

## CONCEPT IDEA NOTE FOR CLIMATE RELATED ACTIVITIES THAT MAY BE FUNDABLE BY THE GREEN CLIMATE FUND AND OTHER FINANCIAL SOURCES

This Concept Idea Note is based upon the GCF Concept Note. It is designed to prepare any Concepts or Project Ideas with GCF financing in mind, however, can also be applicable to other financial institutions. Once the Concept Idea Note is completed please send to the CCCI office (as the GCF National Focal Point), where an assessment will be undertaken as to whether the Concept could be eligible for funding under the GCF or other financial source, or both. CCCI will then communicate the result of the assessment back to the proponent, and outline what will next happen to the Concept Idea Note, such as require more information to make a clearer assessment, the submitted Concept is GCF eligible for funding and the next steps, or a determination that outlines the Concept is not eligible for GCF funding but may get funding from another source.

**Title of Concept OR Project Idea:** Green Waste Management Proposal to GCF

**Date of Submission**      16 October 2018

**Submitted by and Contact**      CIGT Managing Director Malcolm Sword and Director Jessie Sword

<p><b>Indicate the areas for the Concept, which is based upon the CKI Country Program thematic areas</b></p>	<p><u>Mitigation:</u> Reduced emissions from:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Energy access and power generation</li> <li><input checked="" type="checkbox"/> Low emission transport</li> <li><input checked="" type="checkbox"/> Buildings, cities and industries and appliances</li> <li><input checked="" type="checkbox"/> Forestry and land use</li> </ul> <p><u>Adaptation:</u> Increased resilience of:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Most vulnerable people and communities</li> <li><input checked="" type="checkbox"/> Health and well-being, and food and water security</li> <li><input checked="" type="checkbox"/> Infrastructure and built environment</li> <li><input checked="" type="checkbox"/> Ecosystem and ecosystem services</li> </ul>
<p><b>Indicative total project cost</b></p>	<p>Amount: NZD\$8 million</p>

**Project/Programme rationale, objectives and approach of programme/project (max 100 words)**

The decreasing land availability for landfills, a fragile environment suffering from deterioration of present residential and commercial waste systems, overflow & leaching into soil, ground water and the lagoons, and the dramatic increase in tourist numbers and consumerism over the last two decades, is generating large volumes of waste of all types. This is impacting significantly on the environment and the communities on all islands and threatens the livelihoods of people and communities, throughout the nation.

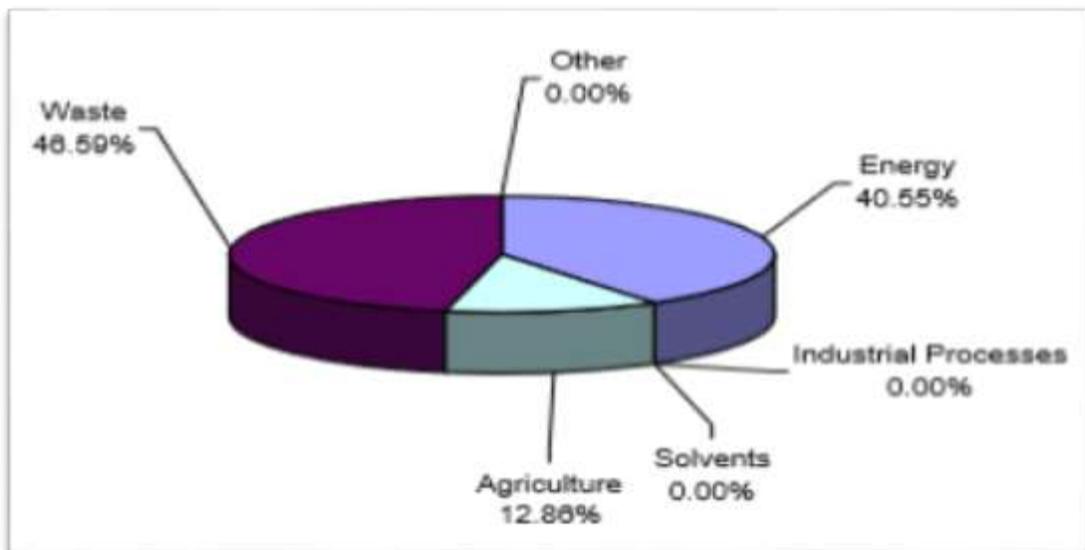
This environmental time bomb will accelerate with the negative externalities of the steadily growing tourism industry (contributing 50% to GDP), the ever-increasing number of Cook Islanders returning home permanently and the existing waste management systems e.g. landfill.

