increase in total investments: from 15% of GDP to 23% of GDP by 2012.

Finally, the third program, *Good Governance*, means that the government provides an anchor for pro-poor growth, revolving around Rwanda’s reputation of low corruption as well as around its regional comparative advantage in “soft infrastructure”. Soft infrastructure refers to those aspects of governance such as well-defined property rights, efficient public administration, transparency and accountability in fiscal and regulatory matters. This third flagship programs provides

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<sup>14</sup> Ibid. 17.

<sup>15</sup> *Vision 2020* should be distinguished from *Vision 2020 Umurenge*, as the former concerns an overarching development strategy, whereas the latter is a sub program of the EDPRS.

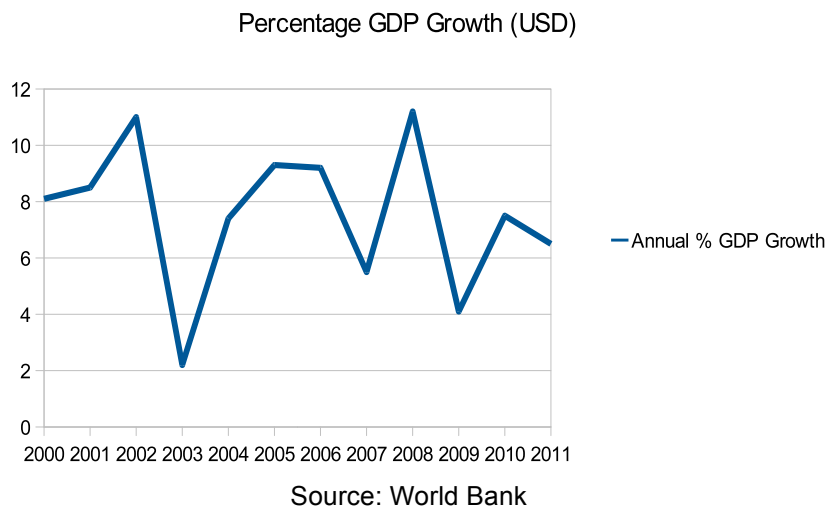
the essential context within which the other two flagship programs are to succeed.<sup>16</sup>

## Implementation of the Strategies

The viability of these ambitious strategies can only be assessed by focusing on their implementation. In this section, the evaluation will be done to a limited extent, since the research conducted in Rwanda will also deliver proof of the extent of implementation.

To start with Rwanda's GDP, the long-term goal as set in the EDPRS and *Vision 2020* strategies are to amount to 8% annual growth. So far, Rwanda has seen mixed outcomes. After the Rwandan economy was ruined due to the genocide, growth rates have been fluctuating between 35% in 1995 and 8.1% in 2000. Since *Vision 2020* kick-off, growth has always been positive and never sank below 4% annual growth. During 2010, Rwanda has been able to meet its targeted growth rate of 8% but it will probably not be able to do so in 2011. According to the International Monetary Fund (IMF), a growth of 8% is potentially possible, but optimistic; 6% being more likely.<sup>17</sup>

Figure 1: GDP Growth since 2000

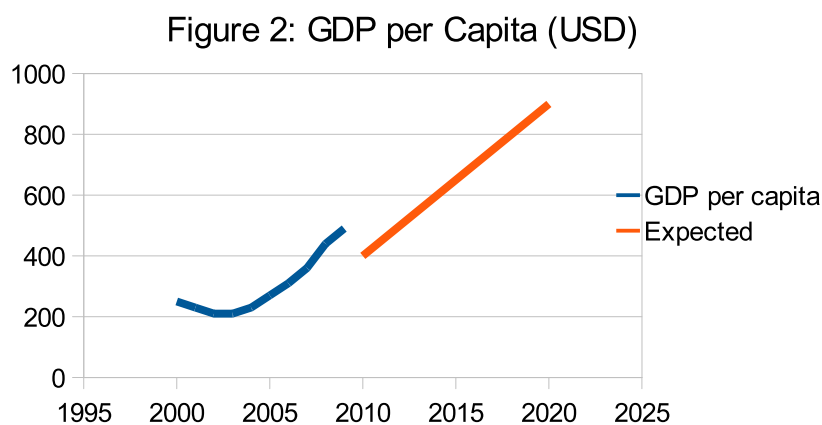


The GDP per capita goal for the year 2020 is envisioned at \$900, and should have reached \$400 by 2010. In fact, Rwanda had already been able to lift its per capita GDP to \$490 during the year 2009 (see graph on next page).<sup>18</sup>

<sup>16</sup> For an elaborate overview, see EDPRS 2008-2012.

<sup>17</sup> International Monetary Fund "Rwanda: 2010 Article IV consultation and First Review under The Policy Support Instrument", IMF Publication Service (2011), 15.

<sup>18</sup> World Bank "Countries and Economies", <http://data.worldbank.org/country/rwanda> (accessed on May 3<sup>rd</sup> 2011).



Source: World Bank

Furthermore, life expectancy has risen from 49 in 2000 to 51 in 2009 (envisioned: 50). Here, Rwanda has proven to exceed its own expectations as well. The data to explain this rise in life expectancy, however, is old (all data found is from 2006).

By contrast, poverty reduction has proven to be more difficult, as 58.5% instead of the envisioned 40% of Rwandans live on less than \$1 a day.<sup>19</sup> Although this data dates back from 2006, the GoR has stated in its *Vision 2020* evaluation that poverty and equality levels were still off track.<sup>20</sup> This slow development is a major problem for the GoR, as poverty reduction is one of the main goals of the EDPRS strategy. At 70% in 2009, literacy levels have also lagged behind the 2010 expectations of 80% (targeted for 100% in 2020), given that literacy in Rwanda stood at 70% in 2009. The GoR has published a *Vision 2020* evaluation in 2011, in which it declared that 66% of the 44 goals set have been met, 11% were on watch and 22% off-track.<sup>21</sup> To be more precise, the GoR has met its goals concerning the basic macro-economic projections, education, gender and health. The goals targeting agriculture were good; however, the GoR has stated that the GDP per capita growth in the agricultural sector was still too low. Infrastructure was classified as 'on watch', since electricity costs were still too high. The goals not met were related to its population (skilled labor, job opportunities), poverty and environment.<sup>22</sup> On the field of education, Rwanda has made some progress: next to a 96% primary school enrolment (in 2009), secondary

<sup>19</sup> Ibid.

<sup>20</sup> The Government of Rwanda, "Vision 2020 Progress and Way Forward", Ministry of Finance and Economic Planning (2011), 5.

<sup>21</sup> Ibid., 2.

<sup>22</sup> A full evaluation is to find on the website of the Ministry of Finance and Economic Planning (MINECOFIN) [www.minecofin.gov.rw](http://www.minecofin.gov.rw).



school enrolment has gone up from 13.9% to 27.2% in only two years.<sup>23</sup> Generally speaking, Rwanda has made some efforts to tackle the skills and education challenge. Since 1984, the number of universities has gone up from only 1 university (National University of Rwanda) to 17 private and national higher education institutions in 2011.<sup>24</sup>

The satisfaction with the progress of *Vision 2020* and EDPRS are not only to be found nationally. Internationally, Rwanda has received much credit. The World Bank has proclaimed Rwanda ‘top reformer’ in doing business in 2009 (the first sub-Saharan country to do so).<sup>25</sup> Since then, Rwanda has been part of the top reformers. According to the World Bank, Rwanda has registered progress on several parameters associated with business processes including starting a business, employment of workers, property registration, obtaining credit, protecting investors, trading across borders, dealing with construction permits and closing a business.<sup>26</sup> In its report on Rwanda, the IMF has shown a positive stance towards Rwandan policy making: “*Rwanda’s resilience to external shocks has also improved further, thanks to prudent policies, substantial debt relief, and heavy reliance on concessional borrowing*”.<sup>27</sup> The IMF has not only credited the GoR for its policy-making, but also for the *implementation* of the EDPRS goals: Out of the 383 by the IMF assessed policy actions, 374 ‘actions’ had been implemented (a rate of 97%).<sup>28</sup>

However, the IMF has also advised the GoR to further reduce infrastructural bottlenecks (thus lowering the price of doing business), to raise agricultural productivity, and to pursue labor intensive growth and facilitate access to loans.<sup>29</sup> In terms of competitiveness, the GoR has received positive reviews from the World Economic Forum. In its yearly conducted “Global Competitiveness Report”, Rwanda was included for the first time and ranked 80<sup>th</sup> out of 139 countries.<sup>30</sup> The research was based on economic factors on the one hand, and on a survey of business leaders on the other. Countries are rated on the basis of twelve ‘pillars’: institutions,

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<sup>23</sup> The Government of Rwanda, “Vision 2020 Progress and Way Forward”, Ministry of Finance and Economic Planning (2011), 26

<sup>24</sup> Private sector Federation, “Interview with Research Team”, March 8<sup>th</sup>, 2011.

<sup>25</sup> World bank “Most Improved Business Reformers in Doing Business”, Doing Business in 2010. <http://www.doingbusiness.org/reforms/top-reformers-2010> (Accessed on May 2<sup>nd</sup> 2011).

<sup>26</sup> Ibid.

<sup>27</sup> IMF Review, 5.

<sup>28</sup> Ibid. 49.

<sup>29</sup> IMF Review, 19.

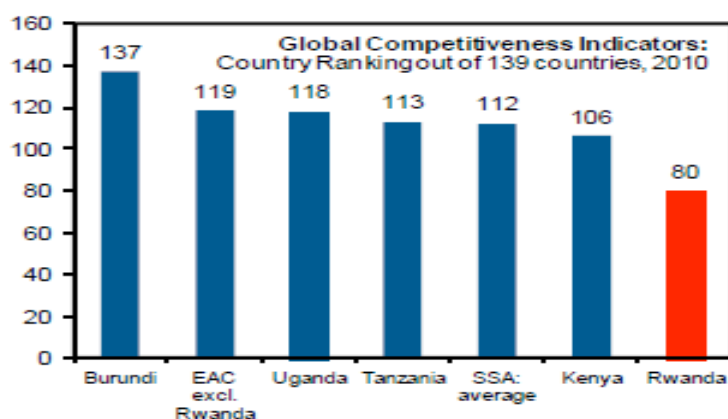
<sup>30</sup> World Economic Forum, “The Global Competitiveness Report 2010-2011” World Economic Forum Geneva (2010), 15.

infrastructure, macroeconomic environment, health and primary education, higher education and training, goods market efficiency, labor market efficiency, financial market development, technological readiness, market size, business sophistication and innovation.

According to standard economic theory, the countries are divided in three successive stages: factor-driven, efficiency-driven and finally innovation-driven.<sup>31</sup> It is important to keep in mind that countries in each stage are rated in a different way. Rwanda is grouped within the in the first stage (factor driven). Within that stage, Rwanda has scored best among the SSA countries. In an overall comparison including non-stage one SSA countries, Rwanda belongs to the top five.<sup>32</sup> The report praises Rwanda's institutions (ranking 19<sup>th</sup> worldwide), its labor market efficiency (9<sup>th</sup>), its trust in politicians (8<sup>th</sup>) and its crime-free environment, which has reached the first position in a worldwide comparison. On the negative side, Rwanda has scored lower on infrastructure (101<sup>st</sup>) macro-economic environment (106<sup>th</sup>), higher education and training (121<sup>st</sup>), technological readiness (100) and market size (128<sup>th</sup>).<sup>33</sup>

The finding of Transparency International's "Corruption Perceptions Index" (CPI) in 2010 likewise drew a rather positive picture of Rwanda. The CPI is a survey-based index that measures the degree of perceived corruption, using local and international experts as well as business leaders as evaluators.<sup>34</sup> On a scale between 1 (highly corrupt) and 10 (very clean), Rwanda has scored a 4.0 and ranks 66<sup>th</sup> (upper 10%) out of 178 states. In SSA, Rwanda belongs to the top ten (rank 8).

Figure 3: Rwanda in the Global Competitiveness Index



Source: IMF

<sup>31</sup> Ibid. 9.

<sup>32</sup> Ibid. 40.

<sup>33</sup> For the full report, see "World Economic Forum: Global Competitiveness Report 2010-2011".

<sup>34</sup> Transparency International "Corruption Perceptions Index 2010", 15.

Generally speaking, Rwanda is doing well in meeting its own strategic vision. The overall positive response to Rwanda's strategic vision has not only been recognized by international institutions, but also by the interviewed firms.<sup>35</sup> Nevertheless, Rwanda still has a long way to go in order to become more attractive to businesses, especially the improvement of higher education and the country's infrastructure.

## **Investment Climate Assessment**

### **Business Reforms**

To support business development and increase the attractiveness of Rwanda's investment climate, the GoR has implemented a long list of business regulation reforms. The World Bank's Doing Business report 2011 concluded that between 2005 and 2010, twenty-two new regulations were introduced.<sup>36</sup> In 2010, Rwanda was recognized by the World Bank as the world's top reformer and in 2011 it came in second. Table 1 provides an overview of Rwanda's rankings per category for *Doing Business 2010 and 2011*. As a positive consequence of the various reforms, entrepreneurs can now register a new business within 3 days. Costs of setting up a business have gone down from 223% of income per capita to 8.9% today. These and other law and institutional reforms have led Rwanda to rise from place 143 up to 58 on the *Ease of Doing Business* ranking within two years. On a similar note, new property laws were introduced in order to reduce time spent on property transactions. These and other legal and institutional reforms have had a positive impact on businesses, as business registration went up from an annual average of 700 before 2008 to 3000 after 2008.<sup>37</sup>

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<sup>35</sup> See Research Nexus Firms, point 12.

<sup>36</sup> World Bank, "Doing Business 2011".

<sup>37</sup> Ibid.

Table 1. Doing Business Ranking Rwanda 2010/2011

Topic	DB 2011 Rank	DB 2010 Rank	Change in Rank
Starting a Business	9	12	3
Dealing with Construction Permits	82	88	6
Registering Property	41	37	-4
Getting Credit	32	61	29
Protecting Investors	28	27	-1
Paying Taxes	43	46	3
Trading Across Borders	159	169	10
Enforcing Contracts	39	40	1
Closing a Business	183	183	No change
Source: World Bank Doing Business (2011)			

### Business Performance

Since 1994, Rwanda has been able to rebuild its economy after near-total destruction during the genocide. Between 1996 and 2000 the Rwandan economy grew by an average annual rate of 10.8%.<sup>38</sup> And although growth slowed down after this period, economic activity still grew by an average annual rate of 6.4% between 2001 and 2006. It should not come as a surprise that in such an environment, various businesses have been able to make a profit.<sup>39</sup> For 2007 and 2008, the PSF concluded that, despite higher costs, businesses were able to maintain performance, by passing on their costs to consumers. Larger firms seem to do particularly well, as the PSF indicated that they make higher revenues and profits compared to smaller firms or micro enterprises. Despite considerable growth rates, the World Bank indicated that Rwanda's economy still faces some structural challenges that the country needs to overcome.<sup>40</sup> These include heavy reliance on imports, which constituted 15% of GDP in 2009. Its export sector is also lagging behind, although it grew from 3% in 2003 to 5% of GDP in 2009. Another challenge is that a lot of economic activity is still informal, with most people working in agriculture, where farmers often only produce for self-sufficiency.

When it comes to Rwanda's industrial base, this sector is still weak. In 2009, manufacturing accounted for only 14% of Rwanda's GDP. The main problem for

<sup>38</sup> World Bank, "The Republic".

<sup>39</sup> PSF Rwanda, "Business & Investment Climate Assessment 2008", 6 - 29.

<sup>40</sup> World Bank, "The Republic".

Rwanda's industrial sector is that it has to compete with many of its more competitive neighboring countries. The World Bank reports that Rwanda's manufacturing sector is less productive because of high wage premiums, which arises due to an insufficient supply of skilled labor. This deficiency translates into higher wages for educated workers, who earn significantly more than their colleagues in neighboring countries and low-cost production countries in Asia (thereby eroding profit margins). In Rwanda, the average added-value per worker is \$2178, while in Tanzania it is \$3395 and in Kenya \$6893. On average, labor costs are as high as 44% of the total value that is added by companies, which is much higher than in Kenya for example, where labor costs are 25% of total value added. Compared with Asian firms, the contrast is even larger: in China labor costs are only 19% of total value added, and in India it is 22%. Competitiveness of Rwandan manufacturing firms is further constrained by the fact that a lot of firms have to import their raw materials from abroad, thereby incurring high trade costs. Moreover, Rwandan firms face a lack of investments in technology and do not have a lot of forward and backward linkages with foreign companies.<sup>41</sup>

Business performance in the service sector is more competitive. The World Bank reports that retailing and especially IT firms have, on average, higher labor productivity and lower unit labor costs than firms in Kenya, Uganda and Tanzania. It is also especially the IT firms who seem to profit most from Rwanda's development investment, because a large share of that is allocated to ICT infrastructure. The World Bank Investment Climate Assessment shows that the country's ICT uptake is much higher in the service sector (making much more use of ICT in this sector) than in the manufacturing sector. Apart from the retailing and ICT firms, the financial sector also seems to do well, as the PSF found out that in this sector most businesses experience higher year on year revenues in 2008.<sup>42</sup>

### **Business Constraints**

Both the World Bank (2009) and the PSF (2008) have tried to identify particular impediments to growth in the private sector. The World Bank conducted a survey among 340 enterprises in Kigali and Butare and elaborated on the business constraints that were ranked as major or severe. For manufacturing, constraints that

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<sup>41</sup> Ibid.

