

ANNEX I. DESCRIPTION OF THE ACTION

Title of the Action	Pacific Adoption of Waste-to-Energy Solutions (PAWES) Project
Locations of the Action (ACP region + countries)	Pacific (Papua New Guinea, Republic of the Marshall Islands, Samoa, Solomon Islands, Tuvalu)
Name of the Lead Applicant	Pacific Community (SPC)
Nationality of the Lead Applicant	SPC is an international intergovernmental organisation operating under the Canberra agreement and Tahiti Niu declaration, and with headquarters in New Caledonia; regional offices in the Fiji Islands and Federated States of Micronesia; and country offices in Papua New Guinea, Solomon Islands and Vanuatu.
EuropeAid ID of the Lead Applicant ¹	FJ-2008-CHH-0906302905
Ongoing contract/legal entity file n ^o ²	NA
Legal status of the Lead Applicant ³	International Organisation

Co-applicant 1	Secretariat of the Pacific Regional Environment Programme (SPREP): an intergovernmental organisation based in Apia, Samoa. It was established on 16 th June 1993 under the Agreement Establishing SPREP. SPREP also functions as the Secretariat of 3 regional conventions: the Noumea Convention, the Waigani Convention and the Apia Convention.
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¹ To be inserted if the organisation is registered in PADOR (Potential Applicant Data On-Line Registration). For more information and to register, please visit: https://ec.europa.eu/europeaid/funding/about-calls-proposals/pador-helpdesk_en

² If a Lead Applicant has already signed a contract with the EC and/or has received a legal entity file number. If not, write 'N/A'.

³ E.g. non-profit, governmental body, international organisation.

1. Summary of the Action

Total duration of the Action	36 Months
Requested EU contribution	EUR 2,400,000
Requested EU contribution as a percentage of total costs	83.58%
Total indicative budget	EUR 2.871.342
Objectives of the Action	<p><i>Overall objective (i.e. impacts):</i> Enhanced solid waste management and energy security in the Pacific region</p> <p><i>Specific objective(s) (i.e. outcomes):</i> SO1: National and subnational government entities able to make informed decisions on developing a sustainable Waste-to-Energy (WtE) sector SO2: Tertiary education providers providing updated training and performing state-of-the-art research on Solid Waste Management (SWM), Renewable Energy Technologies (RET) and WtE</p>
Target group(s)	National and subnational Governments responsible for Solid Waste Management, Renewable Energy and Research/Innovation; Central and local government planners; Regional and national universities and vocational education providers and their students
Final beneficiaries	National ministries of Environment; Industry involved in municipal waste management, green waste management and renewable energy; Businesses that produce a significant volume of waste; Urban and rural communities exposed to health and environmental impacts of poorly managed landfills; Urban and rural communities lacking secure energy or a source of renewable energy; land- and marine-based ecosystems; general public; other atoll nations and Small Island Developing States (SIDS); regional research institutions
Expected outputs	<p>O1.1 Enhanced capacity of government entities in the application of support tools for evidence-based decision-making in WtE</p> <p>O1.2 Increased access to data on SWM and RET</p> <p>O1.3 Enhanced cross-sectoral collaboration among government entities and the educational, research and private sector on WtE</p> <p>O2.1 Tertiary education providers adapting and developing WtE training courses on preparing students for jobs matching existing and future market demands</p> <p>O2.2 Tertiary education providers adapting and developing innovative WtE solutions</p>
Main activities	<p>WP1 – Capacity strengthening of government entities in the application of support tools for evidence-based decision-making in WtE</p> <p>WP2 – Collection and consolidation of data on SWM and RET in the Pacific region</p> <p>WP3 – Promotion of cross-sectoral collaboration among government entities and the educational, research and private sector</p> <p>WP4 – Adapting and developing WtE training courses for tertiary education providers</p> <p>WP5 – Developing WtE solutions through tertiary education providers</p> <p>WP6 – Project management</p>

2. Description of the Action

2.1 Relevance of the Action

(max 5 pages)

2.1.1 Relevance to the objectives/sectors/themes/specific priorities of the OACPS R&I Programme and the ACP Innovation Fund

The Action ‘Pacific Adoption of Waste-to-Energy Solutions (PAWES)’ is fully aligned to the objectives and priorities of the OACPS R&I Programme and ACP Innovation Fund. In this Action, two of the ACP Innovation Fund themes are combined; Renewable Energy Technologies (RET) and Waste Management into a Waste-to-Energy (WtE) initiative. These two themes address critical and urgent issues that hinder socio-economic development in the Pacific: the environmental, health and social impacts associated with substandard solid waste management (SWM) and energy poverty. This Action seeks to increase the adoption of Waste-to-Energy solutions by strengthening multiple aspects of the Pacific region’s nascent research and innovation (R&I) ecosystem.

The successful *creation, transfer* and *application* of new knowledge and/or technology requires education and skills development to provide human capacity, investment opportunities to inject finance and policy settings that enable the operability of emerging business. To this end, there are two specific objectives to build the capacity of target stakeholders groups that play critical roles in a well-functioning R&I ecosystem (OACPS #1): national and subnational government entities and tertiary education providers. By strengthening the role and coordination within and between government entities and tertiary education providers, it enhances the quality of R&I policies and systems (OACPS #3) providing a more conducive environment for piloting, scaling and the eventual adoption of WtE innovations (OACPS #2) as part of the solution to the region’s SWM issues and energy poverty.

The outputs of this Action align with the expected results of the OACPS R&I Programme and ACP Innovation Fund in the following ways. By enhancing the capacity of government entities to apply support tools for evidence-based decision-making (PAWES #1.1), by providing access to the relevant data and information on existing transferable technologies (PAWES #1.2), and better coordinating and collaborating with the educational, research and private sector (PAWES #1.3), government ministries and related implementing bodies can better design, reform and manage the R&I environment that will support a WtE sector. Similarly, by enhancing the capacity of tertiary education providers to design new or supplementing curricula (PAWES #2.1) and by piloting training programmes (PAWES #2.2), sustainable R&I skills development strategies are put in place.

The indicative activities outlined to meet the Action’s objectives align with the priorities of the OACPS R&I Programme and ACP Innovation Fund. These include increasing an understanding of the suitability and sustainability of existing turn-key WtE technologies, or *emerging technologies*, for individual country contexts. A focus on knowledge and technology transfer, on south-south cooperation and sharing lessons learned from within the region through a range of mechanisms and platforms, *practical approaches and good practices, policies and standards will be shared and communicated, and indigenous knowledge can be integrated into formal knowledge systems and practices*. Lastly, by performing a regional skills audit and developing training opportunities to address identified gaps, the Action *creates better links between R&I skills development and labour market demand*.

2.1.2 Relevance to the particular needs and constraints of the region(s), target countries, and/or relevant sectors

Pre-project situation in the target region(s), countries and/or sectors

The Pacific region covers a vast expanse of ocean where land mass comprises only 2% of the region’s Exclusive Economic Zone (EEZ) of almost 30.55 million km² (SPC, 2015). Approximately 11 million inhabitants occupy just over 550,000 km² of land ranging from large volcanic landforms to low-lying atolls and raised coral islands. Population size, geography, socio-economic background, natural resource base and access to global markets vary markedly across the 22 Pacific Island Countries and Territories (PICTs). As such while sustainable development challenges and needs may be shared, a ‘one-size fits all’ approach to

overcoming these issues will not suit many nations context and, therefore, make minimal gains against their sustainable development.

Two of shared challenges of all Pacific nations are solid waste management and energy security. In many countries, rapid development and population growth have outpaced the capacity to deal with the waste produced. In parallel, large sections of communities lack access to clean, affordable energy sources. Addressing a lack of energy with an abundance of waste is a truly innovative way to make needed progress toward the aspirations of the Sustainable Development Goals (SDGs), the guiding regional frameworks of the Framework for Energy Security and Resilience in the Pacific (FESRIP) and the Pacific Regional Waste and Pollution Management Strategy 2016-2025, as well as country commitments to the Paris Agreement (2016) through Nationally Determined Contributions (NDCs), national priorities in their climate change National Action Plans (NAPs) and national development frameworks.

The Pacific Regional Waste and Pollution Management Strategy 2016-2025 acknowledges that: “Inadequate management of wastes and poor control over polluting activities can affect the health of Pacific communities, degrade natural ecosystems and reduce their resilience to climate change impacts”. Moreover, risks are heightened from the impacts of poor waste and pollution management, since many Pacific economic bases (in tourism, fishing and agriculture) are heavily reliant on an environment relatively free of waste and pollution. For many Pacific communities, the predominant method of Municipal Solid Waste (MSW) disposal is via dumps, controlled dumps and sanitary landfills, with over 333 temporary dumpsites, 96 open dumps, 34 controlled dumps and 15 sanitary landfills. Waste streams are not always separated, with household waste, hazardous waste and green waste all disposed of together. In some locations without a proper healthcare waste incinerator, a specific pit for burning and/or burial of healthcare wastes can be found within the disposal site. In the Solomon Islands and Papua New Guinea (PNG), for instance, poor practices include open burning that contributes to air pollution, and open disposal of decomposable solid and liquid waste. The main urban dumpsites are also often frequented by waste pickers who subsist on the sale of items salvaged in hazardous conditions, providing the only local recycling service (ADB, 2014).

On coral atolls, waste management is even more challenging due to the porous nature of atoll soils, the low elevations (often fewer than five metres), and the extremely limited availability of land. In the Republic of Marshall Island’s (RMI) capital, Majuro, an estimated 37,000 tonnes of waste sits in landfill (which spills and leaches into the sea) with an additional 8,500 tonnes added each year. Somewhat tragically elevation data recently collected from Majuro (SPC, 2021) determined the highest point on the island to be the landfill site; a 25 metre high mound locally referred to as ‘Mount Trashmore’. Tuvalu’s capital Funafuti covers an area of just 2.4 km², yet 1 km² of this narrow strip of land is dedicated to landfill. Land reclamation is being considered in many low lying island settings. However, the value of utilizing existing land was highlighted in a recent feasibility study (MFAT, 2019) looking to reclaim 300 hectares of land for the people of Kiribati. Not only was it estimated to cost 230 million Euro but it would take 30 years to complete.

Energy security remains an enormous challenge for the Pacific region. This has been attributed to a lack of an indigenous natural resource base (with PNG the exception), the high cost of extending services to rural and remote communities, a paucity of energy data, lack of skilled workforce in the energy sector, dependence on development finance for most energy infrastructure, and electricity pricing that leaves inadequate resources for effective maintenance. A 2012 UN ESCAP (Economic and Social Commission for Asia and the Pacific) report determined that regional institutions, laws, technical standards, and regulatory systems were out-dated and that there would be significant challenges to develop affordable infrastructure which is resilient to the uncertain impacts of climate change and natural disasters.

The FESRIP provides a regional guidance for addressing energy security. It contains some sobering statistics highlighting the need for much greater effort if equitable access to affordable, reliable and clean energy services is to be realized for the people of the Pacific. Little progress has been between 2000 and 2017 in decreasing the reliance on petroleum with it still providing about 80% of the region’s commercial energy, with around 72% of electricity generation and essentially 100% of transport. This is attributed to the expense of RET and the enormous investment needed to ensure all people have access to any electricity at all. Electrification rates for the region are skewed by the significant lack of access in PNG. The 13% of the population that do have access to electricity live in urban centers and are connected to a grid. However, 80% of

the population inhabit remote, rugged, mountain areas with little infrastructure. Getting them on a national grid would be an enormously complicated, environmentally destructive and expensive undertaking.