CIGT has a proven track record of successful management and diversion from landfill of many waste types. This extensive experience gives rise to a series of carefully planned interventions below, which will alleviate these issues and build resilience to further reduce impacts of climate change in the future.

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**Context and baseline (max. 2 pages)**

**Cook Islands Greenhouse Emission by Sector 1994 Index Year**



The Waste GHG emissions profile for the Cook Islands in index year 1994 was 46.59%. The National Report for the SIDS conference on SDGs in 2014 (p.20) gave Management of Solid Waste a “red light,” noting that initiatives such as the waste management facilities lack sufficient funding to operate in an efficient and effective manner. Quoting the report,

“...with significant e-waste and hazardous waste deposits and no clear way to dispose of them in an environmentally friendly fashion, there is need for immediate action. With limited resources there is need for development assistance in this area.”

Improved plant will allow the available Waste Reduction Model (WARM) to be used giving clear results towards achieving the National Adaptation Plan (NAP).

The Cook Islands Country Programme, Investment Strategy and Priority Setting document (CICP), produced by the CI government gives eleven priority areas to be addressed as part of their National Sustainable Development Plan (NSDP). Waste Management is number five on this list. The government supports measures for reducing waste through initiatives such as “Reduce, Reuse, recycle” and setting standards for sanitation, but there is no cohesive plan to deal with the current situation now.

The National Sustainable Development Plan 2016 – 2020 makes specific mention of a number of Waste Management issues it would like to see eliminated or at least mitigated to some degree. It recognises the effects of climate change in Goal 3 for example, “The effects of climate change impact on all facets of Cook Islands life, from public infrastructure to food security. In the next five years we must continue to take appropriate actions to prepare our country for the current and future challenges of climate change and natural disasters. Unsustainable development practices, such as those which increase solid and hazardous waste, represent a significant environmental, economic and health risk. We will promote responsible, sustainable waste management practices and behaviors to business, organizations and individuals. And manage hazardous waste effectively.”

Goal 4 states “Water and sanitation are basic necessities for our health, economy and environment. Sanitation has become a major national issue, particularly with increased development in Rarotonga and Aitutaki. The inadequate management of human and animal waste and other wastewater poses a significant environmental, economic and health risk to the country. With the increased density of development, inadequate sanitation systems are posing a significant threat to our environment, the economy and public health.”

CICP (above) states, “Waste management cannot be ignored in the context of climate change. The impact of solid waste and sanitation exacerbates the negative aspects being experienced in the lagoon, due to leaching. Programmatic Area 5 in the CICP signals the intention to better manage solid waste, including constructing facilities on all islands to help turn waste into energy.

This proposal sets out a plan to eliminate all present stockpiles of waste which are just “lying around” on all islands and instigate systems which will eliminate such waste in the future.

CIGT would firstly establish a “green” recycling centre in Rarotonga which would be able to operate in all weathers and which would deliver to zero, all waste from each island. What could not be recycled and reused would be exported and sold. CIGT propose to pave and

install covered work and storage areas within the present CIGT yard, installing the necessary equipment to process all waste, to enable the various waste streams to:

- ✚ Reuse for local consumption.
- ✚ Recycle all biodegradables via composting.
- ✚ Export all material, ferrous and non-ferrous, as well as plastics.
- ✚ Reduce volume of general waste via sorting and separating items, residue waste to be shredded and incinerated via a suitable sized waste to energy unit.

This facility would be based on successful models used overseas, which CIGT has visited in recent times. A complete cost estimation and income forecast for all activities will be made available when required. Moreover:

- ✚ Small recycling depots are to be established on all the outer islands.
- ✚ Ideally these depots will be situated close to the islands' port area.
- ✚ These depots would be suitably constructed with paved floors and covered work and storage areas.
- ✚ These depots would receive, handle, sort and separate all recyclable materials delivered to it.
- ✚ Larger items such as vehicles etc., would be stockpiled, for further processing in Rarotonga.
- ✚ Hazardous materials such as batteries etc., would be collected and stored at these depots as well.
- ✚ All recyclable and waste material would be collected weekly by the local council and delivered to the depot.

Each village will have suitable containers supplied, to enable the villagers to deposit all recyclables and non-organic waste into. Employment opportunities would be part and parcel of these satellite centres, to enable upkeep and management of these depots, along with collection, by the Island Governments.

CIGT would uplift all recyclable materials on a regular basis from the outer islands, using their barge.

- ✚ Inward cargo received for the islands would be transported in mini 10', 8' and 6' ISO containers and these would be used on the outward leg to "export" the island recyclables and hazardous materials.
- ✚ Larger items would be delivered complete if possible, to load or to be stockpiled for further processing (cut up) by a specialist team from Rarotonga, as required.
- ✚ Part of this proposal to remove and recycle waste, is to make available land for better and more productive use.
- ✚ Land in the outer islands is limited and the same issues are apparent as on the larger islands of Rarotonga and Aitutaki.