<sup>42</sup> Private Sector Federation Rwanda, "Business & Investment Climate Survey, 2008", 6-29.

were mentioned most often were (in descending order of severity): electricity, tax rates, access to finance, transportation, and tax administration. Firms in the service sector experienced more or less the same constraints. However, generally the constraints were less grave and the order of the top 5 was slightly different, respectively: tax rates, electricity, access to finance, tax administration, and transportation.

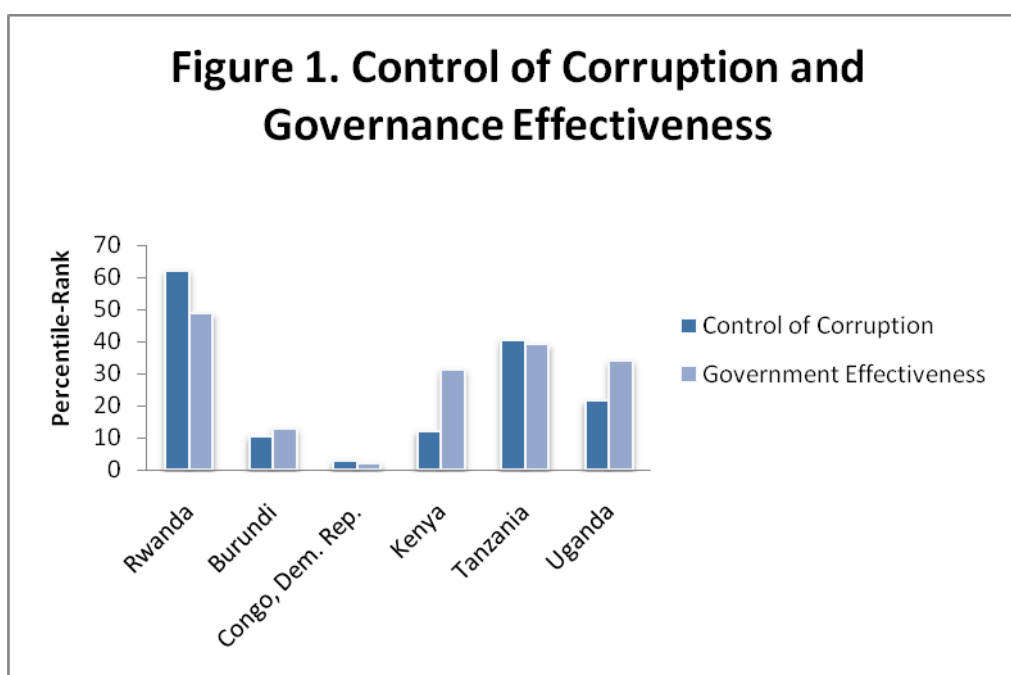
The high cost of electricity and transportation are related to the low productivity of Rwandan companies compared to firms from neighboring countries. However, it is interesting to note that, according to the World Bank's findings, although direct costs of transportation and electricity are high in Rwanda compared to neighboring countries, their indirect costs are lower. For example, indirect electricity costs due to power shortages, as well as indirect transport costs due to crime and corruption, are much lower in Rwanda than in other countries in the region.

In both sectors, tax rates and tax administration are perceived as a major constraint, despite the fact that considerable reforms – such as more efficient procedures – have been introduced in these areas. Rwanda has got one of the lowest tax regimes in the region. However, the interesting part is the fact that, as the World Bank points out, Rwanda's effectiveness in collecting taxes and its severe penalties for tax evasion have led to a higher effective tax burden for companies in Rwanda compared to companies in neighboring countries.

With regard to access to finance, especially micro-enterprises find it hard to get loans. However, in general, access to finance is better than in the rest of the region, with the exception of Kenya. The majority of firms have access to setting up savings accounts and loans. Nevertheless, as will be discussed in the next section, interest rates on such loans are high and thus form a significant obstacle to business. The PSF, which used questionnaires on 952 firms (including small micro-enterprises with less than 5 employees) to determine major hindrances for firms in this sector, found similar constraints to doing business in Rwanda. Besides, respondents also indicated that businesses have problems with recruiting and training of skilled staff (especially in the manufacturing sector), and with access to- and high cost of land.

When it comes to Rwanda's strengths or factors conducive to business, the World Bank highlights factors related to good governance as Rwanda's main comparative advantage. This is a strength that can hardly be undervalued for its positive impact on the effective conduct of business. Rwanda has the lowest costs in

the East Africa region resulting from theft of goods in transit and property, inspections and bribes. Moreover, most firms see the relative political stability and functioning of courts as another comparative advantage of Rwanda in relation to other countries in the region. These findings are in line with the high ratings Rwanda has received on several governance indicators. The graph below presents the percentile rank of Rwanda and some of its neighboring countries on control of corruption and governance effectiveness.<sup>43</sup> It clearly shows that Rwanda stands out in the region on these two governance indicators. That is good news for Rwanda's economy, since the World Bank reports that such indicators have a direct positive effect on profits and investments.<sup>44</sup>



In the next section, findings of a survey that targets the constraints and strengths of Rwanda, as perceived by a group of predominantly foreign firms in Rwanda, will be presented.

<sup>43</sup> The percentile-rank is measured as rank of a country among all other countries in the world. 0 corresponds to the lowest rank, and 100 to the highest. Kaufmann D., A. Kraay, and M. Mastruzzi, "The Worldwide Governance Indicators: Methodology and Analytical Issues", 2010.

<sup>44</sup> Worldbank, "Worldwide governance indicators", <http://info.worldbank.org/governance/wgi/index.asp> (accessed 20 April 2011).

## **Survey of General Investment Climate Rwanda**

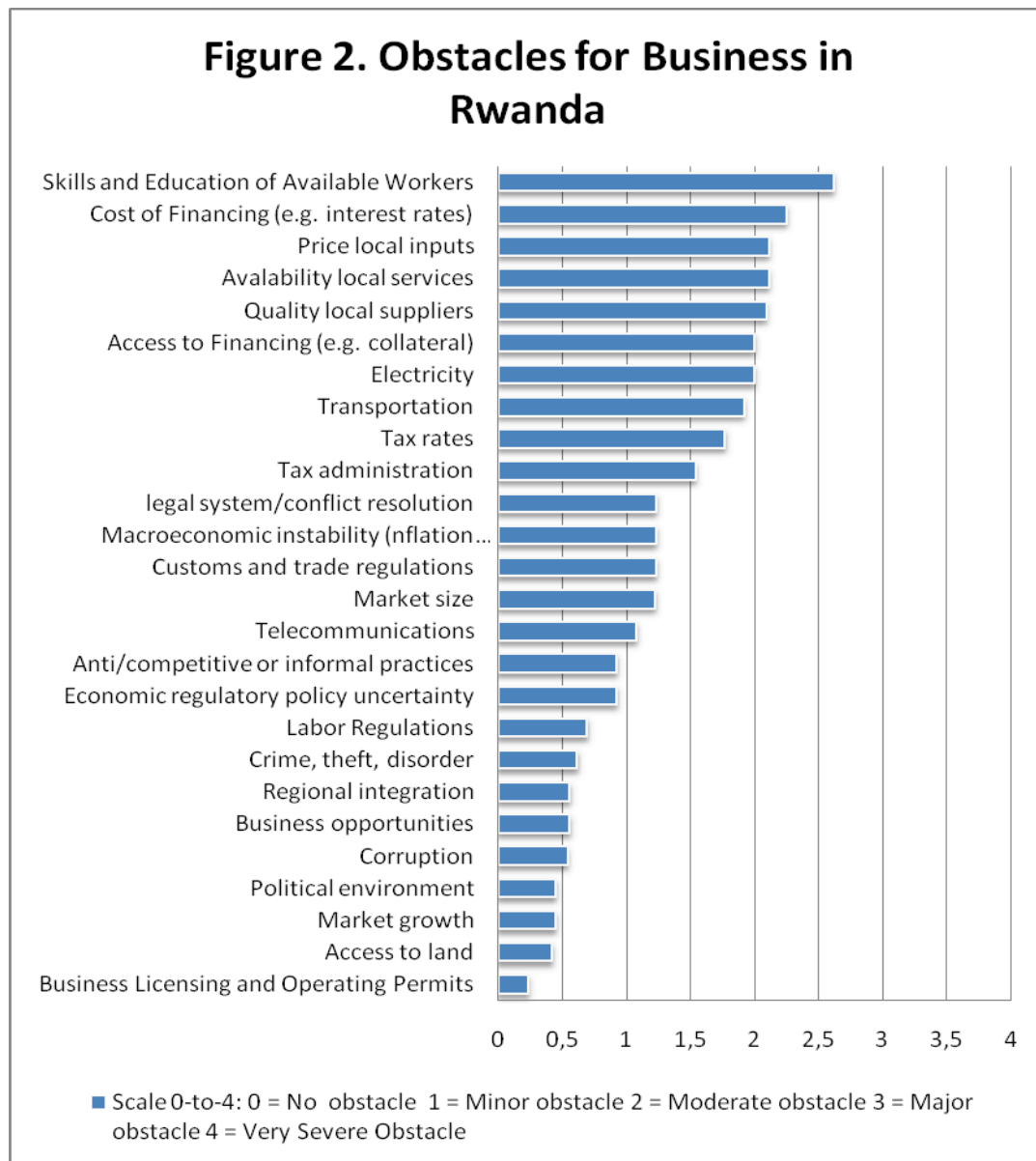
In order to give an impression of the current status of the general investment climate in Rwanda as perceived by foreign firms, representatives of 14 companies (most of them located in Kigali, and related to foreign owners or with foreign participation) were asked to fill out a table containing factors that could form an obstacle for doing business in Rwanda. On a scale ranging from zero to four (where zero represents no constraint and four that the factor constitutes a very severe obstacle), the representatives of the firms indicated to what degree a particular factor constituted an obstacle to their business in Rwanda.

Figure 2 (next page) provides an overview of the results of our survey on the investment climate in Rwanda. All firms indicated that the lack of skilled labor constitutes an obstacle to doing business in Rwanda. Half of the sample firms perceived the lack of skilled labor as a major obstacle to business in Rwanda. A large part of the foreign firms indicated that they have to hire expensive expatriates to fill positions that require skilled and educated workers. Not only did the respondents complain about the lack of highly skilled labor, they also specifically mentioned that there is a lack of intermediate-skilled workers in Rwanda, such as electricians, hospitality staff, construction workers, middle management, etc.

As the graph shows, the second biggest obstacle for foreign companies in Rwanda is the cost of finance. Various companies complained about the high interest rates on commercial loans. A number of respondents explained that high levels of non-performing loans are the main cause of the high interest rates. Related to high costs of finance is access to finance, which is perceived as a moderate obstacle. However, the steps taken towards implementing a national stock market - which includes, among others, Bralirwa - indicates that the government is trying to improve the access to finance for larger firms.



**Figure 2. Obstacles for Business in Rwanda**



The last of the top five constraints are those factors related to local suppliers. The price of local inputs, the availability of local services and the quality of local suppliers are perceived as moderate obstacles by the firms surveyed. For now, it seems that local suppliers cannot deliver the quality and volume of inputs required by foreign firms. Some of these firms indicated that they try to train local suppliers themselves to increase the quality. The fact that local suppliers cannot always deliver the right quality or volume of inputs is to some extent related to the aforementioned lack of skills of the workforce.

Two other often mentioned obstacles are electricity, and transportation costs. Firms indicated that the latter is related to the fact that Rwanda is a landlocked country, located in the heart of Africa (some 1500km from the Indian Ocean and 1800km from the Atlantic Ocean), one singular factor making the import of goods quite expensive. Moreover, because many local firms are not able to supply foreign firms with the right amount and quality of inputs, many of them are forced to rely on foreign suppliers and thereby to incur the related high costs. The infrastructure for electricity does not cause much trouble for the firms in our sample group. However, they did indicate that the costs for electricity are currently too high. Whether this leads to those costs being a major obstacle depends on what kind of activities are undertaken. For example, electricity costs comprise a much larger share in total costs of operation to a company selling dried fruits than to a transport company. Several projects are currently undertaken by the GoR to address this problem. For example, a project is underway to extract methane gas from a large reservoir underneath Lake Kivu, by the end of 2011. This gas will then be converted into electricity, and put on the national electricity grid.

The top ten of largest obstacles for doing business in Rwanda (see Fig. 2) is completed by complaints about tax rates and tax administration. Although firms appreciate the tax rebates on the in- and outflow of capital that the GoR has put in place, they still see internal taxes as a minor-moderate problem.

The bottom part of Figure 2 shows that business licensing and operating permits are considered to be no obstacles for business in Rwanda. This comes as no surprise. As was mentioned before, the World Bank's *Doing Business 2010* report pointed to Rwanda as the World's Top Reformer in 2009. Our survey reflects this outcome.

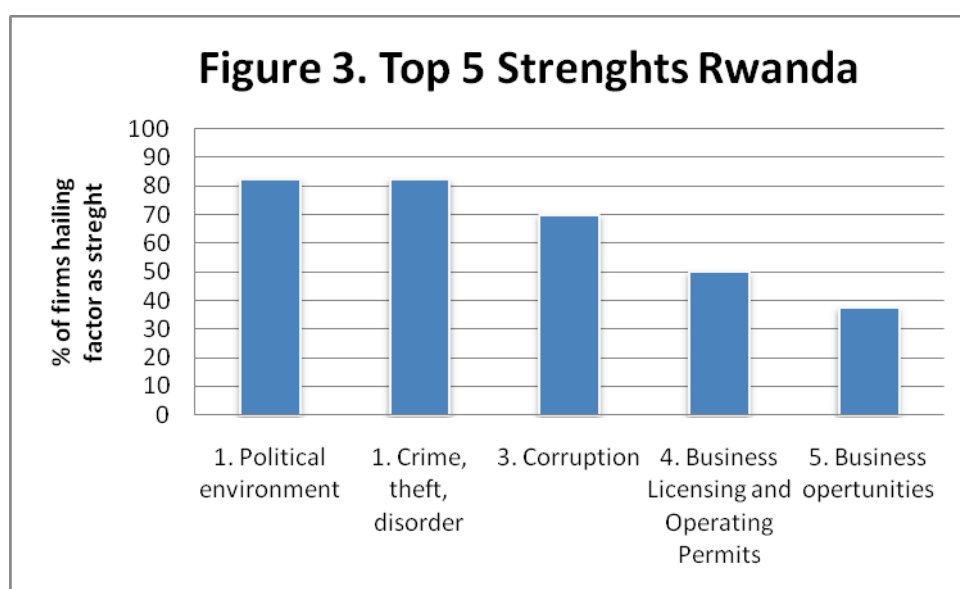
Market growth is also no obstacle for the sample group. With growth rates above 5%, this too is not surprising. The fact that business opportunities are not perceived as an obstacle, even though the market is rather small, is a reflection of, among other things, the high growth rates of Rwanda's economy. *"One should not underestimate the potential size of Rwanda"*, one respondent remarked, *"it is still ten million people, which is comparable to Belgium."*

Access to land is not perceived as an obstacle to business. This is at odds with findings reported by the PSF survey, which revealed that access to and cost of land posed a considerable constraint for local businesses in Rwanda. It could simply be that costs that are considered high by local firms are not necessarily so for foreign firms, it could also be that foreign affiliates face fewer problems when they try to acquire land, or that reforms in Rwanda's land registration procedures have paid off.<sup>45</sup>

All the constraints pointed out by firms in this survey echo to a large extent the findings by the World Bank's assessment, which also put emphasis on constraints with regard to transportation, electricity, taxes and access to finance. A difference with the World Bank survey is that the firms in our sample put more emphasis on the lack of skilled workers as well as the costs, availability and quality of local services. This difference might be explained by the fact that our sample is dominated by foreign firms, whereas the World Bank's sample focuses on local firms.

