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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------|
| <b>Project title: Managing Coastal Aquifer Project (MCAP)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                 |                                                            |
| <b>Country:</b> Republic of Marshall Islands, Republic of Palau, Tuvalu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Implementing Partner:</b><br><br>The Pacific Community (SPC) | <b>Management Arrangements :</b><br><br>IGO Implementation |
| <b>UNDAF/Country Programme Outcome:</b> Outcome 1: Environmental management, climate and disaster risk management. The UN will work to support an integrated approach to environmental sustainability and efforts by PICT governments and communities to adapt to climate change and reduce and manage disaster risk.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                 |                                                            |
| <b>UNDP Strategic Plan Output:</b> Output 1.4.1 Solutions scaled up for sustainable management of natural resources, including sustainable commodities and green and inclusive value chains                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                 |                                                            |
| <b>UNDP Social and Environmental Screening Category:</b><br>Low                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>UNDP Gender Marker:</b> 1                                    |                                                            |
| <b>Atlas Project ID (formerly Award ID):</b> 00112065                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Atlas Output ID (formerly Project ID):</b> 00110740          |                                                            |
| <b>UNDP-GEF PIMS ID number:</b> 6196                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>GEF ID number:</b> 10041                                     |                                                            |
| <b>Planned start date:</b> March 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Planned end date:</b> March 2024                             |                                                            |
| <b>PAC meeting date:</b> 19/2/2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                 |                                                            |
| <b>Brief project description:</b> SIDS rely on small coastal aquifers for their water supply needs. These coastal aquifers are fragile thin freshwater lenses that float on the underlying denser seawater and are reliant on rainfall for recharge. These coastal aquifers are at higher risk of impact to water quality deterioration from threats including saltwater contamination from sea level rise, over abstraction, wave overtopping, loss of aquifer area through coastal erosion, and other impacts on water quality from inappropriate land-use activities. Climate change exacerbates these long-running threats to coastal aquifers through increased climate variability and climate extremes. The fragility of coastal fresh groundwater systems necessitates careful management and protection to ensure their long-term integrity and their role in climate change adaptation strategies and improved water security. The project aims at improving the understanding, use, management and protection of coastal aquifers towards enhanced water security, including in the context of a changing climate. More specifically it aims at 1) identifying the extent, threats and the development potential of groundwater resources, 2) increasing awareness of groundwater as a water security supply source, 3) providing options for improved access to groundwater and 4) and improving aquifer protection and management, within Pacific Small Island Developing States. |                                                                 |                                                            |

| FINANCING PLAN                                   |                                |                       |
|--------------------------------------------------|--------------------------------|-----------------------|
| GEF Trust Fund                                   |                                | USD 5,261,356         |
| <b>(1) Total Budget administered by UNDP</b>     |                                | <b>USD 5,261,356</b>  |
| PARALLEL CO-FINANCING                            |                                |                       |
| USAID                                            |                                | USD 52,937            |
| Government                                       |                                | USD 14,051,360        |
| UNDP                                             |                                | USD 60,000            |
| Others                                           |                                | USD 5,440,500.00      |
| <b>(2) Total co-financing</b>                    |                                | <b>USD 19,604,797</b> |
| <b>(3) Grand-Total Project Financing (1)+(2)</b> |                                | <b>USD 24,866,153</b> |
| SIGNATURES                                       |                                |                       |
| Signature: print name below                      | Agreed by Government           | Date/Month/Year:      |
| Signature: print name below                      | Agreed by Government           | Date/Month/Year:      |
| Signature: print name below                      | Agreed by Government           | Date/Month/Year:      |
| Signature: print name below                      | Agreed by Implementing Partner | Date/Month/Year:      |
| Signature: print name below                      | Agreed by UNDP                 | Date/Month/Year:      |

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# 1. Development Challenge

## 1.1 Regional context

Small Island Developing States (SIDS) rely on small coastal aquifers that are fragile thin freshwater lenses that float on the underlying denser seawater and are recharged by rainfall. These coastal aquifers are at higher risk of impact to water quality deterioration from threats including saltwater contamination from sea level rise, over abstraction, wave overtopping, loss of aquifer area through coastal erosion, and other impacts on water quality from inappropriate land-use activities (GRAPHIC, 2015a; GRAPHIC, 2015b). Climate change exacerbates these long-running threats to coastal aquifers through increased climate variability and climate extremes. The fragility of coastal fresh groundwater systems necessitates careful management and protection to ensure their long-term integrity and their role in climate change adaptation strategies.

The department of Environment of the Australian Government has undertaken a first-pass regional assessment of relative potential vulnerability of groundwater on islands of the Pacific region (covering 15 Pacific Island countries and territories) to the impacts of (i) lowest mean annual rainfall during ENSO phases and (ii) mean sea-level rise (SLR) in two projection periods (2050 and 2085) (Dixon-Jain et al. 2014). The vulnerability of the assumed principal aquifer on each island to current and future climate was assessed through a groundwater vulnerability framework, which considered the components of sensitivity, exposure, and adaptability of the groundwater system. The study found that the majority of assessed low-lying carbonate islands in the Pacific region have higher relative vulnerability. Tuvalu, Palau and the Republic of Marshall Islands were ranked particularly high in terms of groundwater vulnerability due to the large number of low-lying carbonate islands.

The high risks associated with groundwater availability and natural/anthropogenic pollution in low-lying SIDS were also identified by the GEF-funded Transboundary Waters Assessment Programme (UNESCO-IHP and UNEP, 2016). The global assessment performed for the groundwater systems in SIDS highlighted how these risks are particularly exacerbated when human groundwater dependence for its potable and domestic freshwater needs is high, as this is the case in many Pacific low-lying SIDS, including the three project countries.

Further, regional studies show a direct link between the availability of water and sanitation to gender equity, poverty, school attendance and learning outcomes, health and overall well-being. Given women's role as primary water users and household decision-makers, alongside the high vulnerability of children, the elderly and people with disabilities to water shortages, the project will play an important role in addressing these issues in targeted areas.

## 1.2 National context

Climate and rainfall variability is a direct threat to the population of RMI, Palau and Tuvalu which relies mainly on rainwater harvesting for their potable needs. Surviving droughts requires the identification of alternate and drought- resilient water sources. Fresh groundwater occurs naturally in many of the islands of these three SIDS, existing as a freshwater lens which floats on top of the denser seawater. These limited but important freshwater sources are very sensitive to external influences requiring informed decision making to manage and maintain their integrity. Site-specific information on the aquifer locations and extents, the natural and anthropogenic sources of pollution, and the risks from other threats such as wave inundation and over-abstraction, is necessary to achieve sustainable coastal aquifer protection and development. To obtain this knowledge, geophysical and land-use assessments need to be conducted, monitoring networks need to be established and, ultimately, water budget and numerical models need to be developed. The spatial and temporal variability of rainfall needs to be available to ensure reliable model output as a basis for sustainable management, necessitating the collection of daily/monthly rainfall records at the island level.

In most cases, human-induced pollution of groundwater in small islands relates to the absence of sewage treatment systems and to the percolation of the effluents from septic tanks or pit latrines into the groundwater. Agriculture and animal farming are in most cases performed at subsistence level and may be responsible for localized contamination of groundwater. There are a few cases of more intensive agriculture which may cause more significant contamination.

In Funafuti, the capital of Tuvalu, groundwater is exposed to natural and anthropogenic contamination, including salinity, leaving the population solely dependent on rainwater for potable purposes (Baarsch and Berg, 2015). Variations in precipitation patterns, however, can make rainwater access unreliable. The Government of Tuvalu recommends that groundwater in Fongafale, Funafuti should only be used for secondary purposes, as it is contaminated by leaking septic tanks, animal waste, heavy metals, and saltwater intrusion. As the islet of

Fongafale in Funafuti atoll consists mainly of coarse grained sediments, the potential for the development of a freshwater lens is reduced and pollutants can more easily percolate in the shallow and permeable groundwater system.

Groundwater contamination in RMI has been observed in Laura and Delap area (Majuro atoll) where groundwater has been recognized as an important water source, particularly during periods of low rainfall. Contamination in Laura has been observed in the shallower monitoring boreholes and private wells, predominantly in the form of *E. coli* bacteria. In Delap, the fresh groundwater has been found contaminated and unsuitable for potable purposes, but a number of industrial users rely on it for secondary water needs.

It is estimated that 4% of the national land area of Palau and 9% of the total population are affected by saltwater intrusion of aquifers (IWRM hot spot analysis, 2007). Saltwater intrusion has been observed in the island of Peleliu, where one of the country's main freshwater lens aquifers exists. This resulted in the shutdown of several wells located close to the shoreline. In 2013, the freshwater lens aquifer of Kayangel suffered extended salinization due to Super Typhoon Haiyan passing within 11 km of the island. The levels of groundwater salinity increased due to this wave overtopping event to prohibitive levels for potable purposes. Bacteriological contamination from septic tanks has also been identified as a threat in the islands of Kayangel, Peleliu and Angaur (IWRM hot spot analysis, 2007).

The three countries are regularly challenged by droughts which in many instances have major negative impacts on the livelihoods of communities, the workloads of women and children, the level of community and household harmony and the wellbeing of the most vulnerable members of society. In 2011, the Government of Tuvalu declared a state of emergency due to drought (Sinclair et al, 2012). This followed the declaration of national crises on two atolls (the capital Funafuti and the southern island of Nukulaelae) requiring emergency measures to provide enough safe water for the populations living on these two islands. In 2016 a state of emergency was declared by the President of the Republic of Marshall Islands due to the severe drought conditions affecting the country (Sinclair, 2017). Assistance was sought by the RMI government to help determine the impact of the drought and pumping on the fresh groundwater and to provide advice regarding management and operational options available to RMI. Similarly, in the same year also Palau declared a state of emergency and water rationing was introduced with residents only able to use taps for six hours a day (Drought Report, Republic of Palau, 2016). These examples illustrate the high frequency and impact from drought-related disasters in the region and the vulnerability of the three countries and their water supplies.

### 1.3 Development challenges

White and Falkland (2010) stated that despite their vulnerability, Pacific island countries do not know the full extent and quality of their water resources – information that is needed for sustainable development, management and protection of these valuable freshwater resources. This calls for a comprehensive assessment to help guide SIDS in meeting their development challenges in the future.

The lack of country capacity in undertaking consistent water resources assessment and monitoring was identified during the Pacific HYCOS programme (SOPAC, 2010). It was concluded that most countries, by the end of the project had not achieved an acceptable level of sustainability in terms of being able to provide reliable, consistent, and timely data for water resource assessment and monitoring. It was recommended that capacity building should be part of a structured long term programme in order to be successful. A programme of support that can address each countries' needs and priorities is required.

With regards to enhancing groundwater system integrity in vulnerable areas Dixon-Jain et al (2014) recommended the following: developing informed and ongoing groundwater monitoring networks; ensuring sustainable extraction strategies; developing sub-regional groundwater management strategies for countries with similar island type distributions; developing coordinated best-practice guidelines, policies and programs to underpin the above activities. Adaptation capacity can further be increased by: improving in-country technical knowledge of groundwater systems; ensuring sufficient resources are available to carry out the adaptation activities; mentoring of water management agencies; and increasing community participation, including women and young people in water resources management, including sustainable groundwater management.

The development challenge that this project seeks to address is **the lack of knowledge and information on the status of coastal aquifers in Pacific Island Countries which hinders the development of aquifer management, protection, and governance mechanisms and their incorporation into applicable national water policies**. This project ultimately aims at providing to the project countries, and particularly to the selected project sites, the

foundation required to support improved aquifer management/governance including the increased engagement of women in island and community level water planning and decision-making processes.

Immediate causes responsible for this development challenge include the nature of aquifers and groundwater being “invisible” and therefore hard to visualize, monitor, and manage. In many cases, aquifers are only accessed at household level through shallow wells and as a result the behavior of these aquifers to external influences is largely unknown. This obviously impedes the development of targeted management interventions to sustain aquifer services and warrant their protection. Indications, usually incomplete, of groundwater contamination due to increased salinity or due to anthropogenic activities have in various instances led to the conclusion that aquifers are unsuitable for use and their management and protection are therefore irrelevant. This in turn has resulted to a biased public perception against groundwater.

The root causes need to be identified in order to address the development challenge and design appropriate activities and interventions. The obvious barrier limiting the generation of knowledge and data on aquifers and groundwater is the limited capacity at local and national level to assess and monitor aquifers and groundwater resources. The absence of dedicated monitoring infrastructure and human capacity impedes the generation of data that is required to support aquifer management and protection. An important root cause identified by the project countries at the national level is the “*Limited local capacity to explore and make reliable estimates of the quantity and quality of water from underground sources (Palau Drought Report 2016)*”. The lack of data is also caused by the limited appreciation on the value of monitoring and the benefits of long-term data generation in decision making. As a result of this data and knowledge gap, there is also a lack of decision making tools and suitable governance mechanisms at local and national level that could support incorporation of groundwater into applicable national water policies. Further, the low level of engagement by women as primary water users and decision-makers at household level is a key barrier to change.

| Immediate causes                                                         | Root causes / barriers to change                                                                                  |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Limited knowledge/data on aquifers and groundwater quantity and quality. | Limited local and national capacity (human and infrastructural) to assess and monitor groundwater resources.      |
| Contamination of aquifers due to natural and anthropogenic activities.   | Limited appreciation on the value of monitoring and data generation.                                              |
| Biased public perception against groundwater at local/national level.    | Lack of awareness at the local and national level on the value of aquifers and the need to maintain/protect them. |
|                                                                          | Lack of decision making tools and governance mechanisms.                                                          |
|                                                                          | Women’s lack of engagement in community and island level decision-making processes regarding groundwater.         |
|                                                                          | Lack of (integrated) water resources management.                                                                  |
|                                                                          | Lack of understanding/appreciation of the value of groundwater as reliable and usable water resource.             |

## 1.4 National statistics demonstrating the magnitude of the development challenge

The magnitude of the development challenge in the three project countries is demonstrated through evidence obtained from national datasets. Water and sanitation statistics for Palau (2015), Marshall Islands (2011) and Tuvalu (2012) are presented in Tables 1, 2 and 3, respectively. Reticulated water supply in Palau covers 97% of all households (43% of all households on Kayangel island) with 92% of all households having access to flush toilet (with the proportion decreasing to 78%, 61% and 72% for the islands of Kayangel, Angaur and Peleliu, respectively). Even though treated and desalinated groundwater is reticulated to all households on Kayangel, Angaur, and Peleliu islands, rainwater still remains the preferred source of drinking and cooking purposes for 100%, 50% and 96% of all households on the three islands, respectively. This indicates that groundwater is not always perceived as good quality water from the communities living on these islands.

In the Marshall Islands, drinking water supply is covered by rainwater for 79% of all households while groundwater (reticulated or not) is only used by 9% of all households. 84.5% of all households have access to flush or pour flush toilet facilities with this proportion increasing to 96.5% for Majuro atoll.

In Tuvalu, all islands rely, to varying degrees at varying times, on well water for non-potable use (washing, bathing, toilet-flushing, livestock). Reliance on well water generally increases during the drier periods. The sanitation status is relatively good, with most households having water flush or pour toilets (Sinclair et al 2011). Most of these toilets use either rain or well water, and occasionally even sea water. A significant number of households in some of the outer islands (Nui, Nanumea, and Niutao) are without any toilets at all – members of those households report that they use either the bush or the beach for such purposes.

**Table 1. Water and sanitation statistics for Palau (Census 2015)**

|                                                           | Palau | Kayangel | Angaur | Peleliu |
|-----------------------------------------------------------|-------|----------|--------|---------|
| Total population                                          | 17661 | 54       | 119    | 484     |
| Male/female ratio                                         | 1.16  | 1.32     | 1.69   | 1.27    |
| Total households                                          | 4713  | 23       | 44     | 142     |
| <b>Water supply (% of households)</b>                     |       |          |        |         |
| Hot/cold water piped inside household                     | 23.2  | 0.0      | 0.0    | 10.6    |
| Cold water piped inside household                         | 70.3  | 73.9     | 100.0  | 86.6    |
| Cold water piped outside household                        | 5.2   | 26.1     | 0.0    | 2.8     |
| No piped water                                            | 1.3   | 0.0      | 0.0    | 0.0     |
| <b>Sanitation (% of households)</b>                       |       |          |        |         |
| Inhouse access to shower                                  | 82.6  | 69.6     | 54.5   | 59.2    |
| Outside access to shower                                  | 16.4  | 30.4     | 45.5   | 40.8    |
| No access to shower                                       | 1.0   | 0.0      | 0.0    | 0.0     |
| Inhouse access to flush toilet                            | 81.9  | 73.9     | 54.5   | 54.9    |
| Outside access to flush toilet                            | 9.8   | 4.3      | 6.8    | 16.9    |
| No access to flush toilet                                 | 8.2   | 21.7     | 38.6   | 28.2    |
| <b>Main source of water (% of households)</b>             |       |          |        |         |
| Reticulated only                                          | 89.1  | 30.4     | 54.5   | 68.3    |
| Reticulated and cistern                                   | 7.7   | 13.0     | 45.5   | 28.9    |
| Cistern, tank or drums only                               | 2.2   | 47.8     | 0.0    | 2.1     |
| Public standpipe                                          | 0.2   | 0.0      | 0.0    | 0.7     |
| Well/spring                                               | 0.8   | 8.7      | 0.0    | 0.0     |
| <b>Main source of water for cooking (% of households)</b> |       |          |        |         |
| Reticulated water                                         | 89.0  | 0.0      | 45.5   | 2.8     |
| Rainwater                                                 | 8.4   | 100.0    | 47.7   | 95.8    |
| Bottled water                                             | 1.7   | 0.0      | 2.3    | 0.0     |
| Both rain and bottled water                               | 1.0   | 0.0      | 4.5    | 1.4     |
| <b>Main source of drinking water (% of households)</b>    |       |          |        |         |
| Reticulated water                                         | 42.8  | 0.0      | 40.9   | 0.0     |
| Rainwater                                                 | 22.4  | 100.0    | 50.0   | 95.8    |
| Bottled water                                             | 28.6  | 0.0      | 2.3    | 2.8     |
| Both rain and bottled water                               | 6.3   | 0.0      | 6.8    | 1.4     |
| <b>Type of sewage system (% of households)</b>            |       |          |        |         |
| Connected to public system                                | 51.8  | 0.0      | 0.0    | 0.7     |
| Connected to septic tank or cesspool                      | 43.2  | 82.6     | 77.3   | 71.1    |
| Use other means                                           | 5.0   | 17.4     | 22.7   | 28.2    |

**Table 2. Water and sanitation statistics for the Republic of Marshall Islands (Census 2011)**

|                                                        | Marshall islands | Majuro | Wotje | Ailinglaplap | Jaluit |
|--------------------------------------------------------|------------------|--------|-------|--------------|--------|
| <b>Total population</b>                                | 53158            | 27797  | 859   | 1729         | 1788   |
| Male/female ratio                                      | 1.05             | 1.03   | 1.12  | 1.02         | 1.09   |
| Total households                                       | 7738             | 4092   | 132   | 287          | 252    |
| <b>Main source of drinking water (% of households)</b> |                  |        |       |              |        |
| Rain catchment                                         | 79.1             | 76.4   | 100   | 99.3         | 100    |
| Bottled water                                          | 10.3             | 16.4   | 0     | 0            | 0      |
| Reticulated water outside household                    | 5.5              | 1.2    | 0     | 0            | 0      |
| Reticulated water inside household                     | 3.1              | 3.4    | 0     | 0            | 0      |
| Well water                                             | 0.6              | 0.7    | 0     | 0.7          | 0      |
| Other                                                  | 1.4              | 1.9    | 0     | 0            | 0      |
| <b>Type of toilet facility (% of households)</b>       |                  |        |       |              |        |
| Flush toilet connected to central sewage system        | 42.2             | 53.7   | 0     | 0            | 0      |
| Flush toilet connected to own septic tank              | 31.8             | 34.4   | 52.3  | 24           | 39.7   |
| Water sealed (without flush)                           | 10.3             | 6.2    | 29.5  | 35.5         | 19.8   |
| Pit latrine                                            | 6.2              | 1.8    | 14.4  | 15.3         | 7.5    |
| None                                                   | 2.1              | 0.2    | 0     | 0            | 32.9   |
| Other                                                  | 7.4              | 3.8    | 3.8   | 25.1         | 0      |

**Table 3. Water and sanitation statistics for Tuvalu (Census 2012)**

|                                                          | Tuvalu | Funafuti | Vaitupu | Nanumea | Nui   |
|----------------------------------------------------------|--------|----------|---------|---------|-------|
| Total population                                         | 10640  | 5436     | 1542    | 612     | 729   |
| Male/female ratio                                        | 1.04   | 1.06     | 1.00    | 1.11    | 1.03  |
| Total households                                         | 1761   | 845      | 226     | 115     | 138   |
| <b>Drinking water supply (% of households)</b>           |        |          |         |         |       |
| Piped into household                                     | 33.3   | 50.2     | 33.2    | 24.3    | 10.9  |
| Piped into yard                                          | 65.5   | 49.1     | 65.5    | 75.7    | 89.1  |
| <b>Secondary purposes water supply (% of households)</b> |        |          |         |         |       |
| Piped into household                                     | 31     | 46       | 31      | 23      | 10    |
| Piped into yard                                          | 68     | 53       | 67      | 77      | 90    |
| <b>Water storage</b>                                     |        |          |         |         |       |
| Average L/household                                      | 24532  | 26110    | 47330   | 36796   | 22247 |
| Average L/person                                         | 4007   | 3586     | 6937    | 6914    | 4211  |
| <b>Toilet facilities (% of households)</b>               |        |          |         |         |       |
| Septic tank                                              | 75     | 86.3     | 66.8    | 54.8    | 42.8  |
| Pit latrine                                              | 15.2   | 6        | 23.5    | 30.4    | 37.7  |
| None                                                     | 8.2    | 4.6      | 9.7     | 14.8    | 19.6  |

## 1.5 Relevance to national development priorities

The development challenge that the project seeks to address is well reflected in the national development priorities of the three project countries:

### Republic of Marshall Islands

The RMI “National Strategic Plan (NSP) 2015-2017” includes five sectors with development objectives aligned with ten long-standing National Development Themes originating from the broader “Strategic Development Plan Framework 2003-2018” (Vision 2018) published in 2001. The proposed work will contribute in addressing the following national goals and targets of the RMI National Strategic Plan 2015-2017:

1. Efficient use of water resources under National Development Theme 1 “Ensuring and applying the practice of good governance principles to achieve effective governance through community planning and developing effective linkages between local and national government”,
2. Water security and access to reliable infrastructure under National Development Theme 8 “Building a sound infrastructure that provides energy environmental, infrastructure, and transportation security for all atolls”,
3. Environmental and coastal security under National Development Theme 9 “Mitigating the impacts of climate change and creating awareness of the importance of environmental assets through community, national, regional and international approaches and specifically the implementation of the Majuro Declaration”,
4. Environmental and infrastructure security for outer island populations under National Development Theme 10 “Ensuring outer islands populations receive access to all necessary services allowing all RMI citizens to enjoy a high quality of life”.

