

Africa-EU Renewable Energy Cooperation Programme (RECP):
Higher Education for Renewable Energy

Country Mapping



Namibia

May 2015



Figure 1: Map of Namibia (own compilation, (Lonely Planet, 2014))

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1 Namibia at a Glance

1.1 Population and Geography

Table 1: Population (World Bank, 2014a), (Namibia Statistics Agency, 2011)

Population, total (2013)	2,303,315
Population, growth (2013)	1.9%
Population density (2013)	2.8 / km ²
Urban population (2013)	39.5%
Life expectancy at birth	63.9 years
Major Cities	Windhoek (380,000 (CIA, 2014)), Rundu (63,400), Walvis Bay (62,000)
Language	English (official), Oshiwambo 48.9%, Nama/Damara 11.3%, Afrikaans 10.4% (common language for most of the population and about 60% of the white population)
Ethnic Groups	black 87.5%, white 6%, mixed 6.5%; Ovambo (50%), Kavango (9%), Herero (7%), Damara (7%), Nama (5%) and others
Religion	Christian 80% to 90% (at least 50% Lutheran), indigenous beliefs 10% to 20%

Table 2: Geography and climate (CIA, 2014)

Location	Southern Africa, bordering the South Atlantic Ocean, between Angola and South Africa
Area	824,292 km ²
Neighbouring Countries	Angola, Botswana, South Africa, Zambia
Climate	desert; hot, dry; rainfall sparse and erratic
Terrain	mostly high plateau; Namib Desert along coast; Kalahari Desert in east
Natural hazards	prolonged periods of drought

1.2 Government and Legislation

Table 3: Government system Namibia (CIA, 2014), (Transparency International, 2013)

Official name	Republic of Namibia
Conventional short form	Namibia
Form of state	Democracy
Regions and districts	14 regions; Erongo, Hardap, Karas, Kavango East, Kavango West, Khomas, Kunene, Ohangwena, Omaheke, Omusati, Oshana, Oshikoto, Otjozondjupa, Zambezi
Government	President Hage Geingob (since 21 March 2015) of the SWAPO party, next presidential election 2019
Parties as distributed in the National assembly	SWAPO 75.3%, RDP 11.3%, DTA 3.1%, NUDO 3.0%, UDF 2.4%, APP 1.4%
Independence	21 March 1990 (from South African mandate)
Corruption perception index ¹	48 (of 100), Ranks 57 (of 177 countries in total)

Independence was achieved in 1990 and Namibia has been governed by SWAPO (South-West Africa People's Organisation) since then. Post-colonial Namibia is largely stable and peaceful with a progressive constitution.

President Hifikepunye Pohamba completed his constitutional two terms in March 2015 and was succeeded by President Hage Geingob. The president, as well as the parties, is voted for on a five year basis. The constitution guarantees the separation of powers (Wikipedia, 2014). The executive power is owned by the President and the Cabinet. The legislative power belongs to the bicameral parliament with a lower and an upper house, namely the National Assembly and the National Council. The National Assembly is voted in a national election, while the members of the National Council are appointed by regional councils (CIA, 2014). The judiciary power is exercised by the judges in court.

In Africa, Namibia is the 5th least corrupt nation, only bested by countries such as Botswana or Rwanda. On a global scale it ranks the 57th on the corruption perception index of 2013 (Transparency International, 2013).

¹ The corruption perception index is developed by Transparency International. A value of 0 is counted as highly corrupt and 100 as very clean.

1.3 Economy and Infrastructure

Table 4: Economic figures (World Bank, 2014a), (CIA, 2014), (UNDP, 2014)

Overview			
World Bank Rating	Upper middle income		
Human Development Index HDI (2013)	0.624 (Rank: 127/187)		
GINI Index (2013)	59.7 (among the highest in the world)		
Population living below poverty line	21%		
Currency	Namibian Dollar		
Economic Indicators	2011	2012	2013
GDP (in constant 2005 Billion US\$)	9.47	10.17	10.55
GDP per capita PPP (constant 2011 international \$)	8,743	9,155	9,377
GDP per capita growth (annual %)	4.2	4.7	2.4
Unemployment, total (% of total labour force) (modelled ILO estimate)	19.8	16.7	--
Unemployment, youth (% of total labour force aged 15-24) (ILO)	40.1	34.2	--
Ease-of-doing-business index (1: most business friendly)	--	94.0	98.0
Inflation, consumer prices (annual %)	5.0	6.5	5.6
Structure of Economy	2011	2012	2013
Agriculture, value added (as % of GDP)	9.1%	9.4%	7.1%
Industry, value added (as % of GDP)	27.9%	30.3%	29.6%
Services, etc. value added (as % of GDP)	63.0%	60.3%	63.3%