### *Strengths*

Corruption, crime and the political environment are also not perceived as obstacles. In fact, the graph below shows that these factors are hailed by our group of firms as the biggest strengths of Rwanda compared to its neighboring countries.



<sup>45</sup> National Land Centre, "Interview with research team", March 17, 2011.

To construct Figure 3, we asked the representatives of our group of firms to give a top five of investment climate factors wherein Rwanda clearly stands out from the rest of Africa. The list of factors from which the representatives could choose was similar to that of Figure 2. Figure 3 then gives a top five of factors (or strengths) based on the percentage of firms that perceived these factors as a comparative advantage to Rwanda.

Figure 3 shows that more than 80% of the firm representatives hailed the political environment and the low levels of crime, theft and disorder as factors in which Rwanda has a competitive advantage. Corruption is close behind, with 70% of the firms mentioning it as one of Rwanda's top five strengths for doing business in the country. Rwanda's efficient business licensing procedures are ranked fourth in our survey. Evidently, these findings indicate that the government has been able to create a safe, stable and efficient business environment, which is appreciated by this group of firms. Moreover, the first four strengths reflect Rwanda's ambition to make good governance its primary competitive advantage. Such a competitive advantage would, however, not be of much value to foreign investors without proper investment opportunities. It is therefore comforting to see that business opportunities are also among the top five strengths of Rwanda as an investment location. Clearly, many of our respondents think that Rwanda has a lot to offer.

## Conclusion

This chapter has given a general overview of Rwanda as an investment location. The first part has analyzed the government's policy strategy. It has shown the development of Rwanda's economy, which can be considered as remarkable, considering that its economy was shattered by the genocide of 1994. The GoR has formulated two important documents that are the guidelines of Rwanda's development strategy: *Vision 2020* and the EDPRS. Generally speaking, the GoR has set several goals, including a business-friendly atmosphere for the development of the private sector. The reforms implemented since the formulation of these strategies have generated a positive international echo. The World Bank, the IMF, the World Economic Forum and Transparency International have given positive remarks with relation to doing business, increasing competitiveness, improving macro-economic indicators, addressing economic challenges as well as to the role of corruption. In the country itself, companies have encountered some constraints but also strengths during the course of establishing and conducting their business. The overall reputation of Rwanda is that of a stable, corruption-free, and business-friendly country which still encounters some challenges such as electricity costs, lack of skilled labor and an infrastructural network that has room for improvement, especially in the rural areas. The second chapter will turn to Rwanda's sectors and analyze investment possibilities for Dutch firms.

## **Chapter 2: Sector Analysis**

This chapter analyzes the different sectors under review and identifies specific opportunities in each of the sectors. One must bear in mind that the Rwandan economy is generally in its early stages of development, and thus contains plenty of developable opportunities. It has therefore been found necessary to narrow the scope of this research down to areas in which Dutch firms have a particular strength. This resulted in the following ranking, in descending order, based on the number of opportunities that relate to Dutch expertise. As such, most added-value originating from the Netherlands shall be found in the first sector, and least in the last sector. The first sectors have therefore received most attention in terms of research, less time have been devoted to the last sectors.

Sectors (and subsectors) under review are 1) Agriculture/Agro-processing, 2) Infrastructure; especially as it relates to agriculture, and on wet infrastructure, 3) Construction; also with a focus on its relationship with agriculture, 4) Energy, 5) Financial Services, 6) ICT, and 7) Tourism.

In terms of their attractiveness to Dutch FDI, the seven sectors can be further grouped into four categories, starting first with the agricultural sector being by far the most relevant: Dutch expertise in this sector is of world-class and world-renown, while at the same time, Rwanda is in great need of optimization, modernization and expansion of its production. The second group of sectors is comprised by first infrastructure and then construction. This is because the sustainment of agriculture is to a large extent dependent on these two (sub)-sectors. Construction and infrastructure (other than wet infrastructure, which also includes bridges) in other areas of the economy are less promising to Dutch FDI, partly due to the existence of competitors with a significant cost advantage - such as the Chinese -, partly because Dutch expertise stands out less in those other areas in contrast with its competitors. The energy sector contains opportunities mostly related to bio-energy and sustainability. The last three sectors constitute a fourth category, containing the least number of opportunities attractive to Dutch firms. The three sectors in this fourth category are also ranked hierarchically, but this is more on the basis of a hunch felt while conducting the research than based on quantitative data.

Healthcare, initially included as the lowest ranking sector, has been left out from this research. Time constraints impeding getting familiar with this sector, as led

to a the lack of specific knowledge required in order to make more than just commonsensical statement led to this decision. However, the fact that this sector is – like the other sectors – only in an early stage of development, means it certainly contains opportunities. One prominent member of the PSF interviewed during the research indeed mentioned that if he were to invest in any sector, he would choose the healthcare sector, expecting to be able to export services and expertise to neighboring countries in the near future.<sup>46</sup> For the Netherlands, common sense would dictate that opportunities would probably be predominantly in the provision of equipment. Specifying what specific equipment is more profitable or suitable to export than other types of equipment requires that lacking knowledge mentioned before. However, this sector is not one of the Netherlands' important sectors for export, nor is it a priority sector of Rwanda to attract investments to.<sup>47</sup>

## **Agriculture**

Rwanda is still a predominantly rural economy. In 2009, the agricultural sector accounted for 34% of the GDP, around 78% of the population is engaged in agricultural activities; the sector meets 90% of the national food needs and generates more than 70% of the country's export revenues.<sup>48</sup> A modernized agriculture sector is targeted as the main engine for sustainable economic growth, structural transformation, poverty reduction, and enhanced profits from trade in Rwanda.

The agricultural sector can be divided into five sub-sectors: food crops (grains-maize, wheat, sorghum, rice, roots and tubers-e.g. sweet potatoes, Irish potatoes, cassava, horticulture-fruits and vegetables, other crops-e.g. oilseeds, pulses); export crops (coffee, tea, and flowers); livestock (cattle, sheep and goat, poultry, eggs, raw milk, swine, etc.); forestry and fisheries.

## **Sector Performance and its Factors**

There are two major thrusts aimed at transforming the agriculture sector in Rwanda: intensification and diversification. The former refers to improving agricultural productivity in the face of land scarcity and population pressure, whereas the latter

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<sup>46</sup> PSF Chamber of Commerce, "Interview with research team", March 11, 2011.

<sup>47</sup> See: [www.rdb.rw/departments/investment/investment-information-and-promotion.html](http://www.rdb.rw/departments/investment/investment-information-and-promotion.html).

<sup>48</sup> Rwanda Development Board, *Agriculture Overview*, <http://www.rdb.rw/departments/agriculture/agriculture-overview.html>.

aims to increase the unit value of agricultural commodities by improving quality and by producing new exportable products.

This transformation process is constrained by major challenges. Rwanda is a small and very densely populated country; 82% of arable land in the country is used for agriculture. Rwanda also has one of the highest population growth rates in the world with 2.65% annual growth rate.<sup>49</sup> Land scarcity is also related to the geographic and ecological constraints of the country. Rwanda is dotted with steep hills, where altitudes and slopes change dramatically within shouting distance. Farmers have been compelled to cultivate fragile, steep-slope holdings because of land scarcity, which further contributed to the declining agricultural productivity and induced further environmental costs. In order to transform the agriculture sector, as mentioned in *Vision 2020*, it is important to promote soil conservation and fertility, and to improve land productivity.

In Rwanda, the irrigated land area is still small, accounting for 4.4% of all croplands.<sup>50</sup> Fertilizer consumption per hectare of cultivated land is 8.3 kilograms in Rwanda in 2008, which is still lower than Sub-Saharan Africa as a whole (11.6 kilograms per hectare in 2008) and contrasts sharply with the Netherlands' consumption (269 kilograms per hectare in 2008).<sup>51</sup> The average level of use of improved seed is also low, only about 1.3% of total seed applied, below the average for Sub-Saharan Africa.<sup>52</sup> The limited use of improved seeds and fertilizers is related to the lack of knowledge and skills, inadequate supply, high cost of fertilizer, and lack of financial credits to buy fertilizers. Moreover, it is estimated that only 23.4% of land in the cultivated area is more or less free from risk of erosion, 37.5% requires preparation before cultivations, while 39.1% of the land has high risk of erosion.<sup>53</sup> The low level of awareness to establish new and maintain existing soil protection, inadequate knowledge management and technological assistance, lack of monitoring and evaluation system are major factors of land degradation through soil erosion.

From the perspective of sub-sectors, in 2007, 96% of all agricultural output in Rwanda consisted of food production for subsistence or domestic consumption and

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<sup>49</sup> The World Bank Data, <http://data.worldbank.org/indicator>.

<sup>50</sup> Diao Xinshen, Fan Shenggen, Kanyarukiga, Sam and Yu Bingxin (2010), *Agricultural Growth and Investment Options for Poverty Reduction in Rwanda*, International Food Policy Research Institution, Research Monograph.

<sup>51</sup> The World Bank Data, <http://data.worldbank.org/indicator>.

<sup>52</sup> Fowler, M., C. Gasirabo, S. Kanyarukiga, and A. Mutijima (2007), *Rwanda Public Expenditure Review-Agriculture*, Report for the Ministry of Agriculture and Animal Resources.

<sup>53</sup> REMA, *Rwanda State of Environment and Outlook 2009*, <http://www.rema.gov.rw/soe/chap3.php>.



accounted for 92% of cultivated land;<sup>54</sup> livestock represents 3% of agricultural output, with the residual accounted by export crops, fisheries and forestry (Table 2).

Table 2: Value Added for the primary sector (in million euro, at constant 2001 prices) and production (in thousand tons)

Description	2003		2004		2005		2006		2007	
	VA	Prod.	VA	Prod.	VA	Prod.	VA	Prod.	VA	Prod.
<b>Agriculture</b>	<b>348.85</b>	<b>7,015.24</b>	<b>349.20</b>	<b>6,975.53</b>	<b>366.09</b>	<b>7,458.74</b>	<b>370.11</b>	<b>7393.841</b>	<b>365.63</b>	<b>7,166.83</b>
Food crops	303.22	6,818	297.93	6,751	316.90	7,227	316.90	7,138	312.87	6,905
Exports crops	8.16	29.672	12.87	42.9414	9.77	35.0745	12.64	43.601	10.57	35.338
Livestock	21.38	160.273	21.95	173.458	22.53	188.483	23.10	202.973	24.48	216.84
Forestry	12.64		12.87		13.22		13.56		13.91	
Fisheries	3.45	8.144	3.56	8.126	3.68	8.18	3.68	9.267	3.68	9.655

Source: REMA-Rwanda State of Environment and Outlook 2009

\*Converted from RWF to EURO (€1 = RWF870)

Among food crops, roots and tubers are the largest crops in the country, but cereals, bananas, pulses and oilseeds are also important staples in agricultural production. Cassava, Irish potato and sweet potato are the three most important commodities among root crops. As a single crop, banana is the most important staple crop. Among the cereal crops, white sorghum is the largest grain crop, followed by maize; the share of rice in agricultural production has been rising in recent years.

Livestock numbers have increased tremendously during 2000 to 2007 with cattle increasing 52%, goats 262%, sheep 202%, pigs 223% and rabbits 25% (Table 3). These increases were due to improvements in quality and disease control. The number of poultry declined because of bird flu since 2005. The poultry sector is dominated by chicken, which means that the production of eggs also experienced a major decline with the breakdown of the poultry industry. The increase in cattle numbers has contributed to a significant growth in milk production. Although production of livestock products has risen substantially, demand still outstrips supply, especially for milk and eggs, which contributes to under nutrition in the sense of lipid and protein intake.<sup>55</sup> Shortage of land, shortage of water, insufficient and poor quality feed and regular disease epidemics with insufficient veterinary service are major factors that constrain outputs.

<sup>54</sup> Ibid.

<sup>55</sup> Ministry of Agriculture and Animal Resources (2004), *Strategy Plan for Agricultural Transformation in Rwanda*.

Table 3: Trends in livestock and livestock products, 2000-2007

	2000	2001	2002	2003	2004	2005	2006	2007
<b>Livestock ('000 head)</b>								
Cattle	755	814	960	992	1,007	1,077	1,122	1,147
Goats	757	917	920	1,271	1,264	2,664	2,688	2,738
Sheep	233	267	301	372	687	690	695	704
Pigs	177	197	208	212	327	456	527	571
Poultry	2,043	1,278	1,056	2,432	2,482	2,109	1,776	1,868
Rabbits	339	495	489	498	520	427	418	423
<b>TTL</b>	<b>2263</b>	<b>3968</b>	<b>3934</b>	<b>5777</b>	<b>6287</b>	<b>7423</b>	<b>7226</b>	<b>7451</b>
<b>Livestock Products (mt)</b>								
Milk	57,853	63,484	97,981	112,463	121,417	135,141	146,840	158,764
Meat	22,807	25,608	35,748	39,126	48,681	49,861	52,226	54,780
Fish	6,996	7,308	7,612	8,144	8,126	8,180	9,267	9,655
Eggs	1,471	920	1,015	2,432	2,452	2,452	2,236	1,620
Honey	n.a.	760	819	908	1,029	1,671	1,676	n.a.

Source: REMA-Rwanda State of Environment and Outlook 2009

Additionally, exports are almost fully composed of coffee and tea, and there has not been much diversification so far, although there were some additions to the sub-sector, notably flower production for export. The forestry and fishery sub-sectors stagnated due to lack of natural resources. There is a loss of approximately 64% of forests in between 1960 to 2007 from 659,000 ha to 240,747 ha, which is more than 1.3% per year.<sup>56</sup> The rapid increase in population is increasing pressure on forests in terms of encroachment and deforestation.<sup>57</sup> With most lakes depleted, Rwanda heavily depends on imported fish from Uganda, Burundi and Tanzania.<sup>58</sup>

## Opportunities

In general, investments in modern agricultural technologies such as irrigation, fertilizers, improved seeds, soil erosion protection geared to increasing agricultural productivity, are promising. To this end, GoR has taken measures to favor the involvement of private investments by abolishing free fertilizer distributions as well as import taxes (15%) and customs fees (5%) for imported fertilizers.<sup>59</sup> Fertilizer application is expected to increase to 15 kg/ ha/ year in 2020, at which point also

<sup>56</sup> REMA, *Rwanda State of Environment and Outlook 2009*, <http://www.rema.gov.rw/soe/chap6.php>.

<sup>57</sup> Ibid.

<sup>58</sup> AllAfrica, Rwanda: Govt Bans Fish Exports, <http://allafrica.com/stories/200907061827.html> (May. 12. 2011)

<sup>59</sup> Ibid.

90% of soil will be protected from erosion.<sup>60</sup> Furthermore, there are prospects for investments in agricultural services such as monitoring and evaluation for soil erosion, etc. Irrigation and water infrastructure will be analyzed in the infrastructure sector.

### *Food Crops*

Besides improving agricultural intensification on the whole, Rwanda is the ideal location for companies looking to expand horticulture production. Horticulture hereby refers to the production of fruits, vegetables and flowers (floriculture will be analyzed in the export crops). The climate in Rwanda is of a temperate tropical type with an average daily temperature of 22.8°C and an annual rainfall ranging between 900 and 1.600mm, which offers ideal conditions for growing a wide range of fruits and vegetables, such as beans, peas, mushrooms, strawberry, banana, passion fruit and pineapple. With the rapid growth in tourism and middle-class income, there exist driving demands for high quality fruits and vegetables in Rwanda and East Africa, whereas Rwanda has better growing conditions and a geographically central position in East Africa. Further, with shifting demand towards exotic, off-season and prepared products in Europe and a continued increase in demand for these products in regions like the Middle East and the former Soviet bloc, high quality vegetables and fruits could be a new growth niche area for export. Currently, five different airlines have offered regular cargo services to Amsterdam (KLM), Brussels, Nairobi and Addis Ababa. 30 metric tons of cold storage capacity is currently available at the Kigali international airport, which is still looking for expansion.<sup>61</sup>

### *Export Crops*

Coffee and tea industries are close to maturity. The quality of Rwandan tea is now ranked first in the Mombasa auctions, ahead of other countries such as Kenya, Burundi, Uganda, and Tanzania.<sup>62</sup> In order to promote high quality coffee, the GoR has undertaken a promotion program of washing stations to enhance washed coffee

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<sup>60</sup> Ibid.