The impact of CIGT Waste Management project on mitigating the effect of Green House Gas will be two-fold. First will be a direct reduction of methane (CH<sub>4</sub>)<sup>1</sup> emissions from landfills and secondly the reduction of extracting and destroying natural resources through recycling. The project will result in the following impact to the Cook Islands (CI) Green House Gas emissions:

Landfill CH <sub>4</sub> emission current based on 1,144 t	Cumulative emission of CH <sub>4</sub> for 5 yrs. without the project	Reduction of CH <sub>4</sub> expected after the 1 <sup>st</sup> 5 yrs. <sup>2</sup> of project
125,840 CH <sub>4</sub> kg	970,882 CH <sub>4</sub> kg 670% increase	231,220 CH <sub>4</sub> kg State benefit: 76% CH <sub>4</sub> reduction

This is baseline data. According to this, we have basic information. More will be required working with Watson and ICI

See Table 1 below for details. This also shows that by year five, the zero waste target will be achieved and the mitigating effect of the project will exponentially improve, reaching the desired outcome (landfills from national waste collection will no longer exist).

**Table 1**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Landfill CH<sub>4</sub> emission without CGI project</b>						
Accumulative landfill wastes growing at 10% for 5 years	1144 t	2402.4 t	3786 t	5308.9 t	6983.8 t	8826.2 t
CH <sub>4</sub> emission* from growing landfill waste	125840 CH <sub>4</sub> kg	264264 CH <sub>4</sub> kg	416460 CH <sub>4</sub> kg	583880 CH <sub>4</sub> kg	768218 CH <sub>4</sub> kg	970882 CH <sub>4</sub> kg
<b>CIGT mitigating effect on CH<sub>4</sub> emission</b>						
Waste collection % decrease annually	100 % waste	80% waste	60% waste	40% waste	20% waste	0% waste
Effect of CIGT waste management on landfill	1144 t	2251 t	3165 t	3835 t	4203 t	4203 t
Mining % increase from 5 years	0% extracted	10% extracted	20% extracted	30% extracted	40% extracted	50% extracted
Effect of CIGT landfill mining over 5 years	1144 t	2026 t	2532 t	2685 t	2522 t	2102 t
CH <sub>4</sub> emission after CIGT operations	125840 CH <sub>4</sub> kg	22860 CH <sub>4</sub> kg	278520 CH <sub>4</sub> kg	295350 CH <sub>4</sub> kg	277420 CH <sub>4</sub> kg	231220 CH <sub>4</sub> kg
Effect on CIGT project on decreasing CH <sub>4</sub> emission	0 CH <sub>4</sub> kg	241404 CH <sub>4</sub> kg	137940 CH <sub>4</sub> kg	288530 CH <sub>4</sub> kg	490798 CH <sub>4</sub> kg	739662 CH <sub>4</sub> kg
* 1 tonne of landfill waste = 110 kg of CH <sub>4</sub> US Environmental Protection Agency (Seidel 2009)						

**Mitigation: The proposed mitigation investments will include the following *Business Units*, *community projects* and *improvements on current operation*.**

1. Waste management centre reducing landfills utilisation and decreasing CH<sub>4</sub> emission (*Business Unit*)
  - Waste management centre in Rarotonga – 2,500m<sup>2</sup> USD\$800,000
  - Outer islands’ waste management depots - 150m<sup>2</sup> x 10 USD\$597,836
  - Heavy loader USD\$ 50,000
  - Waste sorter plant USD\$400.000

<sup>1</sup> CH<sub>4</sub> gas is a potent greenhouse gas, 21 times more effective at trapping heat in the earth’s atmosphere than CO<sub>2</sub>

