MIF PITCH MEMO

PROJECT TITLE: **BUILDING CLIMATE RESILIENCE THROUGH RIDGE-TO-REEF REHABILITATION**

COUNTRY(s): **TRINIDAD & TOBAGO**

FOCUS AREA: **CLIMATE CHANGE ADAPTATION FOR RURAL COMMUNITIES**

TEAM MEMBERS: **JONATHAN BARCANT, TALYA MOHAMMMED, DANIEL BARCANT, NARINDRA KISSOON, DYLAN QUESNEL**

PARTNER: **IAMOVEMENT**

PROPOSED FUNDING ($USD): **$150,000**

GRANT: **$150,000 from the MIF; and $75,000 from other partners including UNDP GEF SGP, United Way TT & other NGO/corporate partners**

EQUITY:

LOAN:

OTHER: **In kind greater than $75,000**

1. What is the problem being addressed?

Communities in many areas throughout Trinidad & Tobago and the Caribbean face challenges of damage and loss to personal and public property due to the movement of land caused by weather related processes; namely soil erosion, progressive soil failure and slippage, and/or dramatic land slippage/slides. This is especially amplified by extreme weather events which are increasing in recent years due to climate change. Three (3) main geographic areas in T&T which have been affected by these issues in an increasing way are: (i) in the mountainous northern range of Trinidad, and mountainous parts of Tobago, (ii) the sapote or "heaving" clays of central and south Trinidad, (iii) and coastal areas on the south and east coasts of Trinidad. The movement of land - sudden or progressive - causes damage and loss which can often be very costly to houses, private and public buildings such as schools, agricultural lands, and infrastructure such as roads, culverts, and water-ways and drainage systems. Lands which have been 'developed', built-upon, or where natural habitat and vegetation has been otherwise removed, are often also far more susceptible to the processes which cause such damages.

In cases of the three (3) geographic examples listed above, the processes for land movement and damage differ based soil characteristics (be it shale, residual soils, or 'heaving clays') and nature's forces including rainfall/drought, and the ocean for coastal erosion. Traditional ways of tackling these issues are "reactive" rather than "preventative", are often very costly, and carried out 'after-the-fact'; where those affected often face distress while they are forced to helplessly wait for publicly funded works to resolve, often in the form of hard-engineered solutions.

2. THE INNOVATION: what is the solution and why is it innovative?

Through this project, low-cost, green and sustainable, and easy-to-learn alternatives will be brought to vulnerable communities in a very inclusive 'education and empowerment' style approach, building upon past experience with a proven and recognized model which is now being expanded and taken to scale.

The Vetiver System (VS) is a unique plant-based solution which uses vetiver grass as a bio-engineering tool to solve many land and water related challenges. The best-practice methods for plant propagation, land preparation and installation, and maintenance during establishment are key to the VS success; and correctly implemented it can be used to assist greatly with slope stabilization, erosion control, soil and water conservation, and even phytoremediation (the treatment of contaminated lands and water). This is largely due to the extremely deep and fibrous root system of vetiver grass which can grow up to 10-feet deep within the first 2 years, while the root-systems for most other grasses do not grow much deeper than 1-foot. Studies have also shown that the tensile strength of the roots can be as much as 3-6 times higher than other common species of grass (up to 75MPa) and when correctly implemented can increase overall shear strength and slope stability by 40%.

Vetiver grass is also a proven phytoremediator and can absorb a wide range of nutrients and heavy metals and globally has been used as a means of final-downstream treatment for commercial and industrial waste water facilities, and landfills.

With a community education, empowerment and distribution approach, the leaves and roots of vetiver can also be used to make a wide range of beautiful and strong handicrafts, including baskets, mats, chairs, root bundles, soaps and more.

