REGISTERED
NATIONAL QUALIFICATION

Title:	National Certificate in Sustainable Energy Level 1[1]				
Version:	1	**Qualification type:**	National qualification	**TQF level:**	1
Credits:	40	**TQF Registration code:**	QR-01-NQ-018-01-0504-20-01		
Approval date:	30th Nov 2020		**Next review:**	30th Nov 2025	
Qualification developer:	1. Department of Energy, Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC), Tonga 2. *Pacific Centre for Renewable Energy and Energy Efficiency* (PCREEE), Tonga – as Consultant.				
Purpose:	The *National Certificate in Sustainable Energy Level 1* (NCSEL1) is a generic qualification aimed at those who seek entry to work in the Energy/Sustainable Energy sector working with Renewable Energy (RE) sources and Renewable Energy Technologies (RETs). This certificate level qualification will promote the use of the formal technical vocational education and training (TVET) sector to facilitate building national and regional capacity to: i. Raise the level of awareness and knowledge on alternative renewable energy sources and renewable energy technologies (RETs), ii. Develop technical skills and knowledge to support processes for				

[1] This Tonga national qualification (*National Certificate in Sustainable Energy Level 1*) has been adapted from Pacific regional qualification *Certificate 1 in Sustainable Energy* which has been accredited by the Pacific Community's Educational Quality and Assessment Programme (EQAP) and registered (registration code RQ-Q0001) on the Pacific Register of Qualifications and Standards (PQRS) on http://prqs.spc.int/Search/SearchRQAQualification.aspx.

This Tonga national qualification, *National Certificate in Sustainable Energy Level 1* is therefore considered equivalent to the Regional *Certificate 1 in Sustainable Energy* and to any other approved qualification which has been adapted from it.

This qualification adaptation is the outcome of a close collaboration between the *Tonga National Qualifications and Accreditation Board (TNQAB)* and the qualification developers (which is Tonga Department of Energy, MEIDECC, and the *Pacific Centre for Renewable Energy and Energy Efficiency (PCREEE)*, made possible through financial support from the *EU-PacTVET Project*.

	installation, operation and maintenance of RETs, and iii. undertake planning, development, monitoring and assessment and management of sustainable energy projects to promote energy efficiency which will mitigate loss and damages from the effects of climate change. This qualification not only supports the organization outcomes of the *Tonga 2nd Strategic Development Framework 2015-2025* (TSDF II) but also contributes to developing a larger Pacific Community whose people are educated and healthy and are able to manage their energy resources in a sustainable way.
Rationale	The Pacific Island states including Tonga are particularly vulnerable to the adverse effects of climate change. They are also countries that are leading the world in reducing their fossil fuel consumption and shifting to renewable energy sources of electricity generation. The increasing demand, usage and costs associated with fossil fuels to power the transportation and energy sectors of Pacific Island nations has led to an energy transformation in the region. Investment in clean and affordable energy, with a focus on renewable energy, energy efficiency and conservation is leading diversity in technologies, sources of energy and mitigating the environmental effects of using fossil fuels. In Tonga, the *Tonga Energy Road Map (TERM)* has gained wide recognition in these areas. These efforts highlight the levels of importance Tonga has given to its national energy security as well as the need to reduce national vulnerability to global fluctuations in fossil fuel prices through the use of sustainable energy. Around the Pacific Island region, the price of fuel and electricity tariffs rank amongst the highest in the world and there are significant inefficiencies in electricity generation and fuel consumption in the transport sector. While there are promising renewable energy opportunities, about 7 million people out of the region's 10 million still do not have access to electricity. Against this backdrop, Tonga and the rest of the Pacific island countries are prioritising a shift to renewable electricity sources and increased access for all communities. In some cases, whole atolls are now 100 percent renewable, many more people have access to clean and reliable power, the amount of diesel imported for electricity generation has been reduced and some Pacific countries can now better manage the impacts of climate change. As a result of the shift and ongoing changes there is a need for training in a wide range of skills associated with sustainable energy. Hence, the *National Certificate in Sustainable Energy Level 1* is a generic qualification which includes general learning on on-grid and off-grid power systems, renewable and non-renewable energy sources, energy efficiency and renewable energy technologies (RETs). It is part of an attempt to make quality assured training in energy/sustainable energy widely available to training institutions and the people of Tonga.
Outcomes Statement	On completion of a *National Certificate in Sustainable Energy Level 1*, graduates will have broad basic knowledge and skills to engage as competent community members and employees. A graduate would be competent to

undertake roles such as:

