

COUNTRY MAPPING

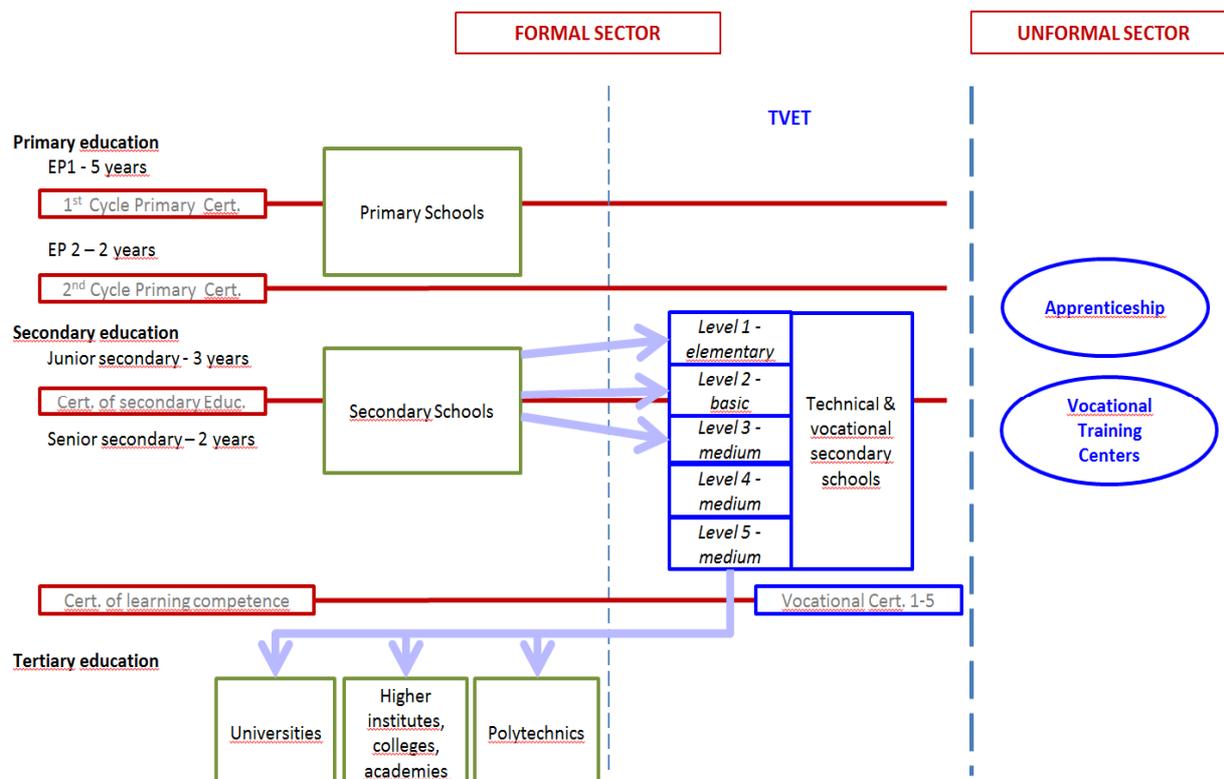
MOZAMBIQUE

1 Facts & Figures

Surface	799,380 sq km ¹	Total literacy rate	56.1% ¹
Population	24,096,669 (2013) ¹	Educ. expenditure	5% of GDP (2006) ¹
Capital	Maputo, 1.59 mio (2009) ¹	GDP per capita	\$1,200 (2012) ¹
Pop. growth rate	2.44% (2013) ¹	Inflation rate	2.1% (2012) ¹
Median age	16.8 years ¹	HDI	0.327 (2012) ²
Urban population	31.2% (2011) ¹		

2 Education system

2.1 Overview



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

² www.indexmundi.com/facts/topics/education

Political framework and objectives

- ▶ Law No. 6/92 of 6 May 1992: general framework of the education system
- ▶ Decree No. 11/90 of 1 June 1990: Authorisation for private education (free or fee-paying) in all types of schools and at all educational levels
- ▶ Subsector Strategy for Adult Literacy and Education and for Non-Formal Education (AEA/ENF) (Ministry of Education, 2001)
- ▶ Higher Education Law No. 5/2003
- ▶ Second Strategic Plan for the Education Sector 2005–2009 (Ministry of Education, 2005)
- ▶ Strategy for Technical and Vocational Education in Mozambique 2002–2011
- ▶ Employment and Vocational Training Strategy 2006–2015
- ▶ Strategic Plan for Higher Education for the period 2011–2020 is currently in draft format ³