Moreover, the proposed work is expected to complement the monitoring of NSP implementation and progress with respect to

1. The “Environment, Climate Change and Resiliency” NSP Sector, which is monitored, among others, through the following indicators:
  - a. Saltwater intrusion to wells and crops,
  - b. Drinking water quality,
  - c. Maps and datasheets of natural resource and conservation targets and uses,
  - d. Number of completed resource management assessments.
2. The “Infrastructure Development” NSP Sector, which is monitored, among others, through the following indicators:
  - a. Reduction of gastroenteritis incidences by 50%,
  - b. Degree of IWRM implementation,
  - c. Improving access to water for disadvantaged households.

Within the context of extreme vulnerability to climate change impacts, the RMI has developed and formally endorsed in 2011 the “National Climate Change Policy Framework”, to provide a blueprint to build resilience in partnership with regional and global partners. The NCCPF identifies “Food and Water Security” among the nine national priority areas which need to be addressed via the following strategic goals of relevance to this project:

1. Strengthen the Enabling Environment for Climate Change Adaptation and Mitigation,
2. Adaptation and Reducing Risks for a Climate Resilient Future,
3. Disaster Preparedness, Response and Recovery.

The purpose of the *Marshall Islands National Climate Change Policy Framework* (NCCPF) is to set out the strategic priorities for scaling up the government’s commitments to address climate change, both in terms of current and future vulnerabilities. This policy promotes a coordinated approach to reducing projected climate-related risks that can lead to loss of life, economic disruption, environmental and property damage and increased poverty in vulnerable groups. From a GESI perspective, the NCCPF states that climate change is a cross-cutting development issues because it affects every aspect of the Marshallese way of life and livelihoods: *“Climate change impacts exacerbate existing cultural and socio-economic vulnerabilities....These impacts threaten the security of our nation... Adapting and mitigating the impacts of climate change on water security through well-designed water resiliency awareness, systems, and practices supported by well-organized and*

comprehensive institutions is urgently required, particularly in addressing the needs of the most vulnerable members of society.”

Links also exist with the “Post Disaster Needs Assessment of the 2015-2016 Drought”. The PDNA document forms the basis for drought recovery by the Government of RMI and is useful for considering the economic and social impacts of drought and potential mitigation measures that can be considered, cost reduction mechanisms identified for future droughts, and recommendations from the lessons learnt that could be considered for inclusion.

Clear links also exist with the “RMI National Water and Sanitation Policy and Proposed Action Plan” that was drafted in 2014 to direct investment in the sector, improve water and sanitation services and sustainably manage the limited fresh water resources. This policy recognizes the “essential role of women in the provision, management and safe-guarding of water, sanitation and hygiene”. The proposed work is expected to support the Water and Sanitation Commission to take key decisions on resource allocation and utilize objective criteria to inform decision-making. The proposed set of project activities can be incorporated in all five policy areas and can support the achievement of the relevant strategic goals:

1. Reduce the occurrence of waterborne illnesses,
2. Ensure water resource sustainability,
3. Ensure water and sanitation utilities are financially solvent,
4. Target service improvements at the disadvantaged,
5. Be resilient to climate variability and extreme events.

Also of relevance, the “National Gender Mainstreaming Policy of the Marshall Islands” is directly linked to Priority Outcome 2; to support the role of women in household community adaptation strategies to climate change impacts and disaster risks, and Priority Outcome 4; to increase women’s participation in planning and decision-making and planning processes.

## **Tuvalu**

The development challenge that the project seeks to address is reflected in the Tuvalu “National Strategy for Sustainable Development 2016 to 2020 (Te Kakeega III)”. The proposed project work will complement:

1. Strategic Area 8 "Natural Resources" as key performance indicator "increase in farmer productivity" implies availability of water including groundwater,
2. Strategic Area 9 "Infrastructure and Support Services" as performance indicator "Enough water in storage to last all the islands through 6 months of drought" is also dependent on groundwater,
3. Strategic Area 10 "Environment" which aims at protecting, restoring and promoting the sustainable use of terrestrial ecosystems including aquifers.

TK III has a strong focus on human rights and advancing gender equality, including the need to ensure that gender and disability perspectives are incorporated into natural resource and disaster risk management.

The need for promotion and enhancement of sustainable use of natural resources including groundwater through awareness and conservation was also highlighted in Tuvalu’s “National Adaptation Programme of Action” in 2007.

The proposed work will also address the 7 strategic goals stated in the “Sustainable and Integrated Water and Sanitation Policy 2012-2021” towards achieving a safe, reliable, affordable and sustainable water supply by the year 2021:

1. Provide a safe, reliable, affordable and sustainable water supply,
2. Manage and conserve scarce water supplies,
3. Establish and maintain effective early warning and response systems,
4. Enable effective, equitable and integrated governance of water and sanitation,
5. Increase community awareness and participation in the management of water and sanitation,
6. Improve access to reliable, affordable and environmentally friendly technologies,
7. Improve the affordability of water and sanitation services and increase access to sustainable sources of finance.

The proposed project activities are well aligned with the proposed strategies within the policy that address the 7 strategic goals.

The *Tuvalu Climate Change Policy TE KANIVA 2012-2021* includes strategies to assess and address the health and socio-economic implications (inclusive of gender) of climate change and disaster risks informing appropriate health and socio-economic adaptation programmes for each island. Upcoming revisions to this policy are expected to increase the focus on GESI issues.

## **Republic of Palau**

The development challenge is clearly reflected in the “Palau 2020 National Master Development Plan” and the proposed work aims at developing and strengthening policy mechanisms, institutional capacity and data collection required for the protection of coastal aquifer systems and to ultimately enhance the natural environment. The project is also in line with the national strategies related to the conservation of environmental assets, which helped implementing the Economic Development Plan.

The “Management Action Plan for Palau”, approved in 2001, calls for comprehensive watershed management planning to achieve excellent water quality and quantity for the people of Palau. This has resulted in the development of a number of watershed management plans in Palau. Even though not explicitly mentioned, groundwater constitutes an integral component of the water cycle in every watershed and its management and protection is critical in achieving the envisaged water security. This links are also reflected in the “Updated Belau Watershed Alliance Action Plan 2018”, a product of the IW R2R project in Palau.

The immediate and root causes of the development challenge were also identified in the “Drought Report” drafted in 2016 and the “Water Use and Conservation Policy” signed by the President in 2017 in response to the 2016 drought which had severe impacts to the entire country.

Priority risks identified in the “Palau Climate Change Policy” of 2015 included salt water intrusion and land inundation, the damage of water infrastructure, the increase in water-borne diseases and the decrease in quantity and quality of water provided by utilities. It was recommended incorporating water security planning within watershed Conservation Action Plans, undertaking vulnerability assessments in various states including the state of Kayangel and undertaking field interventions with the objective to improve access to clean water.

The development challenge is well reflected in the 2011 “National Water Policy” aiming to protecting and conserving Palau’s water resources, ensuring Palauans have access to safe, affordable, sustainable water supply and wastewater services, and seeing that these services are managed and operated sustainably and effectively. The National Water Policy also includes a gender component.

## **1.6 Relevance to regional priorities**

In light of the critical water resource and sanitation issues facing Pacific PICS, the period 2001-2005 saw the development of related regional policies and action plans under the Pacific Plan. These included the: 2001 Wastewater Policy and Wastewater Framework for Action; the 2002 Pacific Regional Action Plan on Sustainable Water Management; and the 2005 Pacific Framework for Action on Drinking Water and Health.

The 2002 Pacific Regional Action Plan (and Ministerial Declaration) on Sustainable Water Management was developed and adopted by the heads of 16 Pacific island countries in preparation for the 3<sup>rd</sup> World Water Forum in Kyoto, Japan. The development challenge which this project seeks to address is clearly identified in the Key Messages under the relevant identified Themes on 1. Water Resources Management, 2. Island Vulnerability, 3. Awareness, 4. Technology, 5. Institutional Arrangements and 6. Finance.

The most recent integrated regional framework developed through an extensive and inclusive engagement process is the Framework for Resilient Development in the Pacific: An Integrated Approach to Address Climate Change and Disaster Risk Management (FRDP 2017 – 2030) which provides high-level strategic guidance to different stakeholder groups on how to enhance resilience to climate change and disasters, in ways that contribute to and are embedded in sustainable development. The development challenge which the project seeks to address is aligned with FRDP’s Goal 1 “Strengthened Integrated Adaptation and Risk Reduction to Enhance Resilience to Climate Change and Disasters”.

## **1.7 Relevance to Sustainable Development Goals**

With regards to Sustainable Development Goals, the development challenge is well reflected under Goal 6 and particularly under Target 6.1 on achieving equitable access to safe and affordable drinking water, Target 6.3 on improving water quality, Target 6.4 on improving water-use efficiency, and Target 6.5 on strengthening integrated water resources management.

Interlinkages with other goals obviously exist as the proposed work is expected to contribute to enhancing food security (SDG-2), ensuring healthy lives and promoting well-being (SDG-3), protecting terrestrial ecosystems (SDG-15), make cities and human settlements inclusive, safe, resilient and sustainable (SDG- 11), take urgent action to combat climate change and its impacts (SDG - 13) and ensuring gender equality and women empowerment (SDG-5).

### 1.8 Promoting Gender Equity and Social Inclusion

The project will mainstream gender equity and social inclusion by ensuring women's needs and views are fully considered and incorporated at regional, national and community level. Gender transformation will be supported by ensuring women actively participate in MCAP decision-making processes, through the provision of training in non-traditional gender occupations, and by reducing women's work burden. By taking on more public roles in community/island water planning processes, this exposure could lead to women's increased engagement in broader political processes over time. Social inclusion will be promoted by ensuring that youth are included in aquifer education, conservation and monitoring efforts. In this way, they will become more knowledgeable about water resource management, the impacts of climate change and how to safeguard this resource for future generations. The project will also supports the inclusion of people with disabilities to ensure their rights and needs are understood and addressed while enhancing disability inclusive disaster risk reduction efforts at island level and community level.

## 2. Strategy

### 2.1 Alignment with International Waters Focal Area Strategy

Following the GEF-6 International Waters strategy with regards to balancing competing water uses in groundwater management (GEF-6 IW Objective 2) and building on the continuous GEF support on addressing the needs of SIDS and Least Developed Countries to meet their water challenges in a changing climate, this project aims towards 1) advancing the understanding of the extent, quality and groundwater resource potential of coastal aquifers, 2) strengthening local and national capacities to enhance monitoring and data collection towards sustainable groundwater management and 3) promoting groundwater governance and decision-making through participatory reporting mechanisms. In line with (GEF-6 IW Program 3), the proposed project interventions are aiming at 1) assessing the storage capacity and resilience of coastal aquifer systems against droughts, 2) assessing the climatic and anthropogenic vulnerability of aquifers and their recharge areas, and 3) employing measures to avoid salt-water intrusion. Water security (GEF-6 IW Program 4) will be addressed by strengthening efficient water use through the implementation of measures that enhance conjunctive management and maintain aquifer ecosystem services. More specifically, demonstration of innovative groundwater production infrastructure, designed and targeted specifically for the fragile nature of coastal aquifers in SIDS will be developed to allow access to and use of fresh groundwater and offer increased resilience against droughts. At the same time, awareness on the importance and the role of emergency drought supplies and on water efficiency measures will be raised to achieve a collaborative and sustainable management of the newly accessed groundwater resources. Enhancing water security in freshwater ecosystems was carried forward as a main objective under the GEF-7 IW investments. Enhanced quality and coverage of data on groundwater availability and use and increased national capacity to collect and analyze this information to obtain technical and policy relevant products will strengthen early warning to natural disasters, such as droughts, which can destabilize societies, increase gender inequality and lead to migration and urbanization. The proposed interventions are aiming at enhancing this information flow by establishing the suitable infrastructure, equipping it with appropriate instrumentation and developing capacities at the local and national level in undertaking climate and water resource monitoring. The proposed interventions present a good opportunity for the GEF to continue supporting efforts to increase water efficiency, reduce groundwater pollution, and addressing the drivers of land degradation which can have detrimental effects on the health of coastal aquifers and hinder the ecosystem services and water security they provide.

### 2.2 Alignment with Land Degradation Focal Area Strategy

It is proposed that IW focal area investments are complimented with resources from the Land Degradation focal area considering the relevance of land degradation effects on coastal aquifers. Extensive soil degradation due to erosion and salinization caused by storms and wave inundation events is frequently observed in low-lying islands and atolls in the Pacific. These events can have detrimental effects in the soil and aquifers causing a decline in crop productivity and deteriorating groundwater quality rendering it undrinkable for an extended period which can last up to several years. Climate change is also further aggravating these challenges as the magnitude and frequency of sea level rise and wave inundation events, respectively, are increasing. It is of primary importance to identify and map the areas which are more prone to wave-overtopping events and areas which are less likely to be affected so that crop and groundwater production can be focused in the safer areas and water and food security can be maintained. Similarly under increasing extreme events, promoting areas where there is greater access to fresh water to support agriculture and improve food security in atolls, will further strengthen the resilience and reduce land degradation from use of brackish water. Under GEF-6 LD Objective 3, it proposes employing sustainable land management interventions to improve water resource management and hydrological functions and services, particularly in Pacific SIDS. The proposed development of capacities to monitor land degradation and its impacts on coastal aquifers is expected to create an enabling environment to support countries achieving a certain level of Land Degradation Neutrality, increasing their resilience against natural disasters and ultimately prevent conflict and migration from these fragile areas. Given women's central role in maintaining food and water security in all project communities, it is essential that they are actively engaged in land degradation efforts. This will be achieved by ensuring full consultation and increasing women's knowledge of the impacts of climate change and human induced hazards on ground water. Similarly, the project will provide information and education materials to schools to promote the sustainability of coastal aquifers.

### 2.3 Design approach and guiding principles

This project is entitled “Managing Coastal Aquifer in Selected Pacific SIDS” and its goal is “to improve the understanding, use, management, and protection of coastal aquifers towards enhanced security in the context of a changing climate”. A range of cross-cutting considerations including gender equality and social inclusion, and participatory planning and decision-making mechanisms will inform how this goal is achieved. The Theory of Change diagram describes the activities under each component that will be implemented in the 3 countries. In the short-term, outputs are shown as early project results forming the pathways of change towards achievement of the outcomes. The Theory of Change articulates 6 outcomes that show change in knowledge (Component 1), change in capacity (Component 2) and changes in attitude, management and governance (Component 3). While the Theory of Change illustrates the change process it is noted that a phased approach will be used to inform further actions. A range of assumptions underpin the logic at each point, which will be explored with stakeholders during the implementation period.

The Theory of Change was developed in close consultation with the three implementing countries during national design phase workshops. Feedback from the countries helped refine the project activities and outputs to ensure that they are aligned to the selected outcomes but also that they are aligned to their countries needs and national priorities. In developing this Theory of Change, there was consideration of synergies with other relevant projects within SPC and the region to minimize duplication and maximize complementarity. To promote results-focused management of the project, the goal and outcomes are the basis and criteria of measurement in the results framework. While results for outputs will be easier to measure and directly attribute to the project, it is noted that the project will only contribute to improvements at outcome and goal levels alongside other initiatives in the region.

A key principle of the project is the need to pay attention to ensuring the active participation and genuine involvement of all groups of people including women, men, young people and those with disabilities throughout implementation. While women do engage in decision-making about water use at household level, they are significantly underrepresented in community, island and national level water management and governance processes in all MCAP countries. As such, the project will address this development issue by increasing women’s knowledge and skills in water management and by providing them with opportunities to fill leadership roles in their communities.

The project GESI Assessment concluded that coastal aquifers play a critical role in water security in identified sites and current levels of freshwater are inadequate to meet people’s basic needs especially during extended dry periods. In line with the theory of change, it is expected that project supported water assessments, training and capacity building support will lead to improved quality and quantity of groundwater in targeted areas, create more equitable access to water resources for vulnerable groups, improve health and education outcomes, enhance livelihoods and reduce household and community level conflict caused by water shortages.

This project will build on findings and lessons learned from previous projects undertaken in the region over the last decade which have been gradually establishing the way towards achieving sustainable aquifer management. The intention is to replicate good practices that have worked in the past and to integrate monitoring and management approaches towards inclusion of groundwater management into applicable national water policies and IWRM plans.

The WMO-funded Pacific HYCOS project (2007-2010) executed by the Applied Geoscience and Technology Division (SOPAC) of the Secretariat of the Pacific Community (SPC) first gave the opportunity to trial and observe different delivery modes used to assess and monitor water resources in 14 Pacific island countries. The most relevant and valuable modalities were identified and were consequently replicated during follow-up work in other similar settings.

The EU funded Pacific Integrated Water Resources Management project (2008-2012), and the GEF funded Pacific IWRM project have respectively provided support through the development of water and sanitation policy to address legislative reform allowing implementation of applicable and effective Integrated Water Resources Management (IWRM) and Water Use Efficiency (WUE) plans to improve cross sectoral coordination of water resources management and water use efficiency to help balance overuse and conflicting uses of scarce freshwater resources.

The EU-funded KIRIWATSAN project (2011-2018), executed by SPC, employed similar assessment techniques to identify and quantify fresh groundwater resources in the islands of Kiribati which were consequently developed through the installation of suitable infrastructure (infiltration galleries) to improve the availability of safe drinking water and reduce water, sanitation and hygiene related diseases. Water resources monitoring capacities were developed and monitoring mechanisms were strengthened through the development of

monitoring guidelines to warrant a continuous collection of data and information necessary for water resources management.

The Australian-funded “Bonriki Inundation Vulnerability Assessment (BIVA)” (2013-2015) and the EU-funded “Climate and Abstraction Impacts in Atoll Environments (CAIA)” (2015-2017), both executed by SPC, demonstrated for the national groundwater reserve of South Tarawa, the capital of Kiribati, the value and integral role of water resources monitoring in aquifer management. Through the development of a numerical model which facilitated understanding the aquifer’s response to external influences such as rainfall and groundwater abstraction, aquifer management options linked to continuous monitoring of groundwater quality (salinity) were demonstrated to the Government of Kiribati as an adaptation technique to increase water security.

The New Zealand-funded “Strengthening Water Security of Vulnerable Island States” project (2014-2019), executed by the Disaster and Community Resilience Programme (Geoscience Energy Maritime Division) of SPC, built on the lessons learnt to support the atoll countries of Cook Islands, Kiribati, Marshall Islands, Tokelau and Tuvalu in building the skills, systems and basic infrastructure to better anticipate, respond to, and withstand the impacts of drought. Water security management options were identified through the combined involvement of three key sectors - disaster management, water utilities, and weather services.

Under the current project, the countries recognize the need to further explore the potential of using groundwater resources to complement their existing water supplies and to offer increased resilience against climate variability. At the same time, they recognize the need to protect their aquifers and improve their existing groundwater supply systems, where available. The countries have decided to achieve the project goal by addressing three main components forming a logical pathway towards increased water security.

The selected approach for the current project is based on the experiences, network, and trust built in the last decade to ensure that the project countries, and particularly the selected project sites, will obtain the foundation required to support improved aquifer management/governance. The key assumptions and guiding principles to achieve this foundational level are outlined below and were identified and agreed via regional and national consultative processes during the project’s conceptualization and preparation phases.

**Component 1:** National demonstrations to support knowledge and use of coastal aquifers for enhanced water security.

- **Outcome 1.1:** Enhanced knowledge on the current status of coastal aquifers and enhanced understanding of aquifer vulnerabilities to climate changes and other factors.
- **Outcome 1.2:** Improved access to groundwater for enhanced water security.

**Enhancing the knowledge and understanding of coastal aquifers:** Sound understanding of coastal aquifers is the basic element of all efforts aiming at protecting and managing groundwater resources. Although traditional knowledge within island communities on aquifer locations exists, visualizing the location and extent of aquifers can help island communities and local governments understanding the relationship between land use activities and potential impacts to underlying aquifers, developing them for water supply and ultimately managing these aquifers in a sustainable fashion to enhance water security and resilience against droughts. In developing understanding of coastal aquifers, the project recognizes that women and men can have different information and viewpoints, hence the importance of ensuring broad consultation and collective learning.

**Improving access to groundwater:** Coastal aquifers are usually only accessed through shallow household wells which have been dug just below the groundwater table. In many cases, opportunities exist for aquifer development to be done at a larger scale (community level) to provide a drought reserve for secondary or even primary water needs. As demonstrated during previous projects, aquifer assessments can help guiding the implementation of such groundwater development works to maximize the benefits and services obtained by these aquifers.

**Component 2:** National-based investments in human capital and tools.

- **Outcome 2.1:** Strengthened capacity and monitoring of climate and water resources at the local and national level.

**Investing in human capacity:** Investments in human capacity at the national and community level have been demonstrated to be critical in achieving long term sustainability of project results. National and community

ownership of project interventions are the only way to ensure long term operation and maintenance of these interventions and incorporation of demonstrated approaches (e.g. monitoring, operation, management, maintenance) into national and community governance structures and mechanisms. A strong focus will be given to the development of human capacities to provide a solid workforce able to harness and apply the management practices recommended through this project. In building capacity, particular attention will be given to training young women as water engineers, working with local schools and developing technical as well as user-friendly aquifer information resources.

**Investing in aquifer monitoring:** Long term aquifer monitoring is required to strengthen the knowledge and understanding of coastal aquifers. The value of consistent and accurate data on water resources (precipitation, groundwater) has been demonstrated in the past through the development of forecasting and decision making tools allowing for predictions and facilitating aquifer management. Aquifer monitoring can be strengthened and sustained in the long-term through appropriate participatory approaches (citizen science) providing for an effective means of data collection motivated by a strong sense of ownership and responsibility.

**Component 3:** Local-based approaches to support the sustainable management and protection of coastal aquifers in the context of climate change.

- **Outcome 3.1:** Coordinated and inclusive approaches at the island-level for coastal aquifer management in place.
- **Outcome 3.2:** Improved and accessible knowledge systems for decision support in place.

**Promoting inclusive approaches for sustainable aquifer management:** The increased reliance on groundwater is resulting in more demand for sustainable aquifer management approaches in the Pacific. This project will provide evidence based guidance on pragmatic approaches that can be practiced for centralised ground water supply systems. Inclusive approaches require the combined involvement of key government sectors (such as disaster management, water utilities, and weather services), local governments (such as island councils) as well as men and women from targeted communities who are the direct beneficiaries (through participatory management approaches).

**Supporting decision making through the delivery of practical tools:** Sustainable management approaches can largely benefit and be guided by numerical models and forecasting systems. The potential of such tools will be demonstrated to the project countries as a way to solidify evidence-based decision making and enhance governance mechanisms.

**Component 4:** Knowledge management and M&E

- **Outcome 4.1:** M&E templates and communication platforms established.

**Effectively monitoring and evaluating project progress:** periodical project monitoring and evaluation through a structured M&E plan is essential to ensure the effective achievement of project results.

**Effectively communicating the benefits of integration and lessons learned:** the regional upscaling and transferability of successful interventions and lessons learned can only be guaranteed when effective communication platforms are established. It is expected that the opportunities existing through GEF communication channels will benefit countries sharing similar issues in the broader region and also globally.