Detailed analysis of the problems to be addressed by the Action

WtE initiatives seek to provide simultaneous solutions to sustainably reduce the volume of waste within landfill systems while providing new renewable energy sources. In essence, the Action addresses two major problems; a lack of information regarding the viability and sustainability of WtE technologies and the need for policy setting and cross-sectoral coordination to support a WtE sector. Due to the markedly different country profiles found in the Pacific region, there will not be 'one WtE solution' that is appropriate for all nations. Where possible, this Action will seek regional participation. Where in-country implementation is required, an initial three countries, one from each of the three sub-regions (Papua New Guinea – Melanesia; Republic of Marshall Islands – Micronesia; Samoa – Polynesia), have been selected to represent common contexts that make up the rich Pacific regional community; from weak to strong WtE sector maturity, SWM coverage, government coordination, private sector participation, and the natural environment. Tuvalu and Solomon Islands will also be considered in order to provide greater balance between volcanic and atoll island nations, and also between various levels of development. This will provide data and experiential learning that can be used to scale successful activities across the region.

Over the past 10 years the Pacific has seen an increasing number of successful biomass WtE projects (SPREP, 2021). There is now a growing interest in exploring municipal WtE options as a means of reducing landfill and relieving dependence on diesel importation for electricity generation. This push is often driven by technology companies promoting proprietary technology, with little regard to long-term affordability and sustainability. Direct technology transfer, or 'turn-key' solutions, from developed countries carry inherent risks due to the vast differences in PIC (Pacific island countries) characteristics. By engaging with the regional and global WtE sector, this Action will introduce technologies to the region and advocate for cutting-edge technologies to be designed and/or tailored to suit Small Island Developing States (SIDS).

Decision makers and investors need robust data to assess the viability of WtE projects. A project's success will be contingent upon sufficient land to develop waste treatment, volume and availability of feedstock, existing sorting processing, well-functioning infrastructure, adequate access to expertise for development and maintenance, clear government policies and plans to ensure economic feasibility, private sector engagement and pricing tariffs to name but a few. By providing a detailed analysis of the potential for WtE across the Pacific, by actively sharing lessons learned through regional and south-south cooperation and bringing suitable technology providers together, government and private sector stakeholders can make well-informed decisions. Furthermore, for WtE technology to provide the stepwise change able to address critical issues of landfill and energy poverty, large investments will need to be made to test industrial scale technology. The data and analysis of the success and failures of this Action will provide the information required for large-scale private investment and to meet eligibility for larger tranches of funding available through instruments such as the Global Environment Fund (GEF) and the Green Climate Fund (GCF).

Lastly, greater attention needs to be dedicated to the enabling policy settings, legislative and regulatory environment of the WtE sector if these solutions are to continue to operate beyond the life of discrete funded pilots. The EU-funded PACE-Net Plus Project report 'Innovation in the Pacific: An Assessment' (UNIDO, 2016) described innovation as a key instrument to achieve diversification, and that regional investment in innovation was still limited. The report cites a number of common key barriers including, but not limited to, the high operational costs due to geographic isolation and small economies of scale, lack of business capabilities and knowledge of opportunities in the private sector, weak links between government, private sector and research institutions, a focus on supporting basic rather than applied research, and low human capital and brain drain. The diversified approach taken by this Action will, in parallel with addressing both waste and energy, assess and contribute to the current vitality of the region's emerging R&I landscape. The Action goes beyond a series of stand-alone pilots and takes a more holistic approach, developing the R&I systems capacity to ensure ongoing success and uptake of WtE solutions.

2.1.3 Relevance to the particular needs and constraints of the target groups and final beneficiaries

Target groups and final beneficiaries in each country, and their needs and constraints

The Action will work closely with two target groups. They will represent national and subnational government ministries responsible for waste management and renewable energy and tertiary education providers responsible for Research, Innovation and Higher Education in SWM, RET and WtE. A third target group of NGO's and interest groups will be engaged in an advisory capacity to ensure that all activities and therefore outcomes of the Action are socially inclusive, gender responsive and climate risk informed. At this time one cannot overstate the impact of the COVID-19 pandemic on Pacific governments, their decision makers and the available resources. In many instances, already strained financial and human resources have been stretched beyond capacity simply to maintain business-as-usual operations. To embrace innovation, it is necessary to also embrace a certain amount of risk of failure. As the Pacific stages its recovery from the recent devastating economic downturn, it is imperative that development assistance be used to absorb as much of that risk as possible. This will be done in this Action by providing technical assistance by means of the consortium and local multipliers to enable participating countries to embrace new technologies and ways of working that will provide opportunities to diversify economies, create employment and make gains against the SDGs 7, 9, 12 and 13.

National and municipal governments responsible for Solid Waste Management, Renewable Energy, and Research & Innovation will benefit from a greater knowledge and awareness of the economic, environmental and social implications of investing in WtE technology; as well as the broader requirements for technology and knowledge transfer. As a nascent industry, the Action will provide much needed information to assess where regulatory and institutional reform is needed, how to incorporate WtE into national waste and energy strategies and plans, as well as providing an opportunity to increase coordination and interoperability of government agencies, research institutes and the private sector within and between PICs.

National universities and vocational education providers will benefit from being able to deliver cost-effective national and sub-regional training activities that allow for customised instruction suited to the local situation. It was noted in UNIDO's Pacific Innovation Assessment that the region suffered from a lack of applied research and training, focusing on basic and academic programmes. By understanding existing and future skills shortages, education providers can preempt and address the needs of the future job market, giving their graduates a greater chance of finding gainful employment upon completion of their studies.

As an example, the region's RE sector suffers from a lack of indigenous technical capacity and expertise. Therefore, all RE projects (private, public and through development assistance) will benefit greatly from increased access to skilled labour from within the region.

The final beneficiaries of the Action include government ministries, including others than those listed above, WtE businesses, the broader public sector as well as urban, rural and remote communities. Individuals may belong to more than one group of beneficiaries, and may benefit in multiple ways. Conversely, the beneficiary groups in each country will differ, given that the prioritised activities in each of the PICs will vary.

Other government ministries, including Health, Environment and Climate Change, will benefit from the Action due to the impact of improved waste management and increased access to renewable energy. Public health departments will benefit from the population's decreased exposure to harmful leachates and particulates from burning, as well as waterborne vectors and their diseases that flourish in dumpsites. Environment and Climate Change departments will have to manage less environmental pollution and be able to account for decreased GHG emissions from decomposing waste and increased renewable energy inputs to ambitious country commitments to the Paris Agreement (2016) under their climate change National Action Plans.

WtE businesses, business that benefit from WtE technology and interested investors will benefit from increased coordination with governments and the ability to advocate for business reform. The Action will provide access to quality modelling and feasibility studies to inform planning and investment, and potential opportunities for Private-Public-Partnerships (PPPs). Furthermore, through direct consultation the Action will allow RE, SWM and WtE industry employees to provide advice and input to the development of industry-ready graduates and skilled worker.

Urban, rural and remote communities will directly benefit from minimized exposure to harmful pollution. The environment from which many derive their livelihoods will also be improved by minimizing pollution thus sustaining their means of employment. New opportunities for employment will result from this Action as it

assesses opportunities for low skilled employment and/or local entrepreneurship as part of developing a viable WtE industry. The Action's overarching ambition is to provide communities with access to reliable, affordable clean sources of energy.

2.1.4 *De facto* monopoly and Partnership composition

SPC and SPREP are members of the the Council of Regional Organisations of the Pacific (CROP), established in 1988 by the Pacific Islands Forum Leaders with the primary purpose of improving cooperation, coordination and collaboration between Pacific regional inter-governmental organisations. With the adoption of the *Framework for Pacific Regionalism*, and as stated in the CROP Charter (2018), CROP organisations own the mandate to collectively support the national aspirations of the 22 member countries and territories harnessing shared strengths to ensure individual country and collective advancement brings practical benefits to all Pacific people. Two of the CROP Charter's main objectives relevant to this Action include: sustainable development that combines economic, social and cultural development in ways that improve livelihoods and well-being and use the environment sustainably, and economic growth that is inclusive and equitable.

SPC's strength comes from an innate understanding of the region built-upon the scientific and technical expertise of almost 50 years working alongside Pacific people, governments and partners. The Geoscience, Energy and Maritime (GEM) Division has an annual budget of approximately 22M Euro with innovation and data driven solutions at the core of their work programme. The Georesources & Energy Programme focuses on two key areas. Then first is to provide energy security and supporting more informed decision making on the use of the region's geophysical resources. The second centers on delivering sustainable, environmentally-managed resources that ensure access to renewable energy relevant for the Pacific. Alongside its portfolio of RE projects, GEM is the host of the Pacific Centre for Renewable Energy and Energy Efficiency (PCREEE) secretariat. This centre provides a regional 'hub' for knowledge and technical expertise on matters related to sustainable energy project implementation and also facilitates innovative partnerships with the private sector. GEM's contribution to the region's Energy sector also includes leading the development of the Framework for Energy Security & Resilience in the Pacific 2021-2030.

SPREP's Waste Management and Pollution Control Programme has the lead responsibility for regional coordination and delivery of waste management and pollution control action. It actively promotes evidence-based planning within countries to develop strategies that address emerging priorities and opportunities in locally appropriate ways. In collaboration with development partners, SPREP has lead this work for decades through the development of regional training and strategies, most recently with the development of the Pacific Regional Waste and Pollution Management Strategy 2016-2025. SPREP is also the region's lead implementing agency delivering on multiple large scale projects, extended upon request by member countries. These include the Japanese International Cooperation Agency projects *Promotion of Regional Initiative on Solid Waste Management* (J-PRISM) from 2011-2016 and subsequently J-PRISM II from 2017-2022 and more recently through the EU funded 7.85M Euro PacWaste and 11.3M Euro PacWaste Plus projects, from 2013-2017 and 2019-2023 respectively.

The SPC-SPREP partnership brings together two CROP organisations with mandate to coordinate and provide the Pacific region with policy and technical expertise in the Waste and Energy sectors. Both focus on in-country human resource support, technical cooperation, and a learning-by-doing approach for longer-term self-sufficiency. They have a history of collaboration, both with each other and with other key regional partners (including international and regional bodies, non-state actors and bilateral and multilateral development partners). This collaboration is based on mutual respect for each other's separate mandates and the comparative advantage that each has in line with its work programme and thematic and sectoral priorities, as can be demonstrated by the successful implementation of the 12.8M Euro EU funded GCCA + SUPA programme.

2.1.5 Multiplier composition

The philosophy of the ACP Innovation Fund is to work directly with local multipliers to scale up and expand initiatives that have been developed by the consortium, and as such accelerate the impact of such initiatives throughout OACPS member states. Under the current Action the objectives of scaling initiatives and accelerating the impacts is envisaged to be delivered through 'non-traditional' multipliers. There are two main factors behind this strategy:

1. There is no existing WtE ecosystem within the Pacific. This Action is being proposed as an initial step in the development of a WtE sector, when there are no existing local entities working in WtE and there is not even any Pacific content for training on WtE. Without an existing innovation pipeline it is not possible to engage local entities in the ‘multiplying’ activities of the Action.
2. Pacific nations and their representative governments have very few people and very limited resources with which to adopt new activities. In the Pacific it is the same: government officials who write a sectoral policy and implement the actions towards that policy. There are not the human resources within the Pacific for numerous entities or agencies to take on the numerous roles of multipliers and target groups as is the preferred model based on the global context.

In this context, and especially the lack of human resources within national government systems, it is envisaged that some of the key target groups for some of the activities will act as multipliers in some instances.