The World Bank rates Namibia as an Upper Middle Income country. However, due to the strong income inequality, the GDP per capita does not reflect the average income.

The economy is largely based on the service sector and the industrial sector with a contribution to the GDP of 60% and 30% respectively. Agriculture generates 8% of the income. Compared with countries like Rwanda or Niger with an agriculture sector contribution of 30 – 40% to the GDP, Namibia shows features of a more developed economic structure.

Despite Namibia's economic strength, unemployment remains at a high 16.7% (SSA mean 2012: 7.6%) although considerable progress in the fight of unemployment was made, as

unemployment was more than halved from 2008 to 2012. However, among the youth unemployment remains a major challenge (youth unemployment was 34.4% in 2012).

Namibia’s economy is closely linked to South Africa’s economy through trade, investment, and common monetary policies. The Namibian dollar is pegged to the South African Rand, making economic trends (including inflation) closely follow those in South Africa (World Bank, 2014).

Mining, livestock rearing, fishing, metallurgy, and food processing have been the mainstays of the economy, with construction growing rapidly in recent years. Metals and minerals provide the majority of export revenue, followed by fish, tourism, livestock and logistics services (World Bank, 2014). Agriculture is the largest form of employment, accounting for 31% of jobs. The informal sector remains large in Namibia. The major source of income for more than 40% of households is subsistence agriculture, a social grant, or other source outside of formal sector employment (Namibia Statistics Agency, 2011).

All major production sectors - mining, tourism, fisheries, livestock and meat production - are vulnerable to external economic and ecological shocks. Foreign demand in each industry is cyclical, seasonal, or unpredictable, with downstream effects for employment, income, and government revenue. All face risks from climate change and/or other countries’ policies to address climate change. The country has suffered from severe flooding during the past three rainy seasons, following a period of annual droughts (World Bank, 2014).

In July 2012, the Fourth National Development Plan (NDP4) was launched, which will guide policies through 2017. Economic growth, job creation, and increased income equality are the three overarching objectives of NDP4. It proposes to achieve these objectives through industrial policies to stimulate growth in tourism, regional trade logistics, agriculture and manufacturing (World Bank, 2014).

Table 5: Infrastructure (CIA, 2014), (Internet World Stats, 2013)

Railways	2,626 km
Roads	44,138 km
Airports (2013)	112 in total of which 19 have paved runways
Telephones (main lines in use) (2012)	171,000
Telephones - Mobile cellular (2012)	2.435 million
Internet users (2013)	305,000, 13,9%

The Namibian infrastructure is very developed by African standards. The country has an extensive and well-maintained road network and a modern aviation industry (Pakarinen, 2012). Walvis Bay has a modern deep-water port, which is expected to become an important commercial gateway to Southern Africa. Another major seaport is situated in Luederitz (CIA,

2014). The telephone system is in a good state and the core fibre-optic network links most centres (CIA, 2014).

2 Energy and Renewable Energy

2.1 Overview

Table 6: Country Energy Overview (World Bank, 2014a), (IRENA, 2013), (EIA, 2014)

	2001	2011
Energy use (TWh)	13.1	18.48
Energy production (TWh)	3.44	3.88
Net import of energy (% of Energy use)	73.8	79
Electricity consumption (TWh)	2.35	3.44
Electricity production (TWh)	1.40	1.43
Electricity consumption per capita (kWh/person)	1,218	1,549
Total electricity capacity (MW)	393	393
Electric power transmission and distribution losses (% of output)	18.4	27.9
Access to electricity, total	36.5% (2000)	43.7% (2010)
Urban	73.0%	77.7%
Rural	13.2%	14.6%
Electricity production by source (in % of the total electricity production)		
Hydro	99.57	98.18
Nuclear	0.00	0.00
Oil, gas and coal sources	0.43	1.82
Renewable Energy excl. Hydro	0.00	0.00
Share of population using solid fuels	57% (2009)	

