

COUNTRY MAPPING

RWANDA

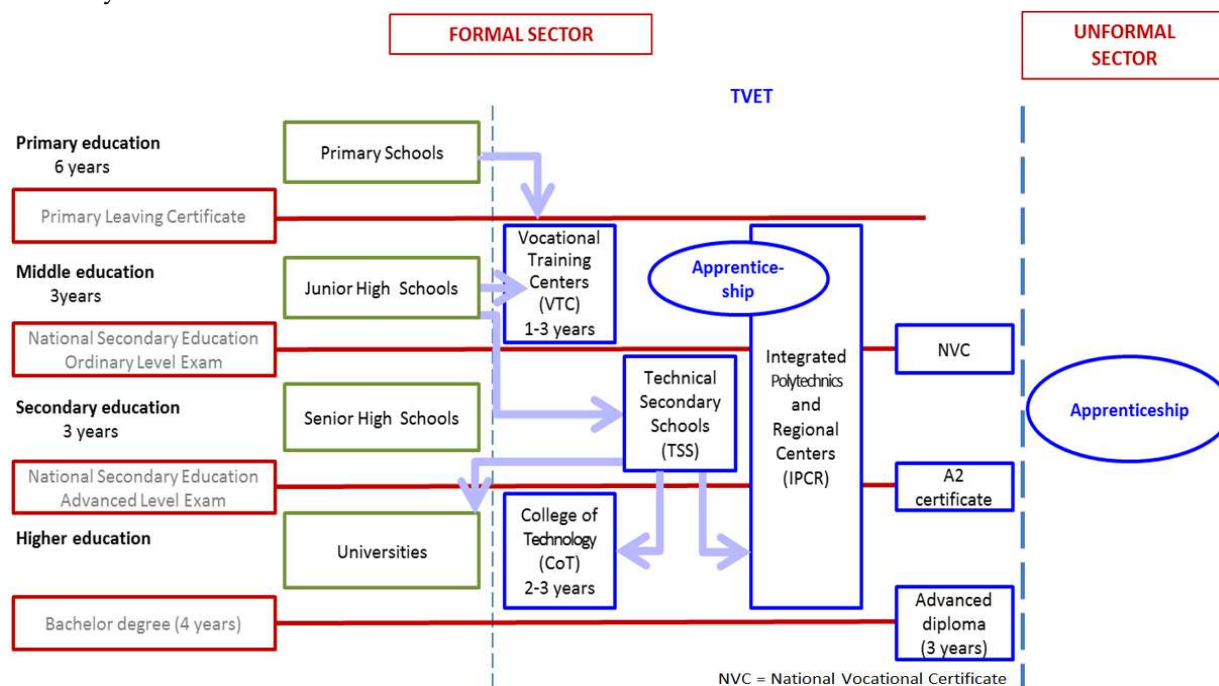
1 Facts & Figures

Surface	26,338 sq km ¹	Total literacy rate	71.1% ¹
Population	12,012,589 (2013) ¹	Educ. Expenditure	4.8% of GDP (2011) ¹
Capital	Kigali, 0.91 mio ¹	GDP per capita	\$ 620 (2012) ¹
Pop. growth rate	2.7% (2013) ¹	Inflation rate	6.3% (2012) ¹
Median age	18.7 years ¹	HDI	0.434 ²
Urban population	19.1% (2011) ¹		

2 Education system

2.1 Overview

All formal TVET provision forms are part of the national education system and fall under the Ministry of Education.



¹ www.cia.gov/library/publications/the-world-factbook/

² hdr.undp.org/en/data/profiles/

Political framework and objectives

- ▶ The National Policy of Science, Technology and Innovation
- ▶ The TVET Policy (MINEDUC, 2008): identification of vocational standards and national needs
- ▶ Reform of the TVET sector in 2008: two new authorities have been installed within the Ministry of Education (MINEDUC)³
 - Workforce Development Authority (WDA): organization of the TVET strategy on the national level
 - Integrated Polytechnic Regional Centres (IPRCs): centres of expertise on a regional level.
- ▶ Education Sector Strategic Plan (ESSP) – 2010 to 2015, see also [here](#)
- ▶ Objective for 2017: 65% of upper secondary education enrolment in TVET.⁴