• Bailer machines x 3	USD\$ 80,000	
• Incinerator x 2	USD\$ 50,000	
• Recycling collection container for district centres 35	USD\$175,000	
• Setup costs		
○ Legal fees – lease and contracts	USD\$ 20,000	
○ Plant import transportation costs	USD\$ 50,000	
○ Consulting costs	USD\$ 20,000	
○ Administration tools and costs	USD\$ 10,000	
○ IT facility to cope with infrastructure project	USD\$ 20,000	
○ Contingency costs 15% of total Business Unit 1.	USD\$340,925	USD\$460925
		<b><u>USD\$2,613,761</u></b>
2. Existing landfills mining and recovery of “legacy waste” (foreign aids deserted machinery)		
• Metal cutting machines	USD\$ 50,000	
• Packing/cartage metal crates x 3	USD\$ 15,000	
• Forklifts x 2 (for outer islands and Rarotonga landfills)	USD\$110,000	
• Onsite sorting plant (for landfills)	USD\$400,000	
• Bailer machines x 2 (For outer islands and Rarotonga)	USD\$ 80,000	
• Heavy duty dump truck (for Rarotonga)	USD\$100,000	<b><u>USD\$755,000</u></b>
3. Low emission transport and a total shift to renewable energy supply for project (improvements on current operation)		
• Change the interisland barge from diesel to LPG	USD\$2,000,000	
• All waste management centres are solar powered	USD\$ 192,600	
• Fuel reserve for initial island clean-up	USD\$1,000,000	
• All-encompassing implementation cost (inclusive)		<b><u>USD\$3,192,600</u></b>
4. Forestry and land use (community project)		
• Native plants planted at cleaned up landfills and where old machinery was dumped		
• All-encompassing implementation costs		<b><u>USD\$ 100,000</u></b>
<b>Adaptation. The proposed adaptation investments will include the following</b>		
5. Most vulnerable people and communities’ education centre and recycling shop (Business Unit)		
• Equipped centre for waste management and greenhouse effect education		
○ Videos x 3, screens x 3 and connections	USD\$20,000	
○ Printing equipment room	USD\$20,000	
○ Internet	USD\$ 1,000	
○ Desks & chairs x 6	USD\$ 12,000	
○ Whiteboards x 2	USD\$ 1,200	
○ Post boards x 2	USD\$ 500	
○ Supply	USD\$ 1,000	
○ Posters	USD\$ 1,500	<b><u>USD\$ 57,200</u></b>
• Recycling export and local shop		
○ Exporting admin centre	USD\$ 12,000	

2. Holding all other variables constant i.e. tourism growth and return home Cook Islanders, CIGT allows for 20% performance improvement per year for 5 years. This is in line with the “zero waste” CIGT target.

○ Shop fittings	USD\$ 20,000	
○ Shop signage	USD\$ 5,000	
○ Till and internet purchase facility	USD\$ 10,000	
○ Display units	USD\$ 12,000	
○ Accounting facility	USD\$ 10,000	<b><u>USD\$ 69,000</u></b>
● International partnership project to clean washed up trash on windward coastal areas		
○ Administration	USD\$ 100,000	
○ Consultation/seminars	USD\$ 100,000	
○ Tools	USD\$250,000	
○ Publicity	USD\$ 50,000	<b><u>USD\$ 500,000</u></b>
6. Ecosystem and ecosystem services ( <i>Business Unit</i> )		
● Tree shredder mulcher machine	USD \$50,000	
● Composting facility		
○ Sorting pans	USD\$ 20,000	
○ Supply to package compost ready for resale	USD\$ 16,000	
● Forklift x2	USD\$112,000	
● Metal cutter	USD\$ 50,000	
● Bailing materials x 3	USD\$150,000	
● Shredder x 3	USD\$150,000	<b><u>USD\$548,000</u></b>
<b>All-inclusive implementation cost 15% of total cost</b>		<b><u>USD\$1,175,334</u></b>
<b>Contingency costs 15% of total cost</b>		<b><u>USD\$1,175,334</u></b>
<b>CIGT Project total:</b>		<b><u>USD\$10,186,229</u></b>
<b>Rate: 1.46</b>		<b><u>NZD\$14,871,894</u></b>
Infrastructure and built environment		
● The waste management project is an infrastructure project with outcomes that will be “environment built”. This is the inherent nature of the project/s		
Health and well-being, and food and water security		
● By cleaning up the landfills, the methane leakage will no longer be a threat to the food and water system of the nation. It should revive the damaged areas of the lagoon that are currently deteriorating with the effects of climate change and direct man-made pollution.		

The removal of “legacy waste” is a project that can be undertaken by this proposal. “Legacy waste” refers to all machinery such as bulldozers, diggers, tractors etc. supplied by Foreign Aid and Cook Islands Government, donated or otherwise that now sits forgotten, broken, damaged or irreparable in all the outer islands.

Metal cutting machinery would be purchased with a team to be sent out to each island to break down these obsolete machineries to manageable size to enable these items to be shipped to Rarotonga for further processing and export. The regular collection of recyclable waste would be established as part of the normal shipping schedule.

The delivery of a sustainable shipping service to the outer islands would be supported with the return of waste material to Rarotonga, attracting reduced freight costs, making each voyage more cost efficient and presenting opportunities for businesses to improve their services. For example, Air Rarotonga would freight fuel deliveries regularly by sea, meaning they could carry more freight and/or passengers not fuel, and savings could be passed on to the end user. This is noted in CIGP 5 as enabling people and communities to be more resilient and able to better use resources.

