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United Nations Decade of Sustainable Energy For All (2014-2024)

DRAFT CONCEPT PAPER & PLANNING GRANT PROPOSAL (2022-2025)

PROJECT TITLE: PROMOTING SOUTH-SOUTH AND TRIANGULAR SIDS-SIDS COOPERATION UNDER THE GLOBAL NETWORK OF REGIONAL SUSTAINABLE ENERGY CENTRES (GN-SEC): OCEAN ENERGY AND THE BLUE ECONOMY

STRATEGIC PARTNERSHIP TO PROMOTE SIDS-SIDS PROJECTS IN THE CONTEXT OF GREEN COVID-19 RECOVERY AND THE COMBAT OF CLIMATE CHANGE

SIDS DOCK ISLAND WOMEN OPEN NETWORK (IWON) PILOT INITIATIVE:
"DEVELOPMENT OF A GLOBAL SUSTAINABLE BOTANICAL / HERBAL SUPPLIER MARKET FROM SIDS DOCK MEMBER STATES"
PILOT IN THE DEMOCRATIC REPUBLIC OF SÃO TOMÉ AND PRÍNCIPE TO BE DEVELOPED UNDER THE GN-SEC

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BELMOPAN, BELIZE
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PILOT INITIATIVE FOR THE DEVELOPMENT OF A GLOBAL SUSTAINABLE BOTANICAL/HERBAL SUPPLIER MARKET FROM SIDS DOCK MEMBER STATES: PILOT PROJECT IN THE DEMOCRATIC REPUBLIC OF SÃO TOMÉ

1.0 INTRODUCTION

> *The Pilot Herbal/Botanical Initiative in SIDS is an innovative social enterprise with the mission to achieve sustainable, scalable impact at the nexus of women's empowerment, energy poverty and climate change. It combines the deployment of SIDS-Appropriate Technologies to decrease energy poverty and increase economic opportunities for women, men and young people in vulnerable communities.*

The SIDS DOCK Island Women Open Network (IWON) and the Government of São Tomé and Príncipe are seeking grant support in the amount of USD 50,000, to prepare a pre-feasibility study and a comprehensive proposal for funding to launch and implement the *"Pilot Initiative for the Development of a Global Sustainable Botanical/Herbal Supplier Market from SIDS DOCK Member States*," in São Tomé and Príncipe.

The total project cost of the "Botanical/Herbal Project" to be developed under a Public-Private-Partnership (PPP), is approximately USD 10,135,000 Million, over four years (2022-2025), in support of the Initiative that will focus on São Tomé and Príncipe entering the dietary supplement market in the European Union (EU), the United Kingdom (UK), United States (US), and Canada. Funding proposals will be submitted to the Green Climate Fund (GCF) under the Simplified Approval Process Pilot Scheme (SAP), as well as the Global Environment Facility (GEF) for the GEF-8 funding period. The GEF is the only multilateral fund dedicated to biodiversity conservation and is one of the largest and most trusted sources of financing for environmental initiatives in developing countries.

São Tomé and Príncipe (STP) is a small island state faced with several challenges. Its economy is characterized by a narrow production base due to limited resources and capacity, as well as limited market access domestically to serve the demand of the population and that of the tourism and hospitality sectors, within the region and internationally. The country's private sector is emerging and has an estimated 9,602 Micro, Small & Medium Enterprises (MSMEs) with limited access to finance and business development services, amid high risks associated with a significant level of Non-Performing Loans (NPLs) in its banking sector amounting to 29.6 percent as of December 2020, further exacerbating low lender and investment confidence. The Government's efforts to support the private sector have not been matched by a commensurate level of external investment due to a number of challenges.

The Covid-19 pandemic has hit São Tomé and Príncipe's economy hard with direct repercussions on the economy's growth, employment, debt, businesses, and value chains[1]. Women have suffered more than men. Almost 70 percent of the people affected globally, are women; in Small Island Developing States (SIDS), this is important, as women represent 51 percent of head of households. Further, the pandemic has brought increased gender-based violence, unimaginable "lockdown" sexual abuse of women and girl children, unpaid care for work, economic devastation, and adverse impacts on sexual and reproductive health services. Covid-19 has profoundly different outcomes for men and women – and not just in terms of their health. For a virus that infects people indiscriminately, gender has an effect, especially financially. These impacts and others, the UN warned, have the ability to undermine social cohesion and devastatingly reduced institutional capacity and services. The COVID-19 Pandemic has amplified and heightened all existing inequalities.

Empowering women entrepreneurism through training and seed and technical assistance funding to develop projects and support for implementation will aid in building climate resilience in their communities allowing them to recover more quickly – energy production by communities provides co-benefits such as improving access, creating employment and providing a new source of income for rural households. It is essential to find new opportunities for women and youth to respond to the losses from their traditional principal income and/livelihoods from fishing and crop production, which are declining as a result of being increasingly negatively affected by the changing climate as reflected in the extent of damages from flooding, droughts and other hydro-metrological events that have dramatically impacted SIDS since 2000.

The Botanical/Herbal Project presents an opportunity not to be missed that could help kick-start innovative micro-businesses and expand sustainable energy solutions for the most vulnerable women in SIDS, i.e., those women who have the least capacity to respond to the impacts of climate change and who suffer from energy poverty.

2.0 GOALS & OBJECTIVES OF THE PROJECT

The *Botanical/Herbal Project* is the "Signature Project" of the SIDS DOCK Island Women Open Network (IWON) and is the most advanced project within the SIDS DOCK IWON Indicative Project Pipeline. Key primary goals and objectives have been outlined, aimed at establishing a sustainable supply chain market that will initially target the EU, UK, US, and Canadian herbal and botanical supplement markets.

Main Goals

The main goals of the project are to formulate and demonstrate activities that support the establishment of a sustainable herbal/botanical market chain in the context of biodiversity protection and conservation, and the gender-energy poverty nexus, and to promote expansion of regional and inter-regional trade and investment opportunities among women in Sao Tome and Principe, by 2025.

[1]https://www.afdb.org/sites/all/libraries/pdf.js/web/viewer.html?file=https%3A%2F%2Fwww.afdb.org%2Fsites%2Fdefault%2Ffiles%2Fdocuments%2Fprojects-and-operations%2Fsao_tome_and_principe_-_zuntamon_lusophone_compact_initiative_phase_1_-_appraisal_report.pdf#page=1&zoom=auto,-13,843

Secondary Goals

1. To help build the capacity of women at the community and grassroots levels in small islands and low lying developing states to participate in the transformation of the SIDS energy sector to achieve the SIDS DOCK goal of *25-50-25 by 2033*, through: The "IWON/DFG Concept of 'Educate, Equip and Empower (3E's)'," that provides Island Women with the necessary agricultural skillsets and manufacturing and production experience, to help create a profitable and sustainable herbal/botanical business, and to develop training and certification programmes that provide continuity of quality and compliance.
2. To promote an understanding of cGMP (current Good Manufacturing Practices); HARPC (Hazard Analysis, and Risk-Based Preventive Controls for Human Food); HACCP (Hazard Analysis, and Critical Control Points); ISO Certification.
3. To promote and foster "*Farm to Fork*" awareness - A term commonly used in reference to the supply chain processes from agricultural production and development or export of raw material ingredients to consumption of finished goods.

2.1 Key Objectives

Several components and subcomponents will collaboratively create the foundation and framework for developing sustainable markets for select botanical/herbal materials and products across the SIDS. Key objectives include:

a. Evaluate the Economic Potential of Herbal and Botanical Therapeutic products.
b. Develop a National Policy for Herbal and Botanical Therapeutic products.
c. Formulate Policies and Regulations on the Protection and Conservation of Health Resources.
d. Establish Appropriate Standards for Herbal and Botanical Therapeutic products.
e. Encourage and Strengthen Clinical Research into evidence-based practice of Herbal and Botanical Therapeutic products.
f. Foster Respect for the Cultural Integrity of Herbal and Botanical Therapeutic remedies.
g. Promote Public Awareness of and Access to Herbal and Botanical Therapeutic products.
h. Protect the Knowledge, Innovations and Practices of Indigenous and local communities.
i. Design a "Best in Practice Renewable Energy and Energy Efficiency (RE&EE) Green Processing Unit" design and layout prototype of an herbal/botanical production, harvest, post-harvest, and "green" processing unit operations for establishment in Sao Tome and Principe and with the ability for replication across the SIDS.

3.0 BACKGROUND

SIDS DOCK, the Small Island Developing States (SIDS) Sustainable Energy and Climate Resilience organization and the United Nations Industrial Development Organization (UNIDO) have agreed on a strategic partnership to promote south-south and triangular cooperation in SIDS within the Global Network of Regional Sustainable Energy Centers (GN-SECs) in ocean energy and the blue economy. Under the partnership, UNIDO and SIDS DOCK will support the GN-SEC

SIDS Centres[2] in the development and implementation of triangular SIDS-SIDS energy and climate programmes and projects in the context of green Covid-19 recovery and the combat of climate change.

The SIDS DOCK-UNIDO-GN-SEC "Global Ocean Energy Project" as the project is referred to, supports the Global Ocean Energy Alliance (GLOEA) and the establishment of an Ocean Energy Platform (OEP) for Blue Economies in SIDS, launched by SIDS DOCK, UNIDO, and the Henry L. Stimson Center Alliance for a Climate Resilient Earth (ACRE), at a United Nations Framework Convention on Climate Change (UNFCCC) Conference of Parties (COP 26) Side Event, on 11 November 2021, at Wood House, in Glasgow, Scotland, UK. The Ocean Energy Project also includes the development of the first Ocean Thermal Energy Conversion (OTEC) pilot project and the first Pilot Botanical/Herbal Project in São Tomé and Príncipe. The achievement of equal opportunities for men and women may necessitate specific women empowerment activities, and this is reflected in the Ocean Energy Project, with the inclusion of the Pilot Botanical/Herbal Project. Relevant knowledge management activities will be promoted through the GN-SEC (www.gn-sec.net) and SIDS DOCK (www.sidsdock.org) web portals. There will be strong emphasis on creating synergies and exchange of best practice, lessons learned, tools and approaches.