**External factors** which are critical for achieving the expected changes include the relationship with the involved stakeholders, including the direct project beneficiaries. Over the years, SPC has built a solid relationship with the national stakeholders involved in this project, further solidifying the links throughout the project preparation phase. This engagement needs to be maintained throughout the entire project's duration, through suitable communication efforts, as its success largely depends on the continuous support from the identified stakeholders. A suitable stakeholder engagement plan, thoroughly detailing the type of engagement for each project activity, will be developed to ensure the smooth collaboration between countries, direct beneficiaries, and executing partner. This plan will include engagement with women, youth and disability organisations.

## 3. Results and Partnerships

### 3.1 Expected Results

In this section, the strategy above is translated into the work that will be done through the project. The planned interventions are described in detail and justification is given as to why they are the best suited ones.

**Component 1:** National demonstrations to support knowledge and use of coastal aquifers for enhanced water security.

*Output 1.1.1: Multidisciplinary (technical and socio-cultural) coastal aquifer assessments completed in 8 sites/aquifers.*

This project Output encompasses all the activities related to the planning and implementation of water resources assessment surveys, land use surveys, land inundation surveys, and socio-cultural surveys required to enhance the existing knowledge on the current state and vulnerability of coastal aquifers.

Geophysics can accurately provide an image of the electrical resistivity of subsurface materials, effectively indicating the presence of fresh groundwater. Electrical Resistivity Tomography (ERT) has been successfully used in similar settings to illustrate and quantify the location and the volume of freshwater resources. The method is based on the principle that sediments which are saturated with brackish and salt water have a lower electrical resistivity as compared to freshwater-saturated materials. When coupled with in-situ measurements of groundwater salinity through the survey of existing wells, ERT surveys can result in maps delineating the depth to fresh groundwater and effectively allowing for the quantification of fresh groundwater volume available for abstraction. Geophysical surveys will be complemented by water balance calculations to approximate important parameters such as aquifer recharge, evapotranspiration, changes in soil moisture, and groundwater discharge to the sea.

Socio-cultural surveys will be undertaken in advance of geophysical surveys to ensure that local knowledge on aquifer location, current and historical use, and any concerns people may in relation to ground water has are taken into consideration when conducting technical studies. Relevant socio-cultural information, economic data and traditional knowledge will be captured from all groups of people, including women, men, the elderly and people with disabilities through interviews, focus-group discussion and/or community consultation. The purpose of this analysis is to identify traditional and modern water resource management practices, water security and land degradation concerns and identify the best ways to involve the community in project activities. Land use surveys will be undertaken through the use of satellite and LIDAR imagery and ground-truthed while on site. The purpose of these surveys will be to identify land use activities that may act as drivers to land degradation and impact on underlying aquifers. The potential impacts to aquifers will be quantified.

Land inundation vulnerability surveys will be undertaken to identify areas which are more prone to flooding from wave overtopping events as drivers to land degradation with negative potential impacts to groundwater quality.

The knowledge obtained from these surveys will also allow assessing the vulnerability of coastal aquifers to natural and anthropogenic influences. These assessments will be performed on islands where groundwater is already developed and used at community or at household level or where there is groundwater development potential based on traditional knowledge. The findings from the surveys will feed into the technical guidance notes to support aquifer management, under project Component 3.

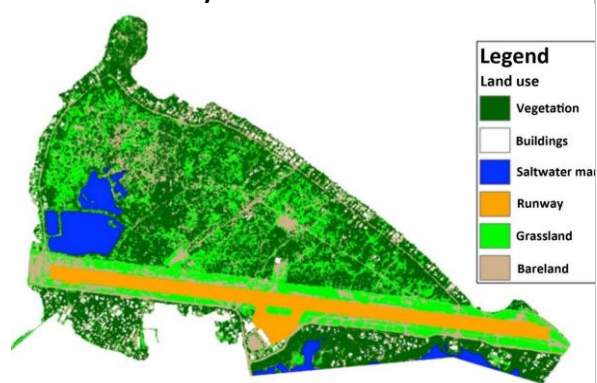
#### 1. Hydrogeological/geophysical surveys



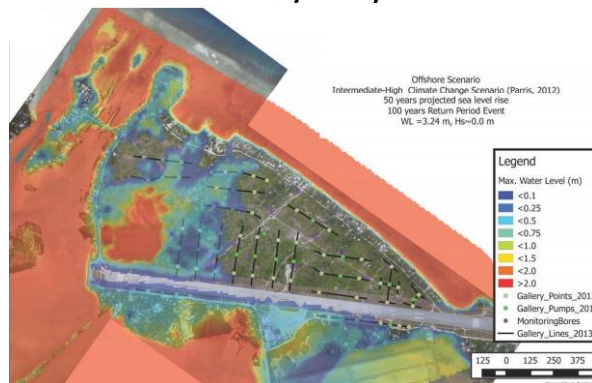
#### 2. Socio-cultural surveys



### 3. Land use surveys



### 4. Inundation vulnerability surveys



| Activity                   | RMI sites                                                                                                                                                         | Palau sites               | Tuvalu sites                                                                                                                                                                                |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Water resources assessment | Delap (Majuro), Laura (Majuro), Jaluit, Ailinglaplap.<br><br>Wotje already undertaken through "Strengthening Water Security of Vulnerable Island States" project. | Peleliu, Angaur, Kayangel | Nui<br><br>Vaitupu already undertaken through "Climate and Abstraction Impacts in Atoll Environments" project.<br><br>Nanumea already undertaken through the "Tuvalu Ridge to Reef" project |
| Land use survey            | Laura (Majuro), Wotje                                                                                                                                             | Peleliu, Angaur, Kayangel | Nanumea                                                                                                                                                                                     |
| Land inundation survey     | Jaluit, Ailinglaplap, Wotje<br><br>Delap and Laura to be undertaken under PREP 2 project                                                                          | Kayangel                  | Nanumea, Vaitupu, Nui                                                                                                                                                                       |
| Socio-cultural survey      | Jaluit, Ailinglaplap, Wotje                                                                                                                                       | Peleliu, Angaur, Kayangel | Nanumea, Nui                                                                                                                                                                                |

*Output 1.2.1: Demonstration of improved groundwater production and water security from appropriately designed wells (infiltration galleries) in Wotje atoll, RMI (132 households served) and Nanumea island, Tuvalu (115 households served).*

Increased resilience to droughts through the delivery of alternative water supplies will be realized by the development of appropriately designed groundwater production infrastructure. The benefits of infiltration galleries for water supply purposes are that they optimise the access to the freshest available groundwater during extended dry periods utilising fit for purpose designs and construction techniques resulting in an optimal and sustainable abstraction of freshwater and minimising the impact on the freshwater lens with regard to "upconing" of brackish water causing aquifer salinization. It is proposed that two infiltration galleries are constructed in Nanumea (Tuvalu) and Wotje (RMI) to benefit 115 and 132 households, respectively. The optimal location for infiltration gallery sites will be determined based on existing results from previously conducted investigations and in consultation with the community and land owners, targeting the thickest and most accessible portions of the freshwater lens. Design will consider community needs and be inclusive of GESI considerations especially with regard to access.

Sustainability of water supply infrastructure will be the responsibility of the community. A series of consultations are planned to ensure that national and local government, and community are aware of their responsibilities

and that preparations are made to ensure operation and maintenance of the gallery with consideration to ongoing costs, noting that solar pumps will be utilised. The sustainability of the infrastructure is strengthened by ensuring that construction and materials are of high quality and of suitable design for the intended purpose. Regularly scheduled maintenance will be incorporated into the developed operational plans.

Recharge area protection measures will be employed (under Output 3.1.2) to prevent land degradation with negative impacts to underlying groundwater which is develop through the galleries. These measures will include fencing of groundwater recharge areas to prevent potential contamination of groundwater through animals and human activities.

Preliminary selection of sites for the installation of infiltration galleries have been identified in the Figures below. These sites will be reviewed and confirmed with communities and landholders prior to any construction. More information on the proposed bore construction and proposed sites can be found in Annex L.



*Output 1.2.2: Improved quality and palatability of reticulated groundwater supply for domestic needs, demonstrated through the adoption of appropriate water treatment technologies and water management practices, such as aeration, water conditioning, and abstraction scheduling.*

Improving the quality of groundwater that is currently reticulated to households will be addressed through the installation of simple treatment systems such as aeration and water softeners. This has been identified as a particular need in Peleliu and Angaur islands in Palau where reticulated water suffers from increased hardness and occasionally of “rotten egg” smell and taste (deriving from hydrogen sulfide gas contained in the water) deteriorating the perception of the communities towards the reticulated water for both potable and secondary purposes. It is proposed to install a treatment system in at least one of the two identified sites suffering from deteriorated quality of reticulated water supply.

Water hardness is naturally occurring from weathering of limestone and other calcium bearing rocks and is primarily the amount of calcium and magnesium, and to a lesser extent, iron in the water. Hard water is mainly an aesthetic concern because of the unpleasant taste water acquires from a high concentration of calcium and other ions. It also reduces the ability of soap to produce a lather, and causes scale formation in pipes and on plumbing fixtures. Although people may become accustomed to a high level of hardness in drinking water it is

recommended hard water to prevent the issues mentioned above. Water hardness can be removed using ion exchange type water softeners.

With the ion exchange process, water is pumped through a tank containing a resin that causes calcium and magnesium ions to be exchanged for sodium or potassium ions. The water leaving the unit still contains essentially the same amount of dissolved minerals, but the hardness-forming minerals have been replaced with sodium or potassium. When the softening material's ability to exchange sodium and potassium for calcium and magnesium is exhausted, it must be 'regenerated' by running a given amount of salt brine (sodium chloride) through the softener tank. The effectiveness of a softener can be reduced substantially when the water contains iron as the exchange material may become coated with iron deposits.

Hydrogen sulfide gas in groundwater is usually produced by sulfur-reducing bacteria which use sulfur as an energy source and chemically change natural sulfates to hydrogen sulfide. Hydrogen sulfide also occurs naturally in groundwater formed from decomposing underground deposits of organic matter such as decaying plant material. It can be found in deep or shallow wells and it can even enter surface water through springs, although it quickly escapes to the atmosphere. The most commonly used method for removing hydrogen sulfide gas from water, responsible for "rotten egg" smell and taste, is continuous chlorination followed by an activated carbon filter. This method can handle relatively large quantities of hydrogen sulfide and does not release odor to the air. Hydrogen sulfide can also be removed using an aerator whereby the gas is released in the air and dissipated through the sides of the aerator. However, because of the bad odor given off by this method, it is not always a desirable way of removing hydrogen sulfide.



## Component 2: National-based investments in human capital and tools.

*Output 2.1.1: National and local (community) capacities developed to undertake monitoring of climatic and anthropogenic impacts on water resources (RMI staff: 13, Palau staff: 6, Tuvalu staff: 11).*

Annual training workshops will be provided by SPC in each project country targeting community members at the island level and governmental staff at the national level, identified by the local and national governments, respectively. The workshops will aim at building a general understanding on groundwater in atoll island settings and on the role of groundwater in disaster response, water safety planning and WASH-related subjects from a gender sensitive and socially inclusive perspective. The workshops will also aim to develop capacities on specific topics and tasks related to infrastructural interventions and to proposed monitoring and management strategies developed under this project.

Monitoring of water resources constitutes a major component of the training workshops as developing the right level of capacity is considered a core intervention to ensure the long term sustainability of project results. The workshop participants will be upskilled on undertaking 1) rainfall monitoring through the available rain gauges installed under this project, 2) groundwater monitoring (quantity and quality) through existing (shallow household wells) and new infrastructure (monitoring bores and groundwater production galleries) and 3) rain tank monitoring (quantity and quality). The trained participants will be equipped with specialized equipment (loggers, water quality test kits, tablets) to allow them undertaking the monitoring through the available infrastructure. Storing and reporting of results will be done through smartphone-based applications which allow direct uploading of collected data into a centralized dashboard (see Output 3.1.1). Training on the use of these

smartphone app based technologies will be undertaken during the workshops. Additionally, participants will be trained on topics related to the operation and maintenance of existing and newly developed water production, monitoring, and storage infrastructure. Finally, the participants will be exposed to the aquifer management options that become available through aquifer assessments and monitoring.

The workshops will be organized in a central location accessible to participants from the outer islands. As a result of these training workshops, it is expected that participants will be in the position to train additional community members at island level and will form island teams, supported by the local governance structure, to sustain activities related to monitoring of climatic and anthropogenic impacts on water resources (links with Output 3.1.1). During the first workshop, the participants will be expected to develop their own monitoring plan which they will follow over the course of the following year. During the following training workshops, the participants will be expected to report back on the monitoring progress over the course of each previous year. This system will also enable evaluation of the effectiveness of training and capacity building through the course of the project.

| <b>RMI participants</b>                                                                                                                        | <b>Palau participants</b>                                                                          | <b>Tuvalu participants</b>                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <u>Community members</u><br>Jaluit: 3<br>Ailinglaplap: 3<br>Wotje: 3<br><u>Governmental staff</u><br><u>(national)</u><br>Delap: 2<br>Laura: 2 | <u>Governmental staff</u><br><u>(local and national)</u><br>Peleliu: 2<br>Angaur: 2<br>Kayangel: 2 | <u>Community members</u><br>Vaitupu: 3<br>Nanumea: 3<br>Nui: 3<br><u>Governmental staff</u><br><u>(national)</u><br>Funafuti: 2 |

In addition to the national training workshops, two participants per country will have the opportunity to attend annual short-term technical courses on relevant topics such as “groundwater for policy makers”, “groundwater modeling”, “pumping test analysis” to reinforce knowledge transferred during the in-country training workshops. Given the significant lack of women engaged in natural resource technical trades in project countries, preference will be given to female candidates. This activity will promote “Women in Water” development in line with national and regional gender equity objectives.

*Output 2.1.2: National capacities developed to undertake monitoring of land degradation to protect aquifers in 8 sites/aquifers.*

The project will build on activities from other parallel projects to support development of monitoring of land degradation to assess the impacts on coastal aquifers and support countries in achieving a certain level of Land Degradation Neutrality and in increasing their resilience against natural disasters. This output aims at the identification of drivers of land degradation and the identification of steps required to address these drivers. The identification of areas which are more prone to wave inundation and areas which are less likely to be affected will allow for crop and groundwater production to be focused in the safer areas and water and food security to be maintained. Training will be provided by SPC at the national level in the collection and analysis of remotely sensed data for quantifying changes in vegetation, shoreline, and land use from baseline LIDAR surveys. It is expected that these training workshops will capacitate the project countries to undertake annual drone surveys to capture high resolution data which can be used to document changes in vegetation cover, coastal erosion and land-use activities and contribute in improving water resource management.

As opposed to the training workshops on climate and water resources monitoring (Output 2.1.1) which aim to develop the capacities of women and men at island level through self-sustained participatory monitoring practices, this activity aims to develop capacity of national government agency staff to monitor land degradation.

| <b>RMI sites</b>    | <b>Palau sites</b>        | <b>Tuvalu sites</b> |
|---------------------|---------------------------|---------------------|
| Wotje, Delap, Laura | Peleliu, Angaur, Kayangel | Vaitupu, Nanumea    |

*Output 2.1.3: Infrastructure and instrumentation in place for the monitoring of climatic and anthropogenic impacts on water resources in 8 sites/aquifers (variables monitored: precipitation, salinity, coliform bacteria).*

The multidisciplinary assessments carried out under output 1.1.1 will provide a static snapshot of coastal aquifers, necessary for mapping the resource, the land-use activities on top of the aquifer and the potential sources of natural and anthropogenic pollution. In order to introduce the temporal component into the assessment, monitoring infrastructure is required. The existing network of (mostly manual) rain gauges in the three project countries will be strengthened with automatic ones which allow telemetered transfer of data to facilitate data collection. Existing points which allow monitoring of groundwater resources (shallow household wells) will be strengthened with dedicated monitoring boreholes to allow for direct monitoring of groundwater resources. A monitoring network consists of an adequate number of monitoring boreholes to allow for the spatiotemporal monitoring of groundwater. The drilling of monitoring boreholes will be guided by the initial aquifer assessment which will help to identify the optimal number, location and depth of monitoring bores. The drilling of monitoring infrastructure will be limited to the islands where groundwater development is already in place (Palau) or will be implemented through the project (for RMI only) to provide an additional tool necessary for the sustainable management and protection of coastal aquifers. Other benefits of monitoring bore construction include the determination of geological and hydrogeological conditions of the aquifer, and the confirmation of water resource potential. Site specific information on depth to groundwater, hydraulic parameters, and water quality can be collected for baseline and long-term monitoring allowing comparison of data sets over time for ongoing future resource management and development decisions. More information on the proposed bore construction and proposed sites can be found in Annex K.

This output also encompasses all activities related to the equipping of monitoring infrastructure and trained national staff with suitable tools and instrumentation to undertake monitoring of water resources and rainfall. More specifically, a number of monitoring boreholes will be equipped with automatic water level and salinity loggers to allow for continuous aquifer monitoring. Trained island staff will be equipped with handheld salinity loggers, water quality test kits and tablets equipped with suitable software to store, upload and report on the collected monitoring data.

| Major activities                           | RMI                                                                              | Palau                                                                                  | Tuvalu    |
|--------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------|
| Telemetered rain gauges (subject to needs) | Wotje, Laura, Jaluit, Ailinglaplap                                               | Peleliu, Angaur, Kayangel                                                              | Nui       |
| Drilling of monitoring boreholes           | Wotje, Delap, Laura<br><br>3-5 sites per island consisting of 3-4 boreholes each | Peleliu, Angaur, Kayangel<br><br>3-5 sites per island consisting of 3-4 boreholes each | -         |
| Automatic borehole loggers                 | Wotje, Laura, Jaluit<br><br>12 units in total                                    | Peleliu, Angaur, Kayangel<br><br>9 units in total                                      | -         |
| Manual loggers                             | 5 units                                                                          | 5 units                                                                                | 5 units   |
| Water quality test kits                    | 500 units                                                                        | 450 units                                                                              | 450 units |
| Tablets/smartphones                        | 9 units                                                                          | 9 units                                                                                | 9 units   |

**Component 3:** Local-based approaches to support the sustainable management and protection of coastal aquifers in the context of climate change.

*Output 3.1.1: Demonstrated community-based participatory monitoring, reporting, and management mechanisms on water resources in place in 6 sites/aquifers.*

This output encompasses all the participatory activities related to monitoring, reporting, and management of water resources undertaken by trained community members at the island level. Working in collaboration with local government and traditional leaders, the project will make every effort to ensure that an equal number of men and women are involved in community-based monitoring efforts. It is proposed that some formal endorsement of these activities will be sought from the relevant island governance authority for integration into any existing water and sanitation frameworks and disaster preparedness mechanisms at the island scale. The

objective is that the trained community members will undertake quarterly monitoring of 1) rainfall in newly installed rain gauges, 2) water level and coliform bacteria in selected private and communal rain tanks, 3) groundwater salinity and coliform bacteria in selected shallow household wells, 4) groundwater salinity and coliform bacteria in monitoring boreholes and 5) groundwater salinity and coliform bacteria in groundwater infiltration galleries. The monitoring frequency will increase should a drought occur.

Storing and reporting of results will be done through smartphone-based applications which allow direct uploading of collected data into a centralized dashboard. These apps will allow the trained community members to create summary reports with graphs and tables, visualize collected data on a map, disaggregate data in reports and maps, and access and export all the data at any time. Essentially, this output aims at creating a “citizen science” basis which can support aquifer management mechanisms through the periodical monitoring and reporting of relevant data. The progress and success of the tested participatory monitoring and reporting activities will be evaluated during the annual training workshops giving all participants the chance to exchange their experiences and lessons learned. Aspects related to management will be mainly relevant for the sites where groundwater production galleries will be installed (Wotje, Nanumea) as the gallery operation can be guided by the monitoring data collected.

| RMI sites                   | Palau sites | Tuvalu sites          |
|-----------------------------|-------------|-----------------------|
| Wotje, Jaluit, Ailinglaplap | -           | Vaitupu, Nanumea, Nui |

*Output 3.1.2: Improved land management for the protection of coastal aquifers through the development of community-based participatory land use zoning and land restoration techniques for 8 sites/aquifers (fencing and vegetation control).*

The appropriate management of recharge areas around groundwater production infrastructure is necessary to maximize groundwater recharge and to minimize the risk of contamination of the abstracted water. Relevant land management techniques include land use zoning demarcating protected areas, high-risk areas and high-impact areas. Maps will be developed delineating these areas and linking them with land use activities with potential impacts to the aquifers. Whether land use zoning for the protection of aquifers takes effect will be a community decision and SPC will provide recommendations on the zoning that is appropriate. Land restoration techniques such as fencing and vegetation clearance around groundwater production infrastructure will also be undertaken in consultation with the communities including both men and women.

| RMI sites           | Palau sites               | Tuvalu sites     |
|---------------------|---------------------------|------------------|
| Wotje, Delap, Laura | Peleliu, Angaur, Kayangel | Vaitupu, Nanumea |

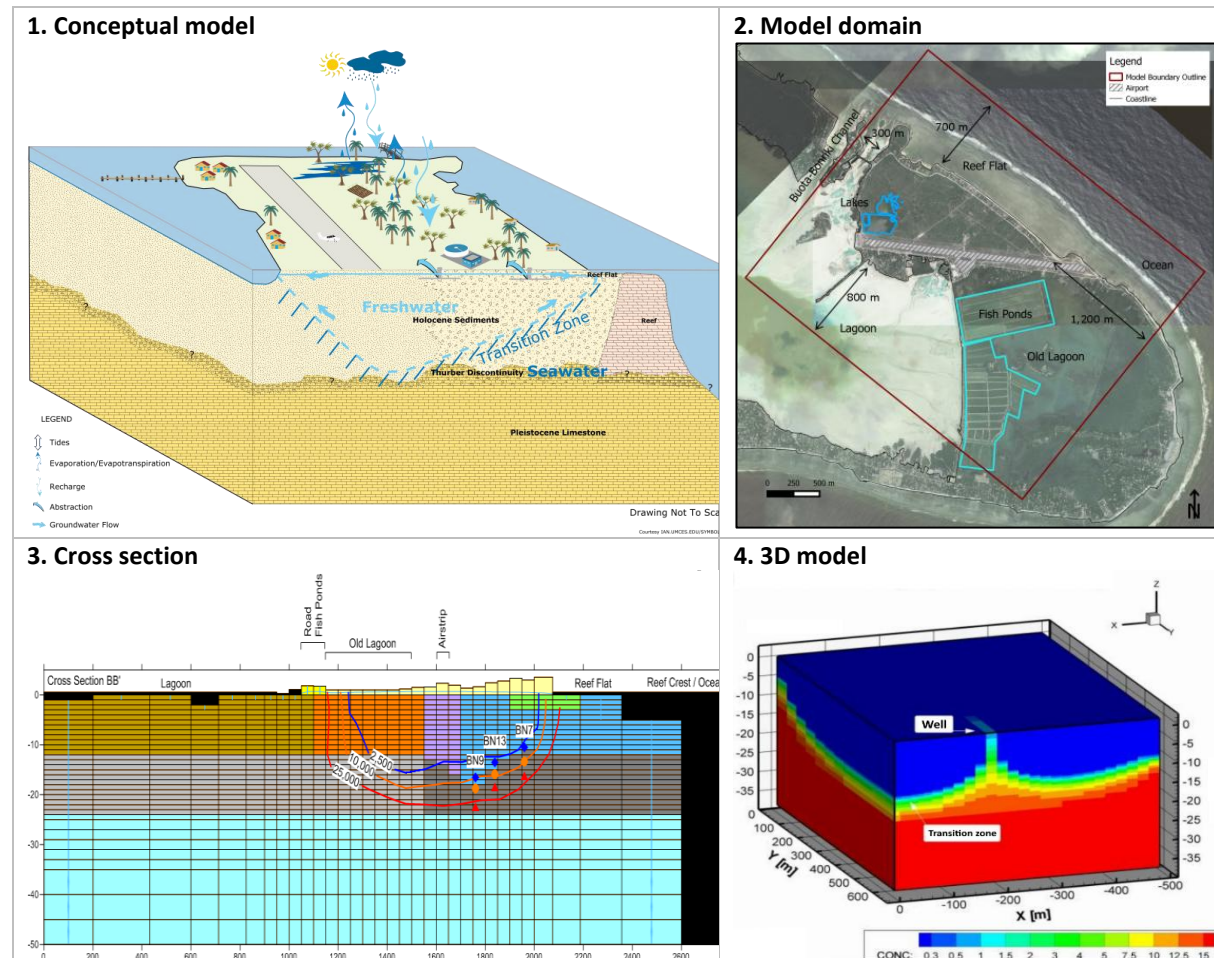
*Output 3.2.1: Development of groundwater numerical models to better understand the aquifer response to climate and anthropogenic impacts on the Laura coastal aquifer, and to inform the design of sustainable groundwater abstraction schemes.*

Numerical models are widely used to simulate the processes in groundwater systems. Advances in computing have resulted in improvements in the technology available to model the complex behaviour of coastal groundwater systems, involving a range of water and salt transport mechanisms, under various stresses, and with improved confidence in model predictions of system responses.