The comparison of the energy use and the energy production of Namibia shows that only 21% of the overall energy use is from internal sources. 79% of Namibia's energy has to be imported, which reveals a strong energy import dependence: More than 50% of imports stem from Eskom (South Africa). To a minor extent energy imports come from Zambia, Zimbabwe and also Mozambique (Konrad-Adenauer-Stiftung, 2012, p. 26). This dependence has grown in the years from 2001 to 2011. The same trend can be seen in the electricity sector. A mere 42% of the country's electricity is produced within its borders. The reliance of

the Namibian electricity grid is depending on imports from the Southern African Power Pool (SAPP). While Namibia’s overall electricity consumption is much lower than that of its neighbours, the electricity consumption per capita of 1,549 kWh per capita is significantly higher than the SSA average of 535 kWh in 2011.

The electricity generation capacity of Namibia was at 415 MW in 2012. Forecasted peak electricity demand for 2030 is around 1.2 GW (Konrad-Adenauer-Stiftung, 2012, p. 21). The installed capacity is provided by only four power plants: The Ruacana hydro power plant of 330 MW, the Van Eck Coal Power Plant of 120 MW and the two peak-load diesel power stations of Paratus (17 MW) and Anixas (22.5 MW) (Reegle, 2014). The Ruacana hydropower and the Van Eck coal plants are being upgraded at the moment (Nampower, 2014a).

The electricity grid remains the main limiting factor for the further development of renewable energy (Reegle, 2014). It does not permit the balancing of powers. This is underlined by the substantial energy losses in the transmission and distribution grids of 27.9%, which is the triple of the SSA average. Additionally, only 77.7% of the urban households have access to electricity. This number falls to 14.6% in the rural areas. In the period of 2000 to 2010, Namibia has seen little progress in further connections. However, the access to electricity increased from 43.7% in 2010 to 60% in 2011 (World Bank, 2014a). The share of population using biofuels lies at 57% (comparison: Rwanda: >95%; Zimbabwe: 71%).

2.2 Energy Policy

Table 7: Namibia Energy Policy (Reegle, 2014), (IRENA, 2013), (REN21, 2014)

Organisations responsible for energy policies	The Ministry of Mines and Energy (MME)
Energy regulator	Electricity Control Board (ECB)
Government Agency	RE & Energy Efficiency Institute (REEEI), now Namibia Energy Institute
Energy policy publications	The White Paper on Energy Policy (1998) Rural Electrification Distribution Master Plan (2000) Namibian Renewable Energy Program (2005)
Targets to increase use of Renewable Energy	40 MW of renewable capacity (excl. hydro) by 2011
Subsidies/Incentives for RE	Cabinet Directive making Solar Water Heaters mandatory for public and semi-public buildings. Feed-in tariff and RE tendering process being discussed.

The main public authority for the Electricity supply industry is the Ministry of Mines and Energy (MME), which is responsible for public energy policies.

The Electricity Control Board (ECB) is a statutory regulatory authority established in 2000. Among the main responsibilities are the regulation of most aspects of the electricity sector through setting tariffs and the issuing of licences.

The key players in the electricity distribution and supply business are NamPower, the Regional Electricity Distributors (state-owned legal entities tasked with the supply and distribution of electricity in a dedicated region) and local authorities. NamPower is a state owned utility that owns and operates all generation and transmission capacity. (Reegle, 2014)

Competition in Namibia is little, as the electricity sector is dominated by NamPower. Most of the distribution network is controlled by the City of Windhoek, Northern Regional Electricity Distribution (Nored) and the Erongo Regional Electricity Distribution (Erongored).

The current energy policy is set down in the “White Paper on Energy Policy” (WPE) of 1998 (WPE). It contains specific policies with regard to RE that guided MME initiatives over the last few years. It is the main energy policy paper of Namibia. Among other national goals, it cites the security of supply, social well-being and sustainability (Reegle, 2014).