Rivkin Radler, and Ullman, Shapiro & Ullman, of Counsel (US Food and Drug [FDA] attorneys), signed a Memorandum of Understanding (MoU) with SIDS DOCK in September 2019, to partner and support the development of national and regional regulatory infrastructure (e.g., quality, and suitable product claims backed by appropriate substantiation) and to support the development of a sustainable botanical/herbal supplier market for SIDS DOCK member states. Partnerships allow SIDS DOCK to play a strategic role in promoting sustainable energy and its paramount importance in the context of resilience and adaptation to climate change; partnership development continues to be the guiding principle for building the capacity of the SIDS DOCK in the spirit of the Small Island Developing States Accelerated Modalities of Action - Samoa Pathway.

The project will also be supported by GRID-Arendal, who will help accelerate the synergistic deployment and monitoring of Nature-based solutions to the challenges of ocean environmental management, rehabilitation of ecosystems, and the development of ocean-based renewable energy technologies in SIDS. GRID-Arendal was established in 1989 by the Norwegian Ministry of the Environment to support environmentally sustainable development by collaborating with the United Nations Environment Programme (UNEP) and other partners. In May 2020, SIDS DOCK and GRID-Arendal signed a MoU to support SIDS DOCK member states. This partnership gives GRID-Arendal the opportunity to develop practical solutions for countries and communities experiencing some of the most immediate consequences of environmental change, from climate change to plastic pollution.

[2] the Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE); the Pacific Centre for Renewable Energy and Energy Efficiency (PCREEE); ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE)

The Pilot "Botanical/Herbal Project" in SIDS is an innovative social enterprise initiative with the mission to achieve sustainable, scalable impact at the nexus of women's empowerment, energy, poverty and climate change. Key areas of development of the Initiative are its capacity building and institutional strengthening, advisory and technical support, science and technology transfer, and communication and outreach activities. Capacity challenges related to the development of sustainable energy and climate resilience projects and programmes, including lack of financial resources at the country level, inappropriate scale and scope of initiatives and policy frameworks, scarcity of technical expertise, and poor infrastructure are, in the case of SIDS, being addressed increasingly by regional institutions such as SIDS DOCK, which is providing specialized assistance to help SIDS improve their resilience to climate change impacts through sustainable climate resilience building activities that lead to sustainable livelihoods.

The "Botanical/Herbal Project" is a "Signature" IWON Project that promotes climate resilience, biodiversity conservation, sustainable livelihoods, sustainable investments in clean energy and looking at multiple value chains – "from the field to the fork." This project has the potential to build climate resilience through the introduction and deployment of SIDS-Appropriate Sustainable Energy Technologies to help drive market competitiveness, such as: solar photovoltaic (PV), solar water heating, wind, ocean, biodiesel and biogas. Protection and conservation of biodiversity is also a main project outcome, further, these and other adaptation activities can help species and ecosystems cope with changing climatic conditions, provide employment and reduce poverty, especially among the population of women in SIDS, who represents half of the population.

The potential of the "Botanical/Herbal Project" to contribute to achieving the Sustainable Development Goals (SDGs) cuts across: Goal 5: Gender Equality; Goal 7: Affordable and Clean Energy; Goal 8: Decent Work and Economic Growth; Goal 9: Industry Innovation and Infrastructure; Goal 13: Climate Action; and Goal 14: Life Below Water. The project also integrates the mandates from the Samoa Pathway's call for a "broad alliance of people, governments, civil society and the private sector all working together to achieve the future we want for present and future generations," as well as the UNFCCC Paris Agreement which cites, "Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience…" as a priority for strengthening the global response to the threat of climate change.

The Project also contributes to achieving the goals of the 2015 *Milan Declaration on Enhancing Food Security and Climate Adaptation in Small Island Developing States*, in the framework of the Samoa Pathway, particularly paragraphs 14 to 16, that speaks to, among other things, the importance of promoting sustainable approaches to agriculture and fisheries and building resilience to climate change and disasters; the benefits of improving rural livelihoods of smallholders and family farmers, especially women and youth; the dependence on international trade and the crucial role of partnerships. The project further contributes to the implementation of the United Nations Decade of Action on Nutrition (2016-2025).

At the fourth session of the SIDS DOCK Assembly, in September 2018, the Assembly approved the development and implementation of the *"Pilot Initiative for the Development of a Global Sustainable Botanical/Herbal Supplier Market from SIDS DOCK Member States."* Since then, eleven (11) pilot countries with potential to develop a sustainable industry indicated interest: Belize, Dominica (Commonwealth of), Grenada, Jamaica, St. Vincent and the Grenadines; Cook

Islands, Samoa (Independent State of), Tonga (Kingdom of), Tuvalu; Mauritius (Republic of), Seychelles (Republic of) and São Tomé and Príncipe (Democratic Republic of). These Pilot Countries have expressed their intention to participate in the programme based on potential in terms of raw materials, existing industries, knowledge and research and information.

Table 1: Pilot Countries - Initiative for the Development of a Global Sustainable Botanical/Herbal Supplier Market from SIDS DOCK Member States

Caribbean	**Pacific**	**Atlantic & Indian Ocean (AIS)**
Belize	Kingdom of Tonga	Republic of Mauritius
Dominica	Independent State of Samoa	Republic of Seychelles
Grenada	Tuvalu	**Democratic Republic of São Tomé and Príncipe**
Jamaica		
St. Vincent and the Grenadines		

3.1 Promoting the Ocean Energy Platform (OEP) for Blue Economies in SIDS and coastal LDCs and the First Ocean Thermal Energy Conversion (OTEC) Project to *"Bring Dominique Home"* to São Tomé and Príncipe: The Gendered Relevance of Ocean Energy

It is estimated that SIDS consume more than 220 million barrels of fuels and emit some 38 million tons of carbon from the energy sector – approximately 0.5 per cent of global emissions. Collectively, all island states spend over USD 67 million each day for more than 900,000 barrels of oil (price of USD 75 per barrel); USD 90 million at USD 100 per barrel; USD 108 million at USD 125 per barrel, and; USD 126 million at USD 140 per barrel. If this money were invested in new renewable generation, nearly 70 megawatts of wind capacity could be added (based on 1 megawatt turbines at USD 1 million each, assuming USD 75 per barrel for oil) or 11 megawatts of solar capacity at a price of USD 6 per watt.

The high cost of fuels imports and the unpredictability of price is the major source of economic vulnerability for many small islands, and many remote and rural island communities have little or no access to modern and affordable energy services. At the same time, difficulties in expanding electricity generation to meet the growing demand are likely to remain the single most important constraining factor in the economic development of the majority of SIDS. Small islands and costal LDCs have entered a "danger zone," where more than ten (10) gigawatts (GWs) of installed fossil fuel capacity needs to be replaced in the coming decade.

The almost total dependence of SIDS on imported petroleum for their commercial energy needs continues to cause severe imbalances in trade and the rising costs of petroleum imports have put a serious drain on limited national financial resources. SIDS already have a 90 percent dependency on petroleum fuels for commercial energy costing more than USD 220 billion per year, pre-Covid-19. The US Energy Information Administration (EIA) reported that crude oil prices increased in 2021 as increasing Covid-19 vaccination rates, loosening pandemic-related restrictions, and a growing economy resulted in global petroleum demand rising faster than petroleum supply. Oil

prices started 2021 at USD 50 per barrel and increased to a high of USD 86 per barrel in late-October, before declining in the final weeks of the year, ending 2021 with an annual average of USD 71 per barrel, the highest in the past three years[3].

Due to the war in Ukraine which started on 24 February 2022, SIDS will now see a significant escalation in the cost of imports, particularly food, as almost all small islands import 60 percent or more of their food needs. Oil is now over USD 120 per barrel compared to under USD 30 per barrel two years ago, and USD 50 per barrel last year. Moreover, due to the small size of their economies and the limited number of goods and services, primarily tourism, agriculture, and fisheries that they provide to the global economy, SIDS are very vulnerable to external shocks such as the war in central Europe. The Covid-19 pandemic had already pushed several SIDS to the brink of economic collapse; they suffered disruptions in supply chains and international trade, flight cancellations, slowdowns in the shipping industry and logistics bottlenecks.

The recent war in Ukraine has brought on immediate economic devastation, and this is in addition to the socio-economic devastation wrought by tropical hurricanes and cyclones. This has worsened existing fiscal stresses on many SIDS. Prices of petroleum products in SIDS are among the highest in the world. Prices of petroleum fuels landed in the several SIDS for instance, are typically 200 to 300 per cent higher than international values. The cost of electricity generation using petroleum products is much higher in SIDS given added costs of fuel distribution for small-scale generation systems. This increase and those projected in the future because of supply and demand dynamics, the volatility of the global oil market, as well as the foreign exchange to pay for imported energy resources, will exert significant pressure on the SIDS economies if, as expected, the international prices for oil and gas keep rising.

Oceans Represent an Unlimited Source of Baseload Electricity for The Blue-Green Economy

Ocean energy represents the most available, and likely the largest potential source of renewable energy in SIDS. The SIDS maritime Exclusive Economic Zones (EEZs) are very large (especially in the Pacific) and extend to approximately one-sixth of the earth's surface. Collectively, SIDS Oceans (EEZ and extended continental shelves) make them 15 times the physical size of the European Union (EU) – SIDS are Large Ocean States. In this system, the tropical ocean acts as a giant solar energy collector for the estimated 25,000 to 35,000 barrels of oil equivalent per hectare of ocean surface.

Oceans represent an unlimited source of baseload electricity for the blue-green economy and can make a significant contribution to the SIDS economy and create jobs. The Global Ocean Energy Alliance (GLOEA) is a proposed mechanism that can help fill the gap in ocean energy knowledge, help foster climate resilient economies in SIDS, support the global deployment of ocean energy technologies and, provide the leadership for high priority ocean energy development in SIDS and coastal LDCs. Establishing the GLOEA is the best possible solution to addressing the problems of SIDS' low capacity to capitalize on SIDS' largest renewable energy source to create an ocean energy industry that can support adaptation efforts and build SIDS climate resilience, and address the major challenge confronting SIDS who have entered a "danger zone," where more than 10 GWs of installed fossil fuel capacity needs to be replaced in the coming decade.