1. Gathering relevant information and data for monitoring and reporting of projects, providing general information, communications and services to communities, government and development partners, and developing community awareness on matters related to renewable and non-renewable energy sources, renewable energy technologies, energy efficiency and energy management.
2. Creating community awareness on matters of sustainable energy.
3. Assisting energy officers and community members to collect field data on energy matters.
4. Assisting the community in determining appropriate energy sources and technologies
5. Assisting the conduct of energy efficiency assessments using a combination of quantitative and qualitative research tools and technologies.
6. Communicating effectively with community stakeholders using appropriate protocols
7. Applying and promoting Traditional Knowledge in Sustainable Energy interventions.

All outcomes for this qualification are compulsory covering the following key job roles:

- **Using tools, equipment and materials**: applied safely in the workplace and relating to generic tools and equipment used for on-grid and off-grid renewable energy sources (wind, micro-hydro, solar, biomass) renewable energy technology and energy efficiency such as fuel generators, battery charge controllers, hand and power tools, PV Solar panels, wind turbines.
- **Identifying appropriate renewable energy sources and renewable energy technologies, measuring energy efficiency and participating in the implementation of sustainable energy projects**: determine standalone and hybrid power systems suitable for local communities, government imperatives and development partner objectives; report on suitable alternative energy sources/technologies and identify risk and vulnerability factors, conduct and monitor tasks to implement SE projects.
- **Communicating with stakeholders**: to identify problems, use appropriate technology to convey information effectively, use appropriate cultural protocols to facilitate discussions and resolve conflicts if needed.

Qualification Components

This qualification consists of the following units of competency:

Unit Code	*Unit Title*	*Credit value*
NS039-01	Fundamental workplace communication skills	6
NS040-01	Apply basic workplace health and safety procedures for SE	3

NS041-02	Participate in a Team towards an Objective	4
NS042-02	Collect, Present and Apply Workplace Information	4
NS043-01	Basic Tools, Equipment and Materials used in Renewable Energy Technology (RET) and Energy Efficiency (EE)	6
NS044-01	Describe and explain energy sources	5
NS045-01	Promoting sustainable energy practices in the Pacific Island communities	8
NS046-01	Perform workplace calculations for the energy sector	4

Note:

1. The above units of competency can be delivered as short courses consisting of one or more units depending on the training needs of an interested training provider;

2. Approval for short course delivery must be sought from TNQAB prior to delivery;

3. Competency gained through short courses delivered in the past three years, can be considered for cross-credit. [Refer to section below on cross-credits].

Entry Requirements

The minimum entry requirements to this national certificate include the following:

EITHER:

1. Completed Year 9 or Form 3, with good marks in *Science*, *Mathematics*, *English*, and *Tongan Studies*;

OR

2. Attempted secondary education with at least one year of work experience in a field related to Sustainable Energy;

OR

3. Completed primary education with at least 10yrs of experience in an SE field or SE related field plus a strong interest to pursue the *National Certificate in Sustainable Energy Level 1*.