2.2 Education & TVET system

- ▶ TVET plays a key role in combating Rwanda's serious lack of qualified people in the workforce, especially in technical sectors.⁵
- ▶ There are currently three different types of TVET institutions under the integrated formal TVET scheme, which require different entry level qualifications and offer different levels of certificates and diploma.
- ▶ The unskilled and unemployed population without formal educational background may join TVET on short courses or on NVC levels.⁴
- ▶ Most students from VTCs (low level vocational training) go to look for work after completing a short course (39.8% in 2011)⁶ or a year training (40.9%) and obtain a certificate, and may come back for another year or two of training thereafter.
- ▶ Unformal TVET takes place at considerable level through traditional apprenticeships in garages, cobbler-shops and other artisan facilities.⁷
- ▶ TVET institutions in Rwanda have difficulties in attracting qualified trainers due to poor incentive schemes as well as lack of sufficient infrastructure and equipment.⁷
- ▶ Partnerships between MINEDUC, TVET service providers and private sector players in order to boost TVET skills development by providing opportunities for industrial attachment, internship and apprenticeship for TVET trainees in a coordinated manner.⁷

³ www.vvob.be/vvob/en/programmes/rwanda-technical-and-vocational-education-and-training

⁴ Mapping Study Rwanda, Edukans Netherlands, October 2012

⁵ planipolis.iiep.unesco.org/upload/Rwanda/Rwanda_technical_vocational_education_policy.pdf

⁶ MINEDUC 2012

⁷ Dr. Ibrahim C. MUSOBO and John GAGA, ADEA 2012 - schoklandtvvet.pbworks.com/w/file/fetch/59834571/031012_Draft%20TVET%20Mapping%20Report.docx.

- ▶ Only few private sector training institutions are providing opportunities for practical industrial exposure to trainees.⁷
- ▶ The Private Sector Federation is engaged to a significant degree in the planning and development of the education system in order to meet the skill requirements for the development of the Rwandan economy. It also provides Technical and Vocation Training to Rwandans.⁸
- ▶ 12 economic sectors have been recently identified and earmarked as priority for TVET investment and initiatives, among which is “Clean and sustainable energy”.⁹

TVET enrolment level

- ▶ In 2012, 144,695 students were enrolled in TVET-programs, corresponding to 38% of the total enrolment in upper secondary education.

Gender

- ▶ Rate of female enrolled in TVET is 49.3% in 2012.⁹

2.3 TVET institutions

- ▶ In 2012 there were 278 providers of TVET-programs in Rwanda. Privately owned TVET had a share of 71% percent whereas public owned TVET accounted for the remaining 29%.⁹
- ▶ The Northern Province which is the most populated of the country is very badly represented in TVET.⁹
- ▶ Private providers are parents associations, association of individuals, groups of people, religious organizations or NGOs.⁹
- ▶ Both public and private schools charge school fees to students, but school fees in government schools are subsidized and therefore lower.⁹
- ▶ Private schools fund themselves but depend on government for registration, accreditation, evaluation and certification.⁹

2.4 TVET challenges

- ▶ Curricula and teaching methods are not responding to labor market demands and lack effectiveness and relevance to the reality of the workplace. Lacks inadequate hand-on competencies and workshops are equipped with poor and inadequate instructional material and equipment.⁹