SPC and SPREP’s mandate is to provide and coordinate policy and technical advice to its member countries. As such it is essential that governments from each target country are given assistance to participate directly, or at a minimum approve of both activities and the ‘multiplier’ responsibility for implementation. The list below is by no means exhaustive and currently represents participants from preliminary consultations that gave in principle agreement to participate in the Action’s further development. This list will be revised during the inception phase when details of the proposed activities can be shaped and adjusted to best suit individual country needs, capacity and capability.

National Government Entities

National Government entities will form one class of non-traditional multipliers for this Action. These government entities include:

the PNG National Energy Authority,

the RMI National Energy Office,

the Samoa Ministry of Natural Resources and Environment,

the Solomon Islands Ministry of Mines, Energy and Rural Electrification, and

the Tuvalu Department of Energy, Ministry of Public Utilities and Infrastructure.

While these entities will be a primary target group for many of the activities, it is an aim of the Action that they will, after having been capacitated by the consortium members, act as multipliers in taking these activities to their broader government systems and stakeholders. For example, the RMI National Energy Office is a key partner in the RMI Nationally Determined Contribution Partnership Plan. Through this existing cross-government mechanism and the three Working Groups therein, the RMI National Energy Office will work with the RMI Environmental Protection Authority, the RMI Ministry of Natural Resources and Commerce and the RMI Climate Change Directorate to multiply activities such as baseline assessments, national data gap analyses, acquiring data and updating national databases. This would be replicated in each of the Pacific island countries with the primary ‘focal points’ listed above acting as the multiplier and working through existing cross-government mechanisms.

University of the South Pacific (USP)

Established in 1968, USP is organised as an intergovernmental organisation and is owned by the governments of 12 Pacific island countries: the Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu. It runs 14 campuses servicing the region’s tertiary education needs. In 2018, USP and SPC resigned a MoU committing to jointly develop quality education and vocational training and improving development in the Pacific, climate resilience, governance and leadership. As with the national government entities, USP is a non-traditional multiplier as it is a primary target group for some of the activities in the Action, but they will also act as a multiplier in further developing some activities, particularly with the network of national universities.

Research students undertaking WtE research at USP are also considered to be a unique set of non-traditional multipliers. These students will return to their national settings, and in many cases their national government institutions, and will expand their learnings in new developments and potentially new start-ups at the national and regional level.

Sustainable Energy Industry Association of the Pacific Islands (SEIAPI)

SEIAPI was formed in 2010 and registered in Fiji. Its members comprise of: sustainable energy businesses and utilities located in the Pacific Islands; companies outside the Pacific Islands who provide products and services into the Pacific Island countries and territories; training Institutes and universities; government departments along with multi-lateral and bi-lateral donors.

The main mission of SEIAPI is to create an enabling environment for the growth of sustainable energy business entities and sustainable energy equipment and/or energy services in the Pacific Islands. Its current activities include sharing business opportunities to members, supporting members in bidding for contracts, and influencing Government policies to support business in Sustainable Energy.

SEIAPI, as an umbrella organisation creating enabling environment and facilitating sustainable energy businesses in the region, is considered a multiplier. In the Action, SEIAPI will provide training for its members on business opportunities created by the WtE sector. SEIAPI and some of its members will also be involved in the feasibility assessments of selected WtE projects.

2.1.6 Particular added-value elements

The OECD recognizes the pivotal role of innovation in economic development and the central role it can play in the growth dynamics of developing countries. The EU-funded PACE-Net Plus Project report (UNIDO, 2016) highlighted the varied role in which innovation plays in the region. Inclusive and social innovation and the transfer of successful technologies from developed countries can contribute significantly to seemingly intractable issues and urgent development challenges, such as pollution control in rapidly expanding urban centres, access to land in atoll nations and access to electricity for rural and remote communities. In many respects this Action provides the baseline and precompetitive data required to fully engage the private sector and industry partners in a regional WtE sector. Wherever possible it is intended that the private sector be encouraged to contribute financially to the Action's activities. This could be where immediate short-term benefits are apparent, for example financing scholarships to skill workers that will be employed directly by the company, or with a view to the future needs of industry, for example through piloting new technologies or providing training for emerging industry needs.

Pacific regionalism can best be enhanced where CROP agencies coordinate and collaborate to ensure the most efficient and effective use of regional resources as Pacific countries strive to meet their commitments under the 2030 Agenda for Sustainable Development and the achievement of the SDGs, the SAMOA Pathway and other regional and global frameworks. Through this Action, SPC and SPREP's GEM and Waste Divisions have an opportunity to strengthen the capacity of regional organizations by documenting and demonstrating innovation and best practice when implementing development assistance. This can serve as a model to regional governments on how to approach, develop and engage R&I irrespective of sector and provide significant input to south-south cooperation in relation to both WtE solutions and the importance of a well-functioning R&I system.

Lastly, Pacific island countries contribute negligibly towards the global greenhouse gas emissions but are at the frontlines of human-induced climate change. By increasing the uptake of renewable energy and decreasing the amount of GHG emissions from landfill, the PAWES project will help PICs make gains against their pledges made under the Paris Agreement. These pledges, or Nationally Determined Contributions (NDCs), include post-2020 actions for climate resilience and low carbon development. For example, Fiji and the Republic of the Marshall Islands have committed to low/net zero emissions by developing and communicating their long-term low greenhouse gas emission development strategies to the United Nations Framework Convention on Climate Change (UNFCCC). PICs also identified adaptation actions and priority areas to build adaptive capacity and transition towards climate resilience. These cover areas relevant to this Action including coastal protection, forestry, fisheries and marine conservation, waste, tourism, land use and land management, human settlements, including health, disaster risk reduction and urban development.

2.2 Quality of the project design

(max 15 pages)

2.2.1 Elaborate on the intervention logic as presented in the Logical Framework (Annex C)

The intervention logic and how the activities will lead to the outputs, the outputs to the outcomes, and the outcomes to the expected impact.

Two shared challenges of all Pacific nations are solid waste management and energy security. In many Pacific countries, rapid development and population growth have outpaced the capacity to deal with the waste produced. On coral atolls especially, waste management is even more challenging due to the porous nature of atoll soils, the low elevations (often fewer than five metres), and the extremely limited availability of land. In parallel, large sections of Pacific communities lack access to clean, affordable energy sources. This Action is pursuing WtE initiatives to provide simultaneous solutions to sustainably reduce the volume of waste within landfill systems while providing new renewable energy sources.

Given the lack of an existing WtE ecosystem within the Pacific, the Action seeks to establish two foundational elements for any such sector in the future:

1. Building the capacity for national and subnational government entities to make informed decisions on developing a sustainable WtE sector, and;
2. Developing the capacity for tertiary education institutions to provide training on WtE and undertake WtE research as part of their SWM and RET offerings.

These two foundational elements will collectively facilitate the development of a WtE ecosystem within the Pacific in the future, through which start-ups and SMEs will grow and develop.

Work with Pacific national and sub-national governments will focus on ensuring access to the relevant technical data (WP2) and direct capacity building of governmental decision makers to ensure they understand the sector and can make effective and efficient decisions regarding WtE (WP1). Another key focus will be building the necessary relationships between government, tertiary education providers and the private sector to facilitate the development of the sector into the future (WP3).

The Action will ensure that Pacific national and sub-national governments have the understanding and capability to make effective and efficient decisions regarding WtE in their national context through understanding the existing capability and policy/operational context for SWM and RET at the national level, and what training is required for government entities to make the requisite decisions in the future.

In terms of making the relevant technical data available for use in decision-making processes, the Action will update existing SWM and RET databases, and integrate data for WtE purposes. Updates will be based on an objective assessment of data gaps and will work at both the regional and national level through multipliers.

The necessary cross-sectoral relationships will be formed through developing physical and virtual platforms to discuss the adoption of existing technologies, an awareness of previous Pacific WtE pilots, and examples of successful WtE implementation internationally through south-south knowledge exchange and cooperation among government entities and the educational, research and private sector. This would include platforms to bring the international community to the Pacific, and for the Pacific to take part in international platforms focussed on WtE.

Within the national government systems of the target countries the Consortium will identify a directorate or ministry as a primary focal point for the Action. These focal points will be the initial target groups of many of the activities such as assessments and capacity building, and will hereafter take on a role as a multiplier through expanding the activities across their respective governments through existing national level cross-government mechanisms and at sub-national level where appropriate.

Work with the tertiary education providers will focus on developing the WtE educational content and then delivering this to the member countries through a cohort of students (WP4). The other focus will be on pilot research projects that could be scaled up and out through future work in the sector in the region (WP5).

To develop the WtE education content, the Action will initially assess existing skills shortages in the SWM and RET sector, map existing national and regional education and training programmes, forecast needs for SWM, RE and WtE sectors, and provide recommendations for skilling the future workforce from low-skilled labour to cutting-edge research. The Action will then work with industry groups and interest groups to develop

accredited training schemes that focus on job-ready graduates that can service and maintain the SWM, RE and WtE sectors. The Action will then develop specialised regional expertise by supporting Masters and Honours students and offer scholarships in applied research projects. These research projects will represent the pilot implementation ‘on the ground’ in the various Pacific island countries.

Similarly to the national government directorate or ministry that serve as a primary focal point for the Action, USP will be a primary initial target group for some of the activities such as curriculum development, and will then take on a role as a multiplier through expanding the activities through their network of national universities.

How the objectives address the problems mentioned in section 2.1 and the needs of each target group.

The Action will work closely with two target groups to provide simultaneous solutions to sustainably reduce the volume of waste within landfill systems while providing new renewable energy sources. These are 1) National government entities responsible for waste management and renewable energy and 2) Tertiary education providers responsible for Research, Innovation and Higher Education in SWM, RET and WtE.

The Action will ensure that national government entities are able to make informed decisions on developing a sustainable WtE sector. This will be done by supporting them to develop strategies and roadmaps promoting the WtE sector, develop new or modify existing RET policies incorporating the development of the WtE sector, and piloting projects in the WtE sector.

The Action will ensure that tertiary education providers are providing updated training and performing state-of-the-art research on SWM, RET and WtE. This will be done through developing and providing short courses on WtE, accrediting new RET qualifications to include WtE, and undertaking WtE pilot projects.

Demonstrate that the chain of results is realistic and feasible in the national and regional context.

Ensuring that national government entities are able to make informed decisions on developing a sustainable WtE sector will be achieved through enhancing the capacity of government entities in the application of support tools for evidence-based decision-making in WtE, increasing access to data on SWM and RET, and enhancing the cross-sectoral collaboration among government entities and the educational, research and private sector.

Ensuring that tertiary education providers are providing updated training and performing state-of-the-art research on SWM, RET and WtE will be achieved through adapting and developing WtE training courses to prepare students for jobs matching existing and future market demands, adapting and developing WtE solutions to a Pacific specific context.

These activities are based on a deep understanding of the needs inherent in the regional context and will be tailored to the national context on the basis of the baseline assessment.

The main assumptions along the chain of results.

The primary assumption is the availability of human resources within Pacific nations. In this regard it is assumed that national government entities have the capacity and time for activities including but not limited to capacity building activities and participating in cross-sectoral platforms. In the same way it is assumed that national governments will focus on meeting renewable energy targets and development of SWM best practice.

The Action also assumes a reasonable level of data sharing within and between government entities, and also with the broader WtE stakeholder community.

There are also numerous assumptions regarding the capacity of tertiary education institutions, including that they have the available human resources to revise the curricula, that they are willing to invest in identifying WtE solutions, and that they can find sufficient students to conduct research.

2.2.2 Elaborate on the activity matrix as presented in the Logical Framework (Annex C)

WP1 – Capacity strengthening of government entities in the application of support tools for evidence-based decision-making in WtE

The Action will ensure that Pacific national and sub-national governments have the understanding and capability to make effective and efficient decisions regarding WtE in their national context. The activities of this Work Package will focus on understanding the existing capability and policy/operational context for SWM and RET at the national level, any appropriate initiatives to fill sectoral gaps, and what training is required for government entities to make the requisite decisions in the future.