[3] https://www.eia.gov/todayinenergy/detail.php?id=50738

The SIDS DOCK IWON plays an important role in promoting the GLOEA, the Ocean Energy Platform (OEP) and the development of the first Ocean Thermal Energy Conversion (OTEC) pilot project in São Tomé and Príncipe, where the world's first Floating OTEC Platform, called *"Dominique,"* is to be deployed in 2024, under a Public-Private Partnership (PPP) with Global OTEC, a UK company, that signed a MoU with SIDS DOCK in July 2021, that establishes a framework for close cooperation between the Parties with a view to develop and deploy Floating Ocean Thermal Energy Conversion (OTEC) Technology Concept based on Global OTEC solutions, in a sustainable, effective and efficient manner in Small Island Developing States (SIDS). Global OTEC Resources Floating OTEC technology is so innovative that it is a gamechanger, bringing OTEC and ocean energy technologies a lot closer to a realistic option for SIDS. In just one day, twenty-four (24) hours, the amount of energy that the sun puts in the tropical oceans can run small islands for decades. The ocean is an inexhaustible renewable energy source and as long as the sun exists, SIDS will have thermal energy in the ocean.

The major economic benefit of OTEC is that this baseload technology is not dependent on fossil fuel price fluctuations or other international influences, thereby allowing full control on the pricing and volumes to be decided domestically. An OTEC plant produces electricity all the time and that we can rely on. That's why it's called baseload power, provided by reliable sources such as an OTEC power plant. The feminization of OTEC through *Dominique,* is in line with the characteristics of Mother Earth's resources. "Despite our gender-blind naming of diseases, hurricanes, storms and other forces of nature, we still bestow on our planetary home and the very core of our existence names of the ultimate symbols of life-giving femininity: Mother Earth and Mother Nature." She's called *Dominique,* in honour of the island of Dominica.

São Tomé and Príncipe simultaneously faces challenges of affordable energy, energy security and climate change mitigation/adaptation. The population's greatest need is access to affordable, reliable and sustainable energy services. The country's National 2030 vision places a strong emphasis on integrating renewable energy into its energy mix and moving away from dependence on imported diesel for power generation. OTEC would complement the efforts to up-scale other renewable sources, particularly small hydro power development and solar PV. Due to biodiversity and grid stability concerns, solar PV and hydro technologies have some limitations. The Floating OTEC Platform has similar technology and components to a floating oil platform, expect OTEC pumps water from the ocean and converts it to energy, versus pumping oil, which significantly reduces the risk to the ocean. The 160,000 km2 exclusive economic zone (EEZ) around São Tomé and Príncipe is an untapped solar heat battery which OTEC platforms could convert to supply carbon-free, baseload power, and research the supply of value-add services such as offshore mariculture.

A major climate change adaptation characteristic of OTEC is the co-production of potable water and improved food security. OTEC produces two valuable by-products: (a) large quantities of cold, nutrient-rich water that can be used for aquaculture, and (b) significant volumes of potable water. Additionally, the cold waste nutrient rich water leaving the plant is used for mariculture (shrimp, scallops and other high value seafood), vegetable production as well as cosmetics, **important industries that have significant potential for high female employment.**

In 2021, in partnership with UNIDO, GN-SEC, and the Henry L. Stimson Centre Alliance for a Climate Resilience Earth (ACRE), SIDS DOCK hosted a virtual Side Event *"Establishing an Ocean Energy Platform as a Marketplace to Support SIDS and Coastal Nations to Deploy Ocean Energy Systems*, during the Vienna Energy Forum (VEF), on 6 July 2021. The event discussed a first deliverable of the Ocean Energy for Blue Economies Platform, which facilitates south-south and triangular cooperation between Small Island Developing States (SIDS), coastal nations, academia, industry players and financiers. To have more impact, the Ocean Energy Platform (OEP) will adopt a regional approach and many activities will be implemented through GN-SEC centres. It will provide services related to policy advisory, knowledge management, qualification and certification, as well as investment facilitation and match-making. Further information is available at: http://ocean.gn-sec.net. As a first step it was decided to establish a virtual information and communication platform of the OEP, where stakeholders can participate in the Marketplace, including those associated with the Botanical/Herbal Project.

4.0 NEED FOR A GLOBAL SUSTAINABLE BOTANICAL/HERBAL SUPPLIER MARKET FROM SIDS DOCK MEMBER STATES - A SPECIFIC WOMEN EMPOWERMENT ACTIVITY

The Ocean Energy Project provides the best opportunity for the establishment of a Pilot Global Sustainable Botanical/Herbal Supplier Market from SIDS DOCK Member States ("Botanical/Herbal Project"), with São Tomé and Príncipe as the Lead Pilot Country, and is the best possible solution to addressing the problems of SIDS' low capacity to capitalize on SIDS' international recognition as "biological hot spots," endowed with a rich biological diversity and a natural resource base that can develop business and livelihood opportunities. For SIDS, coastal and marine environmental resource issues are of overarching economic importance.

São Tomé and Príncipe has more endemic species per square metre than anywhere else on earth. Although often referred to as the 'Galápagos of Africa', the twin-islands of São Tomé and Principe are, in fact, five times older than Galápagos, and yet virtually unknown in comparison. Exceedingly fertile volcanic soils have turned the twin-islands into the 'chocolate islands' and the world's largest producers of cocoa, and an unmatched haven of bromeliads, air plants and orchids. In 2012, the island of Principe was declared a United Nations Educational, Scientific and Cultural Organization (UNESCO) Biosphere Reserve. The island of Príncipe is one of three existing oceanic volcanic islands off the Gulf of Guinea and is geologically the oldest of the group, formed 31 million years ago. The biosphere reserve includes the entire emerged area of the island of Príncipe, and its islets Bom Bom, Boné do Jóquei, Mosteiros, Santana and Pedra da Galei, and Tinhosas islands[4].

The biosphere reserve is home to great biodiversity in terrestrial as well as in marine ecosystems, with high rates of endemism in many groups of organisms, especially vascular plants, molluscs, insects, birds, reptiles and bats. It is part of the biodiversity hotspot of tropical forests of West Africa, containing a wide range of plant communities and habitats of high international importance such as primary tropical forests, forest shade, palm trees and lowland riparian habitats. Considering the importance that this area has for the reproduction of sea turtles, seabirds and cetaceans, as well

[4] https://en.unesco.org/biosphere/africa/island-of-principe

as coral reefs, on the international scene, it's an area of great interest for the conservation of global biological diversity. The status is recognition of not just the island's biodiversity, but also the occurrence of many rare terrestrial and marine species, such as the world's largest sunbird – the aptly named giant sunbird – and the world's smallest ibis – the dwarf olive. Among the 114 bird species found on the islands, there are 26 native species including the São Tomé prinia, its eggs akin to a watercolour painting, the blue-backed Principe kingfisher and São Tomé scops owl, who stands just seven inches tall[5].

Recently, scientists from the Salk Institute for Biological Studies, a US-based independent nonprofit organization, began looking at traditional African medicine for possible treatments for Alzheimer's and Parkinson's disease. They are analyzing the leaves and bark of a tree that grows on São Tomé and Príncipe, that traditional healers have used for hundreds of years - the Voacanga africana tree. It's a small tree that produces yellow or white flowers that turn into berries with seeds. The seeds and bark have been used as a poison, aphrodisiac and a psychedelic. Traditional healers knew it somehow affected those believed to have brain disorders. The Institute is focused on plant extracts that were used in traditional medicine, either specifically for brain disorders or were known to have anti-inflammatory activity. It is now known a lot of neurological diseases – or almost all of them – involve some degree of inflammation[6].

Need for a Specific Women Empowerment Activity

The myths of gender-blind policies must be exploded and serious attention must be given to devising gender-aware strategies and remedies that will significantly improve the lives of women, men and children across small islands. SIDS DOCK's research and studies indicate that domestic renewable energy development can reduce economic vulnerability due to reliance on fossil fuel imports, and that there is significant potential to create jobs to tackle the unemployment rate of women in SIDS and improve the standard of living. The Botanical/Herbal Project is a specific women empowerment activity which is desperately needed. Women and men play different roles in household livelihoods, and therefore they experience the impacts of climate change differently. Possibly more importantly, women and men have differing abilities to respond to the threat that climate change poses to their lives and livelihoods, and it is often women who are at a disadvantage when it comes to adaptation. This is not to say that all women are particularly vulnerable - there are also many examples where women are using their knowledge and capacities to protect their families and communities from the adverse impacts of climate change.

The point is that effective, equitable adaptation requires an understanding of the dynamics of vulnerability. Gender influences these dynamics, and therefore vulnerability assessment must take gender differences into account. Further, this must lead to planning, implementation, monitoring and evaluation of adaptation that reflects the differing roles, responsibilities and power that men and women have, and that seeks to overcome gender inequality. A gender perspective does not solely address women's practical needs; it also looks at the responsibilities of men and women and the relations between them. Gender roles are created by our culture, customs, society's values and our personal values. Culture and personal views about ourselves affect how males and females

[5] https://www.cntravellerme.com/international/africa/sao-tome-and-principe-west-africa-tropical-islands

[6] https://www.voanews.com/a/african-tree-alzheimers-8aug14/2406037.html

think, speak, dress, and interact within society. Learning plays a part in shaping our gender roles. What we learn about the gender roles deeply affect our minds about our masculine and feminine identity.

The Initiative is being driven by the women in small islands, and in particular, the Pilot Countries, where rapid extinction of species is an ecological tragedy. This also has profound implications for economic and social development, given that at least 40 percent of the world's economy and 80 percent of the needs of the poor are derived from biological resources. In addition, the richer the diversity of life, the greater the opportunity for medical discoveries, economic development, and adaptive responses to such new challenges as climate change[7]. The most significant reasons for loss of biodiversity in SIDS include unsustainable practices in forestry, fisheries, and agriculture; poorly managed tourism, mining, pollution; habitat destruction due to construction of urban settlements, industries, and ports; natural events such as hurricanes and tropical cyclones; and introduction of certain non-indigenous species.

Pre-existing gender-related patterns of inequalities and vulnerabilities can block women's ability and capacity to effectively engage in eco-friendly technologies, natural resource management and early warning systems. Sources of these vulnerabilities range from lack of secure land rights (which are inter-related with access to credit and livelihoods), to gender gaps in the ownership of productive assets, higher illiteracy rates among women than men, unpredictable and less favourable access to employment and income, and inequalities in decision-making[8]. At the same time, risks associated with climate change threaten to reinforce gender inequalities and even erode progress that has been made towards gender equality and the Sustainable Development Goals (SDGs) in several SIDS. Poor women's limited access to resources, restricted rights, limited mobility and voice in community and household decision-making can make them much more vulnerable than men to the effects of climate change. This is unfair and can lead to unfortunate consequences for all, as women play a unique role in the stewardship of natural resources and support to households and communities.