<sup>61</sup> AllAfrica, Rwanda: Horticulture Exporters Receive Incentives <http://allafrica.com/stories/201005050068.html> (May.12.2011)

<sup>62</sup> Ministry of Agriculture and Animal Resources (2009), *Strategic Plan for the Transformation of Agriculture in Rwanda – Phase II*.

washed by 2020.<sup>63</sup> There are still FDI prospects for coffee roasting and production of specialty, providing services and opportunities abound for consultancies in tea, coffee marketing and branding. Floriculture is another emerging value added sub-sector for agricultural diversification and export given Rwanda's exceptional agro-climatic zone and rich volcanic soils. The production for fresh cut flowers such as roses and sunflowers is still very limited, while demand well exceeds especially roses which have a huge market in the EU. However, the flora business is an expensive venture, wherein one hectare of land requires €281,023 investment for a profitable business.<sup>64</sup> In this regard, the GoR provides multiple incentives, including free land, training of technicians, no taxes on production inputs and a sound policy environment.

### *Livestock*

There are investment opportunities in improved breed, disease control and veterinary service in order to increase the production of livestock, especially for poultry, which reached its nadir. The prices of chicken meat and eggs are expected to continue rising. Moreover, there are only eight professional chicken farmers in Rwanda who produce their own chicken feed and meet international production standards. These farmers provide 15% of commercial poultry and egg production. There is room for producing chicken feed and large-scale commercial chicken, and eggs, to meet the national demands. Dairy sector is another hotspot for private investments. The Ministry of Agriculture and Animal Resources (MINAGRI) reported that annual milk consumption per capita in Rwanda is 12 liters, which is not only much lower than the Food and Agriculture Organization's official recommendation of 220 liters of milk annually, but also lower than the consumption in the region, which is approximately 100 liters per capita in Kenya, 40 liters per capita in Tanzania, and 22 liters per capita in Uganda.<sup>65</sup> There must be a major improvement over the entire dairy value chain from breed, distribution, and processing & packaging to final consumption. It should be noted that processed milk sells for 2 to 2.5 times the price of fresh raw milk.<sup>66</sup>

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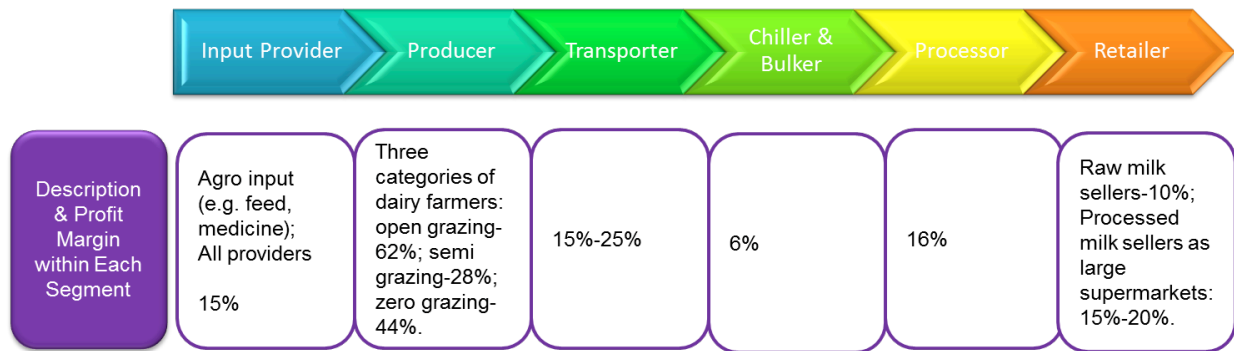
<sup>63</sup> Ministry of Agriculture and Animal Resources and Ministry of Trade & Industry (2008), *Rwanda National Coffee Strategy 2009-2012*.

<sup>64</sup> Market News Service (MNS, July 2009), *Cut Flowers and Ornamental Plants*, International Trade Center.

<sup>65</sup> R. Passmore (2006), *Recommended Intakes of Protein for Growth*, Ministry for Agriculture and Animal Resources.

<sup>66</sup> TechnoServe Rwanda for the East Africa Dairy Development Program (2008), *The Dairy Value Chain in Rwanda*.

Chart 1: Dairy Value Chain and Profit Margins



Source: TechnoServe Rwanda for the East Africa Dairy Development Program

- Open grazing farmers allow cattle to feed on whatever grass is growing on public land. Cattle are left to sleep out in the open. Labor under this form of grazing consists of herding cattle to and from open pasture and sources of water.
- Zero-grazing farmers are on the other end of the spectrum and raise cattle in stalls with feed and water troughs nearby, thus, the cow does not need to move much. Labor under this model is used to grow and cut feed and keep water and troughs full.
- The third type of dairy farmer falls in the middle and practices semi-grazing. In the typical case, the farmer does not have much land and keeps his few cows in stalls. At the same time, he does not have sufficient money and/or knowledge to feed his cows properly and may allow his herd to graze on nearby land. As a result, his income from milk is low.
- The open grazing farmer achieves a profit margin of 62% due to his minimization of costs (no money is spent on feed). For the semi-grazing farmer, labor accounts for almost 50% of monthly costs, while feed constitutes an additional 40%. This farmer segment suffers from the greatest economic challenges because of relatively lower milk production while exotic cattle are growing and increased expenses for feed. Indeed, the semi-grazing farmer only achieves a profit margin of 28%. For the zero-grazing farmer, feed accounts for over 70% of monthly costs, and profit margins are 44%. However, zero-grazing offers the best level of earnings for the farmer (returns to scale) - annually, a zero-grazing farmer can earn over €5747 in profit from milk, while a semi-grazing farmer can make only around €368 and an open-grazing farmer around €690.

Chart 2: SWOT Analysis of Dairy Sector in Rwanda



Source: Investment opportunities in Dairy Sub-sector of Rwanda

### *Agro-Processing*

By the same token, with investment prospects in the agriculture sector and enhancement of agricultural productivity, there are further FDI opportunities in the agricultural processing industry.<sup>67</sup> The industry embraces the processing of dairy products, meat, eggs, potatoes, vegetables, fruits, beverages, etc. along with packaging, canning and distribution on the value chain. Machinery and technological services are also essential here.

### **Dutch Expertise**

The Netherlands is a small and densely populated country. The area of arable land per capita is a mere 0.052 ha, which puts the Netherlands among the countries with

<sup>67</sup> Ministry of Trade and Industry, 'Interview with Research Team', Mar.8.2011.

the smallest per capita amount of arable land in the world.<sup>68</sup> Almost 70% of the available land is allocated to agricultural use. Under agricultural land, grassland accounts for 51%, whereas arable crops account for 43% and land for horticulture accounts for 6%.<sup>69</sup> Nevertheless, the Netherlands has the highest land productivity in the world and also scores high in terms of labor productivity.<sup>70</sup> Moreover, the Netherlands is the third biggest agricultural products exporter in the world, just after the US and France, which have a huge net export of agricultural products, ranging from cut flowers, bulb flowers, potted plants and other ornamental plants, to seed potatoes, eggs, and tomatoes.

### *Horticulture*

In terms of production and export value, horticulture is the most important part of agriculture in the Netherlands and is well known worldwide. The Dutch horticulture subsector is specialized in open field and greenhouse horticulture. Open field horticulture mainly produces bulbs and open field vegetables (cabbage, cauliflower, broccoli, peas, spinach, etc.), while greenhouse horticulture includes cut flowers (roses etc.) and vegetables, such as tomatoes and cucumbers. In 2007, the Netherlands took the lead in the world exports of fresh flowers and vegetables. Roses are the most important flowers in the fresh cut flower category, in terms of both exports and the cultivated land area.<sup>71</sup> Because of the heavy demands placed on the soil by roses, cut roses are largely grown on rock wool mats through which the dosing of water and fertilizers can be fully controlled.<sup>72</sup> Dutch vegetables have shown strong competitiveness in the international market with highly efficient systems of distribution and exportation networks. Vegetable production and marketing is becoming more and more advanced not only by the improvement of modern greenhouse technology, also by the enhancement of the skills of the growers, who always seek to use the best seeds and technologies. Fruits comparatively have a lesser position in Dutch horticulture. There are only a few varieties, such as apples and pears.

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<sup>68</sup> Li Weimin (2009), *Dutch Agriculture through the eye of Chinese Economist*, LEI Wageningen UR, Report 09-035.

<sup>69</sup> Ibid.

<sup>70</sup> Ibid.

<sup>71</sup> Ibid.

<sup>72</sup> Ibid.

Table 4: Output value of Dutch horticulture (EURO: Million)

	1980	1990	1996	2008
Flowers and decorative plants	1,103	2,396	3,201	4,110
Flower bulbs	247	323	442	610
Vegetables	1,031	1,814	1,721	2,050
Fruits	175	317	211	370
Nursery stock	147	311	114	610
Seeds and others	102	206	247	n/a

Source: LNV for 1980-1996 and Commodity Board for Horticulture for 2008

\*The data from 1980-1996 is calculated from currency NLG, with €1 = NLG 2.20371.

### *Livestock*

Another predominant subsector of agriculture is livestock, especially as it pertains to the dairy industry products and poultry for eggs and meat. The Netherlands is one of the world's largest producers of milk and dairy products with long histories. Cow farms in the Netherlands do not only make use of high skilled labor, they also have advanced management. Besides, cheese, butter, condensed milk and milk powder are major dairy exports. Friesland Foods and Campina are main players in the Dutch dairy sector. Specialized poultry farming started in the 1950s in the Netherlands. In 2006, about 90.400m chickens were fed all over the country.<sup>73</sup> The introductions of new hybrids, improved management techniques, mechanization and computerization have increased the efficiency of poultry holdings.<sup>74</sup> Poultry in the Netherlands are given compound feed that contains all the nutrients the animals need with correct proportions. The sophisticated technology used by the foodstuff industry was developed by Dutch scientists. The high quality chickens also lead to the advanced production of eggs. Sovion, Nutreco, Provimi are the biggest companies in the animal feed and meat industry.

### *Agro-Processing*

The Dutch agricultural miracle can be attributed to a large extent to the food processing industry. The Dutch food and drink industry is one of the most vital industrial sectors. The added value of the Dutch food and drink industry accounts for 21% and 19% respectively of the whole industrial sector in the country.<sup>75</sup> Unilever,

<sup>73</sup> Ibid.

<sup>74</sup> Ibid.

<sup>75</sup> Ibid.



Heineken are both world-leading multinationals. Other than the dairy products, meat, potatoes, cocoa, artificial butter and sugar are all very competitive on the world market. Moreover, the success of the Dutch agriculture processing industry benefits from the close cooperation between producers of primary agricultural commodities and manufacturers, where joint ventures are common.

In conclusion, horticulture, dairy and poultry value chains and food processing industry in Rwanda offer investment opportunities to Dutch companies. Additionally, with Dutch successful experiences in improving agricultural productivity and sustainable development, fertilizer, seeds and related knowledge & techniques based investments for Rwanda are also promising.

### **Socio-Political Environment**

Agriculture sector institutions include public institutions at the central level (MINAGRI, MINECOFIN, MININFRA, MINALOC, MIGEPROF and MINEDUC) and the public or semi-public autonomous institutions under MINAGRI (RADA, RARDA, RHODA, ISAR, OCIR-THE, and OCIR-CAFE) and local authorities at decentralized levels; private institutions and civil society.

The agricultural production structure determines investment types, and vice versa: the availability of high quality inputs at low prices determine the agricultural production structure.<sup>76</sup> In Rwanda, the most important inputs are improved seeds, fertilizers and improved breed, which requires public investment. The GoR is expected to support the seed sector so that the population can acquire seeds at an affordable price. Because of the increasing oil prices, the cost of fertilizer is unaffordable for the majority of small farmers. Thus, subsidies on fertilizers are essential in order to expand the use of fertilizers in crop production.

In general, lack of knowledgeable and skilled labor is a main challenge in the agricultural sector. Landlocked and poor infrastructure constrains market access to exports. Regional road and rail projects are under construction and might soon link Rwanda to major regional centers.

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<sup>76</sup> Ministry of Agriculture and Animal Resources (2004), *Strategy Plan for Agricultural Transformation in Rwanda*.

## Infrastructure

The GoR has identified the overall infrastructure of the country to be a key transformative sector in Rwanda. In general, infrastructure encompasses transportation in terms of roads, waterways, airways; water and sanitation; communication (IT, telecommunication); electricity, and agricultural infrastructure. Generally speaking, the GoR's strategy is to give incentives to the private sector (including foreign investors) in order to build a better infrastructure, which shall in turn lead to a decrease in the costs of doing business. The GoR invests 26% of its EDPRS expenditure on infrastructure as a whole.

### Sector Performance and its Factors

Infrastructure has been named one of the major constraints for doing business during our interviews in Rwanda. The low rating of the 'Competitiveness Report' for Rwanda's infrastructure (see chapter 1) supports this view. For instance, Rwanda's roads network amounts to 14.000 km, of which only 1100 km are paved.<sup>77</sup> Waterways are not used yet, however, the Ministry of Infrastructure (MININFRA) has made an economic and technical feasibility test of transportation on Lake Kivu and will shortly do so for the navigability of the Akagera river as well.

The airway is one of Rwanda's most important infrastructural aspects in terms of imports and exports to Europe and Asia (given the fact that Rwanda is a landlocked country with weak connections to the Atlantic and Indian oceans). In order to increase operation capacity and volume for the airway, the GoR has planned to build a bigger airport in Bugesera.

Water and sanitation in Rwanda has improved since 1994. The GoR has made efforts in meeting the EDPRS, MDG and *Vision 2020* goals to supply water to every citizen by 2020.<sup>78</sup> Here, a lot of work (especially in the rural areas) needs to be done in order to be on track with the goals set. So far, 76% of the population has access to clean water (in contrast of the goal of 80% set for 2010).<sup>79</sup>

The communication sub-sector is well-developed, especially in the

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<sup>77</sup> World Bank "Project paper on a proposed additional Credit in the amount of SDR 6.8 million to the Republic of Rwanda for a Transport Sector Development Project", Report nr. 59800-RW (May 2011), ii

<sup>78</sup> The Republic of Rwanda, "Rwanda Vision 2020", 26.

<sup>79</sup> The Government of Rwanda, "Vision 2020 Progress and Way Forward", Ministry of Finance and Economic Planning (2011), 25.

telecommunication branch. Furthermore, the ICT network has been upgraded by the GoR through a countrywide installation of fiber-optic cables.<sup>80</sup>

Electricity is still one of the major challenges for the GoR, as costs are on average higher than in neighboring countries. Nevertheless, electricity costs might decrease in the future, as methane gas found in Kivu Lake would supply energy for at least 100 years to come.<sup>81</sup> Also, Rwanda has potential for other renewable energy sources, such as hydro-electric power, peat, geothermal, biogas and solar energy.

Agricultural infrastructure is part of the expenditures in the agrarian sector. The GoR has set the goal of increasing agricultural production. The path to diversification through focusing on non-traditional crops requires investments in new infrastructure. Larger farmers or farmer cooperatives have problems obtaining capital goods in terms of storage systems, equipment, technology and knowhow.

### *Factors Driving and Hindering Performance*

Investing in infrastructure entails high costs. Capital, equipment and skills for road construction, methane extraction, water-pipes and pumps installations, wetland management systems, irrigation systems or ICT networks are still lacking. Also, transportation and energy costs make such endeavors expensive. Although the GoR envisioned stronger private sector investments, access to financial capital has made it difficult for local companies to engage in the development of infrastructure. As a consequence, infrastructural programs lie on the shoulders of the public sector and the involvement of foreign companies and organizations. Last but not least, Rwanda still struggles with the lack of highly skilled labor to support infrastructural projects.