A1.1 – Baseline assessment on decision-making processes at governmental level on the waste and renewable energy sectors

National baseline studies will be undertaken including existing level of SWM, feedstock, existing policy settings, regulatory framework and business environment, mapping existing WtE projects (and potential to scale/transfer), assessing prospective international technology transfer.

- 1.1.1 Design of the baseline assessment methodology: This will leverage heavily on understanding what is already known through existing projects such as the PacWaste Plus project and numerous RET projects, and then designing a methodology to fill in the gaps.
- 1.1.2 Set up of an operational IT system: This will utilise existing SPC IT infrastructure.
- 1.1.3 Set up of the baseline assessment team: The baseline team will be formed from SPC and SPREP staff.
- 1.1.4 Execution of the baseline assessment: The assessment will involve travel to the Pacific countries by the assessment team, unless travel is not possible due to COVID-19 restrictions, in which case the assessment will be undertaken remotely.
- 1.1.5 Analysis of the assessment data of the sample sites
- 1.1.6 Dissemination of assessment results: Results will be shared with all relevant stakeholders, most importantly with national government representatives to inform decision making regarding WtE as a component of SMW and RET. The results will be disseminated through the Pacific WtE website described in Activity 3.2.
- 1.1.7 Extraction of relevant data for other work package activities: The results of the assessment will feed directly into the feasibility assessments in Activity 1.2.

A1.2 – Feasibility assessment of WtE for the Pacific

National and regional feasibility studies and strategies will be designed (and undertaken) based on baseline assessments and information gleaned from global, regional and south-south knowledge exchange.

- 1.2.1 Review potential working WtE options for the Pacific: This will focus on reviewing the outcomes of A 1.1.
- 1.2.2 Select options that meet technical and environmental merit and public adoption: This will require community consultation to ensure any potential WtE solutions will meet the social and environmental expectations of Pacific communities.
- 1.2.3 Cost/benefit analysis of selected options: Economic analysis of potential solutions will be critical in understanding the feasibility of WtE in a variety of Pacific settings.
- 1.2.4 Assess feasibility of potential WtE options and scaling up at national and regional level: The assessment will look at whether potential national solutions can be scaled up and implemented at a sub-regional or regional scale, as multiple countries have an economy of scale with their SWM sectors.

A1.3 – Training on WtE policy making adapted to the Pacific

Training on WtE policy making will be delivered to Pacific countries, through adapting existing training materials from international examples or developing new materials, presenting at national workshops, and mentoring.

- 1.3.1 Design training course and training methodology: This will leverage processes already established through the Policy and Governance Unit in the Georesources and Energy Programme at SPC, and any equivalent functional unit at SPREP, and then designing a methodology to fill in the gaps in these processes.
- 1.3.2 Develop training materials on WtE sector: These materials will focus specifically on training materials for policy making (as opposed to the technical training on WtE through the education sector in WP 4).
- 1.3.3 Set up a team of trainers: The team of trainers will be formed from SPC and SPREP staff.
- 1.3.4 Develop a training calendar in consultation with government entities.

- 1.3.5 Deliver workshops to national and subnational governments: The workshops will be delivered in person and either nationally, sub-regionally or regionally depending on the findings of the feasibility assessments in A 1.2, If travel is not possible due to COVID-19 restrictions, then the workshops will be delivered remotely.
- 1.3.6 Set up a mentoring programme and provide mentoring to national government representatives to support the updating and development of plans and roadmaps: Ongoing mentoring on an ‘as needs’ basis.

Consortium Role:

The Consortium will design the Baseline and Feasibility Assessments, and undertake the initial surveying with the primary national government counterpart entities. Following the expansion of these activities through the government systems by the primary counterparts (see Multipliers below), the Consortium will synthesise and analyse the results of the assessments.

The Consortium will develop the primary training materials on the WtE sector, and will be the primary mentor for national government representatives within the mentoring programme.

Multiplier Role:

National Government entities such as the PNG National Energy Authority, the RMI National Energy Office, the Samoa Ministry of Natural Resources and Environment, the Solomon Islands Ministry of Mines, Energy and Rural Electrification, and the Tuvalu Department of Energy, Ministry of Public Utilities and Infrastructure, would act as multipliers for the baseline and possibly also the feasibility assessment. While the initial phases of the assessments would be between the Consortium and these government entities, it is envisaged that they would then expand the surveys across their respective governments at sub-national level.

USP will deliver WtE policy-making workshops to national and subnational governments. While the Consortium will lead on the development of Pacific specific training materials in WtE, it is envisaged that USP will work with their network of national universities to modify these materials to the national contexts, and deliver these accordingly,

Deliverables:

- Baseline assessment report on government decision making in RET and SWM
- Feasibility assessment report for WtE in the Pacific, including community consultation reports and economic cost/benefit analysis
- Training materials for WtE policy making in the Pacific
- WtE policy making workshop reports.

WP2 – Collection and consolidation of data on SWM and RET in the Pacific region

Significant amounts of data on SWM and RET already exist in the Pacific at the national and regional level. For example, the Pacific Regional Data Repository (PRDR) is a web-based one-stop-shop energy portal and database management system that supports Pacific governments and their development partners working in the energy sector by facilitating access to up-to-date, reliable energy data. However, many of these data assets at the national level, and some at the regional level, are un-reported and un-discoverable. Additionally, while there is significant amounts of data on SWM and RET generally, there is little or no integration of that data for WtE purposes, or specific WtE data. This Work Package will, therefore, update these existing databases with all available WtE data that can assist in the baseline (A1.1) and feasibility assessments (A1.2), and in the development of training materials (A1.3 and A4.2).

A2.1 – Updating of existing data/databases

Existing SWM and RET databases will be updated and new databases will be developed to ensure up-to-date and reliable data are available for WtE decision makers.

- 2.1.1 Desktop review of available national and regional datasets: An assessment of datasets that are discoverable and accessible at the national and regional level.
- 2.1.2 National consultations to determine un-reported or un-discoverable data: A series of consultations with the Pacific countries to discover any un-reported data. These consultations will be conducted in-country along with the baseline assessment missions (A 1.1.4).
- 2.1.3 Enter un-reported or un-discovered data into existing national and regional datasets where necessary

A2.2 – Development of new data/databases

New databases will be developed where a data gap has been discovered (A 2.1.2) and for which there is no existing logical repository. Where appropriate, existing databases will be modified to minimise the proliferation of databases in the Pacific. Any new regional databases will be part of the Pacific Data Hub (PDH) ecosystem, which is the central repository of data about the Pacific and from the Pacific. Ownership and maintenance of national databases will be a decision for Pacific governments.

- 2.2.1 Gap analysis for national/regional data and databases: This Activity will be iterative along with the baseline and feasibility studies in A 1.1 and 1.2.
- 2.2.2 Develop new or adapt existing databases where necessary: The default position will be to adapt existing databases to avoid proliferation of new databases.
- 2.2.3 Develop new data collection protocols where necessary. These could include:
 - Standardisation of datasets and adoption of updated conversation factors to have flexible tool features in supporting analysis;
 - Establishment of indicators and methodologies for analysing the datasets to report against the indicators;
 - Creation of protocols to allow third parties to access raw data sets for analysis and how to link these value added analysis back to the regional database.
- 2.2.4 Data collection and insertion in databases.

A2.3 – Analysis of use of data

Awareness will be increased of new or updated data and datasets, and providing advice and guidance to stakeholders (especially Pacific national government representatives) to ensure that the data is used for evidence-based decision making.

- 2.3.1 Promotion and advocacy of new or updated databases: Dedicated communications for Pacific national government and other stakeholders to raise awareness of new or updated data, made available through the website developed in A 3.2.
- 2.3.2 Training or workshops on how to access and use the data: These could be stand-alone sessions or be incorporated into A 1.3.
- 2.3.3 Analysis of data usage: Regular measurement and reporting of data usage statistics.

Consortium Role:

The Consortium will perform an initial desktop review of existing databases and facilitate a first round of national consultations with the government focal point entities. Based on the findings of the database gap analysis, the Consortium will lead the development of new databases or modification of existing databases. The Consortium will also ensure that the updated and new data informs the assessment and training activities in WP 1 and 4.

Multiplier Role:

National Government entities such as the PNG National Energy Authority, the Samoa Ministry of Natural Resources and Environment, the Solomon Islands Ministry of Mines, Energy and Rural Electrification, and the Tuvalu Department of Energy, Ministry of Public Utilities and Infrastructure, would act as multipliers for national consultations and the updating of existing and new databases. While the initial phases of consultation, data capture and development guided by the Consortium, it is envisaged that these government entities would then guide other entities across their respective governments at sub-national level in assessing data gaps, and acquiring and updating data.

Deliverables:

- Report on SWM and RET data that is currently available and accessible.
- Report on un-reported and un-discoverable data, with recommendations on how the data can be made accessible.
- New or modified RET and SWM databases.
- Data collection protocols where necessary.
- Data access and usage workshop reports.
- Data usage analytics.

WP3 – Promotion of cross-sectoral collaboration among government entities and the educational, research and private sector

Provide in person and virtual platforms to discuss the adoption of existing technologies, an awareness of lessons learned from previous Pacific WtE pilots or successful WtE implementation internationally, and facilitate ongoing south-south knowledge exchange and cooperation among government entities and the educational, research and private sector. This could include trade missions, trade fairs/expos and conferences. These platforms and other mechanisms will support Pacific national and subnational governments to enhance coordination and facilitate dialogue between ministries, to clarify roles and policy settings, to review WtE in national plans and, where possible, to assist government mobilise resources to progress the recommendations provided through national/regional feasibility studies (A1.2).

A3.1 – Deliver Pacific WtE presentations at international/regional conferences

There are relatively few Pacific entities and people working in the WtE sector, and many of the relevant people are also working across many other sectors. Therefore, ways will be investigated to promote cross-sectoral collaboration through attaching to existing Pacific conferences on RET and SWM, to minimise the time burden on Pacific representatives and maximise the chance of positive attendance.

- 3.1.1 Review past and ongoing RET and SWM conferences/meetings/workshops: an initial assessment of existing and upcoming conferences that would be most suitable to include a session or series of presentations on WtE.
- 3.1.2 Plan and arrange dedicated WtE sessions in planned conferences. These could include:
 - At the National Level – national energy forums or national events like Environment Day or symposiums organised by the national energy office or national universities.
 - At the Regional Level – Pacific Energy and Transport Ministers Meeting, Pacific Power Association conference, or the Pacific Science, Technology and Resources conference.
- 3.1.3 Facilitate WtE sessions: Guide the presentations and conversations during the WtE session, to ensure balanced input and discussion from the range of stakeholders present.
- 3.1.4 Disseminate meeting outcomes: Outcomes from the meeting will be disseminated to the Pacific countries and also the wider SPC/SPREP membership, including through the WtE website described in A 3.2.

A3.2 – Build Pacific WtE website

Develop a website on Pacific WtE with automated and flexible features within the Pacific Data Hub ecosystem and promote the website.

- 3.2.1 Develop a dedicated Pacific WtE dashboard on the existing Pacific Data Hub and/or PRDR: Dedicated Pacific WtE resources will be delivered through the Pacific Regional Data Repository (PRDR), which is part of the Pacific Data Hub (PDH) ecosystem.
- 3.2.2 Develop automated and flexible features: Automated capturing of reports specifically on WtE through the SPC library; automated updating of data as per data protocols established in A 2.2; contact list for stakeholder follow-up enquiries.
- 3.2.3 Promotion and advocacy of the new website: Dedicated communications for Pacific national government and other stakeholders raise awareness of the new website. This could be a stand-alone campaign or merged with communications on the data in A 2.3.1.
- 3.2.4 Track the use of the data and dashboard content through a dashboard analytics page: This will be aligned or incorporated with A 2.3.3.