2.2 Education & TVET system

- ▶ TVET in Mozambique is primarily offered through government schools and training centres managed by a diverse number of different Ministries. More recently, some private training providers have entered the market and offer specialized training programs for their private sector clients (mostly new foreign investors), but these programs still only accommodate a minority of students in the TVET system. Accordingly, unlike other education sub-sectors which are managed and supervised under a single Ministry the TVET system involves a number of government Ministries and private sector partners that need to be drawn together under a single planning framework to give the system coherence and uniformity.
- ▶ The technical education and vocational training system, which is responsible for shaping the skills profile demanded in the labor market, has been slow to respond to changing labor market demands in the formal sector. Employer surveys and labour market studies in formal sector enterprises point to a mismatch between the labour supply and the evolving needs of labour market, which require more skilled workers.
- ▶ Low school enrolment and low literacy rate due to language problem
- ▶ Technical and professional education is taught at technical schools and institutes, offering courses covering three major areas (industrial, commercial and agricultural education) at elementary, basic and medium levels ⁴
- ▶ There is little appropriate education such as vocational training or lifelong skills learning to cater for youth who have dropped out after some primary or secondary schooling ⁴

³ OSOSA 2012 - www.osisa.org/sites/default/files/mozambique_yale_final.pdf

⁴ World Data on Education. 7th edition, 2010/11 - www.ibe.unesco.org/fileadmin/user_upload/Publications/WDE/2010/pdf-versions/Mozambique.pdf

- ▶ Continuing education and professional development: Between 2005–2009, 171,288 people (30% female) were enrolled in various professional training courses at national level ⁴
- ▶ Those students graduating from technical education receive diplomas that are equivalent to those awarded in general education.⁴

TVET enrolment level

- ▶ Enrolment in secondary vocational system in 2011 was 37,176 (4.77% of total enrolment in secondary education).⁵

Gender

- ▶ Rate of female enrolled in formal secondary vocational training in 2011 was 34.08%.⁵

2.3 TVET institutions

- ▶ In 2009 there were 36 technical secondary schools for elementary level (ET - 5,810 trainees), 28 for basic level (ETB - 23,667 trainees) and 19 for medium level (ETM - 7,848 trainees)⁴
- ▶ TVE schools and institutes are mostly operated by the National Directorate of Technical Education (DINET) of the Ministry of Education ⁶
- ▶ Vocational Training Centres (VTCs) are operated by the National Institute for Employment and Vocational Training (INEFP). The target group is mainly employed or unemployed individuals (including school leavers)⁷
- ▶ There are twelve INEFP vocational training centres offering short courses ranging from one week to one year ⁷
- ▶ There are also 81 private training centres which have been authorised by the Ministry of Labour (MINTRAB) to provide vocational education ⁷
- ▶ ADPP Mozambique (Planet Aid's local sister organization) operates 3 vocational schools and also trains teachers
- ▶ The Eduardo Mondlane University (UEM) runs renewable energy studies in a number of graduate level courses, which has helped provide expertise to many energy-related government department and agencies⁸
- ▶ The Faculty of Engineering of UEM is responsible for training engineers in 4 different fields, namely, Mechanical, Electrical, Civil and Chemical and is involved in the SOLTRAIN project

⁵ www.indexmundi.com/facts/topics/education

⁶ Nuffic 2011 - www.nuffic.nl/en/library/mozambique-country-report.pdf

⁷ Nuffic 2011 - www.nuffic.nl/en/library/mozambique-country-report.pdf

⁸ IRENA January 2013 - www.irena.org/News/Description.aspx?NType=NWS&PriMenuID=16&catid=84&News_ID=292

- ▶ Traditionally, linkages between both TVE schools and vocational training centres and the industry have been limited, partly due to a shortage of internship placement opportunities within industry.⁷

2.4 TVET challenges

- ▶ No clearly-articulated policy framework on adult education, youth education, and technical and vocational training and skills-training⁹
- ▶ Centres for vocational skills development are not sufficiently responsive to current labour market needs because both their training methods and equipment are out of date⁹
- ▶ Critical shortage of qualified, competent and up-to-date teachers/trainers, shortage of teaching aids due to budget constraints, dilapidated workshops, outdated curricula and insufficient career guidance and internship arrangements with industry.⁷