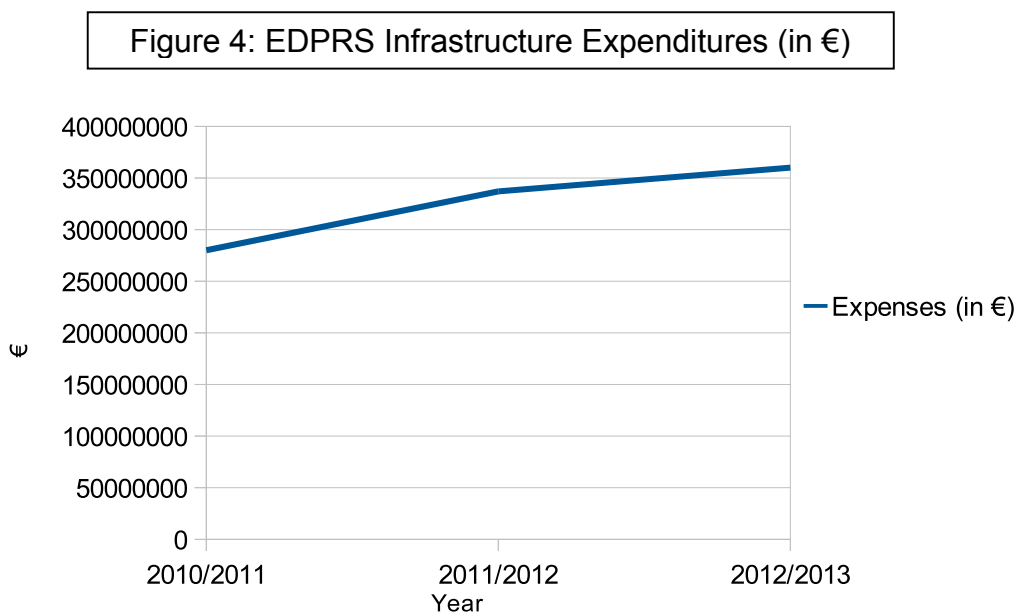
However, the GoR has been persistent and efficient in driving infrastructural programs together with the World Bank, the African Development Bank, the IMF and several European and American development organizations. Furthermore, Chinese contractors have been able to maintain and extend Rwanda's road network. The extension of Rwanda's road network will in the medium- and long-term decrease transportation costs. Also, the extraction of methane gas from Lake Kivu should decrease energy costs.

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<sup>80</sup> Rwanda Development Board "Overview of ICT in Rwanda" <http://www.rdb.rw/rdb/ict.html> (Accessed on May 5, 2011).

<sup>81</sup> Kibuye Power Ltd., "Interview with Research Team", March 16th, 2011.

As mentioned above, Rwanda invested 26% of its EDPRS expenditures (€280.000.000) on the infrastructure sector in 2010 (Figure 4). Figure 4 shows that until 2013, these investments will continue to grow. At the same time, the GoR grants tax exemptions to foreign investors importing capital and equipment into the country.



Source: Minecofin (Originally in RWF, converted into €)

## Opportunities

### *Transport*

The GoR has two major projects that require significant investment outlay. The first opportunity is the planned Bugesera International Airport 40 km south of Kigali. According to the Rwanda Development Board, the investment costs for developing this airport facility are estimated to be \$635m.<sup>82</sup> The investments opportunities vary because they include infrastructure both to- and at the airport. For example, the greatest oil company in Rwanda, Engen petroleum, already bought land in the surroundings of the Bugesera airport in order to build a gas station near the airport.<sup>83</sup> By building the airport, the GoR intends to increase operations in order to keep apace with the demand for airfreight and tourism transportation. Additionally, the airport should serve to achieve the *Vision 2020* goal of Rwanda as a regional transportation hub. In this regard, investments in the Rwandan airline, Rwandair, have been mentioned as a possible investment opportunity.<sup>84</sup> Rwandair, formerly Rwandair Express, has expanded its fleet with the acquisition of two Boeing 737-800s (operational as of 2011), and its flight destinations to all East African capitals, tourism destinations like Mombasa or Kilimanjaro, and to Dubai and Johannesburg.<sup>85</sup>

The second major project in the infrastructure sector is the Isaka-Kigali railway. This project is to link Isaka in Tanzania to Kigali, thereby connecting Kigali to Dar Es Salaam and subsequently to the Indian Ocean (Map 1, next page). In order to do so, a whole new railway (the first to enter Rwanda) needs to be built, and the old Isaka-Dar Es Salaam railway should be restored. The investment costs for this rail link are projected at \$4.7 billion.<sup>86</sup> In contrast to the first project, the costs are very high, and critics argue that inter-state negotiations are still uncertain with regard to Tanzania's intention to restore its Isaka-Dar Es Salaam axis.

At the moment, the GoR is testing the possibility of making some Rwandan rivers navigable.<sup>87</sup> Should this be the case, the GoR would start a bidding process for

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<sup>82</sup> Rwanda Development Board, "Investment Opportunities Infrastructure" <http://www.rdb.rw/rdb/infrastructure.html> (accessed on May 9, 2011).

<sup>83</sup> Engen Petroleum, "Interview with research team", March 10, 2011.

<sup>84</sup> PSF chamber of Commerce, "Interview with research team", March 11, 2011

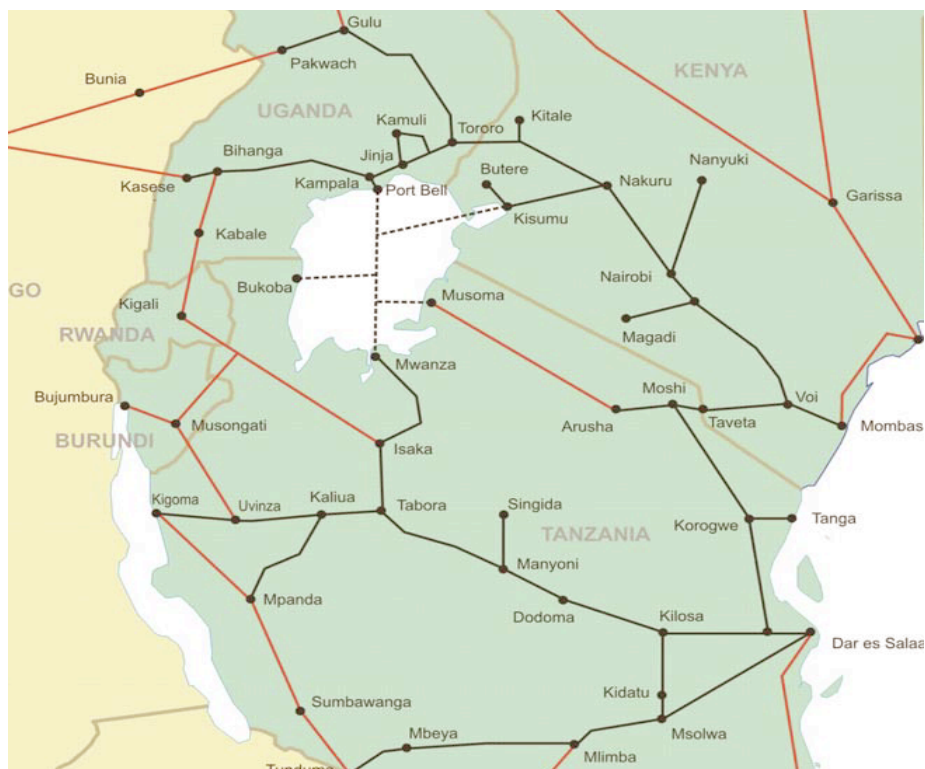
<sup>85</sup> Rwandair, "About Rwandair" <http://www.rwandair.com/about> (accessed on May 9, 2011).

<sup>86</sup> Rwanda Development Board, "Investment Opportunities Infrastructure" <http://www.rdb.rw/rdb/infrastructure.html> (accessed on May 9, 2011).

<sup>87</sup> Mininfra "Introduction to the transport sector", Ministry of Infrastructure [http://mininfra.gov.rw/index.php?option=com\\_content&task=view&id=174&Itemid=315](http://mininfra.gov.rw/index.php?option=com_content&task=view&id=174&Itemid=315) (Accessed on May

PPP programs (Public Private Partnerships. This constitutes business opportunities for firms which are technologically equipped to invest in this area.

Map 1: East African Railway System



Source: African Development Fund

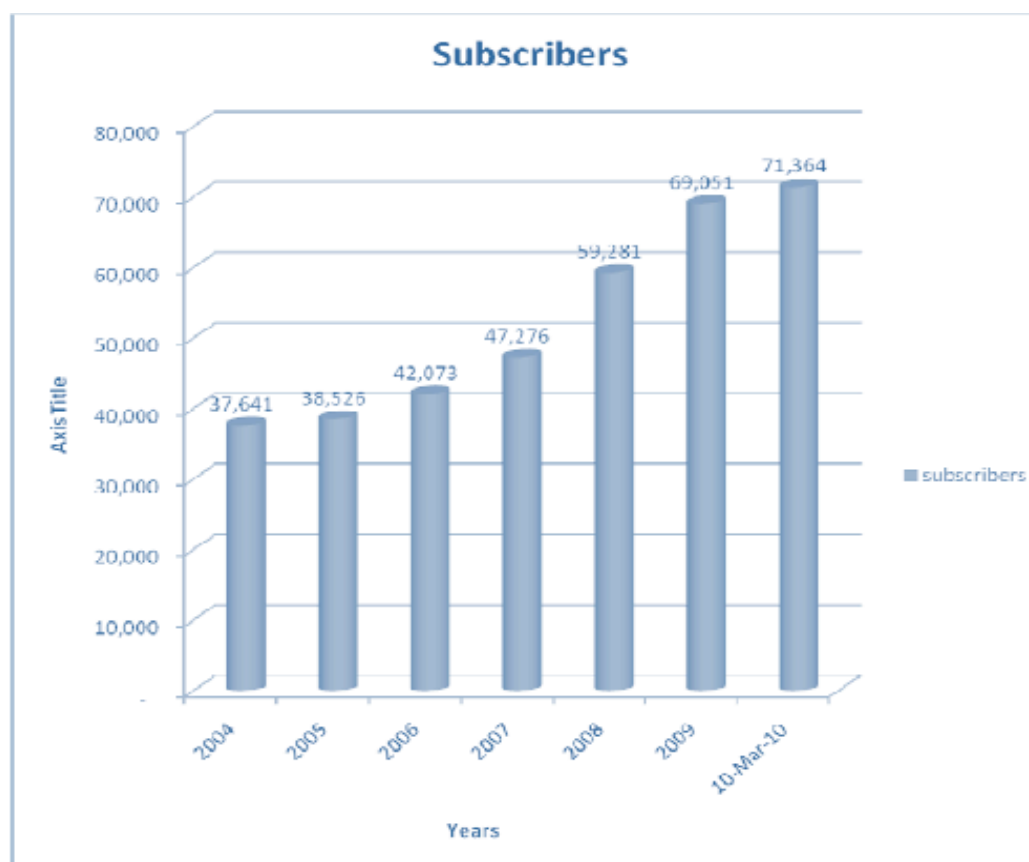
### *Water and Sanitation*

Water and sanitation are two important factors in the MDGs and the Human Development Index, and consequently have been an integral part of the EDPRS. So far, 76% of Rwanda's population has access to clean water. Here as well, the lack of skilled labor has made it difficult for national firms to do business in this field, leaving the market to foreign firms. These firms have complained about a lack of skilled labor, but nevertheless did admit that there is still profit to be made in this sector.<sup>88</sup> Water and sanitation is one out of four major sub-sectors of infrastructural funding which guarantees state subsidy. Besides the construction of water-pipes, sanitation also includes the construction of pumps for the private sector (schools, houses, plants) and for the public sector (schools, hospitals). Between 2004 and 2008, the subscriptions for water connection has increased from 68 314 to 148 873 (Table 5).

9, 2011).

<sup>88</sup> SHER international, "Interview with research team", March 3, 2011.

Table 5: Water supply subscriptions



Source: RURA

### *Water Irrigation Systems*

In order to increase productivity in the agricultural sector, water irrigation schemes are crucial. Irregular droughts have always been a problem in SSA countries and add uncertainty to crop production. The World Bank recognized the importance of increasing irrigation systems across the country, identifying irrigation as one of the 'seeds to growth' for Rwanda. The availability of water for farmers decreases production risks and ensures a higher production output. In the interviews conducted with Rwandan institutions, it was indeed confirmed that irrigation schemes are an important opportunity for FDI in Rwanda.<sup>89</sup> At the moment, irrigated areas in Rwanda, both in marshlands and on the hillsides, sum up to 20,000 ha (1.6% of total arable land).<sup>90</sup> In order to increase irrigated areas, MINAGRI has set up a special task force that is charged with the extension of irrigation systems to an area of 100,000 ha

<sup>89</sup> See Research nexus Institutions and Agencies, point 22.4.

<sup>90</sup> World Bank "Rwanda Economic Update: Spring Edition 2011", World Bank Rwanda (2011), 12.

(8.3% of total arable land) by 2017.<sup>91</sup>

### *Agricultural Infrastructure*

Apart from the lack of expertise and skills, Rwanda also has a shortage of technical equipment. Especially in the dairy area, equipment is crucial to improve the production chain in order to commercialize dairy production. Since commercialization requires milk factories, extensive capital is needed along the entire production chain; starting with milk preservation and storage, cooling systems, packaging, milk testing tools (to verify the quality of milk supplied by local farmers), water supply, lab equipment, spare parts, etc. Due to the high costs of transport to Rwanda, the most cost-efficient investment would be to set up a plant (rather than to import). This investment opportunity will be further discussed in the chapter on construction. So far, the GoR has financed four dairy factories. However, the plants operate at only 20% of their installed capacity.<sup>92</sup> This is due to a variety of reasons, ranging from bad road infrastructure to rural collection centers thus making it difficult for local farmers to supply milk, and bad condition of equipment, to a lack of skilled labor.<sup>93</sup> As seen in Figure 2, infrastructure is needed all along the entire production chain, starting with the provision of medical supply and feed for dairy farms, but also vendors that need effective transportation, and the processing plants and Milk Collection Centers (MCC) that need cooling and quality control systems. Thus, the opportunities are plenty, given that the lack of infrastructure - while an impediment to the sector - at the same time renders the market for commercialized dairy products virgin territory.

### *Livestock Infrastructure*

The number of cattle in Rwanda is estimated to be 1.160.000 heads for the whole country.<sup>94</sup> However, the land tenure in Rwanda comprises largely small hold farmers, making large scale cattle farms unlikely. In light of this, the GoR strategy has been to stimulate farmers' cooperation in order to increase productivity by clustering cattle. This cooperation needs livestock watering systems, feed, pasteurization systems and training. These business opportunities are backed by the GoR, since they would decrease the costs of dairy production inputs.

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<sup>91</sup> Ibid., 11-12.

<sup>92</sup> Rutamu, Innocent "Investment Opportunities in the Dairy Sub-Sector in Rwanda", SNV Kigali (2008), 31

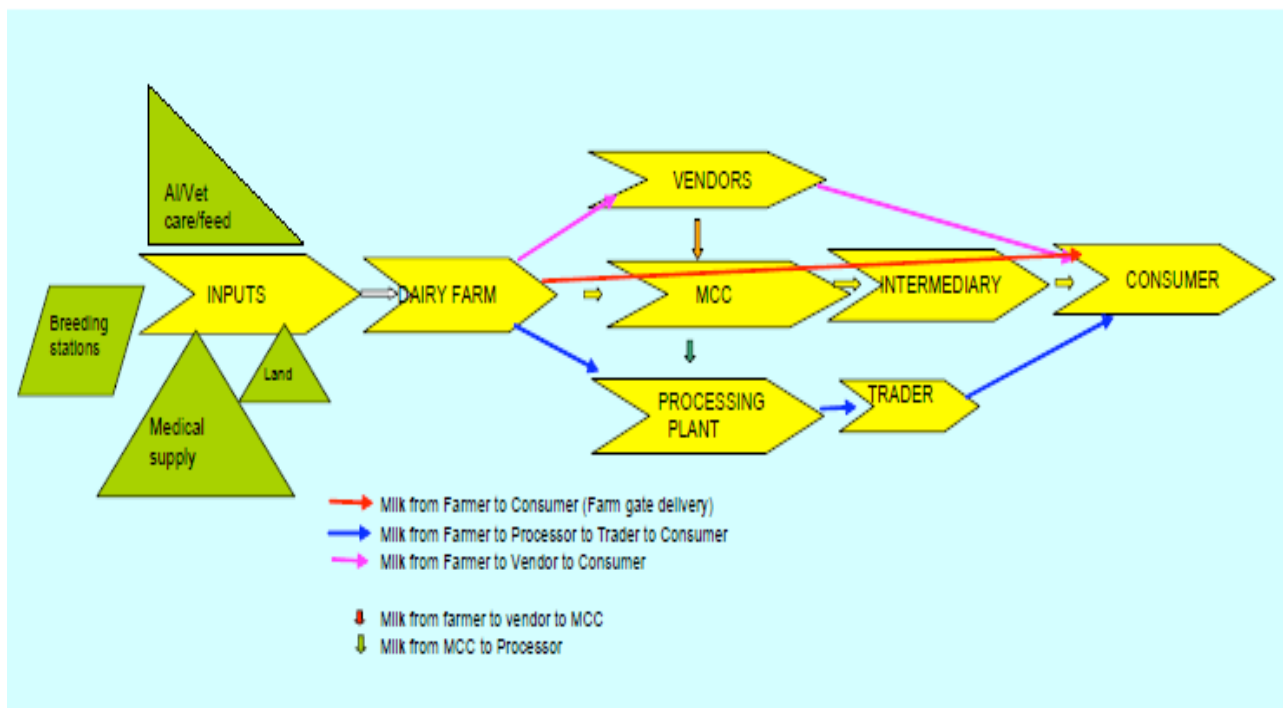
<sup>93</sup> Ibid., 31.