A three-dimensional numerical groundwater model will be developed for Laura, RMI as a demonstration tool of advanced aquifer management. With the benefit of improved software and datasets collected over an extended period, it is expected that the model will provide additional insight into the behaviour of the groundwater system and the impacts of abstraction, as well as the impact of and recovery from droughts. This information may have direct benefits to the management of the lens and be a catalyst for future discussions on the protection and the sustainability of Laura’s freshwater lens under a range of climate and management scenarios.

The presence of an extensive groundwater monitoring network in Laura will allow for collection of adequate groundwater salinity data which in turn will allow for calibration and validation of the developed numerical model and enhance its reliability for prediction purposes. It is expected that 6-months’ worth of data, collected through automatic salinity loggers installed during this project, will be enough to calibrate the model. Having a reliable model will allow testing various climatic and abstraction scenarios and observing their impacts on the

freshwater lens and on the salinity of abstracted water. This will allow for the optimization of abstraction schemes, particularly useful to improve groundwater sustainability during droughts and increase the resilience of the Laura community who largely depend on groundwater. The numerical model will showcase how such tool can support evidence-based aquifer management and decision-making and will demonstrate at the regional level the benefit of monitoring and data collection. It is expected that by the end of this project, Palau will be in a position to develop similar models for the project sites, as the necessary monitoring infrastructure will be in place and relevant data will have been collected.



| Activity                                                           | Detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Literature review of existing models applied in atoll environments | A comprehensive review and analysis of available literature on the effects of overtopping on fresh groundwater resources, factors and processes that determine the subsequent flushing, including the modelling thereof, with specific emphasis on atoll environments.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Groundwater model conceptualisation and design                     | A conceptual model will be developed in consultation with the implementing agency and the water utility, drawing on atoll groundwater expertise and previous hydrogeological and groundwater studies and models. Data sets and needs will be compiled, additional data needs determined, and strategies to acquire or generate necessary information will be outlined. Datasets that will be required and drawn upon for model development include: surface topography (DEM), piezometric and water table elevations (including their temporal variability), temporal and spatial salinity variations, land use, vegetation and soils/geology data, including drillers logs and geophysical data. Data are also needed on model forcings and stresses, including sea level data, groundwater abstraction, rainfall and evapotranspiration, salinity and groundwater level time series. This activity will also include a review to identify the most appropriate numerical code. |

|                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Groundwater model construction — coupled flow and transport model                                      | A model of the existing groundwater system will be constructed, with a focus on historical lens behavior. This will require appropriate gridding of the model area and determination of aquifer properties and boundary conditions.                                                                                                                                                                                                                                                            |
| Groundwater model calibration                                                                          | Parameters estimation will be undertaken using an appropriate historical period of water level and salinity measurement. Depending on data availability, meaningful calibration metrics will be identified and, when feasible (depending for example on run-time constraints), automated calibration software (e.g. the Model Independent Parameter Estimation — PEST) will be used to fine tune aquifer parameters and to improve the match between the model outputs and field measurements. |
| Groundwater modelling of future scenarios of sea-level rise, climate variability and inundation events | The calibrated groundwater model will be used for simulations of future scenarios of sea-level rise, climate variability and inundation events. The intention of the future scenarios is to examine the possible impacts on pumping galleries and the timing associated with lens recovery.                                                                                                                                                                                                    |

*Output 3.2.2: Development of technical guidance notes to support development of aquifer management plans and drought response plans in 6 sites/aquifers.*

The collected data and information will serve as the basis for the development of technical guidance documents aiming to support the development of aquifer management and drought response plans, implemented through a follow-up project. These documents will be focused on the operation, management and maintenance of groundwater development infrastructure already existing in the project sites or implemented during this project, in relation to land-use activities, potential pollution sources, monitoring points and climate information. Each technical note will be site-specific and will take into consideration the land degradation drivers which may have an impact on the aquifers identified through activities under project Component 1.

Developing aquifer management plans will require close monitoring for an adequate period of time of the aquifer's response towards external stresses such as rainfall, groundwater abstraction, and pollution. This project aims at putting in place the necessary infrastructure and mechanisms that will allow obtaining this enhanced understanding of the behavior of each aquifer and consequently allow identifying the management mechanisms and techniques which are best suited for each aquifer. Each aquifer will require a different management strategy which not only depends on the aquifer's behavior but also on the type and magnitude of external influences, both natural and anthropogenic. The proposed technical guidance notes will serve at providing this foundation upon which holistic management plans can be developed.

| Overview of technical guidance notes developed for each site                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Laura (RMI)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Peleliu, Angaur, Kayangel (Palau)                                                                                                                                                                                                                                                           | Wotje (RMI)                                                                                                                                                                                                                                                                                     | Nanumea (Tuvalu)                                                                                                                                                                                                                                                                                                        |
| The case of Laura presents the most complete project site in terms of existing knowledge, data and infrastructure (monitoring and development). As such, it will allow for the development of a numerical groundwater model which, in turn, will largely guide the development of the technical guidance note which is expected to be the most advanced in terms of management recommendations. The document will capture the role of the model as a management tool, able to predict the aquifer's response under different external influences. As such, it will provide recommendations on possibilities | Although groundwater development takes place in all three sites in Palau, aquifer management is absent. The installation of groundwater monitoring infrastructure realized through this project will allow for strengthened management opportunities, such as abstraction scheduling, which | The technical guidance note for Wotje will address the management possibilities stemming from the installation of groundwater development and monitoring infrastructure, both realized through this project. Recommendations will be given with regards to monitoring schedules and abstraction | As no monitoring infrastructure will be installed in Nanumea due to lack of funds, the technical note will be limited on providing guidance with regards to the operation and maintenance of the infiltration gallery installed through this project. Recommendations with regards to monitoring of rainfall, rainwater |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| to improve the existing abstraction schemes to maximize yields without compromising the abstracted water quality. Recommendations will also be given with regards to impacts on existing groundwater development infrastructure from possible inundation events and the timing associated with the recovery of groundwater quality. The adoption of a groundwater monitoring strategy using the existing bores will be recommended to better inform management actions. | will be captured in the technical guidance notes developed for these three sites. The notes will also provide recommendations on the operation and maintenance associated with the newly installed monitoring boreholes and instrumentation. | operation to ensure sustainable yields and resilience during droughts. The notes will also provide recommendations on the operation and maintenance associated with the newly installed groundwater infiltration gallery and monitoring boreholes and instrumentation. | tanks, and shallow household wells will complement, to the extent possible, the absence of dedicated monitoring infrastructure. The notes will also provide recommendations on the operation and maintenance associated with the newly installed groundwater infiltration gallery. |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### **Component 4:** Knowledge management and M&E

*Output 4.1.1: Harmonized reporting templates developed based on proposed indicator sets to facilitate reporting and monitoring of project results.*

Harmonized templates based on the existing results framework will be developed for use by the three project countries in tracking the progress towards achievement of project results. Monitoring and evaluation will be done annually and training workshops will be conducted for the national project managers, during the regional steering committee meetings, to ensure a smooth and harmonized use of reporting templates. Additional national planning exercises will also be conducted to explore the alignment of national indicator sets and to investigate the inclusion of gender-responsive indicators.

*Output 4.1.2: Communication and visibility plan established including the development of project website.*

A communication and visibility action plan will be developed and implemented during the project's first year. The plan's purpose is to detail the approach and strategy to effectively communicate results, and deliverables to the different stakeholders, including beneficiaries, donor. Key to effective communication will be the development of a dedicated project website upon project initiation to host all project-related updates and products and to act as the main communication channel. The website will be regularly updated with short articles summarizing the activities taking place in the three project countries and providing media highlights. Upon project completion, the website will be housed under SPC's website to ensure its long-term viability. The visibility plan will also include the development of communication material such as logos, reporting templates and layouts, and audiovisual promotional material in accordance with project and donor requirements.

*Output 4.1.3: Allocation of at least 1% of IW funds for IW:LEARN activities, including sharing of results globally focusing on SIDS.*

This component will also support stakeholder participation in IW:LEARN activities, including participation in regular international conferences (including the biennial IW Conferences) and sub-regional workshops, preparation of at least 3 IW experience notes, and the establishment of linkages between project website and IW:LEARN website. The project will also explore opportunities to link with other institutions such as the Caribbean Institute of Meteorology and Hydrology, CIMH (Barbados), through the organization/participation in seminars and short courses (links with Output 2.1.1) of relevance to SIDS.

## **3.2 Partnerships**

| Project | Project objective and relevant expected results | Confirmed co-financing |
|---------|-------------------------------------------------|------------------------|
|---------|-------------------------------------------------|------------------------|

|                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                         |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| New Zealand - Strengthening Water Security of Vulnerable Island States (2014-2019) | <p>The project supports atoll countries, including Tuvalu and RMI, in building the skills, systems and basic infrastructure to better anticipate, respond to, and withstand the impacts of drought.</p> <p><u>Relevant activities:</u> water resources assessment surveys undertaken in Tuvalu and RMI will be used to guide the development of groundwater development infrastructure.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | \$196,000                                                               |
| New Zealand Ministry of Foreign Affairs                                            | <p><u>Relevant activities:</u> groundwater development and supply infrastructure is proposed for Vaitupu, Tuvalu, complementing the aquifer management and protection activities proposed for Vaitupu under MCAP.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | \$584,500 (funding agreement expected to be confirmed in November 2019) |
| EU - Building Safety and Resilience in the Pacific (2016-2019)                     | <p>The project focusses on reducing the vulnerability, as well as the social, economic and environmental costs of disasters caused by natural hazards in ACP Pacific Island States.</p> <p><u>Relevant activities:</u> institutional arrangements for Disaster Risk Management were strengthened in the Republic of the Marshall Islands through the review and endorsement of a DRM Plan, public awareness was raised and training workshops were conducted to help businesses better assess and reduce their vulnerability to hazards such as drought, typhoon, storm surge, inundation and utilities failures. In Palau, the National DRM Plan was reviewed and endorsed by Cabinet, State Disaster Plans and Community Disaster Plans were developed for all states and hamlets and submitted to the states for adoption, and public awareness material was developed on water shortages and droughts. In Tuvalu, institutional arrangements for DRM and CCA were strengthened, Island Disaster Committee members were trained on emergency response and measures were put in place to enhance the preparedness, response and recovery.</p> | \$1,960,000                                                             |
| World Bank – Pacific Resilience Projects phase II (2019-2022)                      | <p>The objective of the Second Phase of Pacific Resilience Projects in the Republic of the Marshall Islands is to strengthen early warning systems, climate resilient investments in shoreline protection, and to provide immediate and effective response to an eligible crisis or emergency.</p> <p><u>Relevant activities:</u> Collection of airborne LIDAR imagery, development of hazard and inundation risk maps, monitoring of shoreline changes for Majuro atoll. Development of GIS capacity at the national level. Topographical surveys planned under MCAP will be undertaken by the national staff trained under PREP II.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | \$1,400,000                                                             |
| WMO - Climate Risk & Early Warning Systems                                         | <p>The Climate Risk &amp; Early Warning Systems initiative supports Least Developed Countries and Small Island Developing States to significantly increase the capacity to generate and communicate effective, impact-based, multi-hazard, gender-informed early warnings to protect lives, livelihoods, and assets.</p> <p><u>Relevant activities:</u> wave inundation modelling and forecasting of all the inhabited sites in Tuvalu</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | \$350,000                                                               |
| KfW Development Bank - Cyclone Pam                                                 | <p><u>Relevant activities:</u> development of offshore wave forecasting systems, post disaster surveys, capacity building, and provision of equipment</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | \$450,000                                                               |

|                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| recovery support Tuvalu (2016-2018)                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |
| World Bank - Pacific Catastrophe Risk Assessment & Financing Initiative phase III (2019-2021)  | <p>The project focusses on building the financial resilience of Pacific Island Countries against natural disasters.</p> <p><u>Relevant activities:</u> development of capacities in the Republic of Marshall Islands to conduct risk assessments and to produce hazard information.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                             | \$500,000    |
| Australian Government - COSPPac                                                                | <p>The project goal is to enhance the capacity of Pacific Islands to manage and mitigate the impacts of climate variability and tidal events. This is achieved through work with stakeholders in the Islands to build tools that can forecast and report on climate, tides and the ocean and to determine how best to communicate this information to communities, businesses and Governments.</p> <p><u>Relevant activities:</u> annual maintenance and levelling of tide gauges in the Republic of Marshall Islands and Tuvalu, annual fees for the telemetered data transfer, salaries of SPC staff looking after the Ocean Portal.</p>                                                                                          | \$50,000     |
| GCF – Addressing climate vulnerability in the water sector in the Marshall Islands (2019-2026) | <p>The project aims at supporting the Government of the Republic of the Marshall Islands in adapting to increasing climate risks, particularly more frequent and extreme droughts, which impact the country's drinking water supply.</p> <p><u>Relevant activities:</u> interventions such as the protection of private wells from storm surges and contamination and the enhancement of women and youth's leadership through best practices and community awareness programmes will complement the groundwater protection, monitoring and development work that is envisaged through the MCAP (and vice versa) towards achieving enhanced climate resilience of the water sector.</p>                                              | \$2,267,660  |
| GCF – Tuvalu Coastal Adaptation Project (2018-2025)                                            | <p>The Tuvalu Coastal Adaptation Project assists Tuvalu by implementing measures that reduce exposure to coastal hazards in the three target islands, developing a long term coastal adaptation strategy, building capacity of national and local authorities to better implement adaptation actions, and investing in youth as future stewards of a resilient Tuvalu.</p> <p><u>Relevant activities:</u> collection of airborne LIDAR imagery across Tuvalu's nine atoll islands, implementation of coastal protection measures in Nanumea (geo-textile container revetment + beach nourishment and dune restoration) and Funafuti (rock armour revetment + pre-cast concrete revetment), wave inundation modeling for Nanumea</p> | \$11,591,540 |
| GEF – R2R (2015-2019)                                                                          | The GEF-funded national and regional Ridge To Reef projects are supporting national priorities and development needs of 14 countries while delivering global environmental benefits on Land Degradation, Climate Change Adaptation and International Waters GEF focal areas (among others).                                                                                                                                                                                                                                                                                                                                                                                                                                         | Not eligible |

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
|                             | MCAP will build upon a number of interventions undertaken during the R2R projects in the three relevant countries. For example, the water resources assessment surveys performed in Nanumea and Nukufetau may be used to guide the development of groundwater development infrastructure.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |
| EU - GCCA+ SUPA (2018-2022) | <p>The project aims at enhancing climate change adaptation and resilience within ten Pacific island countries, including RMI, Palau and Tuvalu, aiming specifically at strengthening the implementation of sector-based, but integrated, climate change and disaster risk management strategies and plans.</p> <p><u>Relevant activities:</u> coastal protection interventions are planned for Ailinglaplap atoll in RMI, one of the MCAP project sites. These coastal protection measures are expected to be extremely relevant for the protection of the Woja aquifer from contamination deriving from wave inundation events and storm surges. It is also expected that the scope of MCAP activities in Tuvalu may be expanded by co-financing activities through the GCCA+ SUPA.</p> | Unknown |
| EU - RENI (2017-2020)       | The Readiness for El Niño project is planned to terminate in November 2020 and it is expected that it will be the source of important information and lessons learnt with regards to enhancing drought readiness in the Marshall Islands and Palau.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | \$0     |

### 3.3 Risks and Assumptions

It is expected that a minimal loss of land access due to restrictions may take place as a result of project development (monitoring and groundwater development infrastructure, groundwater protection planning, etc.). The risk for permanent physical and economic displacements of communities is considered to be low as changes in land use/access will always be materialized in consultation and with the agreement of the land owners. Preliminary consultations with communities and land owners have already been conducted during the project preparation phase to ensure that loss of land access will not lead to resettlement. These consultations also revealed that public understanding surrounding the “ownership” of groundwater - which varies from country to country, island to island and community to community - can be a sensitive subject given the common customary belief that people who own the land also own what lies beneath it, even if this position is not supported in state policy. As such, the project will ensure that all land access and use issues are addressed prior to any project intervention and allow sufficient time for consultation and permission processes to occur.

It is also expected that the proposed project interventions may be vulnerable to potential impacts of climate change and extreme climatic conditions. Although rare, extreme climate events such as flooding, and wave inundation may affect/delay the implementation of groundwater development and monitoring infrastructure. The inundation vulnerability mapping that is planned for each project island will guide the installation of such infrastructure towards the safer areas within each identified groundwater resources, to minimize the risk.

As groundwater development constitutes part of the project outputs, the risk of developing and using a contaminated source could theoretically result in increased water-borne health risks. However, improving the quality of existing groundwater supply systems is one of the project outputs. As such, any developments of new groundwater resources will ensure the groundwater is devoid of contamination and suitable monitoring schemes will be put in place to ensure groundwater quality does not degrade. Best practice, user-friendly guidelines to reduce contamination risks will be identified and communicated through awareness raising activities.

As drilling of monitoring boreholes and installation of infiltration galleries are foreseen, these activities could potentially pose OH&S related risks. To prevent physical hazards, OH&S procedures in accordance with industry best practice will be imposed. Also, the installation of groundwater development and monitoring infrastructure will potentially result in the generation of non-hazardous waste, including PVC pipes. A disposal plan for the material brought onsite will be developed to ensure that the environmental and social impact are minimized.

### 3.4 Stakeholder communication and engagement plan

Stakeholders are the individuals, organizations and groups who are impacted, both directly and indirectly, by the outcomes of a project and the activities undertaken to achieve those outcomes. These groups usually have significant interest and influence on the work the project undertakes.

The main purpose of this plan is to outline how the project management team will communicate and engage with key stakeholders throughout the duration of the project as success depends on the continuous support of these people and organisations. Furthermore, stakeholder attitudes can change over time and be influenced by project communications.

Successful stakeholder engagement is a prerequisite to effective partnerships and developing capacity at local and national level. Stakeholder engagement is also at the heart of SPC's GEM Division outcome aimed at improving multi-sectoral responses to climate change and disasters to achieve empowerment and resilience of Pacific communities.

A stakeholder engagement plan is included in Annex F. In summary, activities related to project component 1 "National demonstrations to support knowledge and use of coastal aquifers for enhanced water security" will require engagement with the lead agency in each country and with the ministries/departments/agencies that deal with water, public utilities and public works to 1) successfully conduct the required technical assessments, 2) enhance in-country capacity in assessment techniques, 3) formalize agreements related to location and purpose of groundwater monitoring networks, groundwater production galleries, and water treatment facilities. Engagement with social agencies will also be required to conduct the socio-cultural surveys, facilitate communication and engagement with women's group, youth organisations and agencies focused on disability issues.

Activities related to project component 2 "National-based investments in human capital and tools" will require strong engagement with the agencies who are active and/or have a presence in project islands and communities. Effective knowledge transfer and application to the outer islands will be key in successfully achieving project outcomes related to this component.

Activities related to project component 3 "Local-based approaches to support the sustainable management and protection of coastal aquifers in the context of climate change" will require engagement with most of the identified stakeholders to demonstrate the potential of rolling out the piloted participatory monitoring and management approaches in the outer islands to the national and regional scale.

A National project manager engaged for the duration of the project in each country, will play an essential role in facilitating communication and engagement with relevant stakeholders at national, island and community level. The national project manager will be supported by the implementing partner to ensure relevant and appropriate information on the project is effectively communicated to the stakeholders in accessible formats.

### 3.5 Gender equality and social inclusion

The gender equity and social inclusion (GESI) Assessment (provided in Annex G) concludes that coastal aquifers play a critical role in water security in project sites and that current levels of freshwater are inadequate to meet people's basic needs especially during extended dry periods. It is expected that MCAP supported water assessments, training and capacity building support will lead to improved quality and quantity of groundwater in targeted areas, create more equitable access to water resources for vulnerable groups, improve health and education outcomes, enhance livelihoods and reduce household and community level conflict caused by water shortages.

This will be achieved by strengthening monitoring and maintenance of groundwater sources using citizen science approaches, training young women and men as water engineers and by working in collaboration with existing agencies and committees responsible for water security and climate change adaptation at national, island and community level. The project will also work through local schools, develop technical and user-friendly aquifer information resources and engage with people with disabilities (and their organisations) to enhance disaster risk reduction efforts and ensure their views and needs are incorporated.

From a global perspective the project supports the achievement of the Sustainable Development Goals (SDGs), the United Nations Framework on Climate Change (UNFCCC), the Convention on the Rights of People with Disabilities (CRPD), and the Convention on the Rights of the Child (CRC). At national level, MCAP will contribute to the implementation of water policies, climate change frameworks, disaster preparedness, response and recovery policies and women, youth and disability plans of action.

### GESI Action Plan

The following recommendations are based on literature review findings, national and community level consultation results and best practise guidelines for effective GESI work in the Pacific Islands. Further detail concerning these recommendations can be found in Annex G.