3 Renewable energy market

3.1 Overview

- ▶ No clearly-articulated policy framework on adult education, youth education, and technical and vocational training and skills-training¹⁰
- ▶ Centres for vocational skills development are not sufficiently responsive to current labour market needs because both their training methods and equipment are out of date⁹
- ▶ Electrification rate: 11.7% (2008)¹¹
- ▶ RE installed capacity: 2.2 GW electricity capacity (2010)¹²
- ▶ RE electricity generation: 99.7% of electricity generation (2009) / hydro¹¹
- ▶ RE goal: 6 GW (hydro, solar and wind 2 GW each)¹¹
- ▶ Hydro: 2 GW (2012)¹¹
- ▶ Biomass: 78% of primary energy supply (2012)¹³
- ▶ Solar: 1 MW (2012)¹²
- ▶ Wind: 0.3 MW (2012)¹¹
- ▶ Experience with renewable energy besides hydro is still limited to pilot projects.¹⁴

Political framework and objectives

- ▶ National Energy Policy (1998)

⁹ OSOSA 2012 - www.osisa.org/sites/default/files/mozambique_yale_final.pdf

¹⁰ OSOSA 2012 - www.osisa.org/sites/default/files/mozambique_yale_final.pdf

¹¹ www.irena.org/remaps/countryprofiles/africa/mozambique.pdf

¹² www.map.ren21.net/PDF/ProfilePDF.aspx?idcountry=116

¹³ www.irena.org/DocumentDownloads/Publications/IRENA%20Mozambique%20RRA.pdf

¹⁴ PV Magazin Nov. 2013 - www.pv-magazine.com/news/details/beitrag/special-report-africa--tanzania--mozambique_100013524/#axzz2nfMyG2ld

- ▶ Energy Sector Strategy (2000)
- ▶ Energy Reform and Access Project (2003-2011), encouraging the development of renewables
- ▶ Policy on the Development of New and Renewable Energy (2009)
- ▶ National Policy and Strategy for Biofuels (2009) - high priority of the biofuel resource in Mozambique’s economic and energy policy
- ▶ National Strategy for Renewable Energy 2011-2025 (EDENR 2011-25) – Aiming at developing national renewable resources for generating electric power
- ▶ Government is procuring a large portion of the imported PV equipment through its rural electrification agency (FUNAE).¹³

3.2 Potential and main barriers

Renewables	Solar	Hydro	Wind	Biomass	Geo-thermal
Theoretical potential	1.49 mio ¹⁵ GWh	12,000 MW ¹⁶ (incl. 1,000 MW small hydro)	-	-	-

- ▶ Wind power in Mozambique is in an early stage of development. A wind energy resource atlas is under development.¹⁴
- ▶ The country has a large potential for supplying electricity for off-grid applications, especially through solar PV, small hydro and biomass waste from forest and/or agricultural waste.¹⁴

Main barriers¹⁷

- ▶ The development of the National Electricity Council (CNELEC) into an independent regulatory agency
- ▶ Very limited resources of the public sector for managing the energy sector
- ▶ Emerging gas development.

3.3 Private sector

- ▶ The companies N&M Logotech Lda. and Serviços em Energias Alternativas were already involved with the SOLTRAIN I project

¹⁵ IRENA 2012 -

www.irena.org/DocumentDownloads/Publications/IRENA%20Mozambique%20RRA.pdf

¹⁶ IRENA January 2013 -

www.irena.org/News/Description.aspx?NType=NWS&PriMenuID=16&catid=84&News_ID=292

¹⁷ www.reegle.info/policy-and-regulatory-overviews/MZ

- ▶ The German Fosera is relatively strong in the market with the establishment of its own PV production line in Mozambique.¹⁸

3.4 Main donors' activities

Local programmes

- ▶ Mozambique's first solar panel factory commenced construction in April 2012 in Maputo as the result of bi-lateral cooperation between the governments of Mozambique and India. Estimated production capacity is 5 MWp.¹⁹
- ▶ Renewable Energy for Rural Development Programme (RERD), 2010-2015, funded by Belgium and the Netherlands (23.4 mill EUR)²⁰
- ▶ Access to Modern Energy Services (GIZ-AMES)
- ▶ Entrepreneurial Solar Energy Project in Changanane, Maputo Province; project is funded by the governments of Finland and Austria and hosted by the Development Bank of Southern Africa. The project aims to provide an innovative energy solution to rural communities.²¹
- ▶ Energy Development and Access Programme (EDAP) - a \$ 219 mio programme covering the whole sector (access to electricity in urban, peri-urban and rural areas, renewable energy, stakeholders' capacity building), AFD, World Bank, European Investment Bank.²²
- ▶ The European Commission is financing rural electrification in Cabo Delgado, Tete and Sofala with EdM, PV electrification in rural areas with FUNAE and capacity building in energy planning and management for the MoE²³
- ▶ DFID is giving TA on Biofuels to the National Directorate of Renewable Energy of the MoE²²