<sup>94</sup> Ibid.



So far, the GoR has put strong efforts in paving the way for the commercialization of agriculture. The World Bank has recognized an increase in agricultural production since 2000 (Figure 3, next page).<sup>95</sup> Here, land production is especially high due to favorable climate and production mode (Figure 4, next page). Nevertheless, there is scope for securing food production through investment in technology. Labor productivity, by contrast, is still low in Rwanda compared to SSA countries (as is argued in this research as well), but it has been increasing slowly in the last decade.<sup>96</sup>

Figure 2: Dairy production chain

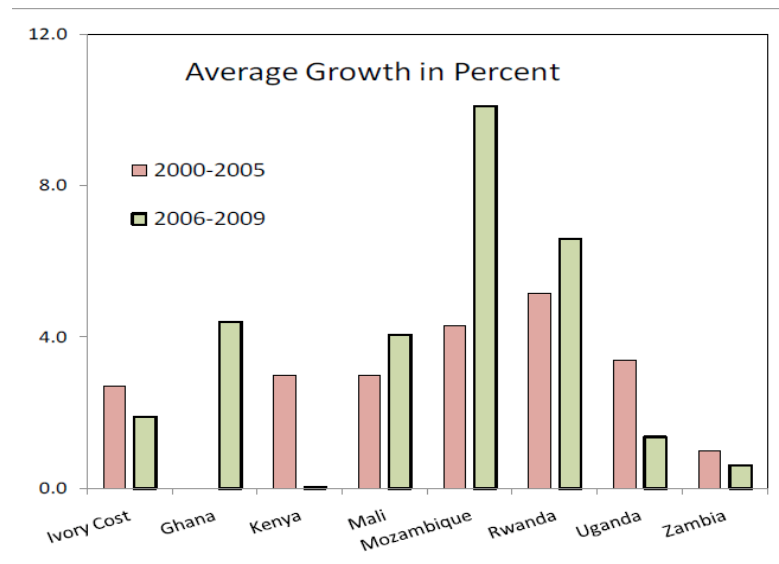


Source SNV

<sup>95</sup> World Bank Rwanda update 2011, 3.

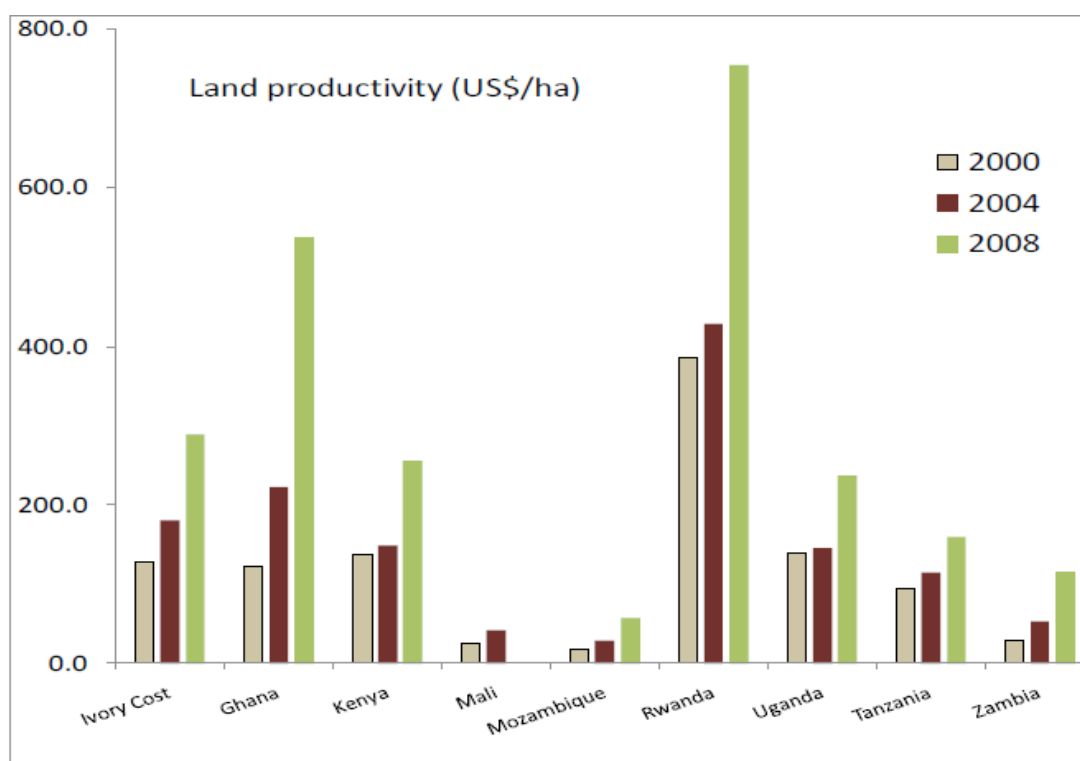
<sup>96</sup> Ibid.

Figure 3: Average growth agricultural sector



Source: World Bank

Figure 4: Land productivity



Source: World Bank

## Dutch Expertise

### *Water and Waste Management*

In the field of water management, Dutch firms are well-positioned to provide added value to Rwanda's water infrastructure. One third of Dutch land is situated below sea level. This needs effective technological management. Traditionally, the Netherlands is known for its expertise in water management. It is estimated that 60% of Dutch companies in the water sector are exporters.<sup>97</sup> Furthermore, the Dutch government has been able to link all important institutions and organizations in the water sector in order to share expertise. The “Nederland Water Partnership” unites 135 members: 71 private sector companies, 24 public institutions, 19 knowledge institutions, 14 NGOs and 7 water supply companies.<sup>98</sup> The Dutch water sector is devoted to international

<sup>97</sup> Hollandtrade, “Water: fact sheet” <http://www.hollandtrade.com/sector-information/water-management/?bstnum=1298> (accessed on May 16, 2011).

<sup>98</sup> Waterland, “Uniting Dutch Water Expertise” <http://www.waterland.net/index.cfm/site/Water%20in%20the%20Netherlands/pageid/E59400D1-D51E-3BB2-79702D5F0BB5F8EB/index.cfm> (Accessed on May 16, 2011).

partnerships and has been active in diverse areas related to water solutions.<sup>99</sup> In the infrastructure sector, Dutch firms represent potential business partners for Rwandan firms; not only where it comes to planning (consulting), but great potential also exists for high-technology transfer, as manufacturers of machines actively look for international markets.

The GoR has been investigating the navigability of Rwandan rivers.<sup>100</sup> Dutch expertise, especially from consultancy firms, could support canalization programs and bring about cost-effective solutions and high quality systems. Generally speaking, the Netherlands has superior expertise in water management and navigability.

## **Socio-Political Environment**

### *Costs and Benefits*

Infrastructure is recognized by all stakeholders in Rwanda, both private and public sector, as well as by the IMF, the World Bank and the World Economic Forum, as a major constraint to doing business in Rwanda.<sup>101</sup> High transportation costs lead to high costs of operations in Rwanda. The same goes for the high electricity costs. Furthermore, the availability of skilled labor still poses a problem for firms operating in Rwanda. Possible investors in Rwanda may well have to invest in capital, technical training (or hire foreign skilled workers). This means that short-term investments in Rwanda are likely to yield lower returns, whereas in the long term, profitability is expected to increase as production costs decrease (through the availability of new infrastructure and lower costs of labor).<sup>102</sup> On the other hand, Rwanda receives comparatively good ratings for its investment climate (as in the 'doing business

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<sup>99</sup> The Dutch water sector has an online presence <http://www.dutchwatersector.com/web/focus-areas> listing Dutch projects abroad.

<sup>100</sup> Mininfra "Introduction to the transport sector", Ministry of Infrastructure [http://mininfra.gov.rw/index.php?option=com\\_content&task=view&id=174&Itemid=315](http://mininfra.gov.rw/index.php?option=com_content&task=view&id=174&Itemid=315) (Accessed on May 9, 2011).

<sup>101</sup> The Private Sector development has made this point in its investment climate assessment in 2008. The IMF and the World Bank did note this in their policy evaluations for 2011. During our research, this has come to the fore in our talks with government agencies and institutions as well as with firms.

<sup>102</sup> See Research Nexus Firms, point 4.

index') and is characterized by good governance and a trustworthy government.<sup>103</sup> As mentioned before, infrastructure is one of the areas of focus of public spending (26% of EDPRS funding) with an upward trend (Figure 1). In the case of (partly) government funding, private investments in infrastructural programs will take place through public bidding procedures.

### *Stakeholders, the State and Competition*

Stakeholders' Responsibility in Rwanda's infrastructure sector lie, to a great extent, with the government. In its EDPRS and *Vision 2020* goals, infrastructure is mentioned as an important sector of focus. The most important infrastructural sub-sectors (road construction, airway expansion) are initiated and coordinated by the state, using public private partnerships (PPP). These PPPs are used to finance high-cost programs, thereby procuring equipment and skills from foreign firms. With regard to the road construction sector, the GoR works mostly with Chinese firms, followed by German businesses (e.g. STRABAG). As mentioned earlier, the road network in Rwanda is advanced in terms of linking Rwanda's major cities, but far from being completed. Especially more remote rural zones have not yet been connected to main cities by tarmac roads. The SNV has cited that the lack of road networks to remote rural areas constitutes a major problem in the supply of MCCs by local farmers.<sup>104</sup>

In the water and sanitation sub-sector, 76% of Rwanda's population has access to clean water. However, water supply subscriber figures show that still a small number of private households are connected to water. In this sub-sector, the GoR is the main stakeholder as well, operating with a state-owned firm called EWASA. (Energy, Water and Sanitation Authority). The underlying reason is the fragile water harnessing in Rwanda, which has led to strong state interventions. Since the water supply is provided by a state-owned company, projects for new water supply lines are subject to bidding procedures, which are very competitive due to the high degree of competitors.

In the agrarian sector, Dutch firms would not encounter much competition, as the Dutch comparative advantage sets them apart as particularly capable of providing the most added values to production. This is especially true for the dairy sector. It has been argued that due to its long tradition with dairy products, Rwandans

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<sup>103</sup> World Economic Forum, "The Global Competitiveness Report 2010-2011" World Economic Forum Geneva (2010), 20.

<sup>104</sup> Rutamu, Innocent "Investment Opportunities in the Dairy Sub-Sector in Rwanda", SNV Kigali (2008), 13.

would pay a higher price for high quality products. Furthermore, Rwanda is well positioned to export to Burundi, Tanzania and the DRC. Kenya and Uganda would also be attractive markets, provided the quality of Rwandan products would be superior that of its regional competitors.

## **Construction**

The construction sector plays an important role in two ways: firstly, it is related to the rapid increase of tourism in Rwanda. Secondly, the construction sector is key to achieving the GoR's goal to become the convention and conference hub for Central and East Africa. Many hotels have been built in the last ten years, with prominent international chains such as Marriot, Hilton, Serena and others already building or planning to do so in the near future. These constructions are part of the “Kigali Masterplan”, an undertaking whose objective is to transform the capital city into a modern financial hub in East Africa. Furthermore, the GoR has introduced a “National Urban Housing Policy” aimed at modernizing the development of Kigali, its suburbs and surroundings. The objective of this policy, which was formulated in *Vision 2020* and in EDPRS is to secure access for citizens to decent housing, clean water and sanitation facilities.

## **Sector Performance and its Factors**

The construction sector in Rwanda has witnessed a boom in the last decade. Within the industry sector, construction contributed substantially to national GDP

expenditure.<sup>105</sup> This boom reached its peak, especially in Kigali, in 2008 (Figure 5). The “Kigali Masterplan” is in its first phase. Phase One has been adopted by the parliament in 2008. Out of twenty plots, nine were auctioned off, fetching investments estimated at \$80 million.<sup>106</sup> Plenty of investment opportunities are to be found not only in the remaining eleven plots, but also in the next phases of Kigali's Master Plan. Nevertheless, the worldwide economic crisis left its mark on Rwanda as well, leading to a contraction in economic growth, from an otherwise phenomenal pre-crisis upward curve. The construction sub-sector, which is the most important part of Rwanda's industrial sector, has not yet managed to attain pre-2008 growth records. Also, it must be added that while investment in manufacturing is for the largest share done by Rwandan firms, construction in the urban and touristic areas has been supported by FDI (especially from China and Germany).

In the rural areas (apart from touristic areas as Akagera and Nyungwe National Parks and Lake Kivu), construction has not yet reached the same pace as in Kigali. Construction projects in rural areas have focused mainly on public buildings such as schools and hospitals. In contrast to FDI in Kigali and the tourist areas, which are private-sector led, rural construction has chiefly been stimulated by the GoR and the (foreign) private sector.

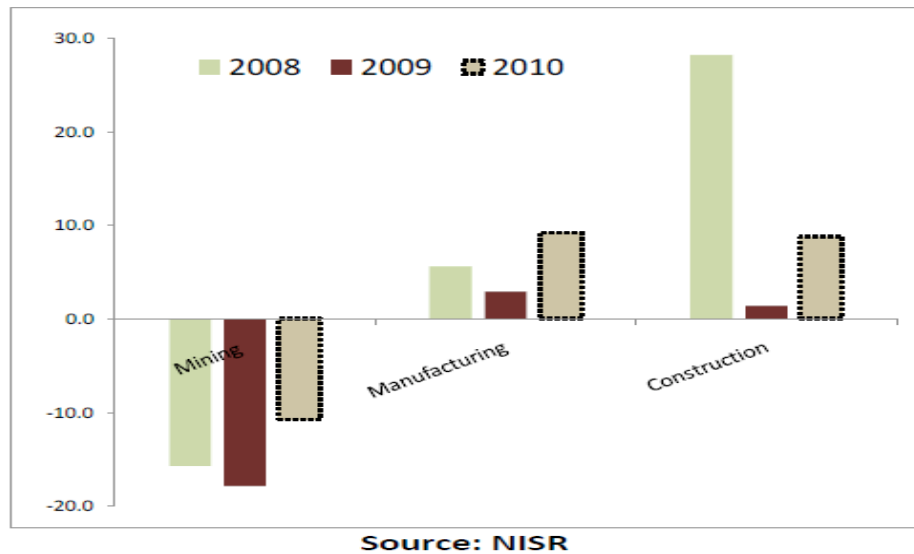
A third factor in construction is agriculture. As mentioned above, the GoR envisions to increase agricultural output by commercializing the production. In order to do so, the GoR has built MCCs and agricultural production plants with help of the African Development Bank and the World Bank. Although the plants are far from producing at their maximum capacity, the production of agricultural goods has risen in the last decade.

Figure 5: Industry sub-sectors performance (%GDP)

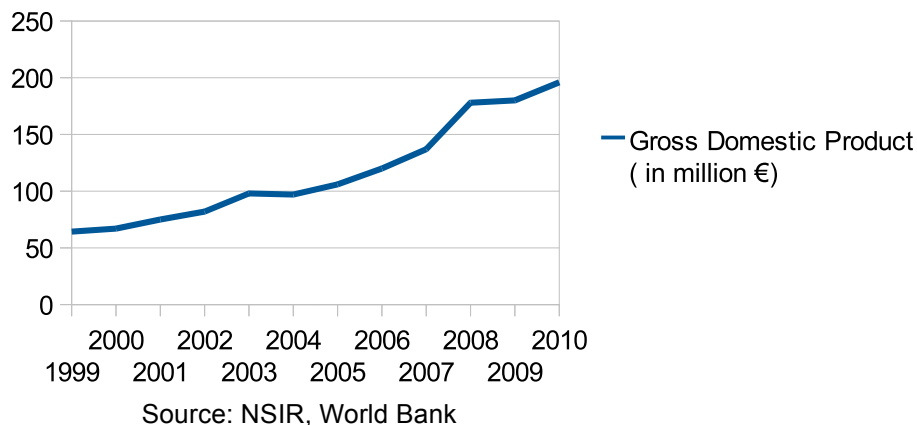
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<sup>105</sup> World Bank “Rwanda Economic Update: Spring Edition 2011”, World Bank Rwanda (2011), 15.

<sup>106</sup> Rwanda Development Board, “Investment Opportunities in Real Estate and Construction” <http://www.rdb.rw/rdb/real-estate.html> (Accessed on May 19<sup>th</sup> 2011).