CIGT would plan and implement education campaigns to explain how each person and community would benefit from this system and deliver printed material to meetings to be prominently displayed in conjunction with the island governments. CIGT sees this proposal as an ongoing, regular collection of all waste materials which island/communities could rely on to remove waste, be supplied with equipment (bins) for ongoing smaller waste collection, to improve the ecology and environment.

A key component of this proposal is to “mine” present landfill sites and remove all waste buried. The equipment to process and enable this project; diggers, industrial shredders etc. would be purchased from grant monies. All such sites would be returned to their original pristine state, the land to become useable and the environment would benefit accordingly.

CIGT has noted the growing waste to the windward coastal areas on all outer islands especially Suvarrow, Takutea and Manuae Islands. Rubbish is brought ashore by the tides and the wind from all over the Pacific. We propose to organise projects involving a variety of local and international groups to gather and remove such waste. This would immediately benefit the islands themselves, the environment and the ecology and perhaps open new avenues for people through ideas such as eco-tourism.

This proposal gives an overview of a project which would greatly contribute to the NAP in addressing small islands resilience to the climate change impact of limited land area to a steadily growing tourism economy and an increasing number of homecoming Cook Island retirees.

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**Engagement among the NDA, AE, and/or other relevant stakeholders in the country (max ½ page)**

CIGT Management, Malcolm & Jessie, have engaged with Wayne King the NDA, to elicit an understanding of the GCF, its purpose and how CIGT, the leading private sector entity in waste management, could take on a national strategic role through GCF and its strategic adaptation model. Malcolm is a Board Member of a National body concerned with waste management. Jessie is the chair of the BCI board which is seeking AE accreditation and it may be that in the future CIGT could become an AE also.

The Directors of CIGT have held numerous informal meetings with MP's, Departmental Heads, village committees, Island Governments, as well as interested private sector stakeholders. The present white ware, e-waste, motor vehicle and ferrous recycling initiatives underway on Rarotonga and Aitutaki are the result of such meetings and discussions.

The community in general is aware of the problems with waste, but have been almost impotent in formulating adequate solutions due to lack of funding and leadership.

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#### **Sustainability and replicability of the project (exit strategy) (max. 1 page)**

CIGT has made significant inroads and investment into waste management over the past years and these efforts has now plateaued. The establishment of a "green" recycling centre to reduce all in-coming waste to zero, is an ambitious but realistic target. A target that will be self sustainable given our knowledge of the industry.

Once this centre is up and running much of the project initiative would be self-funding. Solid waste would be compacted and sold to businesses overseas.

E-waste would be disposed and repurposed in this manner also.

Green waste would be mulched and sold locally.

Other waste by-products would be recycled and reused as required.

Waste that would require disposal would be shredded to provide suitable fuel for the purpose sized waste to energy generator/incinerator.

The GCF will greatly absorb the setting up cost and propel the operation to an economically sustainable business.

There is a need to allow for fuel subsidy for the delivery of freight to the islands and the removal of all waste collected on a regular basis. This could be implemented in the initial grant. It would also be part-funded through those using the service being charged for passenger and or freight transport. It is proposed as part of this project that options to convert the CIGT vessel's propulsion and operating machinery to green fuels such as LP Gas be explored, as well as the implementation of PV panels to generate on board power options.

CIGT would continue to manage the project, with trained staff with the expertise, knowledge and contacts, to source waste and arrange markets overseas. There is a large stockpile of car bodies and motor vehicles for example, that once processed and compacted, would find a ready market in New Zealand.

The project would be monitored through normal business and auditing processes, detailing volumes, weights of all exports and materials processed in and out of the depot. A weigh bridge would be installed as an integral part of this project, as all materials in and out must be weighed. A weigh bridge will also afford the opportunity for Govt to more readily manage roads in due course. This would be an additional source of income for the facility. CIGT currently employs 2 x 3-ton pallet scales to weigh exports.

Allowance for operational costs would be presented for consideration.

Most of the accounting requirements can be handled with present software, although the need for further and more specialized software may be necessary.

Additionally, the green recycling depot, with the resourcing and equipment provided, will be able to capture the volume of wastes generated by the country, identified and weighed, at any point in time with timely improvements implemented, through the use of the "Waste Reduction Model" (WARM). This will quantitatively define the contribution to the "adaptation" and function of the project to the NDP, covering the positive externalities that were previously difficult to quantify.

**Assessed By and Date:**

**Recommendation:**