1. Provide GESI technical support to project personnel and implementing agencies with a focus on building the capacity of National Project Managers;
2. Ensure National Project Managers visit each site during inception to review findings from design consultations; confirm upcoming project activities/timeframes; agree on land use requirements and permissions; review project GESI expectations; and gather baseline data;
3. Ensure all aquifer assessments and management guidance documents are multi-disciplinary and capture the views of women, men, youth and people with disabilities;
4. Strive to ensure women, men and youth are equitably represented on project planning and monitoring committees at national, island and community level by working in collaboration with community leaders to meet established targets;
5. Work through existing mechanisms including local government structures, water, disaster or health committees and women/youth organisations rather than setting up new arrangements;
6. Ensure all land access and use issues are addressed prior to any project intervention and allow sufficient time for consultation and permission processes to occur;
7. Ensure opportunities are provided to all members of the community to participate in field activities to learn more about groundwater assessment, monitoring and conservation;
8. Keep community leaders informed of project activities, timelines and assessment results to ensure transparency and knowledge sharing;
9. Hold community meetings at a time and place convenient to all stakeholders and avoid “consultation fatigue”;
10. Provide “Water for Women” (WfW) learning opportunities and ensure all trainings supported by the project include equal representation of women and men;
11. Facilitate inter-island knowledge exchange visits with women and youth to share experience and best practice on water security, climate change and risk reduction;
12. Ensure people with disabilities are involved in project planning, implementation and monitoring at both national and local level;
13. Develop gender-sensitive community and student-friendly groundwater education and awareness materials in addition to technical guidance notes;
14. Ensure project monitoring and evaluation includes GESI indicators and targets;
15. Support the development of relevant water security and land use policy frameworks using a GESI lens; and
16. Model gender equity in project staffing and management arrangements (including the Regional Steering Committee Board and Country Coordination bodies), develop and enforce a staff Code of Conduct.

### **3.6 South-South and Triangular Cooperation**

As the project evolves, the three project countries will become both recipients of development cooperation and active South-South partners. The annual regional steering committee meetings will act as platforms for the three countries to exchange knowledge and experience learned prior to and during this project to replicate and adapt Southern development solutions and good practices. The three countries have different levels of groundwater resources development, supply, management and protection. Palau for example has a long-standing experience and has therefore a lot to share in terms of groundwater development but is facing challenges related to groundwater quality and shortage during droughts. RMI on the other hand, having a fully established groundwater monitoring network in Laura, Majuro, can provide valuable information on how to establish sustainable and cost-effective monitoring strategies to be adapted by the other countries.

The knowledge management approach addresses the following elements of program delivery:

1. Annual participation of national project managers, national and local governmental staff, and community members from the project sites in national training workshops for the development of capacities on specific topics and tasks related to water resources and land degradation and to proposed monitoring and management

strategies developed under this project. These workshops will be an opportunity for knowledge exchange between project sites at the national level.

2. Annual participation of two governmental staff from each project country in short-term technical courses on water resources related topics to reinforce knowledge transferred during the in-country training workshops. Given the significant lack of women engaged in natural resource technical trades in project countries, preference will be given to female candidates. This activity will promote “Women in Water” development in line with national and regional gender equity objectives.

3. Participation of regional project team in IW: LEARN conferences and other regional conferences to ensure knowledge exchange at international level.

4. The proposed participatory management and reporting mechanism using mobile network technology will promote effective governance at the local level for aquifer and land management developing resilient communities against climate change and natural disasters.

5. The project website will offer a repository of information for project and other countries in the region, sharing similar issues, to engage and exchange knowledge and experiences. Successful demonstrations are expected to catalyze additional funding to replicate interventions and approaches implemented during this project.

6. Development and sharing of GEF IW Experience Notes showcasing specific project experiences that may be of interest to other projects in the portfolio to replicate.

7. Identification of mechanisms for ensuring end-user engagement in the program and understanding end-user needs and priorities.

8. Establishment of a plan to ensure the ongoing availability of project outputs beyond the life of the project for end-users.

9. Support mechanisms to bring the identified relevant stakeholders together to facilitate evidence-based decision-making.

10. Promotion of the MCAP outputs to end-users, particularly in the coastal communities.

### 3.7 Sustainability and Scaling Up

SPC has a long-term commitment to maintain, through an ongoing programmatic support to its member countries, the sustainability and strengthening of their institutions. Through this broader programmatic support, lessons that have been identified through projects benefit other efforts beyond the life of each project. Essentially, SPC is not just a project implementer but responds to country requests for support and accommodates the required technical backstopping. At the same time, lessons learned from previous projects in the region will help SPC supporting a process that is established with the island governance mechanisms to allow them take on sustainability issues. Therefore, strong commitment is also necessary on behalf of the beneficiaries to sustain the work in the long term.

The current project is aiming at providing the means and enhancing the capacities to access and manage a new water resource that can complement the existing rainwater resources and help coping through periods of water scarcity. The piloting of accessible and relatively low-cost technologies such as groundwater infiltration galleries will demonstrate that, when properly planned, such technologies can enhance the resilience of SIDS against climate change and natural disasters. Existing infrastructure which allows monitoring of water resources will be enhanced with dedicated monitoring boreholes to allow for direct monitoring of groundwater resources. Monitoring infrastructure will be equipped with instrumentation to allow for continuous recording of data to allow for effective spatiotemporal monitoring and management of water resources.

Human capacities will be enhanced by setting up and trialing monitoring schemes which will allow the project countries to monitor and report on water resources data through available mobile networks and smartphone applications. Over the course of the project, in-country annual training workshops will be conducted to develop national human capacity in using these technologies and transferring the knowledge to other staff at the island level. The frequency of water resources monitoring and reporting will be a measure indicating the development of capacities and the success of the approach. Three pilot islands will be selected in each one of the three project countries to evaluate the success of these monitoring schemes and promote their upscaling at the national and regional level. It is expected that this bottom-up approach will help in sustaining monitoring activities at the island level past the project closure and consequently ensure national ownership of project results and interventions.

The high importance of coastal aquifers for livelihoods and the inherent risks associated with island vulnerabilities, creates the need for the generation of best practices that can be replicated and scaled-up. The high profile of land and water in island communities, coupled with the limited policy and legal frameworks for the integration of protection and management of these resources, creates significant opportunities for the successful uptake of best practices and lessons learned.

## 4. Project Management

### 4.1 Cost efficiency and effectiveness

Maximum results are expected to be delivered by using a trialled multidisciplinary approach to assessing, monitoring, developing, modeling, managing and protecting coastal groundwater resources to support existing rainwater supplies and provide increased resilience against climatic variability and natural disasters. This approach has been tested through a number of projects executed by the Pacific Community in similar contexts and has proved to attract additional funding for the continuation/optimization of results and to produce the evidence-based knowledge required for decision and policy making. For example, groundwater resources assessments conducted under the New Zealand-funded “Strengthening Water Security of Vulnerable Island States” in Tuvalu have resulted in incremental funding from New Zealand to build on the existing work and develop fresh groundwater resources to alleviate water scarcity during droughts. Similarly, data collected in Bonriki in South Tarawa, Kiribati for the development of a numerical groundwater model under the Australian-funded “Bonriki Inundation Vulnerability Assessment” project triggered additional funding from the European Union to advance the numerical model to allow for predictions under different abstraction schemes and climatic scenarios.

Being very familiar with the operational context in the project countries and having built an extended network, SPC will ensure that the available resources are utilized efficiently with maximum benefit for the beneficiaries. SPC’s procurement policy will ensure that the procurement of required supplies and the identification and engagement with external consultants will be realized in the most effective way without compromising the quality of services provided.

### 4.2 Project management

SPC is an inter-governmental, regional organization dedicated to providing services to promote sustainable development and vulnerability reduction in the countries it serves through legal mandate. The project will be operationalized within SPC’s Geoscience, Energy and Maritime Division (GEM) under the Suva-based campus in Fiji. More specifically, the physical project office will be housed under the Disaster and Community Resilience Programme (DCRP) which provides a coordinated response to member countries in disaster reduction, climate change, water and sanitation, and Ridge to Reef environmental resilience.

SPC staff working exclusively on this project will consist of one administration officer. Shared operations support will be provided by one Chief Technical Advisor / Project Manager, two technical officers, one communications officer, one M&E officer, one GESI officer, one finance officer, and one procurement officer. Additionally, three national project managers will be engaged to coordinate in-country activities, facilitate communication between the Regional Project Team and national stakeholders, and ensure progress towards achievement of national project outputs. The Regional Project Team will provide the day-to-day management and coordination function for project activities and support the national project managers in their role.

Engagement with other projects will be realized by ensuring coordinated meetings to identify synergies and align activities. These meetings will be conducted at both national and regional level.

### 4.3 Agreement on intellectual property rights and use of logo on the project’s deliverables and disclosure of information

To accord proper acknowledgement to the GEF for providing grant funding, the GEF logo will appear together with the UNDP logo on all promotional materials, other written materials like publications developed by the project, and project hardware. Any citation on publications regarding projects funded by the GEF will also accord proper acknowledgement to the GEF. Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy<sup>1</sup> and the GEF policy on public involvement<sup>2</sup>.

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<sup>1</sup> See [http://www.undp.org/content/undp/en/home/operations/transparency/information\\_disclosurepolicy/](http://www.undp.org/content/undp/en/home/operations/transparency/information_disclosurepolicy/)

<sup>2</sup> See [https://www.thegef.org/gef/policies\\_guidelines](https://www.thegef.org/gef/policies_guidelines)

## 5. Project Results Framework

| <b>This project will contribute to the following Sustainable Development Goal (s):</b> 2, 3, 5, 6, 11, 13, 15                                                                                                                                                                                                                                                                                        |                                                                                                                                              |          |                 |                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| <b>This project will contribute to the following country outcome included in the UNDAF/Country Programme Document:</b> Outcome 1: Environmental management, climate and disaster risk management. The UN will work to support an integrated approach to environmental sustainability and efforts by PICT governments and communities to adapt to climate change and reduce and manage disaster risk. |                                                                                                                                              |          |                 |                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>This project will be linked to the following output of the UNDP Strategic Plan:</b> Output 1.4.1: Solutions scaled up for sustainable management of natural resources, including sustainable commodities and green and inclusive value chains                                                                                                                                                     |                                                                                                                                              |          |                 |                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                      | Objective and Outcome Indicators                                                                                                             | Baseline | Mid-term Target | End of Project Target                         | Data Collection Methods and Risks/Assumptions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Project Objective:</b><br>To improve the understanding, use, management and protection of coastal aquifers towards enhanced water security in the context of a changing climate.                                                                                                                                                                                                                  | <u>Mandatory indicator 1:</u> Land area with improved aquifer management and protection (hectares).                                          | 0        | 0               | 3615                                          | Indicator calculated from national datasets (Census data) and SPC's Statistics for Development Division datasets (POPGIS) for areas in which project interventions will take place.                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                              |          |                 |                                               | <b>Risks:</b> Project activities cannot be realized in all project sites due to unforeseen circumstances.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                              |          |                 |                                               | <b>Assumptions:</b> Total area of all project sites will benefit by project interventions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                      | <u>Mandatory indicator 2:</u> Number of direct project beneficiaries.                                                                        | 0        | 0               | 12953 (6480 male, 6473 female, 3424 children) | Indicator calculated from national datasets (Census data) and SPC's Statistics for Development Division datasets (POPGIS) for areas in which project interventions will take place.                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                              |          |                 |                                               | <b>Risks:</b> Project activities cannot be realized in all project sites due to unforeseen circumstances.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                              |          |                 |                                               | <b>Assumptions:</b> Total population of all project sites will benefit by project interventions either through increased knowledge or improved access and management of groundwater.                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Component 1 / Outcome 1.1:</b><br>Enhanced knowledge on the current status of coastal aquifers and enhanced understanding of aquifer                                                                                                                                                                                                                                                              | Indicator 3: Status of knowledge on the current state of coastal aquifers, measured by the completion of water resources assessment surveys. | 0        | 5               | 8                                             | <u>Relevant sites:</u> Ailinglaplap, Delap, Laura, Jaluit, Nui, Peleliu, Angaur, Kayangel<br>Completion of water resources assessment surveys will enhance the knowledge on the current state of coastal aquifers. Consultations will be conducted prior to and after the assessment surveys have been conducted to ensure knowledge transfer is achieved.<br><u>GESI requirements</u><br>All coastal aquifer assessments are developed in consultation with women, men and youth and are inclusive of gender and social inclusion factors, cultural issues, traditional protocols and land access requirements. |

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| vulnerabilities to climate changes and other factors.                                            |                                                                                                                                                                |   |   |                                                                          | <p><b>Risks:</b> Consultations do not cover all members of the community. Consultations to be developed with GESI officer to ensure inclusivity.</p> <p><b>Assumptions:</b> Beneficiaries participate in water resources assessment surveys and pre- and post-consultations</p>                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                                                  | Indicator 4: Status of knowledge on the vulnerability of coastal aquifers, measured by the completion of inundation vulnerability surveys and land use surveys | 0 | 5 | 8                                                                        | <p><u>Relevant sites:</u> Wotje, Ailinglaplap, Delap, Laura, Jaluit, Vaitupu, Nanumea, Nui, Kayangel</p> <p>Completion of inundation vulnerability surveys and land use surveys will enhance the knowledge on the vulnerability of coastal aquifers. Consultations will be conducted prior to and after the assessment surveys have been conducted to ensure knowledge transfer is achieved.</p> <p><u>GESI requirements</u></p> <p>All coastal aquifer assessments are developed in consultation with women, men and youth and are inclusive of gender and social inclusion factors, cultural issues, traditional protocols and land access requirements.</p> |
|                                                                                                  |                                                                                                                                                                |   |   |                                                                          | <p><b>Risks:</b> Consultations do not cover all members of the community. Consultations to be developed with GESI officer to ensure inclusivity.</p> <p><b>Assumptions:</b> Beneficiaries participate in consultations and land use surveys</p>                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Component 1 / Outcome 1.2:</b><br>Improved access to groundwater for enhanced water security. | Indicator 5: Total population benefiting from improved access to groundwater through the development of new groundwater production infrastructure.             | 0 | 0 | 1267: 679 male and 588 female. Total children population benefiting: 377 | <p><u>Relevant sites:</u> Wotje, Nanumea</p> <p>Indicator calculated from national datasets (Census data) and SPC's Statistics for Development Division datasets (POPGIS) for areas in which project interventions will take place.</p> <p><u>GESI requirements</u></p> <p>Both women and men from MCAP communities are actively involved in development of ground water production galleries.</p> <p>Students from island schools learn about infiltration galleries and water supply development.</p>                                                                                                                                                        |
|                                                                                                  | Indicator 6: Total population benefiting from access to improved quality water through                                                                         | 0 | 0 | 471: 247 male and 224 female (Total population of Peleliu island         | <p><b>Risks:</b> No suitable land areas are made accessible for water supply infrastructure. Communities do not adopt long-term O&amp;M ownership.</p> <p><b>Assumptions:</b> Total population of the relevant sites will benefit by project interventions through improved access to and of groundwater.</p> <p>Communities are in agreement with and support the construction of proposed water supply infrastructure. Local government and community engaged in the development of an O&amp;M plan.</p>                                                                                                                                                     |
|                                                                                                  |                                                                                                                                                                |   |   |                                                                          | <p><u>Relevant sites:</u> Peleliu and/or Angaur</p> <p>Completion of up to two water conditioning systems which will improve the water quality of reticulated ground water provided to the community. Indicator calculated from national datasets (Census data) and SPC's Statistics for Development Division datasets (POPGIS) for areas in which project interventions will take place.</p>                                                                                                                                                                                                                                                                  |

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|                                                                                                                                           | treatment of existing reticulated water and/or through the provision of new, higher quality water.       |   |    | that is connected to reticulated water supplies). Total children population benefiting: 106 | <p><u>GESI requirements</u></p> <p>Pre- and post-intervention surveys are conducted with equal numbers of men and women and show improved quality of ground water for household needs as evidenced by reduced illness, improved taste and wider use.</p> <p>Consultations with landowners &amp; community leaders reveal no issues with land use due to gallery development and access.</p> <p><b>Risks:</b> Water quality improvement technologies are not maintained by the water supplier, including purchase of consumables.</p> <p><b>Assumptions:</b> Total population of the relevant sites will benefit by project interventions through improved access and management of groundwater.</p> <p>Water supplier participates in the fitting of the water conditioning equipment, and associated training and operations.</p>                                                |
| <b>Component 2 / Outcome 2.1:</b><br>Strengthened capacity and monitoring of climate and water resources at the local and national level. | Indicator 7: Number of participants attending water resources monitoring workshops                       | 0 | 30 | 90                                                                                          | <p><u>Relevant sites:</u> Wotje, Jaluit, Ailinglaplap, Laura, Delap, Vaitupu, Nanumea, Nui, Funafuti, Peleliu, Angaur, Kayangel</p> <p>Indicator will be measured through attendance lists for the 3 training workshops conducted over 3 consecutive years. 30 participants expected to attend 3 workshops over 3 consecutive years</p> <p><u>GESI requirements</u></p> <p>At least 50 percent of participants attending capacity development training are women.</p> <p>Results of training assessments are gender disaggregated.</p> <p><b>Risks:</b> Personnel assigned to undertake the monitoring are not retained throughout the project or leave there after. Requiring a minimum of two participants trained per monitoring site</p> <p><b>Assumptions:</b> Beneficiaries participate in training workshops. Same participants are maintained throughout the project.</p> |
|                                                                                                                                           | Indicator 8: Number of land degradation workshops conducted at national level in the 3 project countries | 0 | 1  | 3                                                                                           | <p>Workshops to transfer knowledge and build capacity in assessment techniques and image analysis to identify land degradation over time.</p> <p><u>GESI requirements</u></p> <p>At least 50 percent of participants attending capacity development training are women.</p> <p>Results of training assessments are gender disaggregated.</p> <p><b>Risks:</b> Personnel assigned to undertake the monitoring are not retained throughout the project or leave there after.</p>                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                                                                                                           |                                                                                                          |   |    |                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

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|                                                                                                                                                |                                                                                                                                                                                             |   |   |   | <p><b>Assumptions:</b> Beneficiaries participate in training workshops. Same participants are maintained throughout the project</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                                                                                                | Indicator 9: Status of monitoring systems in place for rainfall and water resources monitoring (number of aquifers with complete monitoring systems in place, including handheld equipment) | 0 | 4 | 9 | <p><u>Relevant sites:</u> Wotje, Laura, Jaluit, Ailinglaplap, Delap, Nui, Peleliu, Angaur, Kayangel</p> <p>Measured by the complete delivery and installation of rainfall and water resources monitoring infrastructure and instrumentation (monitoring boreholes, borehole equipment, and handheld equipment) per aquifer/site.</p> <p><u>GESI requirements</u></p> <p>Both women and men from MCAP communities are involved in borehole development and monitoring.</p> <p>Equal number of women and men/boys and girls receive information on aquifer use and conservation.</p> <p><b>Risks:</b> Long term access to sites provided. Vandalism of monitoring bores – reduced with specific measures to minimize visibility and improve security</p> <p><b>Assumptions:</b> Community support needed for monitoring.</p>                                                                                                                                                                                                         |
| <p><b>Component 3 / Outcome 3.1:</b><br/>Coordinated and inclusive approaches at the island-level for coastal aquifer management in place.</p> | Indicator 10: Number of submitted water resources monitoring plans for review/adoption by the local island governance mechanism.                                                            | 0 | 0 | 6 | <p><u>Relevant sites:</u> Wotje, Jaluit, Ailinglaplap, Vaitupu, Nanumea, Nui</p> <p>Measured by the submission of water resources monitoring plans for review/adoption by the local island governance mechanism.</p> <p><u>GESI requirements</u></p> <p>Increase in the number of women involved in water planning and management forums at community and island level as evidenced by change in baseline survey data gathered during project inception.</p> <p><b>Risks:</b> Local island governance does not support monitoring beyond the extent of the project. Demonstrate the value of water resource monitoring assisting with their daily water supply (quantity and quality) and water security needs.</p> <p><b>Assumptions:</b> Community recognize the value that monitoring information provides to enhance operations and management of resource. Strong Local Island Council support is required. Ensure collaboration with Palau Governance project which supports strengthening of Island Council Governance.</p> |
|                                                                                                                                                | Indicator 11: Number of sites/aquifers with appropriate land use zoning and land restoration techniques in place                                                                            | 0 | 0 | 8 | <p><u>Relevant sites:</u> Wotje, Delap, Laura, Peleliu, Angaur, Kayangel, Vaitupu, Nanumea</p> <p>Protection refers to measures (e.g. fencing and zoning) put in place to protect recharge areas long term.</p> <p><b>Risks:</b> Community unwilling to introduce land use control practices.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

|                                                                                                               |                                                                                                |   |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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|                                                                                                               | for aquifer protection.                                                                        |   |   |   | <b>Assumptions:</b> Island communities and governance structure on board with proposed land protection measures to ensure aquifer protection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Component 3 / Outcome 3.2:</b><br>Improved and accessible knowledge systems for decision support in place. | Indicator 12: Number of groundwater models developed.                                          | 0 | 0 | 1 | <p><u>Relevant sites:</u> Laura</p> <p>Marked by the delivery of a fully functional, calibrated and validated groundwater numerical model.</p> <p><u>GESI requirements</u></p> <p>Women are consulted and actively engaged in the development of any proposed abstraction operation which may impact on water quality or quantity.</p> <p><b>Risks:</b> Data needs for modelling are not sufficient or available</p> <p><b>Assumptions:</b> Data sets of sufficient duration required for modelling are available from the relevant authorities or collected during this project.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                                               | Indicator 13: Number of technical guidance notes developed supporting aquifer management plans | 0 | 0 | 6 | <p><u>Relevant sites:</u> Laura, Wotje, Nanumea, Peleliu, Angaur, Kayangel</p> <p>Marked by the delivery of one technical guidance document per island where groundwater development infrastructure was installed (or existed already) supporting aquifer management and drought response plans. Developed “fit for purpose”, based on needs.</p> <p><u>GESI requirements</u></p> <p>Technical guidance notes are accompanied by user-friendly educational materials suitable for students and those with limited literacy.</p> <p>Technical guidance notes are developed in collaboration with women and women’s organisations at community and island level and used to measure project impacts.</p> <p><b>Risks:</b> Necessary datasets for the development of technical guidance notes not complete during project timeframe. Undertake monitoring at early stages.</p> <p><b>Assumptions:</b> Water supply operators or resource managers are able to include the technical guidance notes into operational policies</p> |
| <b>Component 4 / Outcome 4.1:</b><br>M&E templates and communication platforms established.                   | Indicator 14: Frequency of M&E training workshops for the national project managers            | 0 | 1 | 3 | <p>M&amp;E training will be held during the regional steering committee meetings.</p> <p><u>GESI requirements</u></p> <p>All project reports are inclusive of GESI targets, indicators, outcomes, issues and lessons learned.</p> <p><b>Risks:</b> Lack of support for harmonized reporting</p> <p><b>Assumptions:</b> Relevant participants available to take part</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                                                                                               |                                                                                                |   |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|  |                                                                                        |   |     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--|----------------------------------------------------------------------------------------|---|-----|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Indicator 15: Extent of which communication action plan is established and implemented | 0 | 50% | 100% | <ul style="list-style-type: none"> <li>• 0% (no communication plan established or implemented)</li> <li>• 50% (in progress development of communication plan and its implementation)</li> <li>• 100% (communication plan established and implemented)</li> </ul> <p><u>GESI requirements</u></p> <p>Project shares GESI approach and outcomes with regional and national stakeholders including women, youth and disabilities organisations.</p>                                             |
|  |                                                                                        |   |     |      | <p><b>Risks:</b> Delayed implementation of communication and visibility plan</p> <p><b>Assumptions:</b> Suitable communication strategy will be developed with SPC communication experts. SPC IT provides for project websites to be hosted within its home website</p>                                                                                                                                                                                                                      |
|  | Indicator 16: Extent of knowledge sharing in international forums                      | 0 | 50% | 100% | <p>IW:LEARN international conferences are held bi-annually so it is expected to attend 2 conferences by the end of the project. Contribute to other IW:LEARN activities such as project twinning and writing of experience notes, among others.</p> <ul style="list-style-type: none"> <li>• 0% (no conference)</li> <li>• 50% (in progress on knowledge products development and conference planning)</li> <li>• 100% (conference conducted with established knowledge products)</li> </ul> |
|  |                                                                                        |   |     |      | <p><b>Risks:</b> Inability to attend international forums due to unforeseen circumstances.</p> <p><b>Assumptions:</b> -</p>                                                                                                                                                                                                                                                                                                                                                                  |

## 6. Monitoring and Evaluation (M&E) Plan

The project results as outlined in the project results framework will be monitored annually and evaluated periodically during project implementation to ensure the project effectively achieves these results. Supported by “Component/Outcome 4: Knowledge Management and M&E”, the project monitoring and evaluation plan will also facilitate learning and ensure knowledge is shared and widely disseminated to support the scaling up and replication of project results.

Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the UNDP POPP and UNDP Evaluation Policy. The UNDP Country Office will work with the relevant project stakeholders to ensure UNDP M&E requirements are met in a timely fashion and to high quality standards. Additional mandatory GEF-specific M&E requirements (as outlined below) will be undertaken in accordance with the GEF M&E policy and other relevant GEF policies<sup>3</sup>.

In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Report. This will include the exact role of project target groups and other stakeholders in project M&E activities including the GEF Operational Focal Point and national/regional institutes assigned to undertake project monitoring. The GEF Operational Focal Point will strive to ensure consistency in the approach taken to the GEF-specific M&E requirements (notably the GEF Tracking Tools) across all GEF-financed projects in the country. This could be achieved for example by using one national institute to complete the GEF Tracking Tools for all GEF-financed projects in the country, including projects supported by other GEF Agencies.<sup>4</sup>

### 6.1 M&E Oversight and monitoring responsibilities

Chief Technical Advisor/ Project Manager: The Chief Technical Advisor/ Project Manager is responsible for day-to-day project management and regular monitoring of project results and risks, including social and environmental risks. The Regional Project Manager will ensure that all project staff maintain a high level of transparency, responsibility and accountability in M&E and reporting of project results. The Regional Project Manager will inform the Regional Steering Committee, the UNDP Country Office and the UNDP-GEF RTA of any delays or difficulties as they arise during implementation so that appropriate support and corrective measures can be adopted.

The Regional Project Manager will develop annual work plans based on the multi-year work plan included in the Annex, including annual output targets to support the efficient implementation of the project. The Regional Project Manager will ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality. This includes, but is not limited to, ensuring the results framework indicators are monitored annually in time for evidence-based reporting in the GEF PIR, and that the monitoring of risks and the various plans/strategies developed to support project implementation (e.g. ESMP, gender action plan, stakeholder engagement plan etc..) occur on a regular basis.

Regional Steering Committee: The Regional Steering Committee will take corrective action as needed to ensure the project achieves the desired results. The Regional Steering Committee will hold project reviews to assess the performance of the project and appraise the Annual Work Plan for the following year. In the project’s final year, the Regional Steering Committee will hold an end-of-project review to capture lessons learned and discuss opportunities for scaling up and to highlight project results and lessons learned with relevant audiences. This final review meeting will also discuss the findings outlined in the project terminal evaluation report and the management response.

Project Implementing Partner: The Implementing Partner is responsible for providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes, and is aligned with national systems so that the data used and generated by the project supports national systems.

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<sup>3</sup> See [https://www.thegef.org/gef/policies\\_guidelines](https://www.thegef.org/gef/policies_guidelines)

<sup>4</sup> See [https://www.thegef.org/gef/gef\\_agencies](https://www.thegef.org/gef/gef_agencies)

UNDP Country Office: The UNDP Country Office will support the Chief Technical Advisor/ Project Manager as needed, including through annual supervision missions. The annual supervision missions will take place according to the schedule outlined in the annual work plan. Supervision mission reports will be circulated to the project team and Regional Steering Committee within one month of the mission. The UNDP Country Office will initiate and organize key GEF M&E activities including the annual GEF PIR, the *independent mid-term review* and the independent terminal evaluation. The UNDP Country Office will also ensure that the standard UNDP and GEF M&E requirements are fulfilled to the highest quality.

The UNDP Country Office is responsible for complying with all UNDP project-level M&E requirements as outlined in the UNDP POPP. This includes ensuring the UNDP Quality Assurance Assessment during implementation is undertaken annually; that annual targets at the output level are developed, and monitored and reported using UNDP corporate systems; the regular updating of the ATLAS risk log; and, the updating of the UNDP gender marker on an annual basis based on gender mainstreaming progress reported in the GEF PIR and the UNDP ROAR. Any quality concerns flagged during these M&E activities (e.g. annual GEF PIR quality assessment ratings) must be addressed by the UNDP Country Office and the Regional Project Manager.

The UNDP Country Office will retain all M&E records for this project for up to seven years after project financial closure to support ex-post evaluations undertaken by the UNDP Independent Evaluation Office (IEO) and/or the GEF Independent Evaluation Office (IEO).

UNDP-GEF Unit: Additional M&E and implementation quality assurance and troubleshooting support will be provided by the UNDP-GEF Regional Technical Advisor and the UNDP-GEF Directorate as needed.

## 6.2 Additional GEF monitoring and reporting requirements

Inception Workshop and Report: A project inception workshop will be held within two months after the project document has been signed by all relevant parties to, amongst others:

- a) Re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project strategy and implementation;
- b) Discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms;
- c) Review the results framework and finalize the indicators, means of verification and monitoring plan;
- d) Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E; discuss the role of the GEF OFP in M&E;
- e) Update and review responsibilities for monitoring the various project plans and strategies, including the risk log; SESP, Environmental and Social Management Plan and other safeguard requirements; project grievance mechanisms; the gender strategy; the knowledge management strategy, and other relevant strategies;
- f) Review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit; and
- g) Plan and schedule Regional Steering Committee meetings and finalize the first year annual work plan.

The Chief Technical Advisor/ Project Manager will prepare the inception report no later than one month after the inception workshop. The inception report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and will be approved by the Regional Steering Committee.

GEF Project Implementation Report (PIR): The Chief Technical Advisor/ Project Manager, the UNDP Country Office, and the UNDP-GEF Regional Technical Advisor will provide objective input to the annual GEF PIR covering the reporting period July (previous year) to June (current year) for each year of project implementation. The Regional Project Manager will ensure that the indicators included in the project results framework are monitored annually in advance of the PIR submission deadline so that progress can be reported in the PIR. Any environmental and social risks and related management plans will be monitored regularly, and progress will be reported in the PIR.

The PIR submitted to the GEF will be shared with the Regional Steering Committee. The UNDP Country Office will coordinate the input of the GEF Operational Focal Point and other stakeholders to the PIR as appropriate. The quality rating of the previous year's PIR will be used to inform the preparation of the subsequent PIR.

Lessons learned and knowledge generation: Results from the project will be disseminated within and beyond the project intervention area through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to the project. The project will identify, analyse and share lessons learned that might be beneficial to the design and implementation of similar projects and disseminate these lessons widely. There will be continuous information exchange between this project and other projects of similar focus in the same country, region and globally.

"GEF and/or LDCF Core Indicators:

The GEF and/or LDCF/SCCF Core indicators included as Annex will be used to monitor global environmental benefits and will be updated for reporting to the GEF prior to MTR and TE. Note that the project team is responsible for updating the indicator status. The updated monitoring data should be shared with MTR/TE consultants prior to required evaluation missions, so these can be used for subsequent ground truthing. The methodologies to be used in data collection have been defined by the GEF and are available on the GEF [website](#). The required Protected Area Management Effectiveness Tracking Tool (METTs) have been prepared and the scores include in the GEF Core Indicators."

Independent Mid-term Review (MTR): An independent mid-term review process will begin after the second PIR has been submitted to the GEF, and the MTR report will be submitted to the GEF in the same year as the 3<sup>rd</sup> PIR. The MTR findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project's duration. The terms of reference, the review process and the MTR report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the UNDP Evaluation Resource Center (ERC). As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final MTR report will be available in English and will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and approved by the Regional Steering Committee.

Terminal Evaluation (TE): An independent terminal evaluation (TE) will take place upon completion of all major project outputs and activities. The terminal evaluation process will begin three months before operational closure of the project allowing the evaluation mission to proceed while the project team is still in place, yet ensuring the project is close enough to completion for the evaluation team to reach conclusions on key aspects such as project sustainability. The Chief Technical Advisor will remain on contract until the TE report and management response have been finalized. The terms of reference, the evaluation process and the final TE report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the UNDP Evaluation Resource Center. As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. The GEF Operational Focal Point and other stakeholders will be involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final TE report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser, and will be approved by the Regional Steering Committee. The TE report will be publicly available in English on the UNDP ERC.

The UNDP Country Office will include the planned project terminal evaluation in the UNDP Country Office evaluation plan, and will upload the final terminal evaluation report in English and the corresponding management response to the UNDP Evaluation Resource Centre (ERC). Once uploaded to the ERC, the UNDP IEO will undertake a quality assessment and validate the findings and ratings in the TE report, and rate the quality of the TE report. The UNDP IEO assessment report will be sent to the GEF IEO along with the project terminal evaluation report.

**Final Report:** The project's terminal PIR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the Regional Steering Committee during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

### 6.3 Mandatory GEF M&E Requirements and M&E Budget

| GEF M&E requirements                                                             | Primary responsibility                                                                                      | Indicative costs to be charged to the Project Budget <sup>5</sup> (US\$) |              | Time frame                                      |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------|-------------------------------------------------|
|                                                                                  |                                                                                                             | GEF grant                                                                | Co-financing |                                                 |
| Inception Workshop                                                               | Chief Technical Advisor / Project Manager, National Implementation Partners, UNDP Country Offices, UNDP GEF | USD 20,000                                                               | None         | Within two months of project document signature |
| Inception Report                                                                 | Project Team, UNDP Country Offices                                                                          | None                                                                     | None         | Within one month of inception workshop          |
| Standard UNDP monitoring and reporting requirements as outlined in the UNDP POPP | UNDP Country Office                                                                                         | None                                                                     | None         | Quarterly                                       |
| Risk management                                                                  | Chief Technical Advisor / Project Manager and UNDP Country Office                                           | None                                                                     | None         | Quarterly                                       |
| Monitoring of indicators in project results framework                            | Oversight by Chief Technical Advisor / Project Manager, Project team                                        | Per year: USD 25,000                                                     | None         | Annually before PIR                             |
| GEF Project Implementation Report (PIR)                                          | Chief Technical Advisor / Project Manager and UNDP Country Office and UNDP-GEF team                         | None                                                                     | None         | Annually                                        |
| Lessons learned and knowledge generation                                         | Project team                                                                                                | None                                                                     | None         | Annually                                        |
| Regional Steering Committee meetings                                             | Regional Steering Committee, UNDP Country Office and UNDP GEF RTA, Chief Technical Advisor/ Project Manager | Per year: USD 7,500                                                      | None         | Annually                                        |

<sup>5</sup> Excluding project team staff time and UNDP staff time and travel expenses.

|                                                                                                |                                                                     |             |      |                                                  |
|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-------------|------|--------------------------------------------------|
| Mid-term GEF Tracking Tool to be updated by                                                    | Oversight by Chief Technical Advisor/ Project Manager, Project team | USD 10,000  | None | Before mid-term review mission takes place.      |
| Independent Mid-term Review (MTR) and management response                                      | UNDP Country Office and Project team and UNDP-GEF team              | USD 40,000  | None | Between 2 <sup>nd</sup> and 3 <sup>rd</sup> PIR. |
| Terminal GEF Tracking Tool to be updated by                                                    | Oversight by Chief Technical Advisor/ Project Manager, Project team | USD 10,000  | None | Before terminal evaluation mission takes place   |
| Independent Terminal Evaluation (TE) included in UNDP evaluation plan, and management response | UNDP Country Office and Project team and UNDP-GEF team              | USD 60,000  | None | At least three months before operational closure |
| Monitoring of environmental and social risks, and corresponding management plans as relevant   | Chief Technical Advisor / Project Manager, UNDP Country Office      | None        | None | On-going                                         |
| Stakeholder Engagement Plan                                                                    | Chief Technical Advisor / Project Manager, UNDP Country Office      | None        | None | On-going                                         |
| Gender Action Plan                                                                             | Chief Technical Advisor / Project Manager, UNDP Country Office      | None        | None | On-going                                         |
| Addressing environmental and social grievances                                                 | Chief Technical Advisor / Project Manager, UNDP Country Office      | None        | None | On-going                                         |
| TOTAL indicative COST<br>Excluding project team staff time, and UNDP staff and travel expenses |                                                                     | USD 270,000 | -    |                                                  |

## 7. Governance and Management Arrangements

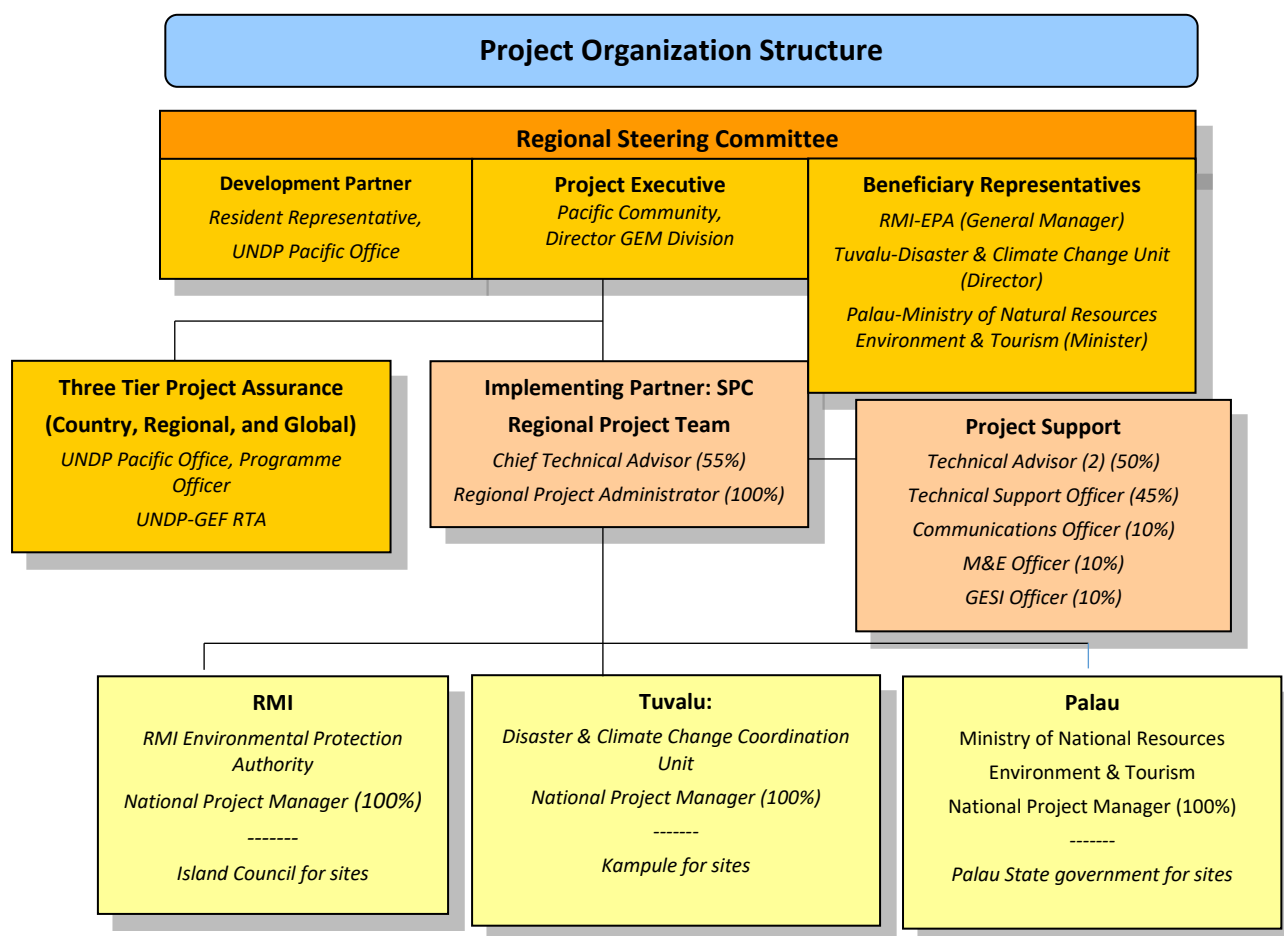
### Roles and responsibilities of the project's governance mechanism:

The project will be implemented following the applicable rules and procedures laid down for UNDP's NGO implementation modality. The Pacific Community (SPC) will be the Implementing Partner for the project, based on the standard Project Cooperation Agreement to be signed between UNDP and SPC.

The Implementing Partner is responsible for executing this project. Specific tasks include:

- Project planning, coordination, management, monitoring, evaluation and reporting. This includes providing all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes and is aligned with national systems so that the data used and generated by the project supports national systems.
- Risk management as outlined in this Project Document;
- Procurement of goods and services, including human resources;
- Financial management, including overseeing financial expenditures against project budgets;
- Approving and signing the multiyear workplan;
- Approving and signing the combined delivery report at the end of the year; and,
- Signing the financial report or the funding authorization and certificate of expenditures.

The project organisation structure is as follows:



The Regional Steering Committee (RSC) is responsible for taking corrective action as needed to ensure the project achieves the desired results. In order to ensure UNDP's ultimate accountability, RSC decisions should be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition.

In case consensus cannot be reached within the Board, the UNDP Resident Representative (or their designate) will mediate to find consensus and, if this cannot be found, will take the final decision to ensure project implementation is not unduly delayed.

Specific responsibilities of the Regional Steering Committee include:

- Provide overall guidance and direction to the project, ensuring it remains within any specified constraints;
- Address project issues as raised by the Chief Technical Advisor/ Project Manager.
- Provide guidance on new project risks, and agree on possible mitigation and management actions to address specific risks;
- Agree on Chief Technical Advisor/ Project Manager's tolerances as required, within the parameters set by UNDP-GEF, and provide direction and advice for exceptional situations when the project manager's tolerances are exceeded;
- Advise on major and minor amendments to the project within the parameters set by UNDP-GEF;
- Ensure coordination between various donor and government-funded projects and programmes;
- Ensure coordination with various government agencies and their participation in project activities;
- Track and monitor co-financing for this project;
- Review the project progress, assess performance, and appraise the Annual Work Plan and Budget for the following year;
- Appraise the annual project implementation report, including the quality assessment rating report;
- Ensure commitment of human resources to support project implementation, arbitrating any issues within the project;
- Review combined delivery reports prior to certification by the IP;
- Provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;
- Address project-level grievances;
- Approve the project Inception Report, Mid-term Review and Terminal Evaluation reports and corresponding management responses;
- Review the final project report package during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

As agreed by the Development Partner and the Executive, the three countries will take turns in chairing the RSC.

The composition of the RSC is described below.

**Beneficiary Representatives:** The Beneficiary Representatives represent the interests of those who will ultimately benefit from the project. The Beneficiary Representatives primary function within the Committee is to ensure the realization of project results from the perspective of project beneficiaries and in accordance with the objectives of the project. The Beneficiary Representatives are the representatives of the three countries, as follows:

- Tuvalu represented by the Director of the Disaster and Climate Change Unit (Office of the Prime Minister),
- Republic of Palau represented by the Minister for Natural Resources, Environment and Tourism,
- Republic of Marshall Islands represented by the Director of the Environmental Protection Authority.

The Beneficiary Representatives are responsible for validating the needs and for monitoring that the solution will meet those needs within the constraints of the project. The Beneficiary Representatives role monitors progress against targets and quality criteria. For the sake of effectiveness, the role should not be split between too many people. Specific Responsibilities (as part of the above responsibilities for the RSC) include:

- Prioritize and contribute beneficiaries' opinions on Regional Steering Committee decisions on whether to implement recommendations on proposed changes;

- Specification of the Beneficiary's needs is accurate, complete and unambiguous;
- Implementation of activities at all stages is monitored to ensure that they will meet the beneficiary's needs and are progressing towards that target;
- Impact of potential changes is evaluated from the beneficiary point of view;
- Risks to the beneficiaries are frequently monitored.

Executive: The Executive is SPC which will implement the project on a day-to-day basis. It is represented by the Director Geoscience, Energy and Maritime Division (GEM). The Executive is ultimately responsible for the project, supported by the Development Partner and working for the Beneficiary Representatives. The Executive's role is to ensure that the project is focused throughout its life cycle on achieving its objectives and delivering outputs that will contribute to higher level outcomes. The Executive has to ensure that the project gives value for money, ensuring cost-conscious approach to the project, balancing the demands of beneficiary and supplier.

Development Partner: Individuals or groups representing the interests of the parties concerned that provide funding and/or technical expertise to the project. The Development Partner is UNDP and is represented by the Resident Representative, UNDP Pacific Office.

Implementing Partner (IP): The IP through the CTA/project manager has the authority to run the project on a day-to-day basis on behalf of and within the constraints laid down by the RSC. The IP's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost.

The IP appoints the CTA/project manager, who should be different from the IP's representative in the Regional Steering Committee.

Specific responsibilities include:

- Provide direction and guidance to project team(s)/ responsible party (ies);
- Liaise with the Regional Steering Committee to assure the overall direction and integrity of the project;
- Identify and obtain any support and advice required for the management, planning and control of the project;
- Responsible for project administration;
- Plan the activities of the project and monitor progress against the project results framework and the approved annual workplan;
- Mobilize personnel, goods and services, training and micro-capital grants to initiative activities, including drafting terms of reference and work specifications, and overseeing all contractors' work;
- Monitor events as determined in the project monitoring schedule plan/timetable, and update the plan as required;
- Manage requests for the provision of financial resources by UNDP, through advance of funds, direct payments or reimbursement using the fund authorization and certificate of expenditures;
- Monitor financial resources and accounting to ensure the accuracy and reliability of financial reports;
- Be responsible for preparing and submitting financial reports to UNDP on a quarterly basis;
- Manage and monitor the project risks initially identified and submit new risks to the Regional Steering Committee for consideration and decision on possible actions if required; update the status of these risks by maintaining the project risks log;
- Capture lessons learned during project implementation;
- Prepare the annual workplan for the following year; and update the Atlas Project Management module if external access is made available.
- Prepare the GEF PIR and submit the final report to the Regional Steering Committee;
- Based on the GEF PIR and the Regional Steering Committee review, prepare the AWP for the following year.
- Ensure the mid-term review process is undertaken as per the UNDP guidance, and submit the final MTR report to the RSC.
- Identify follow-on actions and submit them for consideration to the Regional Steering Committee;
- Ensure the terminal evaluation process is undertaken as per the UNDP guidance, and submit the final TE report to the RSC;

**Project Assurance:** UNDP provides a three-tier supervision, oversight and quality assurance role – funded by the GEF agency fee – involving UNDP staff in Country Offices and at regional and headquarters levels. Project Assurance shall be totally independent of the Project Management function. The quality assurance role supports the RSC and IP by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. The Regional Steering Committee cannot delegate any of its quality assurance responsibilities to the Chief Technical Advisor/ Project Manager. This project oversight and quality assurance role is covered by the GEF Agency.