With their knowledge, women can shape adaptive mechanisms in vulnerable areas. It is therefore vital that gender equality considerations, as well as men's and women's different needs, perspectives and knowledge, be taken into account in the planning of community-based adaptation activities like the Botanical/Herbal Project.

SIDS' are internationally recognized "biological hot spots," endowed with a rich biological diversity and a natural resource base that can develop business and livelihood opportunities

Islands harbour higher concentrations of endemic species than do continents, and the number and proportion of endemics rises with increasing isolation, island size and topographic variety. In creating the right environment to develop these resources into a botanical/herbal raw materials and product trade sector, SIDS DOCK's primary role will be to bring together suitable resources available in the state and elsewhere to assist with identifying development of infrastructure to woo the industrial growth of the state – SIDS DOCK is acting as the perfect catalyst between the market and the industry.

[7] Convention on Biological Diversity, https://www.cbd.int/convention/text/

[8] http://www.undp.org/content/dam/undp/library/gender/Gender%20and%20Environment/EngendCC_7.pdf

This SIDS DOCK IWON Pilot Initiative is also in response to paragraph 8 of decision VIII/30, in which the Conference of the Parties to the Convention on Biological Diversity called for the development of suggestions on how to integrate relevant climate change impacts and response activities into the programmes of work of the Convention. At the Secretariat of the Convention on Biological Diversity (SCBD), work on island biodiversity emphasizes oceanic islands and particularly Small Island Developing States because these systems are often perceived to be the most at risk. A February 2022 report by the UN's Intergovernmental Panel on Climate Change (IPCC) details how climate change has "caused widespread adverse impacts and related losses and damages to nature and people". It details how the "rise in weather and climate extremes has led to some irreversible impacts as natural and human systems are pushed beyond their ability to adapt". For the first time, the IPCC notes that climate change is already contributing to humanitarian crises.[9]

In 2018, the IPCC released a report on, *"Global Warming of 1.5 °C"*[10], a special report on the impacts of global warming of 1.5 degrees Celsius above pre-industrial levels and related global greenhouse gas emission pathways. The report is analogous to a confirmed death knell for SIDS – the report projected that by 2030, small islands' ecosystems will begin to die. Global warming is likely to reach 1.5°C between 2030 and 2052, if it continues to increase at the current rate.

Ecosystems, including marine ecosystems, provide services to people, which are life-sustaining and contribute to human health and well-being. The Millennium Ecosystem Assessment (MEA)[11] (warns that climate change is likely to become the dominant direct driver of biodiversity loss by the end of the century. In fact, climate change is already having an impact on biodiversity either through shifting habitat, changing rainfall regimes, the development of new physical traits or species die-offs and extinctions. Adaptation activities can help species and ecosystems cope with changing climatic conditions. Ranging from the construction of protective infrastructure to the development of corridors or the planting of resistant tree or crop varieties, adaptation activities can have either a positive, negative or neutral impact on biodiversity.

Several literature reviews demonstrate that while renewable energy pathways are associated (directly or indirectly) with each of the five MEA drivers of ecosystem change and biodiversity loss[12], the actual impact mechanisms depend significantly between the different pathways, specific technologies and the environmental contexts within which they operate. In the case of this project, which due to limited land capacity, will see the introduction and use of "special climate resilient greenhouses", the deployment of solar energy and, to a lower degree, ocean energy, may provide relatively large power supplies with minimal impacts on biodiversity. The project will subscribe to an ecosystem services approach that supports assessment and decision-making across land and seascapes, i.e., to consider benefits from ecosystems in natural, urban, rural, agricultural, coastal and marine environments in an integrated way, and ultimately to understand the potential and nature of tradeoffs among services, given different management actions.

[9] https://www.ipcc.ch/report/sixth-assessment-report-cycle/
[10] https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf
[11] https://www.millenniumassessment.org/documents/document.356.aspx.pdf
[12] Habitat change, pollution, climate change, overexploitation and invasive alien species.

In terms of biodiversity, the issue is clearer: islands boast a truly unique assemblage of life. Species become island dwellers either by drifting on islands, like castaways, as they break off from larger landmasses (in the case of continental islands) or by dispersing across the ocean to islands newly emerged from the ocean floor (oceanic islands). Henceforth, they are confined to small, isolated areas located some distance from other large landmasses. Over time, this isolation exerts unique evolutionary forces that result in the development of a distinct genetic reservoir and the emergence of highly specialized species with entirely new characteristics and the occurrence of unusual adaptations, such as gigantism, dwarfism, flightlessness, and loss of dispersability and defense mechanisms. Genetic diversity and population sizes tend to be limited, and species often become concentrated in small, confined areas[13].

Sao Tome and Principe Has High Potential in terms of Human Resource, Raw Materials, Existing Industries, Knowledge and Research and Information

There is a strong case to be made for the need for a Pilot Global Sustainable Botanical/Herbal Supplier Market from SIDS DOCK Member States, and to initiate the first pilot in São Tomé and Príncipe. COVID-19 has unsettled the fragile balance in São Tomé and Príncipe (STP), putting lives and livelihoods at risk.

São Tomé and Príncipe (STP) is highly vulnerable to exogenous shocks. An archipelago divided into six districts and the Autonomous Region of Príncipe (Região Autónoma do Príncipe), the twin islands are located in the Gulf of Guinea, 350 km off the west coast of Africa. With a surface area of 1,001 sq. km, this Portuguese-speaking country has a population of over 215,000 people, and a Gross National Income (GNI) per capita of USD 2,168 and a 0.625 Human Development Index in 2019 (ranked 135 out of 189 countries). In 2021, a highly contested two-round presidential elections were held and the candidate supported by the opposition won. The election outcomes were peacefully accepted by other candidates, who committed to work together with the new president, showcasing the country's transition to democracy[14].

The country's gross domestic product (GDP) grew from an estimated USD 197 million in 2010 to USD 473 million 2020. In 2020, STP's GDP grew by 3.1 percent, despite disruptions caused by the Covid-19 pandemic. This growth has been supported in part by higher public expenditures allocated to Covid-19 relief and financed largely by international aid, thus increasing the public debt to 104.9 percent of the GDP (10 percentage points in one year).

São Tomé and Príncipe's youthful age structure – more than 60 percent of the population is under the age of 25 – and high fertility rate ensure future population growth. Although STP has a net negative international migration rate, emigration is not a sufficient safety valve to reduce already high levels of unemployment and poverty. While literacy and primary school attendance have improved in recent years, STP still struggles to improve its educational quality and to increase its secondary school completion rate. The World Bank notes that STP remains a country reliant on low-productivity activities in the primary sector, particularly in agriculture and fisheries, and in small informal commerce.

[13] https://www.cbd.int/island/intro.shtml

[14] https://www.worldbank.org/en/country/saotome/overview#1

In 2020, the unemployment rate increased to 20 percent (from 13 percent in 2019), where low-income and marginalised individuals and households suffered in higher proportions the impact from Covid-19, as they have no financial savings to cope with rising prices for consumer goods. The country's poverty rates are higher compared to similar countries - with about one-quarter of the population living on less than USD 1.90 per day before the Covid-19 pandemic, 80 percent higher than the average rate in lower middle-income countries (LMICs). Unemployment and low labour force participation, especially among women and youth, further contributes to a high risk of poverty.

The country's economy revolves mostly around agriculture and fishing, sectors which are highly vulnerable to climate change. STP is considered very vulnerable to climate change, with a low capacity to absorb and adapt to ecosystem disturbances. Fisheries seem to be more greatly affected due to the use of traditional practices that are often unable to cope with the recurrence of storms and floods and extensive coastal erosion. The fishing industry is considered very important in São Tomé and Príncipe, as artisanal fisheries are estimated to employ 20 percent of the nation's workforce and represent one of the main employment opportunities in rural areas. Almost a quarter of the workforce is employed in artisanal fisheries with potential fish production estimated at around 8,500 tons per year in coastal pelagic species and around 3,500 tons per year in demersal species. With regard to industrial fishing, STP is limited to issuing fishing licenses within the framework of a protocol signed with the European Union. Yet fish resources have deteriorated due to lack of control on activities being carried out by foreign companies. In addition, studies on the future climate of STP concluded that the expected temperature increase of 2.25 degrees Celsius on the 2040-2060 horizon will further deplete marine resources in the region. Satellite imagery confirms that, over the 1958-2010 period, 20 meters of coastline were eroded mainly due to sea-level rise, turbulent maritime activity and to mismanaged exploitation of coastal biodiversity[15].

Like the majority of SIDS, women represent 50 percent of the STP population. The population age, 25-29 years account for 7 percent of the population and is declining, meanwhile, the population age, 20-24 years, account for 8 percent of the population and rising. Women 65 years and over account for just under 4 percent of the population[16]. Sixty-five (65) percent of the STP population is urban and it is projected to reach 70 percent in 2030. Due to Covid-19, 8,000 new households have fallen or are falling into poverty in STP, in addition to 24,000 households that are already below the poverty line. Recent World Bank estimates show that about one-third of the population lives on less than the international poverty line of USD1.90 per day, and over two-thirds of the population is poor, using the World Bank higher poverty line of USD 3.20 per day. Urban areas and southern districts such as Caué and Lembá have higher levels of poverty incidence[17].