Regional programmes

- ▶ 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

¹⁸ PV Magazin Nov. 2013 - www.pv-magazine.com/news/details/beitrag/special-report-africa--tanzania--mozambique_100013524/#axzz2nfMyG2ld

¹⁹ PVTech April 2012 - www.pv-tech.org/news/mozambiques_first_solar_panel_factory_commences_construction

²⁰ www.btctb.org/en/country/21/projects-list

²¹ www.adpp-mozambique.org/en/comunity-development/renewable-energy-sources

²² AFD -

www.afd.fr/webdav/shared/PORTAILS/PAYS/MOZAMBIQUE/projets/EDAP%2012%202012%20engl.pdf

²³ energypedia.info/wiki/Mozambique_Energy_Situation

- ▶ Energising Development - EnDev - is an impact-oriented initiative between the Netherlands, Germany, Norway, Australia, the United Kingdom and Switzerland. EnDev promotes the supply of modern energy technologies to households and small-scale businesses.
- ▶ Promoting Renewable Energy Programme (PREP) from the Dutch government (DGIS) has a focus on Mozambique.²⁴

4 (RE) Labour market

4.1 Actual situation

- ▶ It is estimated that Mozambique has a total work force of 9.6 million of which the vast majority (70%) are engaged in the agricultural sector, followed by the trade and services sector which account for 18 per cent. The manufacturing, mining and construction sectors, account for only about 5% of the total workforce.
- ▶ Overall, only 5-6 % of the population (520,000 people) is actively engaged in the formal sector. About 80% of the total formal sector employment is made up of trade and services (including public administration, education, health and social services
- ▶ Employers are unanimous in stating that they face labour supply constraints and, in particular, constraints in finding particular skills. The March 2014 National Employment Dialogue identified “outdated and inefficient education systems, including technical and vocational training” as a major constraint to job creation²⁵
- ▶ A recent study carried out by the Ministry of Planning interviewed a range of employers across the country on the general employability of Mozambican youths. The study concluded that “the general perception [of employers] was that the Mozambican youth workforce has immense limitations in terms of quality. Those with secondary schooling do not have skills that are directly applicable to industry. And those with technical or university training have received theoretical information, rather than the practical skills needed to respond to the demands of firms. Due to this, companies are obliged to offer additional training programs or recruit foreign workers.”²⁵
- ▶ The unemployment rate is estimated at 23.2% by the Organisation of Mozambican Workers²⁶
- ▶ Industry stands for 23.9% of GDP (2012 est.)²⁷

²⁴ energypedia.info/wiki/DGIS_Promoting_Renewable_Energy_Program

²⁵ [Mozambican Labor force Markets in the Dace of a Natural Resource Boom](#); USAID, 2014; p. 34 - 36

²⁶ allafrica.com/stories/201309190201.html

²⁷ www.cia.gov

- ▶ Global competitiveness index Rank 137/148 ²⁸
 - Higher education and training 2.3 (valued 1to 7 (best))
 - On-the-job training 3.33
 - Local supplier quality 3.4
- ▶ “Ease of doing business” Rank 139/189 ²⁹

4.2 Planned RE or on-going projects

- ▶ 4,000 MW worth of hydro projects (2010)³⁰
- ▶ Amsterdam-based company Eaglestone NV plans to invest at least 40 percent of 100 million euros of a renewable energy fund in renewable energy projects in Angola and Mozambique, which is presently studying two possible wind energy projects³¹
- ▶ Solar-wind powered irrigation for Mipandi Farmers Association, a project from the British NGO Renewable World together with The Clean Energy Initiative. Installation of a 1kW wind turbine and 200w solar array³².