3. THE FIT: why is the solution proposed a good fit?	4. THE IMPACT: what is the impact we expect?
The introduction of the Vetiver System (VS) to rural communities is a good fit in addressing the current challenges given that rural communities very often have strong agricultural (or at least subsistence farming) cultures, and are thus very savvy to propagation, installation and care of plants; and could therefore be the quickest to learn and make use of it. Furthermore added benefits of soil and water conservation which the VS is proven to help with, and topsoil rebuilding through bio-mass production, are excellent added benefits towards climate smart agricultural practices. Gaining knowledge and expertise in the VS and a supply of plants will also position community members as employable by contractors for supply and implementation of the Vetiver System (VS) in future public works projects, as its inclusion in design-specifications is on the rise, where the Ministry of Works and Transport (MOWT) now includes the VS specific specification in some of their infrastructure plans. Where this project will in-part take place at sites operated by the National Quarries Company Limited (NQCL), an estimated 15-20 community members will be trained and certified as "Quarry Rehabilitation Champions". A larger multi-year GEF-funded "IWEco" project is in place to rehabilitate quarry areas the size of 250 football fields; and trained community members will find ongoing employment under this overall rehabilitation project. Additionally, "green bonds" now exist where new quarries are required to set aside funds for rehabilitation after closure. While these funds are not currently being well managed and used; another goal under IWEco, and existing parallel projects from other partners (including The Cropper Foundation), is to drive the proper functioning of these mechanisms. The production of beautiful, useful and zero carbon handicrafts is also another avenue where there is great potential for development, and where this project will have an included focus on. Being a solution which not only aids in climate adaptation and building resilience to the effects of extreme weather for property protection, but which can also play a major role in more sustainable and greener agricultural practices, through slow-down of rainfall runoff and groundwater recharge, and the capture and generation of topsoil; the project thus fits well into the focus area of Climate Smart Agriculture.	Where this project will take place partially at Quarry sites within Trinidad, in the Valencia area, approximately 5 acres of degraded and vegetation-free quarry land will be rehabilitated, and 15-20 community members will be trained and certified as "Quarry Rehabilitation Champions", whom will be further employable under the multi-year IWEco Project, and future legislatively required rehabilitation practices by quarries in T&T. These persons will learn all about the Vetiver System (VS) for use in protecting their private and surrounding public lands, but will also be trained in its use to rehabilitate degraded quarry lands; and will learn other processes such as biomass mulching to create topsoil and retain soil moisture, and inclusion of various types of trees such as beneficial carbon and nitrogen sequestering and indigenous trees, and fruiting and hardwood varieties. Throughout the project, a total of 50,000 vetiver plants will be installed in hedgerow formation, and based on comparative estimates, the carbon sequestration resulting from rehabilitated lands may be approximately 200 metric tons, after 5-10 years. 200 trees will also be installed in the Quarry site locations, and an estimated 100 tons of waste material (including sawdust, tree and leaf vegetal waste, sargassum seaweed, etc) will be diverted to quarry sites and placed correctly for topsoil rebuilding. At other pilot sites included in this project, in the northern range, in a selected area of vulnerable coastline where erosion is taking place, an additional 5 community members for each site (10 more in total) will be trained and educated in the Vetiver System (VS), through educational workshops and direct participation in implementation and maintenance of the pilot projects. For this project, IAMovement will also partner with several other non-governmental and academic organizations to assist with data capture of different aspects of the project, and collaboration for parallel related projects. These include: *CANARI* – for assistance with design and implementation of Monitoring & Evaluation (M&E) components *The Cropper Foundation* – to collaborate in parallel with their EU funded project "Enhancing Civil-Society Capacity for Governance of Environmental Transparency and Accountability in Trinidad and Tobago's Extractive Industries" *UWI* – Student inclusion to study hydrology and groundwater recharge, and carbon sequestration

5. THE INTERDEPENDENCIES: what are the synergies with the MIF portfolio and with the IDBG?

The proposed "*BUILDING COMMUNITY CLIMATE RESILIENCE THROUGH RIDGE-TO-REEF REHABILITATION*" project aligns well with the MIF's portfolio in T&T and regionally. The MIF's current project "Making Agriculture Profitable and Sustainable" focuses on improving farming practices to reduce watershed contamination; and in this regard, the Vetiver System (VS) as a known phytoremediator can play a role, where hedgerows can slow down and absorb contaminants in runoff entering both water sources and neighboring lands. "PROADAPT" in St. Lucia is geared towards Climate Resilience Investment in the Agricultural sector, and where the VS again can play a partnering role, sharing knowledge and technology.

Where the IDB's greater portfolio projects in T&T focus heavily in water treatment and sanitation, and where the VS has been used in a great way for this in the U.S., Mexico, Australia and China, this project can also potentially lend to pilot trials as a final-release treatment process for these projects.

Where the IDB is also currently exploring a project for "Climate-resilient Coastal Infrastructure and Management" in Trinidad & Tobago with the Ministry of Works and Transport; findings from the coastal protection pilot portion of this project can also potentially lend new technologies to future coastal climate resilient strategies.

The VS adds to a growing portfolio of technologies and knowledge needed in a greater way not just in T&T but through the Caribbean, to deal with effect of climate change, including rising sea levels and extreme weather.