Biodiversity Protection

SIDS In Numbers: Biodiversity and Oceans[18] outlines the scope of biodiversity and its immense value across the three geographical regions that form the SIDS group. Biodiversity is an important

[15] https://www.cbd.int/countries/profile/?country=st

[16] https://data.worldbank.org/indicator/SP.POP.TOTL.FE.IN?locations=ST

[17] https://www.worldbank.org/en/news/press-release/2021/03/03/world-bank-scales-up-the-social-protection-and-skills-development-project-in-sao-tome-and-principe-with-8-million

[18] http://unohrlls.org/custom-content/uploads/2017/09/SIDS_in_Numbers_062817_FINAL_LRes.pdf

issue for the livelihood of many SIDS, as industries like tourism and fisheries can constitute over half of the GDP of small island economies. However, the importance of these natural resources extends beyond the economy; biodiversity holds aesthetic and spiritual value for many island communities. For centuries, these communities have drawn benefits from biodiversity in the form of food supply, clean water, reduced beach erosion, soil and sand formation, and protection from storm surges. SIDS are known for species diversity and endemism. However, due to the small size, isolation and fragility of island ecosystems, their biological diversity is among the most threatened in the world. Species extinction is a natural part of the evolutionary process. However, due to human activities, species and ecosystems are more threatened today than ever before in recorded history. The losses are taking place in forests (where 50 - 90 percent of identified species live), rivers and lakes, deserts, mountains and islands. The plant life of SIDS is highly valuable, both locally and internationally.

Biodiversity today is facing grave threats. Species are disappearing at a rate that far exceeds any seen for millions of years: 1 million species are now threatened with extinction[19]. The impacts are felt not only in remote ecosystems but also in the daily lives of many people who are suffering food insecurity, struggling to find clean water, and losing their lands and livelihoods as a result of this decimation. These trends are already threatening the economic stability of nations and regions. Protecting biodiversity is a matter of survival. If the world is to meet the climate change, biodiversity and land degradation targets, it needs to close a USD 4.1 trillion financing gap in nature by 2050. The current investments in Nature-based solutions amount to USD 133 billion – most of which comes from public sources[20].

São Tomé and Príncipe supports a very high level of endemism, particularly in terms of mammals, birds, reptiles, amphibians, butterflies, mollusks and flora, in relation to its small land area. The international scientific community has classified the tropical rainforest of Sao Tome and Principe second among Africa's 75 forests, in terms of importance for bird conservation (57 percent of the country's 49 bird species are endemic). At present, three bird species are threatened with extinction, namely, the Woodcock (São Tomé ibis), the Shrike São Tomé (Lanius newtoni) and the Anjolô (Neospiza concolor). Ecosystems are also very diverse, particularly with respect to forest formations, ranging from savannah near the coast to cloud forests at mountain peaks. Primary and secondary forests are notably of high quality and relatively well conserved[21].

The country is heavily reliant on agriculture, with cocoa as the main export commodity providing half of export earnings. Both cocoa and coffee are produced in shaded forests. Noble tree species, such as Milicia excels (amoreira), Ficus sidifolia (Figo porco) and Albicia falcataria (Acacia) are currently threatened. This situation was produced inadvertently through a land reform initiative begun in the late 1990s. To reduce the level of poverty, national authorities decided at this time to distribute parcels of land from large agricultural enterprises to small-scale farmers. This however had the opposite intended effect and worsened the state of forest ecosystems, as these farmers did not have the financial means to develop agriculture and as a result began to exploit rare tree species of higher commercial value.

[19] https://ipbes.net/global-assessment
[20] https://www.unep.org/resources/state-finance-nature
[21] https://www.cbd.int/countries/profile/?country=st

Rising above the Challenges – There Is Tremendous Potential and Demand

The agricultural sector in São Tomé and Príncipe is small. However, the economy is mostly based on agriculture, with cocoa production accounting for about 57 percent of the total exports in 2020. The country also exports palm oil, chocolate, pepper, coconut oil, and coffee. Two companies are exporting chocolate to international markets, including the United States. Tropical flowers are also produced in country and are currently being sold to Europe, although in very small quantities. The airport lacks adequate cold storage facilities to maximize these exports[22].

Agricultural production has been declining due to market size and profitability challenges. However, there is great potential in the agricultural products market because the land is fertile and the weather conducive to the harvesting of tropical products such as fruits, vegetables, flowers, peppers, and trees. Most of STP's farming opportunities are untapped. There is no precedent for mass production, but gourmet and high-market value produce thrive in STP. The emerging cooperatives for organic cocoa have the potential to expand production, to increase the incomes of a significant number of Sao Tomean farmers, and to improve the country's economy. Products such as organic coffee and cocoa command a premium because of their high quality. In addition, several local products such as jackfruit, guava, pineapple, bananas, breadfruit, cocoyam, cassava can be processed locally to serve a niche market.

In a Presentation to the SIDS DOCK Assembly in September 2018, SIDS DOCK and its Partners noted that revenue from the global botanical supplements market was estimated to be valued at more than USD 40 Billion in the year 2017. By 2025, the global botanical supplements market is expected to reach a market valuation of more than USD 65 Billion, registering a Compound Annual Growth Rate (CAGR) of 6.9 percent over the forecast period (2017–2025)[23]. The World Health Organisation (WHO) estimates that up to 80 percent of the world's population relies on medicinal plants for their health. The demand for such plants is rising in the industrialized world, where people are resorting to natural health remedies more and more. According to the WHO, the global market for medicinal herbs and herbal products is estimated to touch USD 5 trillion by 2050. This indicates the tremendous potential and demand in this sector.

The results from an annual survey on dietary supplements reveals an all-time high for supplement usage among U.S. adults, with 76 percent reporting they consume dietary supplements, up five percentage points from 2016 results. The survey, 2017 Council for Responsible Nutrition (CRN) Consumer Survey on Dietary Supplements, was commissioned by the CRN and conducted by Ipsos Public Affairs. The survey also found that nearly nine in ten (87 percent) U.S. adults have confidence in the safety, quality and effectiveness of dietary supplements overall. Additionally, 76 percent of U.S. adults perceive the dietary supplement industry as trustworthy; up three percentage points from 2016. Likewise, supplement use by young adults 18-34 (i.e., "millennials") has also contributed equally to the increase in use of herbal and botanical supplements. Usage is driven by the number one concern "health and wellness", followed by "strengthening" and thirdly, "to fill

[22]

[23] Dietary Supplements Market Size, Share & Trend Analysis Report By Ingredient (Botanicals, Vitamins, Minerals, Amino Acids, Enzymes), By Product, By Application, By End-use, And Segment Forecasts, 2013 – 2024, *London, March 29, 2018 /PRNewswire*

nutrient gaps". Most market researchers today collectively agree that this is the "right time" for botanical and herbal supplements and ingredients.

The Botanical/Herbal Pilot Project supports women in agriculture, who play important roles as, amongst other things, food producers, income earners, nurturers, and managers of natural resources, although their efficiency in executing these roles is conditional on the degree to which they are entitled to factors of production. Women are the backbone of the rural economy in SIDS, and have one thing in common across regions: they have less access than men to productive resources and opportunities. The gender gap is found for many assets, inputs and services – land, livestock, labour, education, extension and financial services, and technology – and it imposes costs on the agriculture sector, the broader economy and society as well as on women themselves. Closing the gender gap in agriculture would generate significant gains for the agriculture sector and for society. If women had the same access to productive resources as men, they could increase yields on their farms by 20 to 30 percent. This could raise total agricultural output by 2.5 to 4 percent.

Women perceive global warming as a more dangerous threat than men as they are more vulnerable to the impacts - globally, natural disasters such as droughts, floods and storms kill more women than men, and tend to kill women at a younger age[24]. Women are not only victims of climate change, but also effective agents of change in relation to both mitigation and adaptation. Women have a strong body of knowledge and expertise that can be used in climate change mitigation, disaster reduction and adaptation strategies. Women's responsibilities in households and communities as stewards of natural resources has positioned them well for livelihood strategies adapted to changing environmental realities, and the Botanical/Herbal Pilot Project is intended to demonstrate *Women in SIDS as Change Agents in Climate Change Adaptation and Mitigation.*

Promoting Diversification, Innovation and Sector Synergy

São Tomé and Príncipe is heavily dependent on food imports, food availability is unpredictable: there is no deep-sea port, and, in bad weather, landing is difficult on the country's single short airstrip. In addition, no cereals are cultivated on the island. The country is prone to natural hazards such as floods and landslides, which negatively affect crop development and road access as well as destroy houses and household assets. Now, with increasing frequency of financial, energy and food crises, the competition is or can become very tough for SIDS and requires innovative and efficient practices to remain relevant in the globalized economy. SIDS are therefore increasingly aiming to become less reliant on a single or limited economic sector by diversifying and becoming more resilient to external shocks by reducing dependency on high foreign exchange expenditures such as imported energy.

SIDS are typically small enough that they can be considered micro-economies, and are severely limited by their size in the range of activities that their economies can support. SIDS rely heavily on environmental services and trade to drive growth, hence the volatility of their growth. Promoting diversification and innovation in SIDS economies is relevant as the majority of SIDS depend heavily on the tourism sector, which accounts for 25 percent of GDP and upwards of 70 percent of foreign exchange earnings used to purchase petroleum fuels.

[24] https://www.who.int/globalchange/GenderClimateChangeHealthfinal.pdf

Climate change is projected to have a devastating impact on biodiversity, coastal environments and freshwater resources in SIDS, substantially impairing the tourism sector's ability to generate foreign exchange. Promoting diversification in SIDS economies into new sustainable energy-related industries, as well as encouraging greater education and understating of the critical role of the energy sector in helping to address issues of waste management, freshwater resources, employment generation, agricultural diversification, biodiversity conservation, sustainable land use, and high energy inputs into tourism, will help to offset the predicted negative impacts on tourism and other economic sectors.

The Pilot Herbal/Botanical Initiative in SIDS is an innovative social enterprise with the mission to achieve sustainable, scalable impact at the nexus of women's empowerment, energy poverty and climate change. It combines the deployment of SIDS-Appropriate Technologies to decrease energy poverty and increase economic opportunity to the communities where the planned Botanical/Herbal facilities (powered by renewable energy and energy efficiency and conservation technologies - RE&EEC) will be established. Micro and small enterprise growth in SIDS suffer from perennial undercapitalization. Given that energy is a fundamental requirement for supporting development in all economies, the challenge is to sustainably provide it without driving further loss of biodiversity.