### Gross Domestic Product in the Construction Sector



### Opportunities

The opportunities in the construction sector are twofold. In addition to FDI and other private sector investments, the GoR has also commissioned contractors to build public and semi-public buildings (like the milk basins of Gishwati in the west and Umutara in the East).<sup>107</sup> Furthermore, urbanization and the governmental “Kigali Master Plan” that is designed at planning how Kigali will grow, offer substantial opportunities for potential investors.

### *Habitat and Urbanization*

The GoR has introduced a 'National Urban Housing Policy' that is designed at

<sup>107</sup> Department of Agriculture and Agro-Industries Department, “Livestock Infrastructure Support Programme. Advance Payment from the Project Preparation Financing Facility (PPF)”, African Development Fund (2010), 4.



planning, allocating and building housing units. The slump in the construction sector, has not led to a decrease in demand for housing, especially in Kigali. Here, the demand for housing amounts to 8500 to 10.000 housing units a year. In other Rwandan urban areas, this demand sums up to 15.000 housing units a year.<sup>108</sup> Another opportunity is Kigali's "Masterplan", whose implementation the GoR has appointed foreign consultants to design the future city of Kigali.

### *Post Harvest Management*

In order to realize agricultural productivity increase (as described in *Vision 2020* and EDPRS), the GoR plans to commercialize agricultural production. Opportunities for foreign investment abound in the improvement of infrastructure (agriculture, transportation, energy and water) as well as in agricultural construction. The GoR has created a conducive investment environment to attract foreign firms to invest in post harvest management systems. Resultant opportunities were seized by companies like the Australian Agri-business company ICM. ICM built three rice mills across the country in 2009 and invested in equipment to improve rice production.<sup>109</sup> Although costs for infrastructure and machinery are high, ICM has increased its profitability, since the market has currently no competing large-scale producers.<sup>110</sup> The GoR has in turn stimulated the construction of post-harvest infrastructure, such as storage facilities, silos and grain stocks through public sector procurement. In this respect, a "Storage and Post Harvest Task Force" was created to coordinate the construction of improved production facilities.<sup>111</sup>

### *Dairy Sector*

The promotion of the agricultural industry has been strongest in the dairy sector. The production chain in Figure 2 shows that opportunities for investors abound in this sector. In addition to the farms, the MCCs are the first step in the value addition of Rwandan milk. MCCs are commercially working as chilling and conservation facilities where farmer cooperatives can bring their milk for market access. At the moment, Rwanda has only 42 MCCs and plans to build 70 new ones.<sup>112</sup> The majority will be

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<sup>108</sup> Mininfra, "National Urban Housing Policy for Rwanda", Ministry of Infrastructure Kigali (2008), 5.

<sup>109</sup> USAID "Improvement of Post-Harvest Opportunities in Rwanda", USAID Rwanda (2008), 41-42.

<sup>110</sup> ICM, "Interview with Research team", March 16, 2011.

<sup>111</sup> World Bank "Rwanda Economic Update: Spring Edition 2011", World Bank Rwanda (2011), 12.

<sup>112</sup> Rwanda New Times "Development Bank moves to boost dairy sector in Rwanda" published in AllAfrica.com

financed by the GoR, and the rest by development partners. Next in the production chain are the milk processors. Currently, Rwanda has five milk processing plants.<sup>113</sup> The processing plants transform the raw milk collected in the MCCs in order to supply to the market. Processing plants are therefore crucial for the commercialization of dairy products. The factories are private owned businesses, among them Rwanda's second largest beverage producer Inyange Industries. The profit margin for processing plants amounts to 15%, although the plants operate at 20% of their capacity due to the bad infrastructure (see Infrastructure -> Agricultural Infrastructure).<sup>114</sup> Maximizing productive capacity would commensurately lead to far greater profit margins.

### *Livestock Management*

Rwanda's livestock experienced a dramatic decrease during the genocide. However, cattle population has recovered since. The commercialization of agriculture will need an improvement of cattle settlements, which translates into an opportunity for foreign firms with the capability to provide this service. Most importantly, what is needed are stables for animal husbandry. As mentioned before, the GoR has encouraged the shared use of land for animals and farmers cooperatives, enabling stables to produce biogas and its byproducts from animals to be used as manure, which could ensure a sustainable use of resources.

### **Dutch Expertise**

Dutch construction firms have leading expertise in Europe in this field. The Netherlands has the second highest (after the UK) number of construction enterprises, all in the top 100 in Europe.<sup>115</sup> In terms of export, Dutch construction firms are among the third largest export companies exporting outside the EU.<sup>116</sup> The Netherlands is an export nation, and therefore there are strong incentives for Dutch firms to reach new markets.

Since infrastructure and construction as sub-sectors in agriculture are similar, expertise in both sectors is complementary. The only difference is that, while in

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<http://allafrica.com/stories/201103180049.html> (Accessed on May 14<sup>th</sup>, 2011).

<sup>113</sup> Technoserve Rwanda "The Dairy Value Chain in Rwanda", Report for Heifer International (2008), 15.

<sup>114</sup> Ibid. 31.

<sup>115</sup> Holland Trade, "Infrastructure: Economic Indicators"

<http://www.hollandtrade.com/sectorinformation/infrastructure/?bstnum=2775> (Accessed on May 17<sup>th</sup>, 2011).

<sup>116</sup> Holland Trade, "Infrastructure: Exports from the Netherlands" <http://www.hollandtrade.com/sector-information/infrastructure/?bstnum=2776> (accessed on May 17<sup>th</sup>, 2011).

infrastructure most of the export is in machines and equipment (goods), construction investments are mainly on-the-spot engineering, planning and architectural exports (services).

### **Socio-Political Environment**

The GoR plays a key role in the rural construction sector (apart from hotels). Together with international institutions, development partners and NGOs, the GoR has a grip on project tenders that cannot be financed by the rural enterprises. Hence, commercialization of the agricultural sector stands in its early stages. For this sector the GoR remains the key financier and is an attractive opportunity for prospective investors.

### *Costs and Benefits*

Similar to the infrastructural sector, operational costs are high due to high energy costs and the lack of skilled labor. Therefore, FDI needs to include the training of available labor or the relying on foreign workers. However, construction is a well-functioning sector in Rwanda, with stable growth rates, and especially in the agricultural/rural areas, FDI is still very low. The comparative advantage of Dutch companies would make it easy to receive government tenders in the field of water- and agricultural construction.

### *Stakeholders, the State and Competition*

The GoR is a major stakeholder in the construction sector. While on the one hand there is a liberal stance towards foreign investors, on the other hand, the GoR is strict in planning construction sites, especially in Kigali (see 'Kigali Masterplan'). Furthermore, agriculture has been a focus for the GoR, since an increase in the population of Kigali has provided a ready market. Construction in agriculture is mostly financed by the government and, since the improvement of agriculture plays a key role in food security, international institutions as the World Bank or the African Development Bank help financing projects in that sub-sector. Furthermore, NGOs have played an important role as advisory organs to the GoR.

In the construction sector, competition is high in the urban areas, while in the rural areas, there is comparatively less FDI. However, Chinese and German

contractors have seized on the gaps to embark on road construction projects and can be credited with the good road networks between Kigali and major Rwandan cities. Nevertheless, in the agricultural sector there are not a lot of competitors, as our research interviews have shown.<sup>117</sup> This is owed to the low level of knowhow among national enterprises.

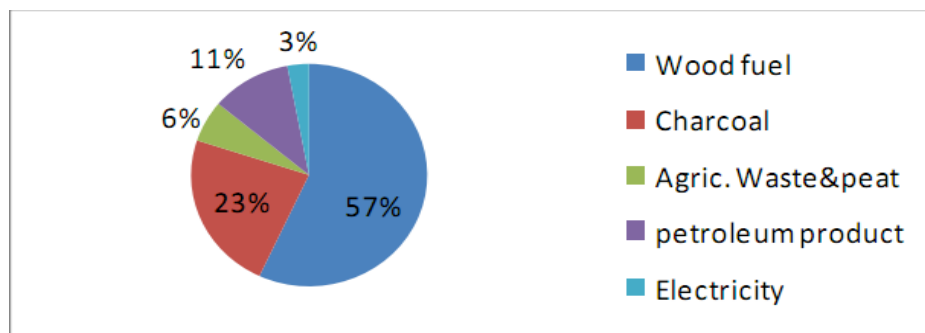
## **Energy**

Rwanda's sustainable economic growth relies on energy security and energy efficiency. Rwanda's primary energy balance is currently dominated by biomass, which accounts for 86% of the energy composition. Biomass here refers to wood fuel, charcoal and agricultural waste and peat, followed by petroleum products and electricity (Chart 3).

Chart 3: Primary Energy Composition

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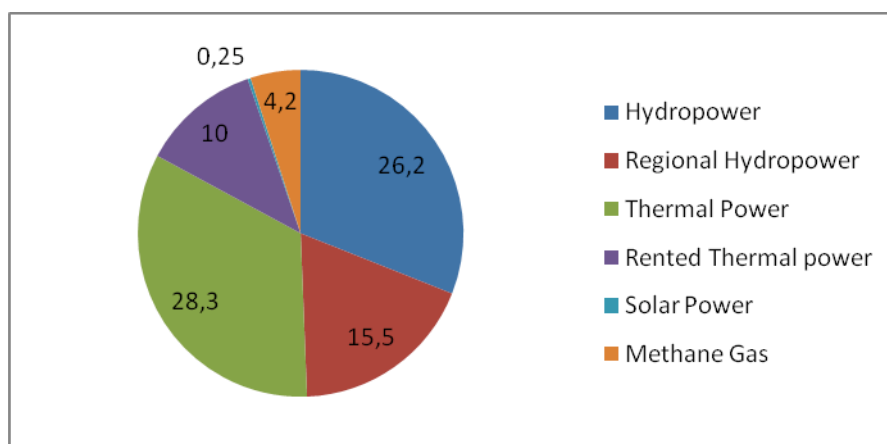
<sup>117</sup> ICM, "Interview with Research team", March 16, 2011.



Source: Energy Statistics

The available capacity for electricity generation in Rwanda stood at 84.45 MW in February 2010 and is generated by hydro power from Rwandan rivers, regional hydro power, thermal power in Rwanda, rental thermal power (rental power plants are set up to meet short-term and emergency requirements of a country), methane to power and solar power (Chart 4).

Chart 4: Electricity Generation Capacity (MW)



Source: The Energy Sector Progress Report

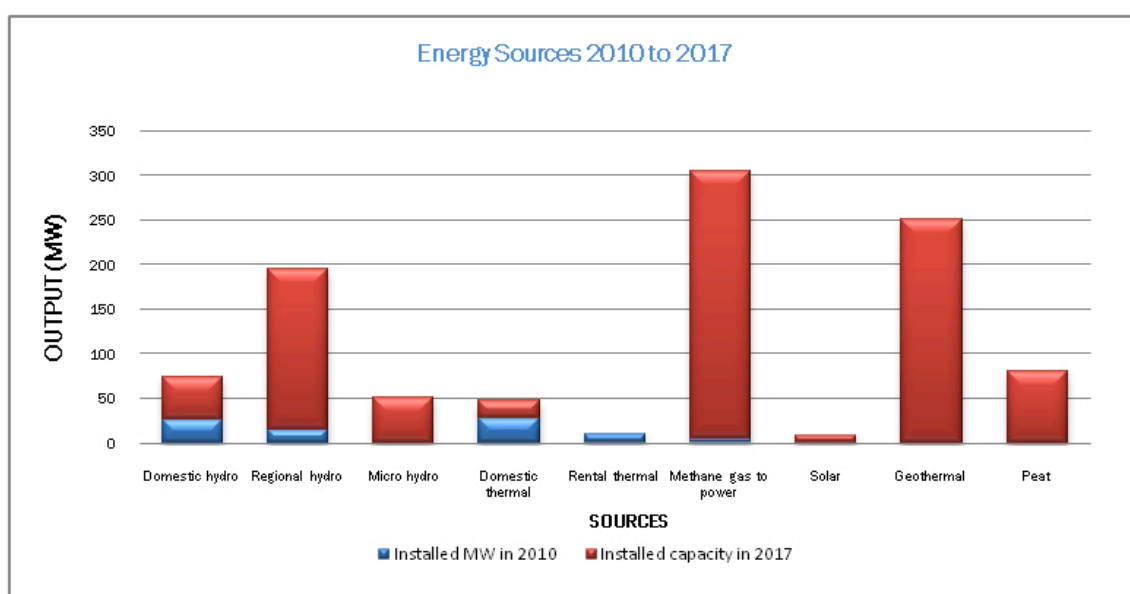
### Sector Performance and its Factors

Wood and other biomass provide the largest part of energy consumed in Rwanda. At the current rate of wood consumption (1.2 kg/day/person in rural areas), wood reserves would run out by 2015 and cause severe deforestation and environmental degradation if nothing is changed.<sup>118</sup> 500.000 Ha/yr of afforested land would be

<sup>118</sup> Mazimpaka. Ernest (2009), *Woodfuel in Rwanda: Impact on Energy, poverty and Environment*, Energy Research Center University of Cape Town, South Africa, 2.

needed to achieve an equilibrium state for wood production / harvesting.<sup>119</sup> But land scarcity has been a salient factor that impedes the biomass development in Rwanda. In light of this, according to the RDB, the targeted energy sources in the long run focus on hydro power, methane gas, peat and geothermal, as the chart on the next page shows:

Chart 5: Energy Sources 2010 to 2017



Source: Rwanda Development Board

The energy industry in Rwanda is still nascent. Lack of legal and regulatory framework for natural resources exploration and development, and lack of advanced related education and technologies are the major challenges in this sector.

## Opportunities

### *Hydro Power*

Rwanda is “dotted” with thousands of hills, and has numerous rivers that flow down the hills which could be utilized for the generation of electricity. Currently, hydro power generates a total of 27.3 MW of electricity (breakdown by power plant:

<sup>119</sup> Ibid.

Ntaruka: 11.5 MW, Mukungwa: 12.5 MW, Gihira: 1.8 MW and Gisenyi: 1.2 MW).<sup>120</sup> Although there are many hydro power plants and micro hydro sites that are under construction, still, supply falls short of demand. This leaves plenty of room for further foreign investments. By the same token, there are increasing demands for hydro power turbines and other hydro power machines.

### *Methane Gas*

According to the Rwanda Ministry of Infrastructure, there are proven reserves of 55 billion m<sup>3</sup> of methane gas in Lake Kivu; it is estimated that 150-250 million m<sup>3</sup> of methane can be extracted. *'Methane potential in Lake Kivu is estimated roughly to be equivalent to 40 million tons of oil, which means an estimated 700 MW can be continuously generated by power plants for a minimum of 55 years, assuming an extraction rate of one billion cubic meters of methane per year'*.<sup>121</sup> Besides extraction, GoR is also looking forward to foreign investments and technology & knowledge transfer in monitoring, processing (purifying gas) and transporting (piping system) methane gas. Furthermore, methane gas could be re-gasified into liquid and fertilizers. With the renewable methane gas fully exploited, Rwanda is expected to be *the* energy hub in East Africa, thereby exporting to its neighboring countries such as Burundi and Congo.<sup>122</sup> The major foreign investment in Lake Kivu is from ContourGlobal, a US energy company focusing on electric power and district heating businesses. ContourGlobal will invest €228 million on Kivuwatt Project, which will be the first large scale facility to extract methane from the depths of Lake Kivu. ContourGlobal will develop, construct and operate a platform based gas extraction system and will extract methane gas from a depth of 350 meters. The gas will be processed and transported by pipeline to a ContourGlobal's power plant being developed in Kibuye, Rwanda. The project will be constructed in two phases with the first phase of 25 MW power capacity and the second phase of 75 MW.<sup>123</sup>

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<sup>120</sup> Rwanda Ministry of Infrastructure, *Energy Investment Opportunities*, [http://mininfra.gov.rw/index.php?option=com\\_content&task=view&id=202&Itemid=341](http://mininfra.gov.rw/index.php?option=com_content&task=view&id=202&Itemid=341) (accessed May 12, 2011).

<sup>121</sup> Rwanda Ministry of Infrastructure, *Hydro Carbons*, [http://mininfra.gov.rw/index.php?option=com\\_content&task=view&id=116&Itemid=144](http://mininfra.gov.rw/index.php?option=com_content&task=view&id=116&Itemid=144) (accessed May 12, 2011).

<sup>122</sup> Kibuye Power, 'Interview with Research Team', March 16, 2011.

<sup>123</sup> Press release, *ContourGlobal Signs Agreement With Republic of Rwanda to Develop Lake Kivu Methane Gas Project*, <http://www.rwandainvest.com/spip.php?article594> (Jun.8.2011).