⁸ Mapping Study Rwanda, Edukans Netherlands, October 2012

⁹ Mapping Study Rwanda, Edukans Netherlands, October 2012

- ▶ The low reputation of TVET teachers is aggravated by low salaries. Similarly qualified employees in enterprises receive 3 – 4 times higher salaries. This results in lower teachers motivation, considerable teaching hour deficit and strong fluctuation tendencies.⁹
- ▶ Performance is inadequate because their practical technical competencies, pedagogical preparation and motivation are underdeveloped.⁹
- ▶ The lack of pro-activity to involve private sector players in curriculum development leads to implementation of curricula that is not very responsive to the labor market needs. The low Public-Private Partnership (PPP) is still an obstacle to effective delivery of TVET. A demand-driven and outcome-based TVET requires a strong partnership between TVET institutions and enterprises.⁹
- ▶ Gender imbalance in TVET engineering courses.⁹
- ▶ Young people annually leave schools without sufficient vocational preparation and continuing TVET capacities are not capable to prepare them for the labor market. Even existing continuing training capacities are not recorded, systematized, promoted nor integrated into strategic programs.⁹
- ▶ Inappropriate management of Technical Schools and Vocational centers, the missing link with the potential employers and the lack of school monitoring and performance evaluation are the main reasons for the Schools' insufficient contribution to the development of much needed human capital.⁹
- ▶ Under-funding is a structural problem in the TVET sector. The budget allocated is still relatively low compared to needs and priorities required to effectively implement the TVET policy.⁹

3 Renewable energy market

3.1 Overview

- ▶ Electrification rate 10.8% (2013)¹⁰ (goal: 70% in 2017)
- ▶ Installed electricity capacity 72.5 MW (2009)¹¹
 - 59.1% hydro
 - 40.5% thermal
 - 0.4% solar

¹⁰

www.btcctb.org/files/web/tender/REQUEST%20FOR%20EXPRESSION%20OF%20INTEREST%20No%200487%20-%20PO%20-%200013_0.pdf

¹¹ www.reegle.info/policy-and-regulatory-overviews/RW

- ▶ RE installed capacity 59% of installed power (2011)¹²
59.3 MW Hydro (2012)¹²
10.4 MW Biomass (2010)¹² / 85.5% of primary energy use (goal: 50% in 2020)¹³
0.3 MW Solar (2012)¹⁴
- ▶ RE installed capacity 45% of total generation¹⁴
- ▶ RE goal for 2017 310 MW hydropower¹⁵

Political framework and objectives

- ▶ National Energy Policy (2008)
- ▶ National Energy Strategy (2008 - 2020) with focus on exploitation of Rwanda’s geothermal potential and increase use of solar water heaters¹⁶
- ▶ Government policy to promote rural electricity: Solar-PV generators and small, micro and pico hydropower through private suppliers¹⁶

3.2 Potential and main barriers

Renewables	Solar	Wind	Geothermal	Small & medium hydro
Theoretical potential ¹⁷	Average horizontal irradiation is 5.5 kWh/m ² /day	Not available	Potential exists for between 170 – 320 MW of geothermal power generation	Hydropower potential in the country is estimated to be 500 MW ¹⁸

Main barriers¹⁶

- ▶ Delayed implementation of regulations established in law due to crisis in the energy market
- ▶ Regulatory framework for sustainable energy is still in its initial phase

¹² www.map.ren21.net/PDF/ProfilePDF.aspx?idcountry=140

¹³ www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Rwanda%20-%20Energy%20Sector%20Review%20and%20Action%20Plan.pdf

¹⁴ www.map.ren21.net/PDF/ProfilePDF.aspx?idcountry=140

¹⁵ www.christianaid.org.uk/images/low-carbon-africa-Rwanda.pdf

¹⁶ www.reegle.info/policy-and-regulatory-overviews/RW

¹⁷ energypedia.info/images/7/77/ENERGY_POLICY_and_STRATEGY.pdf

¹⁸ <http://www.afribiz.info/content/renewable-energy-potential-in-rwanda>

- ▶ No coherent framework for the regulation of renewable energy - The development of such a framework is an essential element of the National Energy Policy
- ▶ Need for:
 - capacity-building,
 - the establishment of standards and codes of practice
 - suitable guidelines for the use of renewable energy
- ▶ National utility is still responsible for the tariff-setting for electricity - can lead to an imbalanced tariff structure.