The Pilot Initiative also addresses the loss of preferential market prices in key agricultural markets for SIDS, namely, bananas and sugar cane, and in the case of STP, cocoa, and the devastating impact it had on women and job losses from 2008 and onwards. Today, farming in relatively all small islands is small-scale and there has been limited investment in commercial agriculture and improved agricultural technology. Agriculture has not been competitive against imports and has difficulty competing in export markets. As a result, there has been a substantial decrease in agriculture's contribution to real GDP. There is an urgent need to build capacity of Island Women traders/hucksters/higglers to effectively adjust to a new regime for the import and export of agricultural produce occasioned by the post-2020 European Union (EU)-Africa, Caribbean, and Pacific (APC) Partnership Agreement. The new partnership is built on:

- UN 2030 Agenda which sets out the Sustainable Development Goals (SDGs);
- Global Strategy for the EU's Foreign and Security Policy, and;
- Coherence with the European Consensus on Development.

The Pilot Initiative also provides women entrepreneurs with training that will allow them to increase their household income; multiple research notes that the income generated by these entrepreneurs is reinvested 90 percent back into their families, thus providing benefits for the next generation. Promoting diversification, innovation, and sector synergy through the establishment of the Pilot Initiative can lead to:

- Creation of a new production and processing industry comprising cutting, transporting, drying, processing, packaging and shipping, and value-added products.
- Significantly more income will be concentrated among small farmers. Herb/botanical production would be more economically viable than traditional crops. It would take much less land to give a farmer 3 or 4 times more income than they now earn. For example, in

- Jamaica, it was estimated that a farmer with an economic size lot[25] will make in excess of USD 8,000 per annum, depending on the herb/botanical being grown.
- There would also be scope for secondary product development. It would attract a new generation in farming and promote sustainable land use practices. The high income will be attractive to the young, where unemployment is at the highest, thereby lowering the average age of a typical farmer in SIDS, from 50+ years to under 30 years.

The Botanical/Herbal Project (2022-2025) is fully in alignment with the Zuntámon Lusophone Compact Initiative – Phase I Project (2021-2025), being implemented in São Tomé and Príncipe and financed with a grant of USD 10.7 million to Support SMEs in agriculture and tourism from the African Development Bank (AfDB) and implemented by the Banque Nationale São Tomé Et Príncipe. The project aims to improve the business environment, capacity, and access to markets and finance for SMEs, and therefore their contribution to the economy and job creation, and is structured around four components: 1) Fostering an enabling environment for SMEs, investors, and financial institutions; 2) Strengthening SMEs and SME support partners and facilitating investments to unlock value-chains; 3) Establishing facilities and financing to provide quality and affordable access to finance for SMEs; and 4) Project management. The ultimate beneficiaries are SMEs, especially women and youth-led businesses (30 percent of target, respectively). Other institutions include actors mandated to support investors and SMEs, such as the Trade and Investment Promotion Agency (APCI), Business Membership Organisations (BMOs)/ Enterprise Support Organisations (ESOs), financial institutions and the Central Bank of São Tomé and Príncipe (BCSTP).

The project will build the capacity of critical institutions of the Government of São Tomé and Príncipe while improving the business environment for private sector development. It will promote and incentivise the formalization of the informal economy to create more and better jobs, especially for women and youth who dominate the informal sector. The country has high potential in agriculture, services, including tourism and the blue economy, sectors that represent more than 70 percent of economic activity. The Zuntámon Project will focus its interventions on commodities and services where women and youth are economically active, such as tourism, and that have growth potential through export, namely: cocoa, coconut, horticulture products, and fish. The focus on these commodities and services is in line with the Government of STP's COVID-19 post-pandemic economic recovery strategies, which place great emphasis on supporting affected businesses and bolstering the recovery in key industries such as agriculture, fisheries, tourism, and hospitality. The Zuntámon Initiative is therefore a solution that seeks to unblock certain country specific bottlenecks to private sector-led growth, while contributing towards a more resilient economy.

5.0 PRIMARY PROJECT COMPONENTS CRITICAL TO SUCCESS AND SUSTAINABILITY

Several SIDS do not currently have specific "Botanical/Herbal Policies," but some instead rely on a menu of sections of Food and Drug Acts, Pharmacy Act & Regulations, Dangerous Drugs Act & Regulations, and Relevant International Conventions, to which the countries are signatory, i.e.,

[25] At least ¼ acre/0.10 hectares or approximately 10,890 sq. ft.

control of storage, sale, use, movement, import/export; others rely on inter-governmental policy led by their Ministry of Health and/or Agriculture which are not likely adequate enough to meet EU, UK or US standards for import of raw botanical/herbal ingredients and products. Jamaica is one of the few SIDS that have recently developed standards and regulations (Regulating the Herbal Industry in Jamaica, Standards & Regulation, Ministry of Health November 11, 2014). Table 2 shows the thought-approach taken by the Jamaican Government in 2004, in establishing the commercialization of the botanical/herbal industry.

Table 2: Government's Response Towards the Commercialisation of a Viable Herbal Market in Jamaica

DEVELOPMENT STRATEGY	**MARKET RESEARCH**	**SUPPORT POLICY**
▪ Identify a range of herbs / plants suitable for growing in pilot countries ▪ Review research information on agronomy of herbs ▪ Economics	▪ Supermarkets ▪ Medicinal ▪ Health Foods ▪ Organic sector	▪ National Industrial Policy ▪ National Biodiversity Policy ▪ Science & Technology Policy ▪ World Market
FEASIBILITY STUDY	**PROCESSING**	**BUSINESS PLAN**
▪ Best market ▪ Prices ▪ Levels of profit ▪ Risk ▪ Development within the markets	▪ Resources/machinery already available in pilot countries ▪ Operating costs ▪ Added value products ▪ Scale of processing	▪ Detailed costs ▪ Processing potential ▪ Financial balance sheet ▪ Business structure

With regards to the review of the current market and the approach necessary in this competitive era, initial primary and critical strategic objectives have been identified to achieve the project goals. Some will have incorporated similar strategies contained in the above matrix. However, within these components there will result other detailed segments or subcomponents such as the need for robust quality management systems (QMS) that are lacking in many areas of the industry that will definitively identify specific and individualized tasks relative to ensuring the sustainability of the supply chain market and the required strict conformity to SIDS and overseas industry compliance.

5.1 Regulatory Framework

It is necessary to identify what intergovernmental regulations and/or requirements may already exist within each country and the arm of government or Responsible Person(s). This is crucial to the securing of complete high-level government "buy-in", commitment and support of the

development of a botanical/herbal industry for export of raw material ingredients and products to export markets. Key activities include:

a. Once identified, meet with these relevant government heads or key decision makers.
b. Work with SIDS DOCK Partner, Rivkin Radler Ullman, Shapiro & Ullman, of Counsel (USA FDA attorneys) toward the development of a national and regional regulatory infrastructure (e.g., quality and suitable product claims backed by appropriate substantiation) to support the development of a sustainable botanical/herbal supplier market for Sao Tome and Principe.
c. Gather STP stakeholders in appropriate national meetings to provide education and sensitization of these regulatory requirements and the necessary resources.
d. The creation of Workshops and Consultations to identify and plan how to navigate the varied biodiversity of STP.

Developing the necessary protection of any proprietary business model platforms and ideas resulting amongst the SIDS DOCK IWON Pilot Countries involves:

a. The protection of SIDS intellectual property interest and creation of general protocols and policies to be followed to protect any intellectual property created as part of the Botanical/Herbal Initiative;
b. Advise and assist in the development of general protocols and policies addressing the risk of cyber or other data breach and appropriate legal response should a cyber security incident occur.

5.2 Regulatory and Quality, Claims, Cyber and Intellectual Property

Review of currently existing standards or regulations in any of the SIDS will be necessary prior to establishing and then developing ingredient and product compliance and a sustainable quality framework. Introduction, education and implementation of appropriate current Good Manufacturing Practices (cGMP), Food Safety Modernization Act (FSMA) rules inclusive of Food Safety Plans (FSP) that have robust Hazard Analysis and Critical Control Points (HACCP) and Hazard Analysis and Risk-Based Preventive Controls (HARPC) programmes, relative to the United States of America (USA) Food and Drug (FDA) regulations; also requirements applicable to Canada's Natural Health Products Regulations, and those of the European Union, are key foundational industry capacity building programmes to facilitate entry into export markets.

The subsequent need for the development and establishment of these programmes within the SIDS, is crucial to the understanding and execution of the concept of the 'farm to fork' process. This process is the basis of the transformation of a sustainable herbal/botanical ingredient supply-chain. Key training programmes specific to this process, in conjunction with the appropriate compliance and specific facility third-party certifications (e.g., GMP Certification), would consequently make the SIDS market attractive to stakeholders and significantly enhance the competitiveness of the SIDS herbal/botanical supplier industry.

Rivkin Radler will play a key role in the development of the regulatory framework to ensure there are no legal gaps, and that FDA and other regulatory Control Bodies perspective and expectations

will be met. They are also responsible for providing guidance and counseling with FDA's New Dietary Ingredient Notification (NDI) process; and with achieving status as Generally Recognized as Safe (GRAS) as food ingredients additives; legal review of any structure-function claims proposed for ingredients and/or products to ensure no possibility of FDA legal action, FTC (Federal Trade Commission) legal action or consumer Class Action Lawsuits (CALS).

Cyber Security awareness and education will also be covered by Rivkin Radler as the FDA requires that quality and food systems data integrity be highly protected; and any new formulas, ingredient processing, and methods development must be carefully guarded. Social media websites and other digital and e-commerce informational platforms also require strict legal handling and guidance. This also becomes key when the focus turns to exporting products to the European market (i.e., meeting EU General Data Protection Regulation compliance (GDPR)[26].

5.4 Capacity Building

In some SIDS the selection of a department to execute specific environmental responsibilities is more a consequence of tradition than institutional capacity. Often, legislative and policy frameworks have gaps and overlaps. Scarcity of human resources is also a capacity-limiting factor in most SIDS. However, most UNFCCC Conference of Parties (COP) country reports, and those of analysts, suggest that financial constraints are the single most limiting factor in environmental management in SIDS. Even where financial allocations are made in the budget, its lack of timely availability too often adversely impacts on the ability to conduct time-sensitive environmental programmes. Further, infrastructure deficits are frequently symptoms of poor financing. Projects requiring substantial investments, such as air and maritime transport, adaptation to sea level rise, recycling and sound waste disposal, tourism infrastructure, road and telecommunication infrastructure lie beyond the resources of most SIDS.