### *Peat*

Rwanda has about 150 million tons of peat in its marshlands, of which approximately one-third is commercially extractable and can be combusted as source of heat or for the production of electricity.<sup>124</sup> But the extraction and ignition of these peat deposits also raise environmental concerns, and it requires sophisticated technologies and subsequent measures in order to obviate environmental damage.

### *Geothermal*

Geothermal power is produced by tapping the steam created by water trapped near hot rocks in the earth. Rwanda straddles a region bordered on the Northwest by the Albertine rift, the western branch of the East African Rift Valley geological formation, one of the world's hottest spots for geothermal activity. The area with the most geothermal activity is the Virunga volcanic zones in the north of the country, and the area around hot springs in the west. Experts estimate the geothermal potential along the East African Rift Valley to be in excess of 15.000 MW, but the huge potential has remained largely unused, except in Kenya and Ethiopia.<sup>125</sup> In line with the prioritization of geothermal power by the GoR, there are demands for advanced exploration drilling.

All the above brings along the need for R&D related investments in the energy sector in Rwanda, in particular for the untapped natural resources of geothermal-, solar-, gas- and peat energy.

### **Dutch Expertise**

The Netherlands' energy security is enhanced by its domestic production of natural gas. The country serves as a transit hub in North-West Europe providing gas flexibly through an increased storage capacity, and is also a major oil-refining center in

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<sup>124</sup> Rwanda Ministry of Infrastructure, *Hydro*, [http://mininfra.gov.rw/index.php?option=com\\_content&task=view&id=202&Itemid=341](http://mininfra.gov.rw/index.php?option=com_content&task=view&id=202&Itemid=341) (accessed May 12, 2011).

<sup>125</sup> Kezio-Musoke David, Reuter Africa, Tue Mar 22, 2011, <http://af.reuters.com/article/commoditiesNews/idAFLDE72LOTG20110322?pageNumber=2&virtualBrandChannel=0> (accessed May 12, 2011).



Europe.<sup>126</sup> As the following data shows, natural gas constitutes the most important share of the energy matrix in the Netherlands.

In 2008, natural gas reserves were estimated at 1390 billion cubic meters (bcm) with over 1000 bcm thereof residing in the Groningen field.<sup>127</sup> Domestic customers use blended low-calorific gas which is also exported to Belgium, France and Germany through transmission pipelines, while industry and power generators use mostly high-calorific gas.<sup>128</sup> The Dutch gas network comprises 11500 km of pipelines, 52 entry points (35 from Dutch gas fields and 17 from networks in neighboring countries), 1100 delivery stations, 23 export stations and 9 compressor stations.<sup>129</sup>

In order to become a regional gas hub, two significant extensions of the Dutch gas network have been installed. One is the Balgzand-Bacton Line (BBL), connecting the Netherlands directly to the United Kingdom and Ireland; another is the Zebra Pipeline connecting the Dutch-Belgium border point Zelzate to the Dutch high-pressure grid.<sup>130</sup> Currently, there are four storage sites in the Netherlands and three more planned.<sup>131</sup> The building of liquefied natural gas (LNG) terminals is also promoted with the aim of strengthening the Netherlands' position as a regional hub. The major players in the Dutch natural gas industry include: Gasunie, a Dutch gas infrastructure company and its affiliate Gas Transport Services B.V. (GTS); GasTerra, a trading and supply company; the largest gas producer NAM (of which Shell and ExxonMobil each own half); and four distribution and supply companies: Essent, Eneco, Nuon and Delta.

Although the Netherlands has a very limited domestic oil production, it has a significant oil refining capacity and is a major exporter of refined oil products.<sup>132</sup> Coal takes a comparatively small proportion in the energy mix, but the design of the

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<sup>126</sup> International Energy Agency (IEA) (2009), *The Netherlands 2008 review*, Energy policies of IEA Countries.

<sup>127</sup> Ibid.

<sup>128</sup> Ibid.

<sup>129</sup> Ibid.

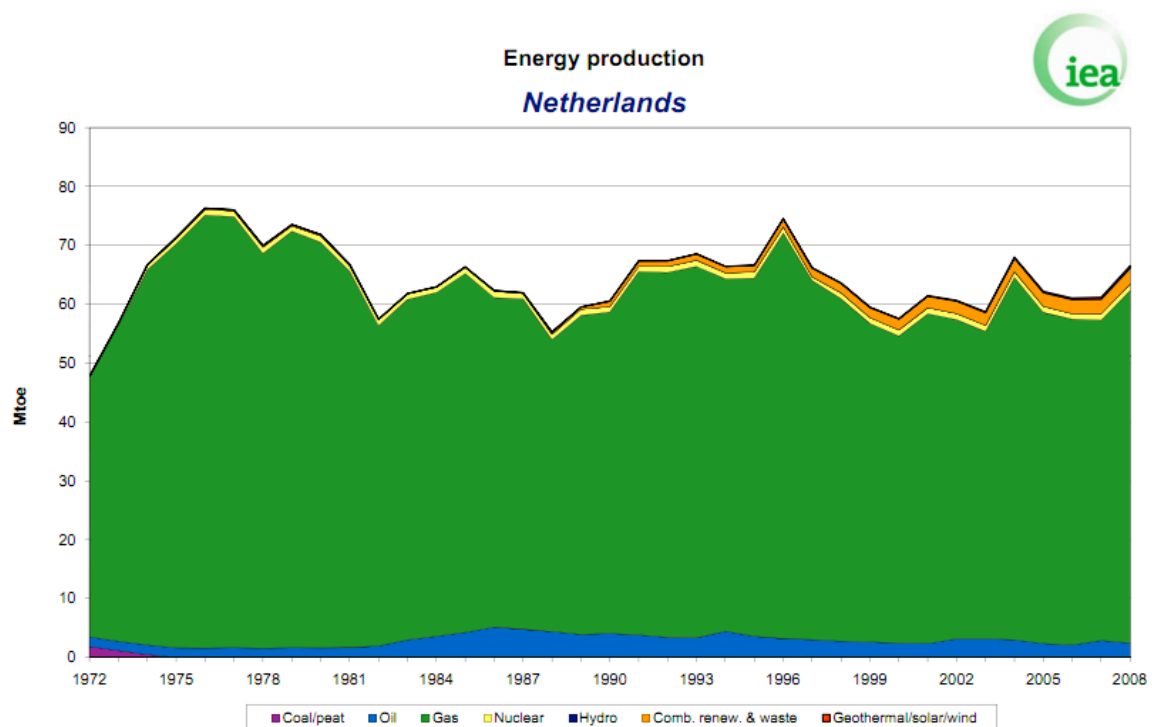
<sup>130</sup> Ibid.

<sup>131</sup> Ibid.

<sup>132</sup> Ibid.

efficient Dutch coal-fired power plants demonstrates they are state of the art.<sup>133</sup> The owners of coal power plants include Electrabel, Nuon, E.ON, EPZ, Essent and RWE. More importantly, the Dutch government foresees that the importance of coal will rise through 2030 and has put more emphasis on clean coal conversion technology such as the carbon capture and storage (CCS) project.<sup>134</sup> Due to the geographical shortcomings, the implementation of hydro power, wind power and geothermal power in the Netherlands has not been very highly developed. However, technological innovation has already moved beyond the early stage of development.<sup>135</sup>

Chart 6: Energy Production in the Netherlands



Source: IEA Statistics

Chart 7: Share of Total Primary Energy Supply in 2008

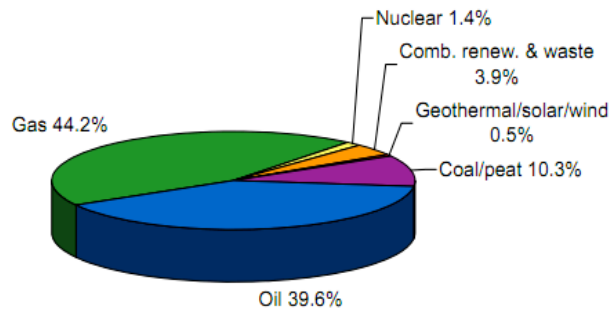
<sup>133</sup> Ibid.

<sup>134</sup> Ibid.

<sup>135</sup> Ibid.

Share of total primary energy supply\* in 2008

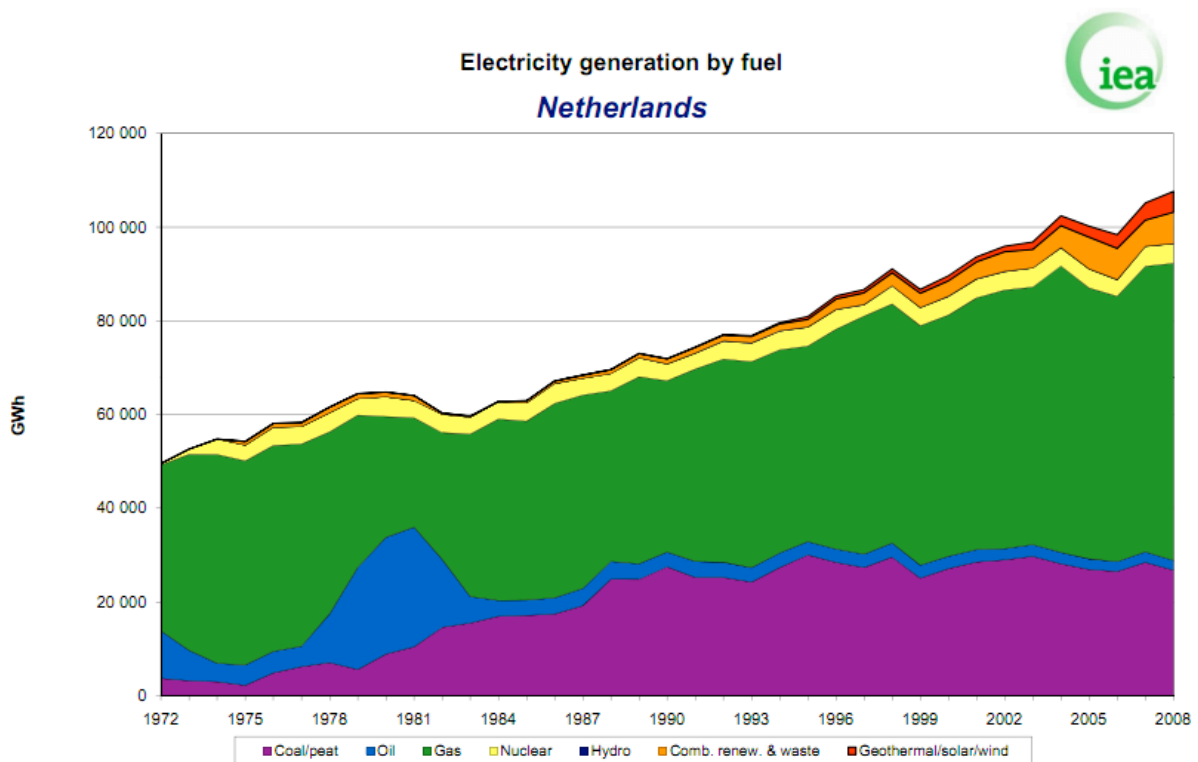
### Netherlands



80 Mtoe

Source: IEA Statistics

Chart 8: Electricity Generation by Fuel in the Netherlands



There are several R&D projects and platforms in the energy sector the Dutch government puts forward:<sup>136</sup>

- Green raw materials: production and use of plant-based materials, including bio fuels
- New gas and clean fossil fuels: more efficient applications of natural gas and other fossil fuels. The platform also includes the development of synthetic natural gas (SNG), biogas and hydrogen
- Sustainable electricity supply: developing new, clean and reliable sources of electricity, such as offshore wind, solar or biomass-based electricity
- Sustainable mobility: accelerating market deployment of alternative engine fuels, such as natural gas and bio fuels, as well as new, environmentally clean vehicles (for example, hydrogen-powered). Sustainable mobility also focuses on vehicle guidance systems to prevent traffic jams
- Chain efficiency: tackling energy use at the chain level, i.e. organizing industrial production chains more intelligently
- The built environment: making heating and cooling of buildings more sustainable and climate-neutral. This platform aims at introducing new technologies, including solar heating and underground heat- and cold storages
- Greenhouses as energy sources: reducing the use of fossil fuels in the greenhouse horticulture sector. This platform aims at climate-neutral growing as of 2020. Greenhouses are expected to strongly reduce their dependence on fossil fuels while enhancing their use of geothermal energy, and to become net suppliers of renewed heat and electricity.

In conclusion, the natural gas sub-sector – in the case of Rwanda, methane gas – contains plenty of FDI and technology & knowledge transfer opportunities due to the high demand: from monitoring and extraction to processing and transportation. In the hydro power, peat and geothermal sub-sectors, the investment opportunities might be limited, but there is still perspective for technological & knowledge transfer related investments.

## **Socio-Political Environment**

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<sup>136</sup> Ibid.

The government of Rwanda recognizes the role energy plays in boosting and sustaining the socio-economic development. A variety of initiatives to attract direct private investments in the energy sector are being taken, including the reduction of tariffs to promote industry and exports, and the formulation of laws on electricity, gas and water which have been submitted to Parliament for approval.<sup>137</sup> These important new laws also reinforce the functioning of the Rwanda Utilities Regulatory Agency as a multi-sector regulatory body dealing with public utilities, thereby providing the regulatory framework for private investors.<sup>138</sup> Unité de Promotion et d'Exploitation du Gaz du Lac Kivu (Department of Promotion and Exploitation of Gas from Lake Kivu - UPEG) is responsible for the policy in the gas sub-sector, and reports to the Ministry of Infrastructure. UPEG is in charge of developing the methane resources by attracting private investments into the sub-sector, and of supervising the establishment and use of gas related properties such as pipelines and storage infrastructure.<sup>139</sup> For all sub-sectors, national policy is formulated by the umbrella institution, the Ministry of Infrastructure.

## Information & Telecommunication Technology (ICT)

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<sup>137</sup> Rwanda Ministry of Infrastructure, *Energy Investment Opportunities*, [http://mininfra.gov.rw/index.php?option=com\\_content&task=view&id=117&Itemid=145](http://mininfra.gov.rw/index.php?option=com_content&task=view&id=117&Itemid=145) (May.14.2011).

<sup>138</sup> Ibid.

<sup>139</sup> The Public-Private Infrastructure Advisory Facility and the World Bank Group (2004), *Private Solutions for Infrastructure in Rwanda, A Country Framework Report*, 33.

Rwanda, being a small and landlocked country, stresses the development of its ICT sector. Therefore, the GoR is aspiring to be an ICT hub for the region. Although Kenya is more advanced in this respect, the country is confident that it will be able to compete in due time.<sup>140</sup> The ICT sector is a natural focus for it is not constrained by the aforementioned factors (the country's size and being landlocked). Besides, nowadays a well-developed ICT sector is fundamental to a well-developed economy, reflected in the idea *ICT4D* (ICT for Development) in *Vision 2020*. The exact size of this sector and its contribution to GDP is rather hard to determine, given the fact that many activities of firms may, or may not be included within the definition of ICT. Those include, to some extent, software development, and online services (e.g. videoconferencing and distance learning). However, the foundation of ICT remains, and can be defined as: *'any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on'*<sup>141</sup>. In that sense, a couple of numbers and figures are presented to depict the current state of the ICT sector in Rwanda.

First of all, the domain of ICT falls within the Service sector of the economy, the tertiary sector. In the year 2010, the tertiary sector comprised 47% of the GDP. Within the service sector, the GoR provides only an aggregate specification for 'transport, storage and communication', without specifying the contribution of 'communication' to this sub-sector. This sub-sector, however, has seen a 9% increase over the year 2010, and constituted 8% of the GDP by the end of that year. Eight percent of the Rwandan GDP adds up to a total value of almost 302 million Euros.<sup>142</sup>

Secondly, but more importantly, are the technical developments of ICT facilities (in terms of mobile and landline phone, and internet facilities) in Rwanda, delimiting the sub-sector's potential. Hereto, a number of graphs on the next page serve to illustrate its progress.<sup>143</sup>

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<sup>140</sup> RDB ICT Advisor, "Interview with research team", March 18, 2011.

<sup>141</sup> SearchCIO-Midmarket.com, "ICT (information and communications technology - or technologies)", <http://searchcio-midmarket.techtarget.com/definition/ICT>, (May 5, 2011).

<sup>142</sup> National Institute of Statistics of Rwanda, "GDP Annual Estimates (2010)".

<sup>143</sup> Félicien Usengumukiza, "Overview of Rwanda's ICT Context". Institute of Policy Analysis and Research, <http://www.afdb.org>, (May 5, 2011).