3.3 Private sector

Rwanda's economy is growing by an average rate of 8.3% for the last 5 years. Clean and affordable energy is seen as a key element for further sustainable growth of the economy. Therefore the Government is identifying the private sector as the main driver for renewable energy development by referring to the financial and human resource requirements needed to obtain growth in the renewable energy sector.¹⁹

- ▶ The private sector is welcomed as a participant at any and all levels of the energy supply industry.
- ▶ Where public-private partnerships (PPPs) are desirable, government will work with private sector entities to ensure the speedy structuring and financing of PPP projects in the energy sector.
- ▶ MININFRA will work closely with other government agencies established to assist private investors in all sectors of the economy, particularly the Rwanda Investment and Export Promotion Agency (RIEPA), the Rwanda Revenue Authority (RRA) and the PPP Unit in the Prime Minister's Office.
- ▶ Currently three stable workshops are active in the manufacturing of pico-turbines ²¹
- ▶ Only few companies in Rwanda are active in the field of solar energy. They focus mainly on the market for larger systems for public institutions, e.g. hospitals, schools, etc. through public tenders. In addition they and others are also trying to sell solar home systems but the market for solar lanterns and small home systems is still in its infancy. Recently, an increasing focus on solar water heating systems has also emerged.²¹

¹⁹www.climatechange.be/jicdmtender/IMG/pdf/National_Efforts_to_promote_CDM_in_Rwanda-PPPFin_Mode_de_compatibilite_.pdf

3.4 Main donors' activities

The coordination of the donor activities in the electricity sector is carried out by the Ministry of Infrastructure (MININFRA). Among the numerous activities the following are to be mentioned:

- ▶ Grant from the Global Environment Facility Trust Fund (World Bank/GEF) of US \$ 4.5 Million for Rwanda Sustainable Energy Development Project (SED Project) funded through Africa Renewable Energy and Access program (AFREA).²⁰
- ▶ Grant from the Nordic Development Fund of 4 Million Euros for the development of Solar Water Heaters under SolaRwanda Programme (2012 – 2015).¹⁹
- ▶ The UK Department for International Development (DFID) has developed a results based financing scheme to support renewable energy enterprises in the solar PV, micro hydro and institutional biogas sector. The programme will be implemented by GIZ.²¹
- ▶ The Belgian Development Agency (BTC) participates in rural electrification based on photovoltaic systems by means of the Energy for Rural Populations through Renewable Energy Project (EPRER) and is currently in the process of establishing a Wind Atlas.²²
- ▶ World Bank, Opec Fund, The Saudi Fund for Development and BADEA - Electricity Access Rollout Project (EARP) aims to connect at least 70% of the population to the grid by 2017.²¹
- ▶ Promoting Renewable Energy Programme (PREP) from the Dutch Government - cooperation with International Fertilizer Development Center (IFDC), KfW, BTC and MININFRA.²¹
- ▶ The French Development Agency through its debt relief programme for Rwanda is providing support to the national electricity access programme.²¹
- ▶ The EC supports in particular two areas with a total budget of € 50 million:²¹
 - energy solutions for off-grid public institutions (PV systems)
 - micro hydro plants
- ▶ GIZ - Private Sector Participation in Micro-hydro Power Supply for Rural Development (PSP Hydro) 2006 to 2013.
- ▶ GIZ “Result-Based Financing Programme” designed to disseminate renewable energy technologies, starting in January 2014.

Furthermore Rwanda is part of the following regional projects:

- ▶ The three-year, \$7 million facility, dubbed Capital Access for Renewable Energy Enterprises, is operating in Kenya, Tanzania, Rwanda and Uganda, and is supported by the Swedish International Development Co-operation Agency - Global Village

²⁰ www.rura.rw/index.php?id=96

²¹ energypedia.info/wiki/DGIS_Promoting_Renewable_Energy_Program

²² energypedia.info/index.php/Rwanda_Country_Situation#Biomass_Energy_Strategy_28BEST.29

International Partnerships (GVEP) is working with MININFRA to implement projects which supports the renewable energy sector in particular hydro power, pico solar and institutional capacity building.²³

- ▶ Energy and Environment Partnership in Southern and East Africa (EEP) – Promotion of renewable energy, energy efficiency and clean technology investments - Jointly funded by the Governments of Finland, Austria and recently joined by the UK's Department for International Development.
- ▶ African Development Fund – “Scaling-up Energy Access Projects” with implementation through EWSA.