These capacity challenges - lack of adequate funding, inappropriate scale and scope of initiatives and policy frameworks, scarcity of technical expertise, and poor infrastructure - have forced regional states to turn to regional institutions for help in specialized assistance. Financial support for continued educational and training programmes; investing in industry trade association memberships as a direct information and educational resource (e.g., American Botanical Council [ABC]; American Herbal Products Association [APHA]); also, Feasibility Studies can guide on how to capture market share, as well as:

a. Access to internal expertise to assist with the implementation processes making the venture more feasibly attainable.
b. Qualified individual(s) to Educate, Equip and Empower (3E's) Island Women.
c. Qualified individuals who can ensure readiness and certification of facilities.
d. Qualified individual(s) to navigate the various FDA, CBP (Customs Border Patrol) and US Department of Agriculture (USDA) phytosanitary rules.

[26] In May 2018, organisations that collect personal data of European Union (EU) residents must become compliant with the General Data Protection Regulation (GDPR). The GDPR is a new law that aims to strengthen people's rights to privacy and protect their personal data. GDPR places the burden of ensuring compliance on your entire organisation, especially functions like collecting personal data.

e. Qualified individual(s) knowledgeable in how to protect the biodiversity from the *Biopirates.*
f. Information, Communication and Technology (ICT) and Administrative Support.

5.5 Institutional Strengthening

Overall, SIDS continue to be deficient in terms of comprehensive legislative and policy frameworks, financial resources, national and regional institutions, and qualified personnel that are needed to develop and implement sustainable development policies and projects, in the face of the environmental challenges. However, the development and adequate funding of regional SIDS-based institutions, especially SIDS DOCK, which is focused on sustainable energy and climate resilience capacity, offers a potentially cost-effective initial capacity development path for the Botanical/Herbal Initiative.

Implementing a sustainable Herbal/Botanical Project will require that countries have the requisite capacity to process the entire value chain. Strengthening capacity from "Farm to Fork" is a major objective of the project. The concept of "Farm to Fork" relates to the entire processing of an herbal/botanical ingredient from its planting and farming, to harvesting, extraction, preparation, processing, testing, and packaging, to its shipment to the EU, UK, USA, and other foreign markets, and this entails:

a. Financing of the necessary training programmes, equipment, technical, scientific and regulatory transfer of knowledge and information; and need for appropriately adequate equipment.
b. Support SIDS DOCK becoming the leading strategic Institution on sustainable energy and climate resilience in the Pacific, Caribbean, and Atlantic and Indian Ocean regions.
c. Build the sustainability of the IWON to support the herbal/botanical entrepreneurial activities of women in small islands and the poor that lead to sustainable livelihoods and a healthy environment.
d. Build the IWON's networking capacity to accomplish its mission – the role of the IWON.

5.6 Science and Technology Transfer

SIDS-appropriate sustainable energy technologies are technologies that enable SIDS to categorize energy technologies and prioritize energy technologies that are: (1) technically feasible, (2) consistent with sustainable development objectives and, (3) that are better tailored to the conditions and needs in island communities[27]. Technology innovation and in particular technology breakthroughs (e.g., the Internet) have over time, led to drastic restructuring of economies and are critical driving forces for development and integration. Due to, among other things, SIDS' current dependence on increasingly expensive global fossil fuels, climate change impacts, financial, food, and other major crises, have led to the economic resilience of SIDS being drastically impacted.

One key ingredient to address this is by using renewable energy technologies (RETs) to produce baseload and peak electric power from sources other than petroleum and the efficient use of power

[27] *SIDS-Appropriate Sustainable Energy Technology Assessment*, SIDS DOCK Secretariat (2012)

through energy efficient end-use technologies (EETs) in the production of goods and services to transition towards low carbon economies. RETs have increasingly become competitive in SIDS due to the rising costs of diesel-fueled power generation and the declining production costs of RETs. SIDS acknowledge and want to make maximum use of the available indigenous natural resources to develop a sustainable energy sector, but are confronted with multiple barriers to the access and deployment of sustainable energy technologies to secure reliable, affordable and clean energy.

SIDS DOCK member states acknowledge the need to develop sustainable energy to drive and balance social and economic development while protecting the environment as the way forward to mitigate the risks and impacts of climate change and achieving sustainable development. SIDS as a group also recognize that it is the smallest contributor to greenhouse gas emission in the global context leading to anthropogenic induced climate change. Nevertheless, SIDS see the development and use of renewable sources of energy and the dissemination of sound and efficient energy technologies to achieve low carbon economic development as having a central role not only in mitigating the adverse impacts of climate change, but mainly to offset the dependency on costly imported fossil fuels (impacting the national budgets) and developing new industries and markets around green energy technologies. These will help in making the island economies more competitive and resilient to external shocks.

This component involves multiple detailed sub-components that will require specific science subject and industry experts to educate and equip the relevant SIDS individuals (e.g., scientists and engineers) in this field:

a. Qualified Science experts/consultants knowledgeable in the herbal/botanicals from the SIDS, EU, UK, USA, and elsewhere.

b. Scientists and Technical Advisors in the following areas:
    1. Method development, testing and validation;
    2. Formulation;
    3. Research and Toxicology;
    4. Clinical research;
    5. Farming Engineers and Auditors;
    6. Equipment Engineers and Metrology Technicians;
    7. Technology development and transfer;
    8. FDA and USDA Phyto-requirements and regulations and other foreign market requirements;
    9. Market Research.

5.7 Public Education and Awareness

The objective of the *SIDS DOCK PEP* (Public Education Programme) is to promote, publicize, and facilitate education of the benefits of a low carbon economy in SIDS - *25-50-25 by 2033*, for the purpose of encouraging the public to reduce the use of fossil fuels, increase the use of alternative energy sources and increase energy efficiency and conservation. A public education and awareness effort will be required to help educate key public and private sector officials and

the general public about transforming the current SIDS economy to a low carbon economy. Educating the general public about the benefits of an herbal/botanical project is intended to help them make wise consumer choices and provide the political environment to bring about needed policies and key interventions on the part of government, and this is critical to the success of the effort as a whole.

There is also need for education of the general populous of the SIDS members as well as the USA, Canadian and EU ingredient and supplement manufacturer markets.

a. Regional consultations, training programmes and workshops led by the IWON Partners.
b. Collaboration with certain Trade Associations and other industry leaders (e.g., INFORMA-SupplySide trade shows, Natural Products Association, American Herbal Products Association (AHPA), etc.)
c. Social Media and Webinar platforms.
d. White Papers and Trade Articles.

6.0 CATEGORIES OF A BOTANICAL / HERBAL SUPPLY CHAIN INDUSTRY IN PILOT COUNTRIES

Table 3, outlines in brief, the segments of markets to which these herbs and botanicals can be marketed, their use in certain products, and the relevant stakeholders likely to show interest in such products and materials.

6.1 Therapeutic / Medicinal

Herbal products in the United States of America (USA) fall under the category of Dietary Supplements, which are a sub-category of foods, and are regulated by the Food and Drug Administration (FDA) and manufactured under strict regulations (Code of Federal regulations (CFR) 21 Part 111 *Current Good Manufacturing Practice in Manufacturing, Packaging, Labeling, or Holding Operations for Dietary Supplements*). To market any raw material or end-product as "therapeutic" and/or "medicinal", will therefore require scientifically valid clinical studies showing any claims proven as such. Because of the nature of USA law and regulations, herbs that may demonstrate pharmacological activity will likely need to be registered as herbal medicines following clinical studies. Despite established lengthy traditional and local medicinal uses, these types of herbal/botanical ingredients will still require clinical validation of use before they can be marketed, and in products where appropriate label claims can be made (as are substantiated). The credibility of these studies, however, will likely attract more stakeholders in the industries listed.

6.2 Foods

Foods are also regulated in Canada by the Canadian Food Inspection Agency (CFIA) and in the United States by the FDA (Code of Federal regulations (CFR) 21 Part 117) *Current Good Manufacturing Practice, Hazard Analysis, and Risk-Based Preventive Controls for Human Food*. Any herbal/botanical ingredient would have to comply with the requirements necessary for entry into the USA (i.e., under FSMA and the Foreign Supplier Verification Program (FSVP)), as well as for use in any of the food categories listed.

6.3 Cosmetics

Herbal/botanical ingredients have been used in cosmetics for centuries. They have been primarily used as colorants in creams and lotions, for skin soothing formulations, protection from pests, or used in oils as fragrances. As such, the interest in use of herbals/botanicals in cosmetic products remains very high. Though the barriers to entry in this market are fairly low, the USA developed some of the earliest rules for identifying botanical ingredients for cosmetic labeling[28].

6.4 Natural Pesticides

Commercial pesticides have always posed a concern for the food and agricultural markets due to its hazardous potential to humans and animals. However, the introduction of "natural" pesticides originating from herbal and botanical plants or plant sources have been introduced and are in high demand especially for the organic food and supplement markets. Inclusive of this demand are the requirements relative to certain import/export regulations mandated by the USA and applicable regulations of the FDA, USDA (United States Department of Agriculture), Environmental Protection Agency (EPA) that would need to be incorporated in the preparation of the herbal/botanical ingredients and products for each respective segment of the market.