**Project extensions:** The UNDP-GEF Executive Coordinator must approve all project extension requests. Note that all extensions incur costs and the GEF project budget cannot be increased. A single extension may be granted on an exceptional basis and only if the following conditions are met: one extension only for a project for a maximum of six months; the project management costs during the extension period must remain within the originally approved amount, and any increase in PMC costs will be covered by non-GEF resources; the UNDP Country Office oversight costs during the extension period must be covered by non-GEF resources.

Governance role for project target groups: At the local (island) level, existing governance mechanisms will be engaged and involved in decision-making processes relevant for their project site. Island Councils in the case of RMI, Kaupule in the case of Tuvalu, and State Governments in the case of Palau form important target groups and collaboration with these groups will be valuable in ensuring successful implementation of proposed project interventions. Island communities will have the opportunity to participate in decision-making through meetings and focus-group discussions and through feedback mechanisms. At the national level, participation of relevant ministries and project implementing agencies in the Regional Steering Committee ensures the direct role of these target groups in governing and managing the project.

## 8. Financial Planning and Management

The total cost of the project is USD 24,866,153. This is financed through a GEF grant of USD 5,261,356, to be administered by UNDP and USD 19,604,797 in parallel co-financing. UNDP, as the GEF Implementing Agency, is responsible for the execution of the GEF resources and the cash co-financing transferred to UNDP bank account only.

Parallel co-financing: The actual realization of project co-financing will be monitored during the mid-term review and terminal evaluation process and will be reported to the GEF. The planned parallel co-financing will be used as follows:

| Co-financing source   | Co-financing type | Co-financing amount  | Planned Activities/Outputs                                         | Risks                                                            | Risk Mitigation Measures                                                                    |
|-----------------------|-------------------|----------------------|--------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| RMI Government        | In kind           | \$192,160            | Facilities, ICT, salary for government staff, utilities            | Government is unable to account for the individual in kind costs | SPC to assist government with the use of reporting templates to capture in-kind expenditure |
| RMI Government        | Grant             | \$2,075,500          | Non GEF funded projects which support MCAP activities and outcomes |                                                                  |                                                                                             |
| Palau Government      | In kind           | \$192,160            | Facilities, ICT, salary for government staff, utilities            | Government is unable to account for the individual in kind costs | SPC to assist government with the use of reporting templates to capture in-kind expenditure |
| Tuvalu Government     | In kind           | 163,017              | Facilities, ICT, salary for government staff, utilities            | Government is unable to account for the individual in kind costs | SPC to assist government with the use of reporting templates to capture in-kind expenditure |
| Tuvalu Government     | Grant             | \$11,428,523         | Non GEF funded projects which support MCAP activities and outcomes |                                                                  |                                                                                             |
| USAID                 | Grant             | \$52,937             | Support during project preparation phase                           |                                                                  |                                                                                             |
| Other projects (SPC)  | Grants            | \$5,440,500          |                                                                    |                                                                  |                                                                                             |
| Other projects (UNDP) | In Kind           | \$60,000             |                                                                    |                                                                  |                                                                                             |
| <b>TOTAL</b>          |                   | <b>\$ 19,604,797</b> |                                                                    |                                                                  |                                                                                             |

Budget Revision and Tolerance: As per UNDP requirements outlined in the UNDP POPP, the Regional Steering Committee will agree on a budget tolerance level for each plan under the overall annual work plan allowing the project manager to expend up to the tolerance level beyond the approved project budget amount for the year without requiring a revision from the Regional Steering Committee. Should the following deviations occur, the Chief Technical Advisor/ Project Manager and UNDP Country Office will seek the approval of the UNDP-GEF team to ensure accurate reporting to the GEF: a) Budget re-allocations among components in the project with amounts involving 10% of the total project grant or more; b) Introduction of new budget items/or components that exceed 5% of original GEF allocation.

Any over expenditure incurred beyond the available GEF grant amount will be absorbed by non-GEF resources (e.g. UNDP TRAC or cash co-financing).

Audit:

The project will be audited as per UNDP Financial Regulations and Rules and applicable audit policies. Audit cycle and process must be discussed during the Inception workshop.

Refund to GEF: Should a refund of unspent funds to the GEF be necessary, this will be managed directly by the UNDP-GEF Unit in New York.

Project Closure: Project closure will be conducted as per UNDP requirements outlined in the UNDP POPP.<sup>6</sup> All costs incurred to close the project must be included in the project closure budget and reported as final project commitments presented to the Project Board during the final project review. The only costs a project may incur following the final project review are those included in the project closure budget.

Operational completion: The project will be operationally completed when the last UNDP-financed inputs have been provided and the related activities have been completed. This includes the final clearance of the Terminal Evaluation Report (that will be available in English) and the corresponding management response, and the end-of-project review Regional Steering Committee meeting. Operation closure must happen with 3 months of posting the TE report to the UNDP ERC. The Implementing Partner through a Regional Steering Committee decision will notify the UNDP Country Office when operational closure has been completed. At this time, the relevant parties will have already agreed and confirmed in writing on the arrangements for the disposal of any equipment that is still the property of UNDP.

Transfer or disposal of assets: In consultation with the Implementing Partner and other parties of the project, UNDP programme manager (UNDP Resident Representative) is responsible for deciding on the transfer or other disposal of assets. Transfer or disposal of assets is recommended to be reviewed and endorsed by the Regional Steering Committee following UNDP rules and regulations. Assets may be transferred to the government for project activities managed by a national institution at any time during the life of a project. In all cases of transfer, a transfer document must be prepared and kept on file<sup>7</sup>.

Financial completion: The project will be financially closed when the following conditions have been met: a) The project is operationally completed or has been cancelled; b) The Implementing Partner has reported all financial transactions to UNDP; c) UNDP has closed the accounts for the project; d) UNDP and the Implementing Partner have certified a final Combined Delivery Report (which serves as final budget revision).

The project will be financially completed **within 6 months of operational closure or after the date of cancellation**. Between operational and financial closure, the implementing partner will identify and settle all financial obligations and prepare a final expenditure report. The UNDP Country Office will send the final signed closure documents including confirmation of final cumulative expenditure and unspent balance to the UNDP-GEF Unit for confirmation before the project will be financially closed in Atlas by the UNDP Country Office

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<sup>6</sup> see <https://info.undp.org/global/popp/ppm/Pages/Closing-a-Project.aspx>

<sup>7</sup> See [https://popp.undp.org/\\_layouts/15/WopiFrame.aspx?sourcedoc=/UNDP\\_POPP\\_DOCUMENT\\_LIBRARY/Public/PPM\\_Project%20Management\\_Closing.docx&action=default](https://popp.undp.org/_layouts/15/WopiFrame.aspx?sourcedoc=/UNDP_POPP_DOCUMENT_LIBRARY/Public/PPM_Project%20Management_Closing.docx&action=default).

## 9. Total Budget and Work Plan

| TOTAL BUDGET AND WORK PLAN                                                                                        |                                                       |         |            |                              |                                         |                     |                     |                     |                     |             |                  |
|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|---------|------------|------------------------------|-----------------------------------------|---------------------|---------------------|---------------------|---------------------|-------------|------------------|
| Award ID:                                                                                                         | 00112065                                              |         |            |                              |                                         |                     | Project ID:         | 00110740            |                     |             |                  |
| Award Title:                                                                                                      | Managing Coastal Aquifers in Selected Pacific SIDS    |         |            |                              |                                         |                     |                     |                     |                     |             |                  |
| Business Unit                                                                                                     | FJI10                                                 |         |            |                              |                                         |                     |                     |                     |                     |             |                  |
| Project Title                                                                                                     | Managing Coastal Aquifers Project                     |         |            |                              |                                         |                     |                     |                     |                     |             |                  |
| PIMS No.                                                                                                          | 6196                                                  |         |            |                              |                                         |                     |                     |                     |                     |             |                  |
| Implementing Partner                                                                                              | Pacific Community (SPC) GEM Division                  |         |            |                              |                                         |                     |                     |                     |                     |             |                  |
| ALL COMPONENTS-REGIONAL AND NATIONAL COMPONENTS                                                                   |                                                       |         |            |                              |                                         |                     |                     |                     |                     |             |                  |
| GEF Component                                                                                                     | <a href="#">Responsible party /Implementing Agent</a> | Fund ID | Donor Name | Atlas Budgetary Account Code | ATLAS Budget Description                | Amount Year 1 (USD) | Amount Year 2 (USD) | Amount Year 3 (USD) | Amount Year 4 (USD) | Total (USD) | See Budget Note: |
| Component 1: National demonstrations to support knowledge and use of coastal aquifers for enhanced water security | SPC                                                   | 62000   | GEF        | 71200                        | International Consultants               | -                   | -                   | -                   | -                   | -           |                  |
|                                                                                                                   |                                                       |         |            | 71300                        | Local Consultants                       | -                   | -                   | -                   | -                   | -           |                  |
|                                                                                                                   |                                                       |         |            | 71400                        | Contractual Services - Individual       | 221,096             | 224,980             | 229,058             | 233,341             | 908,475     | 1                |
|                                                                                                                   |                                                       |         |            | 71600                        | Travel                                  | 55,777              | 55,777              | 55,777              | 55,777              | 223,108     | 2                |
|                                                                                                                   |                                                       |         |            | 72100                        | Contractual Services-Companies          | 179,831             | 179,831             | 179,830             | 179,831             | 719,323     | 3                |
|                                                                                                                   |                                                       |         |            | 72200                        | Equipment and Furniture                 | -                   | -                   | -                   | -                   | -           |                  |
|                                                                                                                   |                                                       |         |            | 72400                        | Communication & Audio Visual Equip      | -                   | -                   | -                   | -                   | -           |                  |
|                                                                                                                   |                                                       |         |            | 72500                        | Supplies                                | -                   | -                   | -                   | -                   | -           |                  |
|                                                                                                                   |                                                       |         |            | 72800                        | Information Technology Equipment        | 4,290               | -                   | -                   | -                   | 4,290       | 4                |
|                                                                                                                   |                                                       |         |            | 73100                        | Rental & Maintenance-Premises           | 3,720               | 3,720               | 3,720               | 3,720               | 14,880      | 5                |
|                                                                                                                   |                                                       |         |            | 73300                        | Rental & Maintenance of Info Tech Equip | 5,994               | 5,994               | 5,994               | 5,994               | 23,976      | 6                |
|                                                                                                                   |                                                       |         |            | 74100                        | Professional Services                   | -                   | -                   | -                   | -                   | -           |                  |
|                                                                                                                   |                                                       |         |            | 74200                        | Audio Visual & Print Prod Costs         | -                   | -                   | -                   | -                   | -           |                  |
|                                                                                                                   |                                                       |         |            | 74500                        | Miscellaneous Expenses                  | -                   | -                   | -                   | -                   | -           |                  |
|                                                                                                                   |                                                       |         |            | 74700                        | Transport, Shipping and handle          | -                   | 4,350               | 2,833               | -                   | 7,183       | 7                |
|                                                                                                                   |                                                       |         |            | 75700                        | Training, Workshops and Confer          | -                   | -                   | -                   | -                   | -           |                  |
|                                                                                                                   |                                                       |         |            |                              | Total Component 1                       | 470,708             | 474,652             | 477,212             | 478,663             | 1,901,235   |                  |
| Component 2: National -based                                                                                      | SPC                                                   | 62000   | GEF        | 71200                        | International Consultants               | -                   | -                   | -                   | -                   | -           |                  |
|                                                                                                                   |                                                       |         |            | 71300                        | Local Consultants                       | -                   | -                   | -                   | -                   | -           |                  |

|                                                                                                                                                |     |       |     |       |                                         |                |                |                |                |                  |    |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------|-----|-------|-----------------------------------------|----------------|----------------|----------------|----------------|------------------|----|
| investments in human capital and tools to support resilience to climate change.                                                                |     |       |     | 71400 | Contractual Services - Individual       | 132,957        | 136,841        | 140,919        | 145,202        | 555,919          | 8  |
|                                                                                                                                                |     |       |     | 71600 | Travel                                  | 64,023         | 64,023         | 64,022         | 64,024         | 256,092          | 9  |
|                                                                                                                                                |     |       |     | 72100 | Contractual Services-Companies          | 139,152        | 139,152        | 139,152        | -              | 417,456          | 10 |
|                                                                                                                                                |     |       |     | 72200 | Equipment and Furniture                 | 76,477         | 76,477         | 76,477         | -              | 229,431          | 11 |
|                                                                                                                                                |     |       |     | 72400 | Communication & Audio Visual Equip      | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 72500 | Supplies                                | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 72800 | Information Technology Equipment        | 5,544          | 5,544          | 5,544          | 5,544          | 22,176           | 12 |
|                                                                                                                                                |     |       |     | 73100 | Rental & Maintenance-Premises           | 2,640          | 2,640          | 2,640          | 2,640          | 10,560           | 13 |
|                                                                                                                                                |     |       |     | 73300 | Rental & Maintenance of Info Tech Equip | 4,253          | 4,253          | 4,253          | 4,254          | 17,013           | 14 |
|                                                                                                                                                |     |       |     | 74100 | Professional Services                   | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 74200 | Audio Visual & Print Prod Costs         | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 74500 | Miscellaneous Expenses                  | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 74700 | Transport, Shipping and handle          | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 75700 | Training, Workshops and Confer          | 14,866         | 14,866         | 14,866         | 14,868         | 59,466           | 15 |
|                                                                                                                                                |     |       |     |       | <b>Total Component 2</b>                | <b>439,912</b> | <b>443,796</b> | <b>447,873</b> | <b>236,532</b> | <b>1,568,113</b> |    |
| Component 3: Local-based approaches to support the sustainable management and protection of coastal aquifers in the context of climate change. | SPC | 62000 | GEF | 71200 | International Consultants               | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 71300 | Local Consultants                       | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 71400 | Contractual Services - Individual       | 112,529        | 116,413        | 120,491        | 124,774        | 474,207          | 16 |
|                                                                                                                                                |     |       |     | 71600 | Travel                                  | 20,320         | 20,320         | 20,320         | 20,321         | 81,281           | 17 |
|                                                                                                                                                |     |       |     | 72100 | Contractual Services-Companies          | -              | 72,445         | 72,445         | 72,445         | 217,335          | 18 |
|                                                                                                                                                |     |       |     | 72200 | Equipment and Furniture                 | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 72400 | Communication & Audio Visual Equip      | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 72500 | Supplies                                | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 72800 | Information Technology Equipment        | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 73100 | Rental & Maintenance-Premises           | 2,640          | 2,640          | 2,640          | 2,640          | 10,560           | 19 |
|                                                                                                                                                |     |       |     | 73300 | Rental & Maintenance of Info Tech Equip | 4,253          | 4,253          | 4,253          | 4,254          | 17,013           | 20 |
|                                                                                                                                                |     |       |     | 74100 | Professional Services                   | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 74200 | Audio Visual & Print Prod Costs         | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 74500 | Miscellaneous Expenses                  | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 74700 | Transport, Shipping and handle          | -              | -              | -              | -              | -                |    |
|                                                                                                                                                |     |       |     | 75700 | Training, Workshops and Confer          | 32,175         | 32,175         | 32,175         | 32,175         | 128,700          | 21 |

|                                                                  |            |              |            |       |                                         |                |                |                |                |                |    |
|------------------------------------------------------------------|------------|--------------|------------|-------|-----------------------------------------|----------------|----------------|----------------|----------------|----------------|----|
|                                                                  |            |              |            |       | <b>Total Component 3</b>                | <b>171,917</b> | <b>248,246</b> | <b>252,324</b> | <b>256,609</b> | <b>929,096</b> |    |
| <b>Component 4:<br/>Knowledge<br/>Management and<br/>M&amp;E</b> | <b>SPC</b> | <b>62000</b> | <b>GEF</b> | 71200 | International Consultants               | -              | 40,000         | -              | 60,000         | 100,000        | 22 |
|                                                                  |            |              |            | 71300 | Local Consultants                       | -              | -              | -              | -              | -              |    |
|                                                                  |            |              |            | 71400 | Contractual Services - Individual       | 37,293         | 39,157         | 41,115         | 43,171         | 160,736        | 23 |
|                                                                  |            |              |            | 71600 | Travel                                  | 45,594         | 45,594         | 45,594         | 25,593         | 162,375        | 24 |
|                                                                  |            |              |            | 72100 | Contractual Services-Companies          | 9,572          | 9,500          | 9,500          | 9,500          | 38,072         | 25 |
|                                                                  |            |              |            | 72200 | Equipment and Furniture                 | -              | -              | -              | -              | -              |    |
|                                                                  |            |              |            | 72400 | Communication & Audio Visual Equip      | -              | -              | -              | -              | -              |    |
|                                                                  |            |              |            | 72500 | Supplies                                | -              | -              | -              | -              | -              |    |
|                                                                  |            |              |            | 72800 | Information Technology Equipment        | -              | -              | -              | -              | -              |    |
|                                                                  |            |              |            | 73100 | Rental & Maintenance-Premises           | 1,188          | 1,188          | 1,188          | 1,188          | 4,752          | 26 |
|                                                                  |            |              |            | 73300 | Rental & Maintenance of Info Tech Equip | 1,914          | 1,914          | 1,914          | 1,914          | 7,656          | 27 |
|                                                                  |            |              |            | 74100 | Professional Services                   |                |                |                |                |                |    |
|                                                                  |            |              |            | 74200 | Audio Visual & Print Prod Costs         | -              | -              | -              | -              | -              |    |
|                                                                  |            |              |            | 74500 | Miscellaneous Expenses                  | 13,153         | 13,153         | 13,153         | 13,153         | 52,612         | 28 |
|                                                                  |            |              |            | 74700 | Transport, Shipping and handle          | -              | -              | -              | -              | -              |    |
|                                                                  |            |              |            | 75700 | Training, Workshops and Confer          | 21,588         | 21,588         | 21,588         | 21,588         | 86,352         | 29 |
|                                                                  |            |              |            |       | <b>Total Component 4</b>                | <b>130,302</b> | <b>172,094</b> | <b>134,052</b> | <b>176,107</b> | <b>612,555</b> |    |
| <b>Project<br/>Management</b>                                    | <b>SPC</b> | <b>62000</b> | <b>GEF</b> | 71200 | International Consultants               | -              | -              | -              | -              | -              |    |
|                                                                  |            |              |            | 71300 | Local Consultants                       | -              | -              | -              | -              | -              |    |
|                                                                  |            |              |            | 71400 | Contractual Services - Individual       | 34,474         | 36,198         | 38,008         | 31,357         | 140,037        | 30 |
|                                                                  |            |              |            | 71600 | Travel                                  | 4,895          | 4,895          | 4,895          | 4,897          | 19,582         | 31 |
|                                                                  |            |              |            | 72100 | Contractual Services-Companies          | -              | -              | -              | -              | -              |    |
|                                                                  |            |              |            | 72200 | Equipment and Furniture                 | 3,200          | 1,600          | 800            | 800            | 6,400          | 32 |
|                                                                  |            |              |            | 72400 | Communication & Audio Visual Equip      | 2,000          | 2,000          | -              | -              | 4,000          | 33 |
|                                                                  |            |              |            | 72500 | Supplies                                | 736            | 500            | 500            | 500            | 2,236          | 34 |
|                                                                  |            |              |            | 72800 | Information Technology Equipment        | 3,500          | 3,500          | 3,500          | -              | 10,500         | 35 |
|                                                                  |            |              |            | 73100 | Rental & Maintenance-Premises           | 5,544          | 5,544          | 5,544          | 4,356          | 20,988         | 36 |
|                                                                  |            |              |            | 73300 | Rental & Maintenance of Info Tech Equip | 8,932          | 8,932          | 8,932          | 7,018          | 33,814         | 37 |
|                                                                  |            |              |            | 74100 | Professional Services                   | 3,000          | 3,000          | 3,000          | 3,000          | 12,000         | 38 |
|                                                                  |            |              |            | 74200 | Audio Visual & Print Prod Costs         | -              | -              | -              | -              | -              |    |

|  |  |  |       |                                |                  |                  |                  |                  |                  |    |
|--|--|--|-------|--------------------------------|------------------|------------------|------------------|------------------|------------------|----|
|  |  |  | 74500 | Miscellaneous Expenses         | -                | -                | -                | -                | -                |    |
|  |  |  | 74700 | Transport, Shipping and handle | -                | 400              | -                | 400              | 800              | 39 |
|  |  |  | 75700 | Training, Workshops and Confer | -                | -                | -                | -                | -                |    |
|  |  |  |       | <b>Project Management</b>      | <b>66,281</b>    | <b>66,569</b>    | <b>65,179</b>    | <b>52,328</b>    | <b>250,357</b>   |    |
|  |  |  |       | <b>PROJECT TOTAL</b>           | <b>1,279,120</b> | <b>1,405,357</b> | <b>1,376,640</b> | <b>1,200,239</b> | <b>5,261,356</b> |    |