4 (RE) Labour market

4.1 Actual situation

- ▶ The unemployment rate was estimated around 2.4% in 2011, youth unemployment (15-24 years) around 0.7%.²⁴
- ▶ Industry stands for 13.9% of GDP (2012 est.)²⁵
- ▶ Global competitiveness index Rank 66/148²⁶
 - Higher education and training 3.0 (valued 1to 7 (best))
 - On-the-job training 3.82
 - Local supplier quality 4.1
- ▶ “Ease of doing business” Rank 32/189²⁷
- ▶ In the labor market, most graduates from these institutions are not found relevant and therefore, not employable. This has resulted into massive skills gaps that are mostly filled by migrant labor from neighboring countries. It is not uncommon to find in Rwanda that at least 50% of vocational skills laborers in motor garages, hotels, hair saloons, building construction sites, and repairs and maintenance of household electronics, furniture, etc. are provided by foreigners while Rwandan streets are full of unemployed youth some of whom are graduates from these technical and vocational schools. The government is aware of the magnitude of the problem and is taking measure.

²³ The East African November 16, 2013 - www.theeastafrican.co.ke/business/Swedish-agency-invests-7m-in-renewable-energy/-/2560/2075552/-/9e8dtxz/-/index.html

²⁴ www.indexmundi.com/facts/indicators/SL.UEM.TOTL.ZS

²⁵ www.cia.gov

²⁶ World Economic Forum - reports.weforum.org/the-global-competitiveness-report-2013-2014/

²⁷ www.doingbusiness.org/data/exploreeconomies/rwanda

4.2 Planned RE or on-going projects

- ▶ In July 2013 the Government has sealed a \$23 million energy deal with a Dutch firm, GigaWatt Global, to develop an 8.5 Megawatts solar power plant at Agahozo Shalom Youth Village in Rwamagana District, Eastern Province.²⁸
- ▶ Further IPP projects with PPA for the development of 9.6 MW of hydro power plants (in construction phase) and 9 micro hydropower plants.²⁹
- ▶ Ngali Energy is developing micro hydropower projects for 45 MW.²⁹
- ▶ Rusumo Falls Hydro Power Plant with a generation capacity of 80 MW shared between Burundi, Rwanda and Tanzania. The construction will start in 2013 and its completion is forecasted for 2016. The Netherlands will invest 12 million euro through the World Bank and the African Development Bank.³⁰
- ▶ Exploratory drillings on 3 wells for geothermal resources to power project started in June 2013 and will determine planning and design of further geothermal projects.³¹

5 Relevant vocational training activities

5.1 Main donors' activities

The SolaRwanda Programme (2012 – 2015) includes training of agents/distributors and shall also benefit TVET graduates. To this purpose a steering team was put up composed of staff from MANUMETAL, WDA, Tumba College of Technology, IPRC-Kigali and Nelson Mandela Education Center.

The involvement of development partners such as GTZ, DED, JICA, APEFE, VVOB and VSF (Veterinaires Sans Frontieres) in the TVET sector in Rwanda especially after 2000 has been a pivotal game changer as far as partnerships in the sector are concerned. Between 2004 and 2007, the mentioned development partners in partnership with the Ministry of Education of the Government of Rwanda (MINEDUC) entered into a formal partnership to support the TVET sector in the country.

This partnership involved supporting the sector through individual schools, TVET associations through the TVET desk that functioned from within the Ministry of Education. As a result, a partnership between the Ministry of Education, GTZ and JICA supported the NTS (Network of Technical Schools) to formalize and become TEVSA (Technical & Vocational Schools Association) covering almost all TVET service providers in the country.