Table 3: Market Segments for Use of Herbal / Botanical Ingredients

MARKET SEGMENT	PRODUCTS	STAKEHOLDERS
THERAPEUTIC MEDICINAL **Label claims validated**	▪ **Supplements** ▪ **Nutraceuticals** ▪ **Functional Foods**	▪ **Aroma Therapists** ▪ **Researchers** ▪ **Scientists** ▪ **Food & Dietary Supplement Industries**
FOODS	▪ **Spices** ▪ **Dietary Supplements** ▪ **Herbal Drinks** ▪ **Herbal Roots Tonic** ▪ **Teas** ▪ **Powdered Herbs** ▪ **Flavours**	▪ **Packers** ▪ **Manufacturers** ▪ **Researchers** ▪ **Herbalists** ▪ **Naturopathic** ▪ **Food & Dietary Supplement Industries**
COSMETICS	▪ **Essential Oils** ▪ **Deodorant** ▪ **Body Products** ▪ **Fragrances** ▪ **Colorants**	▪ **Manufacturers** ▪ **Distributors**

[28] http://www.cosmeticsinfo.org/ingredient/botanical-ingredients-0

NATURAL PESTICIDES	▪ **Natural Repellants** ▪ **Incense**	▪ **Herbalists** ▪ **Organic Farmers** ▪ **Researchers**

7.0 DESCRIPTION OF PROPOSED ACTIVITIES AND INDICATORS

Table 4: Description of Proposed Activities and Indicators (2022-2025)

	Strategic Objectives	**Activities**	**Indicators**
REGULATORY FRAMEWORK			
1.	• Develop a National Policy for Herbal and Botanical Therapeutic products. • Identifying what intergovernmental regulations and/or requirements may already exist within each country and the arm of government or Responsible Person(s)	(a) Establishment of Project Planning Committee (b) Collaborate with Pilot Member States from the Caribbean, Pacific, Atlantic and Indian Ocean Regions to identify and develop products, people and policy necessary to the sustainability of this private-public program. (c) Securing of complete high-level government "buy-in", commitment and support of the development of a Botanical / Herbal industry for export of raw material ingredients and products to the USA.	• Executive Council, in July 2017, approved the development and implementation of the *"Pilot Initiative for the Development of a Global Sustainable Botanical/Herbal Supplier Market from SIDS DOCK Member States*' • 11 SIDS Pilot Member countries requested participation • Work with USA-FDA Attorneys (Ullman & Shapiro of Counsel Rivkin Radler)

BIODIVERSITY PROTECTION			
2	• Developing the necessary protection of any proprietary business model platforms and ideas resulting amongst the SIDS DOCK IWON Pilot Nations	(a) Protect the knowledge, innovations and practices of indigenous and local communities. (b) The protection of SIDS intellectual property interest and creation of general protocols and policies to be followed to protect any intellectual property created as part of the Botanical / Herbal Initiative	• Intellectual Property and Cyber Security attorneys to assist in the development of general protocols and policies addressing the risk of cyber or other data breach and appropriate legal response should a cyber security incident occur. (Rivkin Radler)
QUALITY, CLAIMS, CYBER AND INTELLECTUAL PROPERTY			
3	• Development and implementation of robust Compliance and Quality Management Systems (QMS); GMPs; and strategies to ensure product protection from intentional adulteration. • Ensure that ingredient and/or finished product structure-function claims are supported and substantiated by credible clinical and scientific studies. • Protection of formulation, process and method development unique to identified herbal/botanical ingredients and products (e.g. Identity, Composition, Purity, Strength and limits of contaminants).	(a) Review existing SIDS framework and perform an evaluation and gap analysis of such systems. (b) Clinical Review Boards must be legitimate in performing clinical studies that definitively provide scientifically valid and sound structure-function claim support. (c) Protect the knowledge, innovations and practices of indigenous and local communities. (d) The protection of SIDS intellectual property interest and creation of general protocols and policies	• Intellectual Property and Cyber Security attorneys to assist in the development of general protocols and policies addressing the risk of cyber or other data breach and appropriate legal response should a cyber security incident occur. (Rivkin Radler)

	• Protection of scientific data integrity.	to be followed to protect any intellectual property created as part of the Botanical / Herbal Initiative	
CAPACITY BUILDING			
4	• Financial Support for continued educational and training programs; investing in Industry Trade Association Memberships as a direct information and educational resource (e.g., American Botanical Council [ABC]; American Herbal Products Association [APHA]; • Feasibility Studies on how to capture market share. • Phytosanitary rules. • Educate, Equip and Empower (3E's©) Island Women to help create a profitable and sustainable herbal/botanical business. • To develop training programmes and material to build individual and institutional capacity to support transition to and manage the herbal/botanical supply-chain • Establish four (4) operations facilities (Harvest, Post-Harvest, Manufacturing and Production Packaging).	(a) Access to internal expertise to assist with the implementation processes making the venture more feasibly attainable. (b) Qualified individual(s) to Educate, Equip and Empower (3E's©) our women. (c) Qualified individuals who can ensure readiness and certification of facilities. (d) Qualified individual(s) to navigate the various FDA, CBP and USDA import requirements. (e) Qualified individual(s) knowledgeable in how to protect the biodiversity from the *Biopirates* (f) Educate, Equip and Empower (3E's) Island Women with the necessary agricultural skillsets and manufacturing and production experience, to help create a profitable and sustainable herbal/botanical business.	• Qualified industry subject matter experts (SMEs) been identified • Potential Private sponsors, foundations and trade associations have been approached • Training and Certification Programs developed with the GN-SEC that provide continuity of quality and compliance • Production facilities established each Pilot Countries

		(g) Develop Specialised Training Programmes- Create Training and Certification Programs with the GN-SEC that provide continuity of quality and compliance	
INSTITUTIONAL SUPPORT & STRENGTHENING			
5	• Establish IWON Herbal/Botanical Project Unit as part of the SIDS DOCK Secretariat to act as the Coordinating Focal Point	(a) Develop Operating Plan (b) Human resources (full- & part-time): Program Manager, Research Officers, Cybersecurity Experts, USA FDA attorneys; Herbal/Botanical experts; ITC Expert; Admin support (c) Procure office supplies and equipment (d) Establish archiving of institutional records (e) Develop public education and marketing collateral (f) Appoint and train national and regional focal points to participate in work program (g) Convene meetings of the IWON Committee and IWON Technical Sub-Committee	• Functioning Herbal/Botanical Unit serving Member States providing information, policy advice, technical, financial and other support • Operational Plan • Focal Points from Pilot Countries enabled to monitor projects and prepare appropriate reports • Meeting reports
SCIENCE & TECHNOLOGY TRANSFER			
6	• Transfer SIDS-Appropriate Technologies and Sharing of Scientific Information	(a) Identification of SIDS-Appropriate Technologies for transfer (b) Require specific science subject and	• Deployment of SIDS-Appropriate Technologies in Pilot Countries • The sharing of skills, knowledge, technologies,

		industry experts in an effort to educate and equip the relative SIDS individuals (e.g., scientists and engineers) in this field. (c) Develop cadre of SIDS qualified Science experts/consultants, engineers, knowledgeable in the herbal/botanicals	methods of farming, processing, manufacturing, testing methods, equipment, etc.
PUBLIC EDUCATION & AWARENESS			
7	• Inform the public of the direction that the SIDS DOCK Members has arrived at in association with development partners, which is identifying the most appropriate energy and climate-resilient future for the SIDS, which is transition to a low carbon economy • Education of the general populous of the SIDS members as well as the USA (and others) ingredient and supplement manufacturer markets • Promote the use of cleaner and more efficient energy technologies and alternative energy sources throughout the farming, harvesting, processing, manufacturing and export of the herbal/botanical raw ingredients/materials • Promote the rich, indigenous and, valuable biodiversity of small islands and the need to protect, preserve and sustain.	(a) Procure consultant to design an education and awareness-building strategy, communication plan and promotional campaign, with efficient monitoring mechanisms, for the herbal/botanical projects being implemented by SIDS DOCK IWON and its partners (b) Desk research and review of technical literature and existing communications plans (c) Internal and External Communications Plan Development (d) Stakeholder Engagement and External Communications Action Plans (e) Establish Website and Social Media presence	• Consultations, national and regional workshops • Communications Plans – internal and external, with heavy emphasis on high level stakeholder buy-in • Launch of website and visible social media presence on platforms such as Facebook, etc. • IWON Marketing, Printing, Participation in Events • Monitoring and evaluation framework for communications activities • Public aware of the importance of particular UN Conventions on climate change (UNFCCC), biodiversity (UNCBD) and the Sustainable Development Goals (SDGs)

	• Promote the goals and objectives of the IWON		
FINANCING & RESOURCE MOBILIZATION			
8	Include SIDS DOCK IWON's Projects at development stage in the SIDS DOCK Indicative Project Pipeline Include resource mobilization strategy in the SIDS DOCK Resource Mobilization Plan (2016-2021)	(a) Conduct pre-feasibility and feasibility studies to aid preparation of investor-ready Project Profiles from the various private-public entities, foundations, development partners, and sovereigns that leads to investments in this project in Pilot SIDS countries; how to capture market share (b) Develop individual "Project Profiles" for each component (and sub-component)	• Pre-feasibility studies and Feasibility studies in the Botanical / Herbal market/industry • 6 SIDS DOCK IWON Pilot country – Sao Tome and Principe - in partnership with private-public organisations in the Pilot Initiative for the Development of a Global Sustainable Botanical / Herbal

8.0 ESTIMATED BUDGET (2022-2025)

8.1 Financing and Resource Mobilization

The income of **USD 10,135,000[29],** is estimated to come from targeted sources, including the from the GCF, GEF, sovereign partners, philanthropic organisations, development partners and other grant making institutions, and includes USD 100,000 from UNIDO GN-SEC; and USD 35,000 in-kind support from Sao Tome and Principe. The project will be supported in the long-term through the SIDS DOCK Foundation and Secretariat and the SIDS DOCK Project Partners.

[29]All dollar figures quoted in United States dollars

Table 4: Estimated Budget (2022-2025) – Planning & Capacity Building Proposal: 'Pilot Initiative for the Development of a Global Sustainable Botanical/Herbal Supplier Market from SIDS DOCK Member States*: *Pilot In The Democratic Republic Of São Tomé And Príncipe To Be Developed Under The GN-SEC

PHASE & ACTIVITY	**2022**	**2023**	**2024**	**2025**	**TOTAL**
Phase I: Planning Phase					
Development of Pre-feasibility Study and GCF Simplified Approval Process (SAP) Proposal Concept Paper & Funding Proposal	50,000				**50,000**
Phase II: Research & Development, Production & Marketing Phase					
Regulatory and Quality Framework		150,000	250,000	100,000	**500,000**
Biodiversity Protection		300,000	100,000	100,000	**500,000**
Legal Claims, Cyber and Intellectual Property		150,000	100,000	50,000	**300,000**
Capacity Building		300,000	300,000	200,000	**800,000**
Institutional Support & Strengthening		200,000	150,000	150,000	**500,000**
Science & Technology Transfer		1,000,000	1,000,000	300,000	**2,300,000**
Public Education & Awareness	20,000	200,000	150,000	150,000	**520,000**
Financing & Resource Mobilization		10,000	10,000	10,000	**30,000**
Phase III: Establishment & Operationalization of Pilot Production Facilities					
São Tomé and Príncipe			4,000,000	500,000	**4,500,000**
Estimated Total	**70,000**	**2,310,000**	**6,060,000**	**1,560,000**	**10,000,000**