A3.3 – Strengthening existing Private Sector-Government-Partnership initiatives

This activity will ensure a holistic approach to waste management through WtE. The consortium will support government through the development /review of relevant energy roadmaps, policies and legislation that will provide the enabling environment for WtE and facilitate investment by the Private Sector.

- 3.3.1 Enhance collaboration between relevant regional (e.g. SEIAPI) and national agencies: by strengthening the capacity of SEIAPI members through WtE training, collaboration through feasibility studies and cost-benefit analysis to identify viable WtE projects, and facilitating private sector / investor / power utility engagement in WtE projects.
- 3.3.2 Enhance collaboration between national and private energy and waste agencies (e.g. national energy and waste associations): by developing / reviewing national WtE roadmaps, policy and legislation, engaging an expert to train and introduce innovative and effective methods of waste collection, sorting and usage, and carrying out feasibility studies and cost-benefit analysis of

selected WtE projects, and identifying co-financing sources to promote and facilitate investment in WtE.

- 3.3.3 Stimulate private sector engagement in WtE: Facilitated in conjunction with existing private sector engagement activities in PCREEE. Collaborate with SEI-API to identify and train selected representatives of the private sector on specific WtE areas that can create business opportunities and scaling up in the future, facilitate access to climate financing by the private sector, and support students to conduct WtE research.

A3.4 – Undertake WtE Trade Missions

Technical advice on WtE, and on RET and SWM more generally, will be provided to groups of government officials traveling to countries/regions where WtE is currently in operation to investigate and learn what is currently operational in terms of WtE. These represent key consultation events through which cross-sectoral collaboration on WtE will be enhanced. The learnings from these missions will help inform potential implementation of research pilots (as part of A 5.1) and operational systems in the Pacific.

- 3.4.1 Review international WtE meetings: The project will initially determine whether or not there are any potential international WtE meetings to which the delegation could visit, which would serve the joint purposes of hearing from the international WtE community and seeing WtE in operation.
- 3.4.2 Presentation in selected international WtE meetings: This is contingent on there being a suitable international WtE meeting within the timeframe of the Action: prepare presentation material and provide technical advice to Pacific delegation
- 3.4.3 Initiate potential collaborations: Any potential collaborations would be elaborated upon through A3.1 and 3.2.

Consortium Role:

The Consortium will perform the secretariat role in preparing and facilitating Pacific WtE presentations at international/regional conferences (A3.1), and also for the trade missions (A3.4). The Consortium will build the WtE website, including uploading and maintaining the data that will be accessed through the website (A3.2), and facilitate collaboration efforts among actors of existing Private Sector-Government-Partnership initiatives. The Consortium would also provide overall guidance to all Activities in this Work Package.

Multiplier Role:

Regional entities such as SEI-API and PCREEE, would act as multipliers for promoting WtE business and investment opportunities through regional initiatives like the Regional Energy Ministers Meeting, Pacific Power Association (PPA) conference / investment forum, and the Science, Technology and Resources (STAR) conference. The multipliers will facilitate and guide the private sector, potential investors and entrepreneurs in capacity building, due diligence and investment decision making.

Deliverables:

- Presentations on WtE in the Pacific, including past experience, ongoing needs, and potential solutions.
- Meeting reports detailing the outcomes of WtE sessions at international/regional conferences.
- Pacific WtE website.
- Website usage analytics.
- Trip reports from Trade Missions outside the region.

WP4 – Adapting and developing WtE training courses for tertiary education providers

Assess existing skills shortages in the SWM and RET sector through consultation with industry groups and the research and development sector, map and evaluate existing national and regional education and training, forecast needs for SWM, RE and WtE sector and provide recommendations for skilling the future workforce from low-skilled labour to cutting-edge research.

Develop regional expertise in the first instance by supporting Masters and Honours students and offer scholarships in applied research projects.

Work with industry groups and interest groups to develop accredited training schemes that focus on job-ready graduates that can service and maintain the SWM, RE and WtE sectors. Training may include a blend of course work, industry placement, apprentices and internships and be delivered nationally or sub-regionally.

A4.1 – Adaption of RET qualifications

Existing RET qualifications will be assessed in terms of inclusion of educational materials on WtE. These regional qualifications will then be revised to include a WtE component. These updated qualification will be accredited on the Pacific Qualifications Framework through SPC's Educational Quality and Assessment Programme (EQAP), and adapted to the national or local context where required.

- 4.1.1 Review and revise existing RET qualifications at regional level: There are a number of existing qualifications at various levels for RET. The project will together with regional tertiary education providers determine the most appropriate revisions in the context of WtE.
- 4.1.2 Develop WtE input for the qualifications: This input will be based on desktop studies of international best practice and findings of the baseline assessment in A 1.1.
- 4.1.3 Facilitate accreditation of the qualifications: The qualifications will be accredited on the Pacific Qualifications Framework through SPC's EQAP.
- 4.1.4 Assist relevant national education agencies to adapt the regional qualifications to local context: National universities will be guided to make the materials relevant to the national setting where appropriate.

A4.2 – Co-development of short courses on WtE with tertiary education providers

The proposed short courses are un-accredited workshops or online learning that provide tailored training on technical aspects of WtE, targeting Pacific national government SWM and RET practitioners and decision makers, and potential private sector partners.

- 4.2.1 Skills gap analysis: Assess existing skills shortages in the SWM and RET sector through consultation with industry groups and the research and development sector.
- 4.2.2 Review existing international WtE short courses: Desktop study.
- 4.2.3 Adapt existing WtE short courses to the Pacific context
- 4.2.4 Develop new Pacific WtE short courses at national and/or regional level: Where no existing WtE short course are found to be appropriate to the Pacific context, new short courses will be developed.
- 4.2.5 Mentor, monitor and evaluate the delivery of WtE short courses.

A4.3 – Co-development and facilitation of research demonstration projects with tertiary education providers

A number of targeted higher education research projects will be set up to build and strengthen specific WtE skills in the Pacific and to grow the overall Pacific innovation ecosystem.

- 4.3.1 Develop and implement research demonstration projects on WtE for honours/masters students: A balance of Honours and Masters degrees at regional and national tertiary education institutions. These may incorporate aspects of the pilot projects in WP 5.
- 4.3.2 Select honours/masters students for participation in the research demonstration projects
- 4.3.3 Mentor honours/masters students: Mentoring will be performed by SPC and SPREP, in addition to the supervision provided through the education institutes.
- 4.3.4 Analyse the research projects to determine the applicability for incorporation into future iterations of the feasibility studies.
- 4.3.5 Disseminate the results of the research projects through the WtE website developed in A 3.2.

Consortium Role:

The Consortium will primarily provide management and mentoring oversight, with more specific contributions focussed on the development of short courses. The Consortium will mentor honours/masters students selected for participation in the research demonstration projects.

Multiplier Role:

USP will work with national universities to adapt the Pacific regional materials to the national contexts. USP will work with their network of national universities to adapt national level RET qualifications to include WtE (A4.1) and to develop any research projects at the national level (A4.3).

Deliverables:

- Accredited RET qualifications including educational WtE material
- Report on Pacific SWM and RET skills gaps
- Short courses on WtE in the Pacific
- Honours and Masters theses on WtE research projects in the Pacific.

WP5 –Developing WtE solutions through tertiary education providers

The minor advances that have occurred in WtE in the Pacific to date have primarily been through a series of *ad-hoc* pilot projects. The pilot project work in this Work Package differs from those previous initiatives in that they will not be *ad hoc* and that they will be based on the regional baseline and feasibility assessments (A1.1 and 1.2).

A5.1 – Co-design and development of pilot projects with tertiary education providers

As the principle RET and SWM technical institutes in the Pacific, SPC and SPREP will together with organisations at the national level co-design and develop pilot projects at a national or sub-regional level.

- 5.1.1 Select feasible WtE options for the Pacific: Select the most appropriate option(s) from the feasibility assessment in A 1.2 for piloting.
- 5.1.2 Design pilot WtE projects
- 5.1.3 Execute pilot WtE projects and develop pilot solutions
- 5.1.4 Analyse the pilot projects and solutions
- 5.1.5 Disseminate the results of the pilot projects through the Pacific WtE website developed in A 3.2.

Consortium Role:

The Consortium will work with national government representatives to co-design pilot projects, and from that stage will primarily have an oversight role of pilot project development. The Consortium will facilitate the analysis of the solutions and the disseminations of the results.

Multiplier Role:

In the case of pilot WtE solutions, the Action considers the research students involved in developing and implementing the pilot installations at the USP and potentially at national universities to be a case of non-traditional multiplier. These students will return to their national settings, and in many cases their national government institutions, and will expand their learnings in new developments and potentially new start-ups at the national and regional level.

Deliverables:

- Pilot project design reports
- Pilot installations
- Pilot project results reports

WP6 – Project management

A6.1 – Setting up the project management structure

The project management structure will be established in line with the management system of the Action detailed below in Section 2.2.7. The Project Management Unit (PMU) and technical experts will be identified/recruited at both SPC and SPREP and the Project Steering Committee (PSC) established through consultation with Pacific members.

A6.2 – Project meetings

The PMU will hold weekly meetings of core Project Staff and monthly meetings with multipliers. PSC meetings will be undertaken annually or when the need arises.

A6.3 – Support to local multipliers

Technical advice, mentoring and capacity building will be provided by the Consortium to the multipliers through most activities. Financial support will focus on national government focal entities and USP to fund staff time, scholarship programmes and pilot installations.

A6.4 - Financial management

The day-to-day technical and financial monitoring of activities will be a continuous and reflective process under SPC and SPREP's responsibility. Under this agreement, SPC will establish a permanent internal, technical and financial monitoring system.

A6.5 - Monitoring, Evaluation and Learning (MEL)

A MEL plan will be prepared by SPC-GEM MEL staff with support from SPC MELnet and SPREP during the inception phase and will be finalised by the Project Management Team as per the monitoring and evaluation methodology detailed below in Section 2.2.7.

A6.6 – Communication strategy

A communication and visibility plan will be co-developed by the SPC-GEM and SPREP communications teams, as per the details below in Section 2.2.7.

A6.7 – Reporting

SPC will provide annual technical and financial progress reports and a final report to the Contracting Authority. Every narrative report shall provide an accurate account of implementation, difficulties encountered, adaptive management actions and changes introduced, as well as the degree of achievement of results (outputs and outcomes) as measured by corresponding indicators, using as reference the Logframe matrix. Upon request of the Contracting Authority, other reports will be drafted as needed.

2.2.3 Describe the financial and technical support to third parties (i.e. local multipliers)

The objectives and results to be obtained with financial and technical support to local multipliers.

Under the current Action the objectives of scaling initiatives and accelerating the impacts is envisaged to be delivered through the following ‘non-traditional’ multipliers: National Government Entities, USP and SEIAPI.

National Government Entities will multiply the following activities in the following ways:

- A1.1.3 Execution of the baseline assessment – National government focal entities will work with cross-government counterparts to expand the survey assessment beyond their immediate team to a broad range of ministries.
- A1.3.4 Deliver workshops to national and subnational governments – National government focal entities will deliver workshops on WtE training with cross-government counterparts.
- A2.1.2 National consultations to determine un-reported or un-discoverable data – National government focal entities will work with cross-government counterparts to assess data gaps at the national level.
- A2.1.3 Enter un-reported or un-discovered data into existing national and regional datasets where necessary – National government focal entities will work with cross-government counterparts to assist in entering the newly discovered data into existing national and regional databases.
- A2.2.4 Data collection and insertion in databases – National government focal entities will work with cross-government counterparts to use new data collection protocols to add data to new databases.
- A2.3.2 Training or workshops on how to access and use the data – National government focal entities will take a lead role at the national level on training nationals to access and use the data.
- A3.4.2 Presentation in selected international WtE meetings – National government focal entities will take the lead in presenting at international WtE meetings.