### Budget Notes:

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | <p>Total cost is USD1,938,601; for 7 contractual services Individual positions for Chief Technical Advisor, Technical specialists (2), Technical officer and National project managers (3), and specialist input from 8-10 technical staff from SPC.</p> <p>47% is budget under component 1, 29% under component 2 and 24% is under component 3.</p> <p>Cost breakdown:</p> <p>1 Chief Technical Advisor— 484 days over 4 years with 55% of equivalent full time position allocated to the project, (Component 1. 25%, Component 2. 10%, Component 3. 10% Component 4. 10%), totaling. Total amount allocated for this role over the 4 years is USD407,854</p> <p>2 Technical specialists – 880 days over 4 years with 50% of equivalent full time position for each position allocated to the project, (Component 1. 20%, Component 2. 15%, Component 3. 10%, Component 4 10%), Total amount allocated for this role over the 4 years is USD548,796</p> <p>1 Technical officer – 440 days over 4 years with 45% of equivalent full time position allocated to the project, (Component 1. 25%, Component 2. 10%, Component 3. 5% Component 4. 5%), Total amount allocated for this role over the 4 years is USD47,758</p> <p>3 National project managers – full time for 4 years, 100% of equivalent full time position for each position, 1 per country, allocated to the project, (Component 1. 35%, Component 2. 30%, Component 3. 25%, Component 4. 10%), @ USD132,000 per person, Total amount allocated for this role over the 4 years is USD396,000</p> <p>8-10 technical staff from SPC - staff time over 4 years for land degradation training/workshop, water resource monitoring/workshop, oversight for drilling of monitoring bores, citizen science trainings/workshops, etc., Total amount allocated for these inputs over the 4 years is USD538,193</p> |
| 2 | <p>Total cost USD 223,108</p> <p>-Travel expenses for project manager technical staff to support countries with project implementation at USD 4,700/year = USD 18,800</p> <p>-Travel expenses for technical staff to undertake water resource assessment, land use surveys and inundation assessments as well as oversight of water supply infrastructure, inclusive of vehicle rental at USD 21,377 per year = USD 85,508</p> <p>-Travel expenses for technical staff to undertake water resource assessment, land use surveys and inundation assessments as well as oversight of water supply infrastructure, inclusive of vehicle rental at USD 8,973 per year= USD 35,892</p> <p>-Travel expenses for technical staff to undertake water resource assessment, land use surveys and inundation assessments as well as oversight of water quality improvements infrastructure, inclusive of vehicle rental at USD20,727 per year= USD 82,908</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 3 | <p>Costs for contractual services (company) to undertake construction of water supply infrastructure and undertake cultural surveys in RMI (USD 289,482), Tuvalu (USD 209,293) and Palau (USD 220,548 ), totalling USD 719,323</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 4 | <p>Costs for the procurement of laptop computer for National Project Management staff</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5  | Partial costs for facilities rental and maintenance services for project coordination team, technical staff to undertake water resource assessments, inundation surveys and design of water supply infrastructure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 6  | Partial cost ICT for project coordination team & technical staff to undertake water resource assessments, inundation surveys and design of water supply infrastructure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 7  | Costs for shipping of survey equipment into RMI and to outer islands and its return<br>Costs for shipping of survey and construction equipment into Tuvalu and to outer islands and its return<br>Costs for shipping of survey equipment into Palau and to outer islands and its return                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 8  | <p>Total cost is USD1,938,601; for 7 contractual services Individual positions for Chief Technical Advisor, Technical specialists (2), Technical officer and National project managers (3), and specialist input from 8-10 technical staff from SPC.</p> <p>47% is budget under component 1, 29% under component 2 and 24% is under component 3.</p> <p>Cost breakdown:</p> <p>1 Chief Technical Advisor– 484 days over 4 years with 55% of equivalent full time position allocated to the project, (Component 1. 25%, Component 2. 10%, Component 3. 10% Component 4. 10%), totaling. Total amount allocated for this role over the 4 years is USD407,854</p> <p>2 Technical specialists – 880 days over 4 years with 50% of equivalent full time position for each position allocated to the project, (Component 1. 20%, Component 2. 15%, Component 3. 10%, Component 4 10%), Total amount allocated for this role over the 4 years is USD548,796</p> <p>1 Technical officer – 440 days over 4 years with 45% of equivalent full time position allocated to the project, (Component 1. 25%, Component 2. 10%, Component 3. 5% Component 4. 5%), Total amount allocated for this role over the 4 years is USD47,758</p> <p>3 National project managers – full time for 4 years, 100% of equivalent full time position for each position, 1 per country, allocated to the project, (Component 1. 35%, Component 2. 30%, Component 3. 25%, Component 4. 10%), @ USD132,000 per person, Total amount allocated for this role over the 4 years is USD396,000</p> <p>8-10 technical staff from SPC - staff time over 4 years for land degradation training/workshop, water resource monitoring/workshop, oversight for drilling of monitoring bores, citizen science trainings/workshops, etc., Total amount allocated for these inputs over the 4 years is USD538,193</p> |
| 9  | Travel expenses for (1) Chief Technical Advisor and technical staff to support countries with project implementation and short course participation all countries; (2) participants to undertake water resource monitoring, and citizen science trainings as well as technical staff to oversight drilling, total 256,092                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 10 | Includes contractual services for the drilling, construction and installation of monitoring bores, across 3 of the project sites in RMI, Tuvalu, Palau, total USD 417,456                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 11 | Investment of monitoring equipment for water resources monitoring including water quality in RMI, Tuvalu, Palau                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 12 | Investment in equipment and licences for use of mobile phone technology for water resource data collection and telemetry , total USD 22,176 (estimated total USD 11,088 for RMI, USD 6,336 for Tuvalu and USD 4,752 for Palau).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 13 | Partial costs for facilities rental and maintenance services for project coordination team over the 4 years,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 14 | Partial cost ICT for project coordination team for implementation of project over the 4 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 15 | Costs for short courses for participants, including workshops /training on monitoring and citizen science over 4 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 16 | <p>Total cost is USD1,938,601; for 7 contractual services Individual positions for Chief Technical Advisor, Technical specialists (2), Technical officer and National project managers (3), and specialist input from 8-10 technical staff from SPC.</p> <p>47% is budget under component 1, 29% under component 2 and 24% is under component 3.</p> <p>Cost breakdown:</p> <p>1 Chief Technical Advisor– 484 days over 4 years with 55% of equivalent full time position allocated to the project, (Component 1. 25%, Component 2. 10%, Component 3. 10% Component 4. 10%), totaling. Total amount allocated for this role over the 4 years is USD407,854</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p>2 Technical specialists – 880 days over 4 years with 50% of equivalent full time position for each position allocated to the project, (Component 1. 20%, Component 2. 15%, Component 3. 10%, Component 4 10%), Total amount allocated for this role over the 4 years is USD548,796</p> <p>1 Technical officer – 440 days over 4 years with 45% of equivalent full time position allocated to the project, (Component 1. 25%, Component 2. 10%, Component 3. 5% Component 4. 5%), Total amount allocated for this role over the 4 years is USD47,758</p> <p>3 National project managers – full time for 4 years, 100% of equivalent full time position for each position, 1 per country, allocated to the project, (Component 1. 35%, Component 2. 30%, Component 3. 25%, Component 4. 10%), @ USD132,000 per person, Total amount allocated for this role over the 4 years is USD396,000</p> <p>8-10 technical staff from SPC - staff time over 4 years for land degradation training/workshop, water resource monitoring/workshop, oversight for drilling of monitoring bores, citizen science trainings/workshops, etc., Total amount allocated for these inputs over the 4 years is USD538,193</p> |
| 17 | <p>Travel expenses total \$81,281</p> <p>-Travel for project manager technical staff to support countries with project implementation total USD 18,801</p> <p>-RMI: Costs for travel of participants for land degradation workshops and consultation workshops at project sites at USD 6985 per year for 4 years = 27,940</p> <p>-Tuvalu: Costs for travel of participants for land degradation workshops and consultation workshops at project sites at USD 3,388per year for 4 years=13,552.</p> <p>-Palau: Costs for travel of participants for land degradation workshops and consultation workshops at project sites at USD 5,247 per year for 4 years=20,988</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 18 | Costs for contractual services (company) to undertake development of numerical model for Laura, RMI to assess land degradation and resource risk from coastal inundation and undertake targeted land degradation works such as discrete fencing for water resource protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 19 | Partial costs for facilities rental and maintenance services for project coordination team over the 4 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 20 | Partial cost ICT for project coordination team for implementation of project over the 4 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 21 | Total costs (USD 128,700) of community consultation workshops for project sites and land degradation workshops (RMI USD 68,640, Tuvalu USD 33,000, Palau USD 27,060)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 22 | MTR and TE international consultants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 23 | Costs for contractual services (Individual) for communication Officer, M&E officer and GESI adviser 10% of time for each officer per year for 4 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 24 | Costs for travel for participants to regional steering committee meetings                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 25 | Costs for development of website and management of audio-visual production                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 26 | Partial costs for facilities rental and maintenance services for Comms, GESI, and M&E officers team over the 4 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 27 | Partial cost ICT for project Comms, GESI, and M&E officers over the 4 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 28 | Minimum of 1% of IW budget for production of experience notes and travel to IW global programme                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 29 | Costs for regional steering committee costs USD 86,352 and conference costs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 30 | Costs for Project administration officer 100% of time over 4 years, and support for procurement adviser 40% of time per year for 3 years, and 10% of time in 4 <sup>th</sup> year.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 31 | Costs for travel for project management to support project implementation total \$19,582 for 4 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 32 | Office furniture for project management team                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 33 | Project cameras and projectors for project duration USD 4,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 34 | Office stationery and supplies total \$2,236 for 4 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 35 | Office equipment computers, printers, copiers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 36 | Costs for facilities rental and maintenance services for administration officer and partial costs for procurement officer over the 4 years,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 37 | Costs for ICT for project administration and 40% of ICT costs for the procurement officer over the 4 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 38 | Costs for project financial audits \$3,000USD per year for 4 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 39 | Transport, shipping and handle costs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## 9.1 Summary of funds

|                                                                                                          | Amount<br>Year 1 | Amount<br>Year 2 | Amount<br>Year 3 | Amount<br>Year 4 | Total      |
|----------------------------------------------------------------------------------------------------------|------------------|------------------|------------------|------------------|------------|
| <b>GEF</b>                                                                                               | 1,279,120        | 1,405,357        | 1,376,640        | 1,200,239        | 5,261,356  |
| <b>Co-financing through grant contribution from USAID Climate Ready during project preparation phase</b> | 13,234           | 13,234           | 13,234           | 13,235           | 52,937     |
| <b>Co-financing through other project grants</b>                                                         | 4,736,131        | 4,736,131        | 4,736,131        | 4,736,131        | 18,944,524 |
| <b>Co-financing through in-kind contribution from other project grants (UNDP)</b>                        | 15,000           | 15,000           | 15,000           | 15,000           | 60,000     |
| <b>Co-financing through in-kind contribution from Governments</b>                                        | 136,834          | 136,834          | 136,834          | 136,834          | 547,336    |
| <b>TOTAL</b>                                                                                             | 6,180,319        | 6,306,556        | 6,277,839        | 6,101,439        | 24,866,153 |

## 10. Legal Context

This project forms part of an overall programmatic framework under which several separate associated country level activities will be implemented. When assistance and support services are provided from this Project to the associated country level activities, this document shall be the “Project Document” instrument referred to in: (i) the respective signed SBAA for the specific countries; or (ii) in the [Supplemental Provisions to the Project Document](#) attached to the Project Document in cases where the recipient country has not signed an SBAA with UNDP, attached hereto and forming an integral part hereof. All references in the SBAA to “Executing Agency” shall be deemed to refer to “Implementing Partner.”

This project will be implemented by the Pacific Community (SPC) (“Implementing Partner”) in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

Any designations on maps or other references employed in this project document do not imply the expression of any opinion whatsoever on the part of UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

## 11. Risk Management

1. Consistent with the Article III of the SBAA [or the Supplemental Provisions to the Project Document], the responsibility for the safety and security of the Implementing Partner and its personnel and property, and of UNDP's property in the Implementing Partner's custody, rests with the Implementing Partner. To this end, the Implementing Partner shall:

- a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
- b) assume all risks and liabilities related to the Implementing Partner's security, and the full implementation of the security plan.

2. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the Implementing Partner's obligations under this Project Document and the Project Cooperation Agreement between UNDP and the Implementing Partner .

3. The Implementing Partner agrees to undertake all reasonable efforts to ensure that no UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via [http://www.un.org/sc/committees/1267/aq\\_sanctions\\_list.shtml](http://www.un.org/sc/committees/1267/aq_sanctions_list.shtml)

4. The Implementing Partner acknowledges and agrees that UNDP will not tolerate sexual harassment and sexual exploitation and abuse of anyone by the Implementing Partner, and each of its responsible parties, their respective sub-recipients and other entities involved in Project implementation, either as contractors or subcontractors and their personnel, and any individuals performing services for them under the Project Document.

(a) In the implementation of the activities under this Project Document, the Implementing Partner, and each of its sub-parties referred to above, shall comply with the standards of conduct set forth in the Secretary General's Bulletin ST/SGB/2003/13 of 9 October 2003, concerning "Special measures for protection from sexual exploitation and sexual abuse" ("SEA").

(b) Moreover, and without limitation to the application of other regulations, rules, policies and procedures bearing upon the performance of the activities under this Project Document, in the implementation of activities, the Implementing Partner, and each of its sub-parties referred to above, shall not engage in any form of sexual harassment ("SH"). SH is defined as any unwelcome conduct of a sexual nature that might reasonably be expected or be perceived to cause offense or humiliation, when such conduct interferes with work, is made a condition of employment or creates an intimidating, hostile or offensive work environment.

5. a) In the performance of the activities under this Project Document, the Implementing Partner shall (with respect to its own activities), and shall require from its sub-parties referred to in paragraph 4 (with respect to their activities) that they, have minimum standards and procedures in place, or a plan to develop and/or improve such standards and procedures in order to be able to take effective preventive and investigative action. These should include: policies on sexual harassment and sexual exploitation and abuse; policies on whistleblowing/protection against retaliation; and complaints, disciplinary and investigative mechanisms. In line with this, the Implementing Partner will, and will require that such sub-parties will take all appropriate measures to:

- i. Prevent its employees, agents or any other persons engaged to perform any services under this Project Document, from engaging in SH or SEA;
- ii. Offer employees and associated personnel training on prevention and response to SH and SEA, where the Implementing Partner and its sub-parties referred to in paragraph 4, have not put in place its own training regarding the prevention of SH and SEA, the Implementing Partner and such sub-parties may use the training material available at UNDP;
- iii. Report and monitor allegations of SH and SEA of which the Implementing Partner and its sub-parties referred to in paragraph 4 have been informed or have otherwise become aware, and status thereof;
- iv. Refer victims/survivors of SH and SEA to safe and confidential victim assistance; and
- v. Promptly and confidentially record and investigate any allegations credible enough to warrant an investigation of SH or SEA. The Implementing Partner shall advise UNDP of any such allegations received and

investigations being conducted by itself or any of its sub-parties referred to in paragraph 4 with respect to their activities under the Project Document, and shall keep UNDP informed during the investigation by it or any of such sub-parties, to the extent that such notification (i) does not jeopardize the conduct of the investigation, including but not limited to the safety or security of persons, and/or (ii) is not in contravention of any laws applicable to it. Following the investigation, the Implementing Partner shall advise UNDP of any actions taken by it or any of the other entities further to the investigation.

b) The Implementing Partner shall establish that it has complied with the foregoing, to the satisfaction of UNDP, when requested by UNDP or any party acting on its behalf to provide such confirmation. Failure of the Implementing Partner, and each of its sub-parties referred to in paragraph 4, to comply of the foregoing, as determined by UNDP, shall be considered grounds for suspension or termination of the Project.

6. Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (<http://www.undp.org/ses> ) and related Accountability Mechanism (<http://www.undp.org/secu-srm> ).

7. The Implementing Partner shall: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.

8. All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.

9. The Implementing Partner will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, responsible parties, subcontractors and sub-recipients in implementing the project or using the UNDP funds. The Implementing Partner will ensure that its financial management, anti-corruption and anti-fraud policies are in place and enforced for all funding received from or through UNDP.

10. The requirements of the following documents, then in force at the time of signature of the Project Document, apply to the Implementing Partner: (a) UNDP Policy on Fraud and other Corrupt Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. The Implementing Partner agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at [www.undp.org](http://www.undp.org).

11. In the event that an investigation is required, UNDP has the obligation to conduct investigations relating to any aspect of UNDP programmes and projects in accordance with UNDP regulations, rules, policies and procedures. The Implementing Partner shall provide its full cooperation, including making available personnel, relevant documentation, and granting access to the Implementing Partner's (and its consultants', responsible parties', subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with the Implementing Partner to find a solution.

12. The Implementing Partner will promptly inform UNDP in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.

Where the Implementing Partner becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, the Implementing Partner will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). The Implementing Partner shall provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.

13. UNDP shall be entitled to a refund from the Implementing Partner of any funds provided that have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of this Project Document. Such amount may be deducted by UNDP from any payment due to the Implementing Partner under this or any other agreement. Recovery of such amount by UNDP shall not diminish or curtail the Implementing Partner's obligations under this Project Document.

Where such funds have not been refunded to UNDP, the Implementing Partner agrees that donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities under this Project Document, may seek recourse to the Implementing Partner for the recovery of any funds determined

by UNDP to have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document.

Note: The term “Project Document” as used in this clause shall be deemed to include any relevant subsidiary agreement further to the Project Document, including those with the Implementing Partner, responsible parties, subcontractors and sub-recipients.

14. Each contract issued by the Implementing Partner in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution, and that the recipient of funds from the Implementing Partner shall cooperate with any and all investigations and post-payment audits.

15. Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project, the Government will ensure that the relevant national authorities shall actively investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.

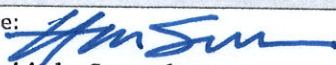
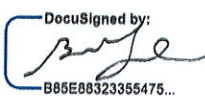
16. The Implementing Partner shall ensure that all of its obligations set forth under this section entitled “Risk Management Standard Clauses” are passed on to each responsible party, subcontractor and sub-recipient and that all the clauses under this section entitled “Risk Management” are included, mutatis mutandis, in all sub-contracts or sub-agreements entered into further to this Project Document.

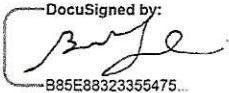
## List of Annexes

- A. Theory of Change diagram
- B. Multi-year Work Plan
- C. Gender Analysis and Action Plan
- D. Stakeholder Engagement Plan
- E. Procurement plan
- F. Overview of Technical Consultancies/subcontracts
- G. Terms of Reference
- H. Project site prioritization
- I. Project site profiles
- J. Technical description of monitoring boreholes
- K. Technical description of groundwater infiltration galleries
- L. UNDP Social and Environmental Screening Procedure
- M. List of people consulted during project development.
- N. Co-financing letters



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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------|
| Project title: Managing Coastal Aquifer Project (MCAP)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                      |                                                 |
| Country: Republic of Marshall Islands, Republic of Palau, Tuvalu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Implementing Partner:<br>The Pacific Community (SPC) | Management Arrangements :<br>IGO Implementation |
| UNDAF/Country Programme Outcome: Outcome 1: Environmental management, climate and disaster risk management. The UN will work to support an integrated approach to environmental sustainability and efforts by PICT governments and communities to adapt to climate change and reduce and manage disaster risk.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                      |                                                 |
| UNDP Strategic Plan Output: Output 1.4.1 Solutions scaled up for sustainable management of natural resources, including sustainable commodities and green and inclusive value chains                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                      |                                                 |
| UNDP Social and Environmental Screening Category:<br>Low                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | UNDP Gender Marker: 1                                |                                                 |
| Atlas Project ID (formerly Award ID): 00112065                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Atlas Output ID (formerly Project ID): 00110740      |                                                 |
| UNDP-GEF PIMS ID number: 6196                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | GEF ID number: 10041                                 |                                                 |
| Planned start date: March 2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Planned end date: March 2024                         |                                                 |
| PAC meeting date: 19/2/2020                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                      |                                                 |
| <p><b>Brief project description:</b> SIDS rely on small coastal aquifers for their water supply needs. These coastal aquifers are fragile thin freshwater lenses that float on the underlying denser seawater and are reliant on rainfall for recharge. These coastal aquifers are at higher risk of impact to water quality deterioration from threats including saltwater contamination from sea level rise, over abstraction, wave overtopping, loss of aquifer area through coastal erosion, and other impacts on water quality from inappropriate land-use activities. Climate change exacerbates these long-running threats to coastal aquifers through increased climate variability and climate extremes. The fragility of coastal fresh groundwater systems necessitates careful management and protection to ensure their long-term integrity and their role in climate change adaptation strategies and improved water security. The project aims at improving the understanding, use, management and protection of coastal aquifers towards enhanced water security, including in the context of a changing climate. More specifically it aims at 1) identifying the extent, threats and the development potential of groundwater resources, 2) increasing awareness of groundwater as a water security supply source, 3) providing options for improved access to groundwater and 4) and improving aquifer protection and management, within Pacific Small Island Developing States.</p> |                                                      |                                                 |

|                                                                                                                                                                           |                                      |                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------|
| FINANCING PLAN                                                                                                                                                            |                                      |                                       |
| GEF Trust Fund                                                                                                                                                            | USD 5,261,356                        |                                       |
| (1) Total Budget administered by UNDP                                                                                                                                     | USD 5,261,356                        |                                       |
| PARALLEL CO-FINANCING                                                                                                                                                     |                                      |                                       |
| USAID                                                                                                                                                                     | USD 52,937                           |                                       |
| Government                                                                                                                                                                | USD 547,337                          |                                       |
| UNDP                                                                                                                                                                      | USD 60,000                           |                                       |
| Others                                                                                                                                                                    | USD 18,944,523                       |                                       |
| (2) Total co-financing                                                                                                                                                    | USD 19,604,797                       |                                       |
| (3) Grand-Total Project Financing (1)+(2)                                                                                                                                 | USD 24,866,153                       |                                       |
| SIGNATURES                                                                                                                                                                |                                      |                                       |
| Signature: <br>F. Umiich Sengebau<br>Minister, MNRET                                     | Agreed by<br>Government<br><br>Palau | Date/Month/Year:<br><br>10/15/2020    |
| Signature:                                                                                                                                                                | Agreed by<br>Government              | Date/Month/Year:                      |
| Signature:                                                                                                                                                                | Agreed by<br>Government              | Date/Month/Year:                      |
| Signature:                                                                                                                                                                | Agreed by<br>Implementing<br>Partner | Date/Month/Year:                      |
| Signature: <br>Levan Bouadze<br>Resident Representative<br>UNDP Pacific Office in Fiji | Agreed by UNDP                       | Date/Month/Year:<br><br>30 March 2020 |

|                                                                                                                                                                              |                                                                |                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------|
| <b>FINANCING PLAN</b>                                                                                                                                                        |                                                                |                                       |
| GEF Trust Fund                                                                                                                                                               | USD 5,261,356                                                  |                                       |
| <b>(1) Total Budget administered by UNDP</b>                                                                                                                                 | <b>USD 5,261,356</b>                                           |                                       |
| <b>PARALLEL CO-FINANCING</b>                                                                                                                                                 |                                                                |                                       |
| USAID                                                                                                                                                                        | USD 52,937                                                     |                                       |
| Government                                                                                                                                                                   | USD 547,337                                                    |                                       |
| UNDP                                                                                                                                                                         | USD 60,000                                                     |                                       |
| Others                                                                                                                                                                       | USD 18,944,523                                                 |                                       |
| <b>(2) Total co-financing</b>                                                                                                                                                | <b>USD 19,604,797</b>                                          |                                       |
| <b>(3) Grand-Total Project Financing (1)+(2)</b>                                                                                                                             | <b>USD 24,866,153</b>                                          |                                       |
| <b>SIGNATURES</b>                                                                                                                                                            |                                                                |                                       |
| Signature:<br>Clarence Samuel<br>Director<br>Climate Change Directorate                                                                                                      | Agreed by<br>Government<br>Republic of the<br>Marshall Islands | Date/Month/Year:<br>21/10/2020        |
| Signature:                                                                                                                                                                   | Agreed by<br>Government                                        | Date/Month/Year:                      |
| Signature:                                                                                                                                                                   | Agreed by<br>Government                                        | Date/Month/Year:                      |
| Signature:                                                                                                                                                                   | Agreed by<br>Implementing<br>Partner                           | Date/Month/Year:                      |
| Signature:<br><br>Levan Bouadze<br>Resident Representative<br>UNDP Pacific Office in Fiji | Agreed by UNDP                                                 | Date/Month/Year:<br><br>30 March 2020 |