In 2005, the government of Namibia initiated the Namibia Renewable Energy Programme (NAMREP), in order to increase RE affordability, access to RE services and the acceleration of a RE market development, which ended in 2010 (Deenapanray, 2011). One of its main outcomes was the Strategic Action Plan for the Implementation of RE Policies from 2006, which seeks to fulfil nine key objectives to boost RE.

The Renewable Energy and Energy Efficiency Capacity Building Program (REEECAP) was implemented to generate information for the implementation of RE and energy efficiency policies formulated in the WPE.

The Namibia Energy Efficiency Programme in Buildings (NEEP) seeks to promote Energy Efficiency in Buildings starting in 2010 on a three-year basis. It is jointly carried out by the MME and the REEEI of the Polytechnic of Namibia (Polytechnic of Namibia, 2010).

In order to tackle rural electrification the Namibian government devised two master plans: the Regional Energy Distribution Master Plan (REDMP) and the Off-Grid Energisation Master Plan (OGEMP) in 2000 (IRENA, 2013). While the first one intends to expand the national grid to 1,543 rural communities in the next 20 years, the latter electrifies communities with Solar Energy in locations, in which a grid-extension is too expensive (Laurea University of Applied Sciences, 2012).

2.3 Renewable Energy

2.3.1 Potential and Projects

Solar: Namibia has one of the best solar regimes worldwide with an average high direct insolation of 2,200 kWh/m² per year and minimal cloud cover. The highest radiation can be found in the western part of Namibia (Reegle, 2014).

Small solar applications are often used in rural electrification projects such as Photovoltaic Solar Home Systems or in the form of a solar thermal panel for water heating in urban areas. Solar thermal heating just took a big step forward with the 20,000 Solar Water Heater Campaign, which wants to replace 20,000 electric geysers with solar water heating plants from 2014 to 2019 (Nampower, 2014a). The new Omburu Solar PV Park to be constructed by InnoSun Energy Holding will provide 4.5 MW power to Namibia by the end of 2014² (Nampower, 2014b). According to the April press release of Nampower, a tender process for three solar PV plants of in total 30MW is currently underway (Nampower, 2014).

Wind: Namibia has one of the highest wind power potentials in Africa since it is located in the more extreme latitudes, away from the atmospheric heating and the earth's rotation negative impacts (Reegle, 2014). There is currently one wind turbine of 220 kW installed in Namibia. It feeds into the distribution grid in the Erongo Region. Within the framework of the National Integrated Resource Plan (NIRP) a 44 MW wind park is envisaged to be constructed in the area of Luderitz. Up to this pilot project, it was difficult to negotiate a power purchasing agreement with NamPower (Dodd, 2013).

Biomass: According to IRENA, Namibia has a low biomass potential (IRENA, 2013). However, there is one pilot project biomass to electricity plant of 250 kW, which uses the ecologically damaging "invader bush" to produce electricity. It has been calculated that 26 million hectares of land are invaded by the bush species. This could enable Namibia to generate up to 1,100 TWh of electricity annually (Reegle, 2014).

Hydro: Namibia's only perennial rivers are the Kunene, Kavango (forming borders with Angola and Zambia in the north) and the Orange River bordering South Africa in the South. Already, the 322 MW Ruacano hydropower plant produces most of the electricity in the country (98% of the national production). Nampower is examining the possibility for a large hydro project along the Kunene and several small projects between six and 12 MW along the Orange River. However, due to socio-economic concerns and tensions with Angola, the larger hydro-project is currently not developed further (Reegle, 2014).

2.3.2 Market and Jobs

As the government's energy policy is to stimulate the involvement of Independent Power Producers (IPPs) in the Namibian electricity market, it is understood that NamPower searches equity participation of up to 49 per cent from international power developers. By 2013, one IPP with a small scale solar project had a power purchase agreement (PPA) with NamPower (Norton Rose Fulbright, 2013).