USP will multiply the following activities in the following ways:

- A4.2.4 Develop new Pacific WtE short courses at national and/or regional level – USP will work with national universities to adapt regional short courses to the national contexts.
- A4.3.1 Develop and implement research projects on WtE for honours/masters students – USP (including through their students) will undertake the research projects within the Action, the findings of which will be expanded to their national settings driving new developments and potentially new start-ups at the national and regional level.
- A5.1.3 Develop pilot solutions – Pilot WtE solutions will be developed as part of these research projects, and while the students will complete the projects in a regional institution, the pilot solutions will be implemented at the national level.

SEIAPI will multiply the following activities in the following ways:

- A3.3.1 Enhance collaboration between relevant regional (e.g. SEIAPI) and national agencies – SEIAPI will provide training for its members on business opportunities created by the WtE sector.

The multipliers will be coached and mentored where necessary and will receive technical support from the consortium members at implementation and management level.

SPC will make agreements with the local multipliers including, among others, the frequent provision of funds for the implementation of their activities in the Action, regulations with respect to financial and narrative reporting, and other contractual arrangements.

*The different types of activities eligible for financial support, on the basis of a fixed list, the types of entity eligible which may receive financial support, the criteria for selecting these entities and giving the support, the criteria for determining the exact amount of financial support for each multiplier, and the maximum amount which may be given to them.*⁴

National government entities will be funded to undertake baseline assessments, deliver workshops, undertake national consultations, enter data into national and regional datasets, and present at international WtE meetings. The amount of funding supplied to undertake these activities will be based on current salaries of Pacific government officials and travel and other operational costs in line with similar actions in the Pacific.

USP will be funded to develop new Pacific WtE short courses at national and/or regional level, and to develop and implement research projects that include pilot solutions. The amount of funding supplied to undertake these activities will be based on the costs for a Masters student at USP, plus a nominal operational expense that will be tailored depending on the proposed solution.

Costs for SEIAPI to provide training that will enhance collaboration in WtE at the regional and national. The amount of funding will be determined by similar activities undertaken in PCREEE.

Information of the local multipliers (name, legal status, country, role in the Action, etc.).

The local multipliers envisaged are as follows:

- National Government entities which may include:
 - the PNG National Energy Authority,
 - the RMI National Energy Office,
 - the Samoa Ministry of Natural Resources and Environment,
 - the Solomon Islands Ministry of Mines, Energy and Rural Electrification, and
 - the Tuvalu Department of Energy, Ministry of Public Utilities and Infrastructure.
- USP
- SEIAPI

2.2.4 Describe the cost effectiveness of the Action

Strategy adopted to ensure that the proposed results will be achieved in the most economical and efficient way, and on time; arrangements adopted for financial management.

All expenditure for the Action will be executed in line with SPC's established Financial Regulations, and specifically SPC's 'Procurement' and 'Grants and Sub-delegations' policies. These Regulations have been assessed as in line with the EU Pillar Assessment. In this way the Action will achieve the described results in the most economical and efficient way.

2.2.5 Describe the relation with other initiatives

Synergy or complementarity with other past and ongoing development initiatives (in particular those financed by the EU), and avoidance of duplication; collaboration with other ongoing initiatives ; potential synergies with other initiatives, in particular those financed by the EU.

As highlighted in Section 2.1, waste management and energy security are two intractable issues facing Pacific Island Countries, contributing to an inability to meet multiple Sustainable Development Goals and climate change aspirations. As such, a wide range of development partners (including the EU) have financed separate

⁴ With reference to Section 2.4 of PRAG, the beneficiary of the grant contract shall be responsible for the respect of the EU restrictive measures in case of financial support to third parties.

past and ongoing development initiatives in Waste Management and Renewable Energy with very few exploring the nexus between the two. To date, Pacific WtE has focused on the conversion of biomass with the most recent and large-scale initiative being the opening of Samoa's latest biogas plant. The Plant is part of activities under the IMPRESS – Improving the Performance and Reliability of Renewable Energy Power Systems in Samoa – Project. This project was funded by the Global Environment Facility (GEF) via the United Nations Development Programme (UNDP), and the EU and the Government of Germany's Government Agency of International Cooperation (EU-GIZ) within the broader ACP's Adapting to Climate Change and Sustainable Energy (ACSE) programme. However, other than biomass conversion, no more than a handful of individual feasibility studies focusing on the conversion of municipal waste to usable energy have been conducted in the Pacific, with no projects backed and brought to fruition.

There is great synergy between the PAWES project and the multi-million Euro EU funded PacWastePlus project which builds upon on the success of the EU's initial PacWaste project. This initial project supported the efforts of Pacific island countries and territories to adopt cost-effective and self-sustaining priority waste management systems, improving regional hazardous waste management across the priority areas of healthcare waste, E-waste, asbestos, and integrated atoll solid waste management. The current PacWastePlus project was designed to generate improved economic, social, health and environmental benefits by enhancing existing activities and building capacity and sustainability into waste management practices. As part of this current iteration, a background paper on WtE options has been commissioned and will provide background information on the existence of turn-key technologies and the best avenues for further exploration once the PAWES baseline studies have been conducted and feasibility studies commence. It is foreseen that close collaboration and information sharing will exist between the SPREP-managed PacWastePlus and the SPC/SPREP-managed PAWES projects, coordinated by the PAWES PMU and facilitated through communication channels already existing between the two Pacific CROP agencies.

Another complementary EU-funded initiative includes the 2014-2020 PACTVET project; designed to enhance and create regional and national capacity of, and technical expertise to respond to climate change adaptation and sustainable energy challenges. The PacTVET project was component three within the broader ACP's ACSE programme building on the recognition that energy security and climate change are major issues that are currently hindering the social, environmental and economic development of Pacific countries. This project was implemented by the SPC in partnership with the University of the South Pacific. While expansive in scope, it did not specifically address WtE and, therefore, there is no overlap or duplication with the current Action. Moreover, the lessons learned from this project will influence the final detailed design of the Action as well as provide a template for the development of new accredited courses; through the experience of the roll-out of PacTVET's two Regional Certificates; in Resilience (climate change adaptation and disaster risk reduction) and Sustainable Energy.

There are many development partners supporting and financing Waste and/or Energy initiatives with some tangential synergy between the two sectors. However, the PAWES project will be the first in the Pacific to specifically focus on the nexus between the two sectors making it a truly innovative endeavour.

2.2.6 Sustainability of the Action

How the effects of the Action can become sustainable after completion.

Sustaining project-funded programmes upon completion of implementation is always a challenge for the Pacific ACP region. It is, therefore, critical for the participating organizations to continue to explore viable options in consultation with the participating Pacific ACP countries to sustain the implementation of necessary on-going and long-term programmes initiated by this Action. Some of the options envisaged and that will be further explored during inception and implementation phases include but not limited to:

- Strong ownership of activities by project-executing regional organisations, multipliers and the beneficiary countries of the Action. This is achieved through active and on-going engagement and participation in detailed design of Action activities, implementation, reviews leading to

stronger commitment to the successful implementation of the Action and continuation of its critical activities beyond the life of the project.

- National and sub-national level capacity building to sustain skills and knowledge relevant to RET, SWM and WtE which is one of the core focus areas of the Action. This will in turn reduce country dependence on externally funded projects.
- Strengthening the WtE sector will contribute to more steady economic growth and prosperity and both directly and indirectly through better health and education outcomes.
- Stronger advocacy during the implementation of the Action to encourage and get more meaningful buy-in from national governments of participating countries to consider WtE in their national budgets.
- Using a gender, rights and inclusive approach will contribute to a fairer sharing of economic, social and environmental benefits of WtE.
- Partnerships with other projects, programmes and groups through new or existing partnership agreements provide opportunities for the continuation of key activities.
- The regional organisations implementing this Action continue to support the Pacific ACP countries as their mandatory responsibility in progressing the global and regional agreements and frameworks, e.g. SDGs, the Framework for Resilient Development in the Pacific, etc.

Dissemination plan and the possibilities for replication, extension of the Action outcomes (multiplier effects), capitalisation on experience and knowledge sharing.

The Action will develop a dissemination plan to support consistent and effective implementation of the intended development outcomes and impacts of the Action through best practice and informed by communications strategies. This includes developing evidence-based knowledge products to support effective implementation at country and regional levels. This strategy will support the activities and sustainability of the Action by:

- Promoting good practice in RET/SWM/WtE in the participating countries;
- Sharing lessons learnt and knowledge acquired from the Action; and
- Promoting visibility of the Action particularly with constituents of the European Union, citizens of participating countries, development partners, and organisations working in the resilience and sustainable development spaces; and ensuring stakeholders are informed on the project objectives, progress and benefits.

Success in communications and knowledge management will be evidenced through an **increased understanding of underlying problems, local impacts and responses to WtE amongst decision-makers at all levels within Pacific countries**, including amongst government, business and civil society stakeholders. This means being able to communicate information in a manner that is relevant, accessible and aligned with stakeholder values.

The dissemination plan will support the roll-out of a wider communications and awareness campaign closely linked to SPC and SPREP's broader outreach on Energy and Waste, respectively, and their communication to Member Countries and partners through the production and dissemination of results stories, social media content, and videography.

The dissemination plan will harness well-established and far-reaching communications platforms such as SPC's Pacific Way television programming, as well as SPC's outreach to Member Countries and partners through regular campaigns such as those conducted annually for the Pacific Resilience Week.

Activities will draw upon the *Communication and Visibility Requirements for European Union External Actions*, *SPC Communication Guidelines* and other relevant guidelines developed during the life of the project and ensure these are appropriately reflected in the branding and visibility of project activities, equipment and infrastructure.

2.2.7 Describe the management system of the Action

Governance structure of the Action and the role of the members of the partnership herein, including where relevant the involvement of other stakeholders.

A Project Steering Committee will be established and made up of one representative from each of the beneficiary countries or their nominees; one senior representative from each of the consortium members (SPC and SPREP), one senior representative from the Pacific Islands Universities Research Network (PIURN), and the Project Manager. The main role of the Steering Committee is to provide overall guidance and strategic direction for the Action. If possible, the Steering Committee will meet in person in the first quarter of 2022, the first quarter of 2023, six months prior to project close-out, and virtually as required. The Project Manager will be responsible for coordination, the preparation of the agenda, all meeting documents and official minutes. The Steering Committee will be chaired by a beneficiary country representative on a rotating basis. Other organizations and multipliers may be invited to attend as observers.

Overall responsibility of the project will be with the Director of SPC's Geoscience, Energy and Maritime (GEM) Division in collaboration with the SPC Director General.

The day-to-day project and financial management and administration for the Action will be the responsibility of the Project Management Unit (PMU) that will be set up in SPC and led by a Project Manager. SPREP will also have a small team responsible for leadership and financial management of their input to the Action's deliverables. The PMU will provide logistical, financial, administrative and communications support for the delivery of this Action. This will include: (i) compilation and submission of 6-monthly progress and annual reports; (ii) annual financial reports and a complete final financial report in 2024; (iii) oversight of procurement across the two implementing consortium members; (iv) monitoring expenditure to ensure timely preparation and transmission of replenishments; (v) preparation and ongoing review of the monitoring and evaluation plan; (vi) support for the overall, integrated communication of the activities; and (vii) organization of a regional Inception Meeting and three meetings of the Steering Committee.