Learning Assumed to be in Place

- Basic communication skills (spoken and writing) in both English and Tongan.
- Basic mathematics skills including but not restricted to the four math operations (addition, subtraction, multiplication and

	division), understanding of percentages, fractions, decimals, basic algebra, understanding and reading visual representation of data such as charts and graphs, reading the axes of a graph and rows and columns of tables. • Basic technology skills including but not limited to using a computer, the Internet and social media, using a mobile phone. • Basic geography of Tonga (and the Pacific Islands) including but not restricted to the locations of places on a map, climate and weather. • Basic science skills and knowledge of living world and the environment.
International Comparability	This Tonga national certificate is equivalent to: 1. *Regional Certificate 1 in Sustainable Energy (SE)* registered by South Pacific Commission (SPC) *Educational Quality and Assessment Programme (EQAP)* on the Pacific Register of Qualifications and Standards with qualification code RQ-Q0001. (Ref: http://prqs.spc.int/Search/SearchRQAQualification.aspx). Refer to Footnote 1 on the front page. 2. Any other Pacific Island qualification in SE that has been formally recognized as equivalent to the regional qualification mentioned in 1 above.
Recognition of Prior Learning	This qualification may be achieved in whole or in part through Recognition of Prior Learning (RPL) that considers skills and knowledge gained in different settings including the community, workplace and educational institutions, and in accordance with relevant national and institutional policies and processes. Learners can achieve competence in ways most suited to their educational, work or cultural needs and aspirations. Assessment for RPL must be undertaken by a qualified assessor. Evidence of skills and knowledge acquired must be shown before recognition can be given. Recognition of prior learning (RPL) acknowledges the skills and knowledge gained from workplace, community experiences or informal training which includes courses or study previously undertaken.
Credit transfer	Both the *Tonga Qualifications Framework* (TQF) and the *Pacific Qualifications Framework* allow for credit recognition and transfer from other regional or national qualifications through a process of mutual recognition. Credit transfer is a process whereby credits already achieved for one qualification are recognized towards a new qualification. Thus, if a learner has obtained competency (within the past 3 years) in: 1. A qualification which has been identified as equivalent to this Tonga national qualification, he or she will receive credit for unit standards which have been successfully completed. Evidence of achievement will be required by relevant authorities before credit transfer is

	approved; 2. A TNQAB-approved short course that is made up of any of the component units of this national qualification, he or she will receive cross credit recognition. Evidence of achievement will be required by relevant authorities before credit transfer is approved.
Learning Pathways	**Pathways in:** 1. High School leavers who meet entry requirements. 2. Mature students and current employees who meet the entry requirements 3. Completion of relevant short courses. **Pathways out:** 1. *National Certificate in Sustainable Energy Level 2* (to be developed after this national qualification) 2. Other relevant training overseas such as the Australian *Certificate 2 in Sustainable Energy* (Career Start) that is available at many TAFEs including *TAFE New South Wales* and *TAFE Queensland*. 3. Employment – in the energy industry or environment management in both Tonga and overseas.
Support for Qualification	This national qualification has gained the support of the following organizations: 1. Pacific Community's *EU-PacTVET Project*, Fiji. 2. Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications (MEIDECC), Tonga. 3. Ministry of Education and Training, Tonga. 4. Tonga Institute of Science and Technology (TIST), Tonga. 5. Pacific Centre for Renewable Energy and Energy Efficiency (PCREEE), Tonga, 6. Department of Energy, Tonga, 7. Pacific *Community's Educational Quality and Assessment Programme* (EQAP), 8. Sustainable Energy Industry Association of the Pacific Islands (SEIAPI). Fiji.
Accreditation Requirements	Important accreditation requirements include: 1. Teaching staff must have must: a. Have at least a Level 2 qualification in Energy/Sustainable energy (or a related field) plus relevant industry experience; b. Have a relevant qualification as a trainer or assessor in TVET; 2. Physical resources (satisfied with standard of computers and internet access, and other class room resources);

	3. Specialised facilities and resources for each unit of competency. 4. General course outline is provided to students with details of Purpose, Learning outcomes, Qualification components, Credit values, Entry requirements, Learning assumed to be in place, and Name(s) of teaching team; 5. Unit outlines are provided to students with details of: a. Learning outcomes and performance standards, b. Assessment details including assessment tasks, marking guidelines, moderation information, and specific requirements about the completion of each unit. c. Recommended readings for students, and d. Names and contact details of teaching staff.
Public comments on this national qualification	Please contact TNQAB National Qualifications Unit (email EnquireNQ@tnqab.to or Telephone 28136) if you like to discuss or suggest changes to this qualification.