Bush Energy Namibia Ltd was established under the project Combating Bush Encroachment for Namibia's Development, developed by the Desert Research Foundation of Namibia. It operates, as an IPP, a 250 kW bush-to-electricity power plant, feeding electricity into the

² "Rather unlikely" (Chiguvare, Personal Comment, 2014)

distribution and transmission grid. The operation and bush harvesting provides 20 full time employment positions (Schultz, 2011). It is estimated that a 1 MW plant would employ between 2 to 70 people, depending on the level of mechanization of the bush harvest (Konrad-Adenauer-Stiftung, 2012).

A number of licensed wind energy projects are said to be on development. The Diaz Wind Power company, a project initiated and promoted by United Africa Group plans to establish a 44 MW wind farm south of Lüderitz, with a total investment of US\$ 150 million, and a second phase of 90 MW. (United Africa Group, 2015). Innovent has at least one wind park of 21 MW and five solar parks between 21 and-37 MW under development (Innovent, 2015).

In the solar sector in 2012, it was estimated that the local PV industry had a capacity to install 2,000 medium-scale PV systems per annum (Konrad-Adenauer-Stiftung, 2012). In 2014, the largest solar-diesel hybrid system in Africa was built in the Otjozondjupa region by Hopsol Africa, a branch of a Swiss company (Ministry of Mines and Energy, 2014). By 2015, the French company InnoSun was in charge of building the first solar power park in Namibia, with 4.5MW of electricity to be delivered to the national grid as independent power producer (African Review of Business and Technology, 2014). Also, the negotiations for the Arandis and Copperbelt Energy Corporation project to build a hybrid (solar - heavy fuel) 120 MW power station were said to be temporary suspended (The Namibian, 2015).

The Renewable Energy Industry Association of Namibia does not have much public information available, but its objectives are to emphasize on industry representation, promoting and educating; adhering to quality standards; lobbying; and establishing professional relationships with bodies with similar objectives (REIAoN, 2015).

A list of retailers in Namibia show companies like Sky Sol Solar Suppliers for high pressure solar geysers, solar garden lights and solar submersible pumps; Yandalux for distribution of solar components, engineering and installation of off-grid solar systems, pumping, lights and telecom shelters as well as hybrid systems. African Energy is a specialized distributor of solar electric and power back-up equipment exclusively for the African market (Source Guides Renewable Energy Directory, 2015).

2.4 Conclusion: Barriers, Trends and Patterns

As can be seen in the small amount of projects on the top, the Namibian RE sector is still at an early stage of development. However, the political commitment is there and the technical potentials of Namibia invite for a strong development in renewable energy. Namibia has a huge wind and one of the highest solar potentials. It has a strong Rural Electrification Program, which is partly utilising photovoltaic energy. The country has very high energy dependence, as it imports most of its electricity and other energy forms from foreign countries (mainly RSA). The main source of electricity in Namibia is hydropower, which is dependent on the water level in the rivers. Namibia is therefore hugely depending on regular rainfalls. Also other parts of Namibia's economy (e.g. agriculture) are strongly

affected by the climate, which is changing due to the adverse effects of climate change, which could be another motivation to promote renewable energy.

On the other hand, both off-grid and grid-connected energy production from RE resources require a special institutional and legal framework which is not in place to date. In the latest annual report of the ECB, one can read that an overwhelming need exists to transform Namibia's energy regulatory and institutional framework because the current one is largely non-existent and partially out-dated. At the moment, companies are reluctant to negotiate Power Purchase Agreements (PPA) with NamPower, and Namibia's government is discussing Feed-In Tariffs. In case of Feed-in Tariffs, companies with already negotiated PPAs have to stick to the contract conditions.

3 Education and Higher Education

3.1 Primary and Secondary Education

The Namibian education sector follows a 7-3-2 system comprising primary, junior secondary and senior secondary education, respectively. For a few children, primary education is preceded by two to three years of pre-primary education. However, early childhood development (ECD) and pre-primary programmes do not form an integral part of public education provision. It is compulsory to attend ten years of schooling. Namibia’s constitution makes provision for free, compulsory Basic Education from Grade 1 to Grade 10 or 16 years of age, whichever comes first (Clegg & Van Graan, 2006).

During primary school, pupils are promoted to the next class on the basis of their competences. After the following junior secondary education, students have the option to continue with a two-year senior secondary education which is charged. In order to get access to a universities, students need an international general certificate of education moderated by Cambridge University or a higher international general certificate of education that is marked there too (Classbase, 2014).