²⁸ Newtimes July 23, 2013 - www.newtimes.co.rw/news/index.php?i=15427&a=68894

²⁹ www.rdb.rw/rdb/energy.html

³⁰ energypedia.info/wiki/PREP_Highlight:_Rwanda_Country_Program

³¹ Newtimes July 19,2013 - www.newtimes.co.rw/news/index.php?i=15423&a=68792

5.2 Further vocational training activities

- ▶ Within the framework of the Rwanda domestic biogas programme (2007-2011), Technical and Vocational Education and Training (TVET) institutes embarked on curriculum development to integrate biogas into regular courses and for the provision of tailor made short courses; on the job training also took place.³²
- ▶ At the time being some institutions are planning to offer TVET in the fields of “Clean and sustainable energy for renewables”, especially IPRC Kigali.³³
- ▶ GIZ operates a vocational training program which also includes trades such as electrical and electronics under the political umbrella of Ministry of Economic Planning and Finance (MINECOFIN).
- ▶ Until December 2013 the Rwanda Renewable Energy Association (RREA) had a cooperation with the Vocational Training Centres of Bavarian Employers’ Associations (bfz) for training activities.³⁴
- ▶ UNIDO’s “Integrated Programme for Capacity-Building to Enhance Industrial Recovery, Competitiveness and Sustainability” includes recovery of manufacturing capacity through enterprise rehabilitation and restructuring and institutional capacity building for small and medium-sized enterprise (SME) development with emphasis on women entrepreneurs.³⁵
- ▶ In 2008, partnership in the TVET sector was created between MINEDUC, JICA, GTZ and NTS giving birth to TEVSA (Technical and Vocational Schools Association in Rwanda). This partnership was aimed at impacting all TVET providers in the country for improvement.

6 Suggestions for TVET RE activities by the EUEI PDF

6.1 Possible project ideas

Mini and micro hydro as well as solar PV and solar thermal are regarded as the technologies where most needs are emerging.

Through the GIZ project “Promotion of the Economy and Employment” and with its TVET component there is a starting point regarding need analysis undertaken by a manpower survey to supplement the existing data by examining employment promotion needs.

³² SNV Netherlands Development Organisation, Case study 40 Rwanda - www.snvworld.org/sites/www.snvworld.org/files/publications/the_rwanda_domestic_biogas.pdf

³³ WDA October 2013 - www.wda.gov.rw/content/rwanda-best-model-tvet-effectiveness-says-to-go-minister

³⁴ www.sequa.de/index.php?option=com_content&id=1321%3Aostafrika-regionale-verbandskooperation-fuer-erneuerbare-energien&catid=83%3Asequade&Itemid=62&lang=en

³⁵ www.unido.org/en/where-we-work/offices/regional-offices/officeethiopia/regional-brief/rwanda.html

Co-operation with the private sector can also be enhanced through the national employment agency and the Private Sector Federation.

Since 2009, in the courses selected for support at participating schools, vocational students have been benefiting from needs-based, up-dated curricula and modernised teaching materials. This has been achieved with the support of the Association of Technical and Vocational Schools (TEVSA).

The TVET activities in the hydropower sector should pursue two objectives

- ▶ Construction and maintenance of hydropower plants
- ▶ Manufacturing of pico-hydro power projects.

Short courses are well established in the Rwanda TVET systems and could thus serve as a starting point in the form of pilot courses and at the same time are used to assess qualification levels and skills gaps.

A round table should be established to co-ordinate and focus short and long term development of hydro power capacities. Partners in such a round table could include be representatives from institutions such as:

- ▶ Ministry of Economic Planning and Finance (MINECOFIN)
- ▶ Rwanda Renewable energy Association (RREA)
- ▶ Private Sector Federation (PSF)
- ▶ Association of Technical and Vocational Schools (TEVSA)
- ▶ The Workforce Development Authority (WDA)
- ▶ Donors active in hydropower development
- ▶ Major firms active in manufacturing of hydropower development.

After the initial pilot courses a curriculum development and training of trainers shall be developed.

7 Main stakeholders

- ▶ Ministry of Education (MINEDUC) - www.mineduc.gov.rw
- ▶ Energy, Water and Sanitation Authority (EWSA) - www.ewsa.rw
- ▶ Workforce Development Authority (WDA) - www.wda.gov.rw
- ▶ Rwanda Renewable energy Association (RREA)
- ▶ Technical and Vocational Schools Association (TEVSA) - www.tevsa-rwanda.org
- ▶ Private Sector Federation (PSF) - www.psf.org.rw
- ▶ EDC (Education Development Center), a US NGO conducting the Akazi Kanoze Livelihoods Project - www.edc.org/category/rwanda