Project offices will be established in SPC and SPREP using existing office facilities. The costs of supporting these offices will be supported through this Action with staff from the PMU and SPREP office to be recruited by each organization following their respective procurement procedures. The overall delivery and coordination will be the responsibility of the PMU, with backstopping support of SPREP and SPC.

Communication pattern with the partnership members, the multipliers and other stakeholders.

In addition to the Steering Committee meetings, SPC and SPREP, will meet via teleconference at least monthly during the Inception Phase to plan and coordinate activities. This meeting schedule will likely be maintained at least quarterly and tailored throughout implementation to include multiplier representation. Records will be kept by the PMU of all meetings and included with quarterly reporting and briefings. They will be made available through knowledge products to all participating PAWES organizations as well as, where appropriate, external communication campaigns. These Steering Committee meetings and Partnership-Multiplier meetings also provide opportunities for the sharing and compiling of lessons learnt on an ongoing basis, and for policy dialogue with development partners and OACPS Member States.

The risks during the implementation of the activities (including also the impacts of the Covid-19 pandemic) and along the chain of results, and mitigation measures.

SPC will actively work with the beneficiary countries to manage political, economic, sociological, technological, legal, environmental, disaster and organisational risks associated with this Action. All SPC projects are delivered against the Organisation's Risk Management Guidelines. SPC has developed these Risk Management Guidelines based on Australian and New Zealand Standards on Risk Management (AS/NZS ISO 31000–2009 'Risk Management – Principles and Guidelines' and

AS/NZS 4360–2004 ‘*Risk Management*’). All risks associated with the Action will be included and aligned with the mitigation measures outlined in SPC’s soon to be launched centralized Risk Register and further detailed in individual Risk Assessment and Control Forms. Risks associated with the delivery of this Action include, but are not limited to:

- **Travel restrictions imposed:** The COVID-19 pandemic has forced all organizations to address issues associated with an inability to congregate in groups, to attend the office, or to travel across national borders. SPC and SPREP have demonstrated their ability to adapt and continue to operate under these trying conditions by a flexible and often innovative approach to project delivery. Online platforms have been used to deliver training courses, facilitate workshops and host global and regional meetings with great success. Although the Pacific practice of face-to-face discussion and ‘talanoa’ (as known in Fiji) is the preferred delivery modality, the world has had almost 2 years’ experience adapting to remote and online modes of project delivery. The Action will continually assess the sanitation situation and adapt accordingly.

- **National focus on Net Zero Emissions precludes the use of WtE due to non-negligible carbon footprint:** Wide stakeholder consultation will need to include participation by multiple government ministries to ensure that the Action aligns with the medium- and long-term climate change aspirations of each participating country. As in the Marshall Islands, WtE was determined as a Medium Term strategy at best, due to the aspiration of a Net Zero Emissions target by 2050. It is for this reason that an in-depth baseline and feasibility study must include current and projected national emissions targets to ensure the specific technology fits each individual country context.

- **Insufficient human resources in country:** Where insufficient human resources are available, consultants may be employed to supplement in-country capacity. Where possible, a matrix management approach can also be employed using existing under-allocated SPC/SPREP staff who can be reallocated to deliver on certain activities associated with this Action. As outlined above under ‘Travel Restrictions’, it is possible to deliver aspects of the Action online utilising regional capability or alternately to upskill members of the available workforce in-country through online training and mentoring to assist in the delivery of the Action’s activities.

- **Multipliers unable to deliver on contractual agreements:** As part of the adaptive management approach, multiplier activities will be continuously monitored to ensure they are tracking against the Action’s deliverables. Where poor performance or the likelihood of non-delivery is identified, a number of options are available. These include pivoting or redesigning certain activities to a more manageable modality, or as a last resort not proceeding with the activity and expanding successfully delivered activities elsewhere. This may only occur within legislative requirements and business agreements. To reduce the likelihood of this occurrence, a number of controls may be put in place including contract conditions, supervision, technical controls, compliance programmes, procedure manuals, quality control manuals, training, other forms of technical support, etc.

Further risks and mitigation measures will be documented during the Inception Phase as multiplier roles, responsibilities and plans solidify. These will be regularly revised as part of the reporting cycle as SPC and SPREP monitor contextual changes.

Measurements put in place for ensuring the quality of the activities.

The selection criteria outlined in Section 2.2.3 was developed to ensure that the multipliers selected to participate in the Action have proven experience and can demonstrate success in their field. During the inception phase the multipliers will be required to provide a detailed design of how they intend to implement their specific activities to deliver on the objectives and results outlined in the Logical Framework (Annex C). The technical feasibility of the proposed designs will be independently evaluated by SPS and SPREP (and by external advisors where the necessary expertise cannot be found in-house). The monitoring and evaluation methodology outlined below will ensure that any issues that arise can be dealt with and adapted swiftly to ensure ongoing success and the quality of the activities. SPC can also draw on its divisions where technical support is needed, including the

GEM Division, Land and Resource Division, Public Health Division, Fisheries, Aquaculture and Marine Ecosystems Division, Social Development Programme, Regional Rights Resource Team, Strategy, Performance and Learning Programme, and the Climate Change and Environmental Sustainability Programme. Furthermore, enhancing collaboration, networking and training underpins many aspects of this Action and will provide an opportunity for multipliers to work directly with regional and global expertise, receive mentoring and learn and exchange best practice throughout the duration of the Action.

Monitoring and evaluation (internal and external) methodology.

SPC has been actively reviewing its monitoring, evaluation, research and learning (MERL) approaches and learning culture. This includes its ability to adopt MERL-informed adaptive management approaches when working with its donors and Pacific partners, allowing for changes in programming design based on changes in context and learnings from earlier activities. The travel restrictions imposed as part of COVID-19 controls throughout the world, have also laid a foundation for adapting and ‘doing things differently’. Under this Action, an adaptive management approach is therefore proposed.

To successfully implement this approach, SPC will seek to systematically manage and share data and knowledge from the Action itself. While multiplier plans will be confirmed during the inception phase, regular steering committee meetings will be facilitated, providing opportunities to reflect on progress and contextual changes (including political, economic, social/cultural, technological, legal and environmental challenges and opportunities presented). It will also be an opportunity to make evidence-based recommendations for consideration by SPC and the OACPS on any appropriate adaptations that will lead to greater impact being achieved.

The day-to-day technical and financial monitoring of the implementation of this Action will be a continuous process and part of the consortium members’ responsibilities. To this aim, each consortium member shall establish a technical and financial monitoring system for the Action and elaborate through regular progress reports (six-monthly and annual) and a final report covering the entire Action. This will be supported by quarterly reporting from each multiplier. Every report shall provide an accurate account of implementation of the Action during the time frame for the particular report, difficulties encountered, changes introduced, as well as the degree of achievement of its results using the Logical Framework and its indicators as a guide (see Annex C). The final report, both narrative and financial, will cover the entire period of the Action’s implementation.

The European Commission (EC), as donor of the Action, may undertake additional project monitoring visits both through its own staff and through independent consultants recruited directly by the EC for independent monitoring reviews (or recruited by the responsible agent contracted by the EC for implementing such reviews). The final evaluation will be conducted by the consortium and will cover the entire Action (all Outputs and Outcomes).

Benchmark and indicators foreseen to verify the results of the Action, including those presented in the Logical Framework (Annex C).

Ongoing assessment and results of the Action will be verified against the indicators and targets associated with each segment of the results chain described in Section 2.2.1 and summarized in the Logical Framework (Annex C). These include:

- The Impact to ***enhance solid waste management and energy security in the Pacific region*** will be verified by: number of policies promoting the Waste-to-Energy (WtE) sector and new Public Private Partnerships (PPPs) offering WtE services.
- SO 1 that ***national and subnational government entities are able to make informed decisions on developing a sustainable Waste-to-Energy (WtE) sector*** will be verified by: number of strategies / roadmaps promoting the WtE sector, new / existing RET policies incorporating the development of the WtE sector, and investment projects started by stakeholder’s in the WtE sector.

- SO 2 that ***tertiary education providers are providing updated training and performing state-of-the-art research on Solid Waste Management (SWM), Renewable Energy Technologies (RET) and WtE*** will be verified by: number of short courses on WtE provided and students attending these courses, new RET qualifications accredited by the EQAP Board, WtE research projects set up by tertiary education providers, new innovative WtE solutions identified, and innovative WtE solutions adopted by users.
- Output 1.1 ***Enhanced capacity of government entities in the application of support tools for evidence-based decision-making in WtE*** will be verified by: number of training events organised, and government entities and staff trained on WtE and mentored in applying support tools in WtE decision-making.
- Output 1.2 ***Increased access to data on SWM and RET*** will be verified by: number of existing / new datasets on SWM and RET made available at national and regional level.
- Output 1.3 ***Enhanced cross-sectoral collaboration among government entities and the educational, research and private sector*** will be verified by: number of annual consultation events organised for co-developing initiatives for the WtE sector with stakeholders from the educational, research and public and private sector, and new multi-sector and multi-stakeholder platforms established and existing ones strengthened.
- Output 2.1 ***Tertiary education providers adapting and developing WtE training courses to prepare students for jobs matching existing and future market demands*** will be verified by: number of existing qualifications on SWM and RET adapted to WtE, new short courses on WtE designed and piloted, students enrolled in the WtE pilot courses, and WtE research demonstration projects executed.
- Output 2.2 ***Tertiary education providers adapting and developing WtE solutions*** will be verified by: number of tertiary education providers supported in the adaptation and development of WtE solutions, and (innovative WtE solutions piloted / adapted to the local context, or created).

As outlined in Section 2.1, alongside the indicators associated with verifying the results of this particular Action, where possible, results will be reported in line with the many other reporting obligations Pacific Member States are burdened with. These include, but are not limited to the global Sustainable Development Goals (SDGs), Nationally Determined Contributions (NDCs) associated with the Paris Agreement, Regional Waste and Energy Frameworks, as well as the myriad of projects funded by Development Partners across the Waste, Energy and associated sectors.

Indicate (where applicable) if some results will be patented or have other forms of intellectual property tied to it, and indicate how intellectual property rights will be managed by the partnership.

Due to the limited budget of the Action, it is not the intention to develop new WtE technologies, and therefore, need to assign intellectual property (IP) rights. Rather it is foreseen that emphasis will be on the transfer and deployment of *existing* technologies into new areas with previously attributed IP. The technology transfer will be facilitated through the universities active within the Action. Therefore, IP and copyright will also align with the University's published IP and Copyright policy and procedures set out to cover all staff and students, and all others affiliated with the university for any purpose. As institutions of higher learning, universities are mandated to teach and conduct research. These core activities may generate IP; teaching involves preparing original course materials, while research may generate new and useful knowledge. Since universities employ people specifically to engage in teaching and research, there is a legal and moral right to own at least part of any IP they produce. Yet this right is not absolute and an individual's IP rights may supersede those of the university.

SPC/SPREP copyright protects the organisation's work from commercial or for-profit exploitation, while ensuring that the information can be freely used for scientific, educational or research purposes; provided SPC/SPREP and the source document are acknowledged. SPC/SPREP employees can be

listed as authors, but the copyright is vested in the organisation. All work commissioned by SPC/SPREP and carried out by consultants belongs to SPC/SPREP, with the copyright vested in the organisation, not the author. Consultancy and multiplier contracts will reflect a shared and agreed upon understanding of IP and Copyright prior to commencement, to be finalized and approved by SPC/SPREP legal departments.