The enrolment ratio for primary, secondary and tertiary education is shown in Table 8:

Table 8: Gross Enrolment Ratio in the primary, secondary and tertiary education sector (Unesco Institute for Statistics, 2014)

	Primary Education	Secondary Education	Tertiary Education
Gross Enrolment Ratio	110% (2012)	65% (2007)	9% (2008)

3.2 Higher Education

3.2.1 Shape of higher education

At present, there are two public universities in Namibia. The University of Namibia, established in 1993, accounts for about 53% of all higher education enrolments. It offers bachelors and master’s degrees, as well as diplomas in the faculties of Agriculture and Natural Resources, Economics and Management Sciences, Education, Humanities and Social Sciences, Medical Health, and Natural Sciences. The Polytechnic of Namibia, established in 1994, accounts for another 40% of the enrolments and focuses on education for advanced technical skills. The other seven per cent of the students attend the private institutions International University of Management and the Headstart Mercy Montessori Teaching Training College. The Namibian College of Open Learning (NAMCOL), established in 1994, provides mainly distance education for Namibians who could not complete the formal requirements to enter a university (Kotecha, Wilsom-Strydom, & N Fongwa, 2012).

Table 9 shows that nearly half of the students at the public universities are enrolled in business, management and law. The courses in science, engineering and technology (SET) are attended by about 15% of the students.

Table 9: Student enrolment by major field of study and level of study (SARUA, 2012)

	Undergraduate	Postgraduate < Masters	Masters	Doctoral
Agriculture	498	113	15	0
Business, management and law	10,992	134	132	6
Education	2,029	65	94	10
Health sciences	1,368	44	32	15
Humanities and social sciences	2,461	116	101	18
Science, engineering and technology	3,089	245	38	29
Other	1,027	0	17	0
Sum	21,464	717	429	78

Enrolment at the postgraduate level accounts for a very small proportion of the total enrolment in public universities in Namibia. While there are more than 21,000 enrolments at undergraduate level, just about 5% of all students are registered for postgraduate studies. Especially the number of students attending doctoral studies is extremely low.

On the other hand, there are many more applications for undergraduate and postgraduate studies than universities could accommodate. For the 2009/2010 semester there were 26,612 applications for undergraduate studies but only about 16,500 met the admission criteria and only 48.5% of them could be accepted. For postgraduate studies 53% of 2,296 applications were accepted (SARUA, 2012).

3.2.2 Higher education policy

Higher education in Namibia is regulated by Namibian Higher Education Act of 2003, which inter alia provides funding for public higher education institutions and takes care of a panel of enquiry for higher education institutions. Furthermore, the main statutory body for regulation and quality assurance of higher education in Namibia, the National Council for Higher Education (NCHE) was established by the Higher Education Act in 2003 (officially launched in 2005). The NCHE promotes the establishment of a co-ordinated higher education system, advises the Minister of Education on quality assurance, supports the access of students to higher education institutes, and gives recommendations for the allocation of money to public higher education institutes.

The quality of education and training at Namibian higher education institutions is supervised by the Namibian Qualification Authority (NQA), a statutory body established in 1996. NQA

aims to ensure that all qualifications provided by higher education institutions meet the national standards (Kotecha, Wilsom-Strydom, & N Fongwa, 2012).

3.2.3 Quality assurance

The quality assurance framework for the Namibian higher education system was developed in 2009, taking into account international experiences as well as the local context. Quality assurance processes are under responsibility of the NCHE in cooperation with the NQA. The council is in charge of the accreditation of higher education programmes and monitors the quality assurance procedures of higher education institutions. Both public higher education institutions have internal quality assurance mechanisms in place. These include monitoring of academic regulations, regular self-evaluations, programme accreditation and programme reviews according to the National Qualification Framework (Kotecha, Wilsom-Strydom, & N Fongwa, 2012).

3.2.4 Higher education staff

The existing data about higher education staff in Namibian universities are inconsistent. Therefore the following statement should be treated very carefully.