5 Relevant vocational training activities

5.1 Main donors’ activities

- ▶ GIZ runs a major education and TVET program including “Implementation of the Technical & Vocational Education Reform in industrial maintenance trades”. Part of that has been the establishment of a well-equipped renewable / solar training centre in Maputo funded by the Access to Modern Energy Services (GIZ-AMES).
- ▶ Southern African Solar Thermal Training and Demonstration Initiative II (SOLTRAIN) financed by the Austrian Development Agency (ADA), 2012-1015
- ▶ In the frame of the Entrepreneurial Solar Energy Project (ADPP, see 3.4), students from One World University (OWU), which is operated by ADPP, led the implementation of a project that installed six solar power stations. The students are also helping to train community members in using, managing, and maintaining the stations. The project aims to train 2,400 people (approx. 400 families) on how to obtain solar energy from sustainable small-scale energy power stations in Changalane. Also 50 local business people will receive training on how to use the new technology to develop their

²⁸ World Economic Forum - reports.weforum.org/the-global-competitiveness-report-2013-2014

²⁹ www.doingbusiness.org/data/exploreeconomies/mozambique

³⁰ www.irena.org/DocumentDownloads/Publications/IRENA%20Mozambique%20RRA.pdf

³¹ BloombergBusinessweek, June 2013 - www.businessweek.com/news/2013-06-28/eaglestone-seeks-angola-mozambique-renewable-energy-investments

³² www.renewable-world.org/content/wind-powered-irrigation-mipandi-farmers-association

businesses, 200 community leaders and members will be given capacity training on how to use the new technology to improve their economy and general living standards.³³

5.2 Further vocational training activities

- ▶ The farmers of the Mipandi Farmers Association will be trained in basic maintenance of wind/solar systems (see 4.2)³⁴

5.3 Links of TVET to RE private sector

None is known.

6 Suggestions for future activities by the EUEI PDF

6.1 Possible project ideas

For the RECP TVET activities the various solar applications related to electrification are presenting a suitable focal area. The support of the local manufacturing could present a second field of TVET activities.

The landscape is characterised by numerous donor activities and other actors. It is thus suggested to start with a stock taking and needs analysis.

This needs analysis should include:

- ▶ Donor activities
- ▶ Private sector actors (including the module manufacturing)
- ▶ TVET institutions and their offerings
- ▶ FUNAE and other governmental players regarding the perspectives of the various PV application
- ▶ The entire value chain from sales to maintenance.

The results of that needs analysis should be discussed in a workshop with the aim to establish suitable co-ordination mechanisms (roundtable or national platform).

The main line of activities to be structured based on the results of the needs analysis are expected and suggested to be:

- ▶ Interfacing between TVET sector and RE sector so that skills development can be aligned with investments and economic and technological developments in the RE
- ▶ Facilitating the self-organization of the emerging renewable energy “industry”

³³ www.adpp-mozambique.org/en/comunity-development/renewable-energy-sources

³⁴ www.renewable-world.org/content/wind-powered-irrigation-mipandi-farmers-association

- ▶ Developing short-term and medium occupational RE-technology training courses for graduates and practitioners
- ▶ Integration of RE-technologies in the relevant curricula at all vocational levels
- ▶ Training of trainers: cooperation between RE projects (private and donors) and TVET teachers courses which aim at the same time at further education for RE projects needs and training of teachers

6.2 Possible main partners

- ▶ National Fund for Rural Electrification (FUNAE) - www.funae.co.mz
- ▶ National Directorate for Technical Education (DINET)
- ▶ National Institute for Employment and Vocational Training (INEFP)
- ▶ Relevant RE donor projects such as:
 - Renewable Energy for Rural Development Programme (RERD), 2010-2015, funded by Belgium and the Netherlands (23.4 mill EUR)³⁵
 - Access to Modern Energy Services (GIZ-AMES)
 - Entrepreneurial Solar Energy Project in Changanane
 - Energy Development and Access Programme (EDAP)
 - The European Commission's rural electrification project.

7 Further stakeholders

- ▶ Ministry of Education and Culture (MEC) - www.mec.gov.mz
- ▶ Ministry of Energy - www.me.gov.mz
- ▶ National Institute for Educational Development (INDE)
- ▶ Confederation of Business Associations of Mozambique (CTA) - www.cta.org.mz
- ▶ Eduardo Mondlane University (UEM), Faculty of Engineering - www.uem.mz
- ▶ Mozambique Solar Thermal Technology Platform (at Eduardo Mondlane University)
- ▶ Executive Committee for Professional Education Reform (COREP) - www.portaldogoverno.gov.mz/noticias/educacao/junho-2010/corep-procura-regular-ensino-tecnico

³⁵ www.btctb.org/en/country/21/projects-list