Activities to ensure the visibility of the Action and the contribution of the OACPS and the EU.

This Action shall contain communication and visibility measures, based on a specific Communication and Visibility Plan, to be elaborated and approved by the Contracting Authority and the EC on implementation. A Communications Officer will be assigned or hired (depending on divisional capacity) by SPC at the start of the Action. They will work with the co-delegate (SPREP), and multipliers to ensure consistent overall visibility and communication of the seven outputs. A small operational budget for communications across the Action has been included in the Budget, and provisions made for communications and visibility activities across all Outputs under the Action, as well as in the separate Grant Agreements with multipliers.

In terms of legal obligations on communication and visibility, the measures to acknowledge the financial and technical support of the OACPS and the EU, as well as of the consortium members, shall be implemented by the Action, the beneficiary countries, contractors, multipliers and/or final beneficiaries. Appropriate contractual obligations will be included in the financing agreement, as well as in procurement and multiplier contracts. The Communication and Visibility Requirements for EU External Actions 2018 shall be used to establish the Communication and Visibility Plan of the Action and the appropriate contractual obligations. Refer to **Annex XXX** for indicative communication and visibility plan.

2.3 Work plan

(max 1 page)

See attachment.

2.4 Logical Framework

See Annex C.

2.5 Budget

* * *

Literature

Framework for Energy Security and Resilience in the Pacific (FESRIP) 2021-2030

Innovation in the Pacific: An assessment (2016), *Inclusive and Sustainable Industrial Development Working Paper Series WP 18*, United Nations Industrial Development Organisation.

The Pacific Regional Waste and Pollution Management Strategy 2016-2025

Annex C. Logical Framework

Impact (Overall objective)	Results chain	Indicator	Baseline (value & reference year)	Target (value & reference year)	Current value (reference year)	Source and mean of verification	Assumptions
Enhanced solid waste management and energy security in the Pacific region	1. Number of integrated Renewable Energy Technologies (RET) policies promoting the Waste-to-Energy (WtE) sector implemented (by country and stage of operationalisation)		TBD during the inception phase (2021)	6 (2024)		Annual national Government plans, budgets and reports; <i>Reports from:</i> Cleaner Pacific 2025 Pacific Regional Waste and Pollution Management Strategy (2021-2030); The Framework for Energy Security in the Pacific (FESRIP) 2021-2030; Pacific Regional Infrastructure Facility's (PRIF); Pacific Infrastructure Performance Indicators (PIPI)	
	2. Number of new Public Private Partnerships (PPPs) created offering services (e.g., scaling up of proven solutions) in the WtE sector (by country)		TBD during the inception phase (2021)	TBD during the inception phase (2024)			
SO1 National and subnational government entities able to make informed decisions on developing a sustainable Waste-to-Energy (WtE) sector	1.1 Number of strategies / roadmaps promoting the WtE sector developed and updated (by country)		0 (2021)	6 (2024)		National Government reports (collected annually from ministries responsible for energy, waste management and central planning); Intervention reports	Public and private interest to invest in WtE technologies
	1.2 Number of new / existing RET policies incorporating the development of the WtE sector (by country and stage of policy making)		TBD from the baseline survey (2022)	TBD from the baseline survey (2024)			National focus on meeting renewable energy targets and development of SWM best practice is maintained.
	1.3 Number of investment projects started by stakeholders in the WtE sector to update / expand technologies (by country and sector: public/private)		TBD from the baseline survey (2022)	TBD from the baseline survey (2024)		Press releases; National statistics offices; SPC social media; Intervention reports	Governments have the capacity and time for piloting WtE projects.
SO2 Tertiary education providers providing updated training	2.1 Number of short courses on WtE provided by tertiary education providers (by type, country/region, type of education provider)		0 (2021)	TVET: 3 Regional University: 1 National University: 3 (2024)		Websites of education providers; Intervention reports	Sufficient local resources and skilled trainers available to run the courses.

and performing state-of-the-art research on Solid Waste Management (SWM), Renewable Energy Technologies (RET) and WtE	2.2 Number of students attending the short courses on WtE provided by tertiary education providers (by country, sex, age)	0 (2021)	TVET: 20 Regional University: 6 National University: 6	Annual reports from education providers with data on enrolment and graduation; Intervention reports	Sufficient local interest to enrol in courses. Market interested in WtE skilled people.
	2.3 Number of new RET qualifications at tertiary education providers accredited by the Pacific Educational Quality and Assessment Programme (EQAP) Board (by country, stage of accreditation)	0 (2021)	4 (2024)	Reports/publications from education providers; End-line survey of the Intervention; Intervention reports (progress, final)	
	2.4 Number of WtE research projects set up by tertiary education providers (by country)	0 (2021)	1 per country (2024)	Reports from tertiary education providers; Intervention reports (progress, final)	
	2.5 Number of innovative WtE solutions identified by tertiary education providers (e.g., existing ones piloted or adapted to the local context, new ones created) (by country)	0 (2021)	2 (2024)	National registration offices; Reports / Publications from tertiary education providers	
	2.5 Number of innovative WtE solutions adopted by users (by country)	0 (2021)	2 (2024)	Press releases; Reports from tertiary education providers; Intervention reports (progress, final)	
O1.1 Enhanced capacity of government entities in the application of support tools for evidence-based decision-making in WtE	1.1.1 Number of training events organised (by country, subject)	0 (2021)	12 (2024)	Training reports; Intervention reports (progress, final)	Sustained political will to continue exploring WtE as part of SWM solutions and the national energy mix Public and private stakeholders willing to share data
	1.1.2 Number of government entities trained on WtE (by country)	0 (2021)	4 per country (2024)		
	1.1.3 Number of staff from government entities trained on WtE (by country, sex, age, cadre)	0 (2021)	12 per country (2024)		
	1.1.4 Number of staff from government entities mentored in applying support tools in WtE decision-making (by country, sex, age, cadre)	0 (2021)	3 per country (2024)	Training reports; Intervention reports (progress, final)	
O1.2 Increased access to data on SWM and RET	1.2.1 Number of existing / new datasets on SWM and RET made available at national level (by country/region, state: new/existing, type)	TBD during the inception phase (2021)	7: 1 per country (2024)	National databases; Intervention reports	
	1.2.2 Number of existing / new datasets on SWM and RET made available at regional level (by state: new/existing, type)	0 (2021)	1 (2024)	Pacific Regional Data Repository (SPC); Pacific Data Hub (SPC); Intervention reports	

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O1.3 Enhanced cross-sectoral collaboration among government entities and the educational, research and private sector on WtE	1.3.1 Number of annual consultation events organised for co-developing initiatives for the WtE sector with stakeholders from the educational, research and public and private sector (by country, region)	0 (2021)	1 per country per year, 1 regional per year (2024)	Training reports; Intervention reports; Publications of national and regional training events by the organisers	A sufficient number of students enrol to make the courses viable Tertiary education providers are willing to revise curricula Tertiary education providers have available human resources to revise curricula
	1.3.2 Number of stakeholders and people participating in the consultation events (by country, type of stakeholders, sex, age)	0 (2021)	TBD during the inception phase (2024)		
O2.1 Tertiary education providers adapting and developing WtE training courses on preparing students for jobs matching existing and future market demands	1.3.3 Number of new multi-sector and multi-stakeholder platforms established and existing ones strengthened (by country/sub-region, type)	TBD during the inception phase (2021)	TBD during the inception phase (2024)	Intervention reports; Publications from platforms; Websites of platforms	Tertiary education providers are willing to invest in identifying WtE solutions Tertiary education providers have available human resources to conduct research
	2.1.1 Number of existing qualifications on SWM and RET adapted to WtE (by country/region, type of provider)	0 (2021)	2 (2022)	Intervention reports; Publications of SPC	
O2.2 Tertiary education providers adapting and developing innovative WtE solutions	2.1.2 Number of new short courses on WtE designed (by country/region, type of provider, subject)	0 (2021)	TBD during the inception phase (2024)	Institutional annual reports; Multiplier reports; Intervention reports	Tertiary education providers are willing to invest in identifying WtE solutions Tertiary education providers have available human resources to conduct research
	2.1.3 Number of new short courses on WtE piloted (by country/region, type of provider, subject)	0 (2021)	TBD during the inception phase (2024)	Institutional annual reports; Multiplier reports; Intervention reports	
	2.1.4 Number of students enrolled in the WtE pilot courses (by type of provider, sex, age)	0 (2021)	TBD during the inception phase (2024)	Press releases; Websites of education providers; Intervention reports	
	2.1.5 Number of WtE research demonstration projects executed (by type, country, type of provider)	0 (2021)	2 (2024)	Multiplier reports; Intervention reports	
O2.2 Tertiary education providers adapting and developing innovative WtE solutions	2.2.1 Number of tertiary education providers supported in the adaptation and development of innovative WtE solutions (by country)	0 (2021)	4 (2024)	Websites of education providers; Multiplier reports; Intervention reports	Tertiary education providers are willing to invest in identifying WtE solutions Tertiary education providers have available human resources to conduct research
	2.2.2 Number of innovative WtE solutions piloted / created / adapted to the local context (by country)	0 (2021)	2 (2024)		

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Activity Matrix

<p>WP1 – Capacity strengthening of government entities in the application of support tools for evidence-based decision-making in WtE</p> <p>A1.1 – Baseline assessment on decision-making processes at governmental level on the waste and renewable energy sectors</p> <p>A1.2 – Feasibility assessment of WtE for the Pacific</p> <p>A1.3 – Training on WtE policy making adapted to the Pacific</p> <p>WP2 – Collection and consolidation of data on SWM and RET in the Pacific region</p> <p>A2.1 – Updating of existing data/databases</p> <p>A2.2 – Development of new data/databases</p> <p>A2.3 – Analysis of use of data</p> <p>WP3 – Promotion of cross-sectoral collaboration among government entities and the educational, research and private sector</p> <p>A3.1 – Deliver Pacific WtE presentations at international/regional conferences</p> <p>A3.2 – Build Pacific WtE website</p> <p>A3.3 – Strengthening existing Private Sector-Government-Partnership initiatives</p> <p>A3.4 – Undertake WtE Trade Missions</p> <p>WP4 – Adapting and developing WtE training courses for tertiary education providers</p> <p>A4.1 – Adaption of RET qualifications</p> <p>A4.2 – Co-development of short courses on WtE with tertiary education providers</p> <p>A4.3 – Co-development and facilitation of research demonstration projects with tertiary education providers</p> <p>WP5 – Developing WtE solutions through tertiary education providers</p> <p>A5.1 – Co-design and development of pilot projects with tertiary education providers</p> <p>WP6 – Project management</p> <p>A6.1 – Setting up of the project management structure</p> <p>A6.2 – Project meetings</p> <p>A6.3 – Support to local multipliers</p> <p>A6.4 – Financial management</p> <p>A6.5 – Monitoring, Evaluation and Learning (MEL)</p> <p>A6.6 – Communication strategy</p> <p>A6.7 – Reporting</p>	<p>Means</p> <p>Throughout all work packages, primarily staff time is required from the consortium members and the local multipliers for drafting training materials and delivering trainings.</p> <p>Logistical costs are foreseen for the research demonstration projects.</p> <p>Flights and per diems are needed for the various meetings under the project and events to be visited. A special consultancy service is required to obtain an accreditation of the newly developed RET courses.</p> <p>Costs</p> <p>See Annex B ‘Budget for the Action’</p>	<p>Assumptions</p> <p>Government entities have sufficient human resources to participate</p> <p>Tertiary education providers committed to invest in RET and SWM as part of their training mandates</p> <p>Pre-conditions</p> <p>Regional interest from governments and the public in treating the challenges of waste and renewable energy</p>
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