“The Namibian public universities reported having 858 academic and research staff, the majority of whom (93.4%) are national citizens. Only 120 (6.6%) of the academic and research staff were reported to be from outside Namibia (75 from other SADC countries, and 45 from countries outside the SADC region). In the previous SARUA study, 11% (73 out of 660) of the staff members were from outside Namibia, so there appears to have been a decline in international staff members within the Namibian system. This is, however, commensurate with an overall decrease in total staff numbers. Of the 600 administrative and management staff, only eight are not Namibian citizens. Considering academic and research staff members specifically, the data show that 43.1% of academic and research staff are female. In some fields of study the gender ratios are relatively even, but in others large disparities are evident. This is particularly the case for science, engineering and technology, which is dominated by men.

The majority of academic and research staff at UNAM have masters and doctorate degrees, but the majority of staff at the Polytechnic of Namibia have undergraduate degrees as their highest qualification” (Kotecha, Wilsom-Strydom, & N Fongwa, 2012).

3.2.5 Funding of higher education

Since 2006 the allocation of the national budget to education rose slightly from 20.2% to 21.8% in 2010. For the tertiary education sector the budget allocation grew from 10% in 2009 to 17.4% in 2010. Thus, it can be seen that the tertiary education is to be strengthened. 60% of the funding for the higher education institutions is provided for by the education budget and 35% by student fees. For example the fee for Science, Engineering and

Technology stood at 2,805 US\$ for local students and 3,586 US\$ for other foreign students (SARUA, 2012).

3.2.6 Research output

The great majority of the Namibian research output stems from the University of Namibia, as the Polytechnic of Namibia is currently not a research-focused institution. UNAM encourages research activities and provides funding for its researchers to present papers at national and international conferences. Most of the publications are reports, theses and conference papers (see Table 10). UNAM receives the major share of its research funding from the government (66.4%), while 21% are provided by private individuals or trusts and only 2.4% by international institutions (Kotecha, Wilsom-Strydom, & N Fongwa, 2012).

Table 10: Research output of the University of Namibia (SARUA, 2012)

Category of research output	2009	2010
Peer-reviewed journal articles	89	98
Peer-reviewed books	16	10
Peer-reviewed book chapters	28	29
Patents	5	7
Reports, theses, study guides, conferences, papers, translation, symposia	261	228

3.3 Renewable Energy Higher Education

In general, Namibia has a good potential of qualified academic and research staff. However, a strong gender disparity in engineering and science can be observed. Furthermore, there are not enough places available at the universities to meet the increasing demand (Kotecha, Wilsom-Strydom, & N Fongwa, 2012).

There are already some programmes for bachelor degrees in electrical engineering and related studies at the Polytechnic of Namibia but there are no master programmes so far. The University of Namibia offers a bachelors’ degree in electrical engineering as well, whereas there no courses related to this subject offered at the private institutions yet.

The Polytechnic of Namibia is currently (2015) in the transition of becoming a full-fledged university. In cooperation with the University of Lesotho, the University of Botswana and supported by the German University of Applied Science Darmstadt it is organising an EDULINK supported approach in order to establish the Southern African Sustainable Energy Initiative (SASEI). Main objective of this project is to strengthen institutional, human and system approaches in the sustainable energy field, comprising e.g. curriculum development and capacity building. In the future, this project can support the establishment of a cooperative regional platform. The start of a new Master’s in Sustainable Energy is envisaged

for 2016, the scheduled capacity will be determined based on a needs assessment (Sendegeya, 2014).

3.4 Conclusion and Recommendations

With the Renewable Energy and Energy Efficiency Institute (REEEI) at the Polytechnic of Namibia a strong and fast developing institute has been developed, closely linked to the national power sector, the Namibian government and international organisations. It is “an institute that promotes the use of RE and energy efficiency, and links to the Government of Namibia, with the Minister of Mining and Energy” (Chiguvare, Personal Interview, 2014) dedicated to research and implementation of renewable energy and sees its main task in supporting local authorities. With their already numerous international research projects, including EU, the Polytechnic and in particular the REEEI can take over the role of a hub for further engagement in research and Higher Education in Southern Africa. Its currently ongoing EDULINK project with the universities in Botswana and Lesotho could be a starting point for another regional RE Master, with the potential to link up and support of the restart of the RE Master Programme in Zimbabwe.

4 References

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