7. SCALE: what are the likely paths to scale and with whom?

This proposed project will be timely, aiding to expand areas of experience of past proven project completed (2016-2017) in T&T's biggest hillside farming community called Paramin, as a pathway to scale. This past project was called the *Vetiver Education & Empowerment Project (VEEP)* and was designed and carried out by *Vetiver TT Ecological Engineering Solutions Ltd.*, a green-social enterprise and sister organization to the project partner IAMovement. VEEP was funded by the UNDP GEF SGP, and IAMovement working closely with Vetiver TT has been building relationships across T&T, with interested communities, partners and parts of government whom are now keen to have similar

6. THE RETURN: what is the expected financial performance and potential upside?

With the current economic climate and downturn in Trinidad & Tobago, there is general lessened overall budgeting available to tackle many major infrastructural issues which arise on an annual basis, a great deal caused by geotechnical failures, slippages and erosion of land. A preventative solution with the Vetiver System (VS) to protect private and public properties and infrastructures such as roads, can cost as little as 5 to 10% of what the total cost would typically be for hard-engineered alternatives needed for reparations after failure has occurred. This therefore makes the solutions offered through this project, especially where they can be implemented by local members of communities, an invaluable tool in helping build not just climate resilience but economic and social resilience as well. Where each prevented road-slippage or failure could save 90% of the cost for reparative solutions, the measurable returns and savings from this project could be calculated as having a very short payback period, of 1-2 years. Members of communities whom become trained "Vetiver System (VS) installers" or "Quarry Rehabilitation Champions", will find ongoing employment opportunities beyond the life of the project. IAMovement as the implementing entity for this project will also move forward with wider implementation and replications throughout T&T and the Caribbean.

8. Who are the project partners (the Team) and what are their strengths?

The lead project partner is IAMovement, working closely with Vetiver TT Ecological Engineering Solutions Ltd as a key technical partner. Mr. Jonathan Barcant is the designer of the VEEP project, cofounder of IAMovement and founder, Managing Director and Civil Engineer at Vetiver TT. He also recently joined the board of The Vetiver Network International (TVNI) (www.vetiver.org), where he has been a contributing member for 5 years. TVNI will be another available technical partner for the project.

Mr. Barcant was the original generator of the idea for the VEEP project; and based on collective interest within IAMovement from other team members to tackle the need for Quarry Rehabilitation in T&T, and shared goals for expansion and growth of the VEEP model both in T&T and regionally, there was clear opportunity to merge the two efforts. Relationship with the UNDP and National Quarries, and learning about the existing GEF-IWEco project, also played an important role in the conceptualization of this project.

programmes in their areas; including six (6) communities across T&T, three (3) regional corporations - Diego Martin, Tunapuna-Piarco and Penal Debe, the University of the West Indies, UNDP, United Way TT, the Ministry of Communities & Development, and several other partnering NGOs. Regionally, community partners and government members in several islands have also voiced keen interest, including in St. Lucia, Grenada, Antigua, Dominica, Jamaica and Haiti. The VEEP project has been recognized through several awards including *2018 Social Investment Project of the Year from SMEs by the TT Energy Chamber*; 3rd place in the *2017 ReSource Award from the Swiss Re Foundation for Entrepreneurial Solutions for Building Resilience in Water Management Practices*, and recently co-founder of IAMovement and designer of the VEEP project Mr. Jonathan Barcant received *2018 Regional Commonwealth Youth Award for the Caribbean and Americas, for Excellence in Development*; and through this, has connected with the Prince's Foundation whom are providing climate change resilience building assistance in the Caribbean following recent hurricanes in 2017, and have voiced interest in helping to endorse future initiatives. With the wide show of interest, IAMovement has submitted a strong application to T&T's Green Fund in July 2017, with all the above local partners included; and this year, will also be creating a regional online web-platform called "*The Vetiver Network West Indies (TVNWI)*", to aid in connecting stakeholders throughout the Caribbean who are using vetiver, or interested in having the VEEP program come to their countries and communities. Recent Commonwealth Youth Award article: http://www.guardian.co.tt/lifestyle/2018-04-23/trini-wins-americas-regional-award Swiss Re Foundation: https://www.swissrefoundation.org/our-work/focus-area/water/Vetiver_TT.html 2018 Energy Chamber Award: https://www.youtube.com/watch?v=mMsTzMW-7Qs&t=37s VEEP project intro video made prior to project: https://www.youtube.com/watch?v=KRQ70ondXWE ***"Metiver" in Paramin*** documentary, produced to capture VEEP:https://vimeo.com/222586721	Other key members of the IAMovement and Vetiver TT teams specialized in community training, M&E, project management and implementation and video/online communications include Ms. Talya Mohammed, Mr. Narindra Kissoon, Mr. Daniel Barcant, and Mr. Dylan Quesnel. Other core technical and funding partners will include UNDP GEF SGP, GEF-IWEco, National Quarries, United Way TT, University of the West Indies (UWI), CANARI, and The Cropper Foundation. Community and governmental partners will include the Ortoire or Sans Souci community councils, Tunapuna-Piarco Regional Corporation, Sangre Grande Regional Corporation, EMA, and Ministry of Community Development, Cultures and Arts. Mr. Jonathan Barcant is a member of the IDB's NextGen Board for the Unfollow Campaign, and in this space learned about many of the linkages to existing projects in the MIF and IDBG portfolios. In particular, where The Cropper Foundation is an organization with which IAMovement already has a relationship; linkage of this project to their existing MIF project focused on Sustainable Agriculture, and to their EU project focused on driving accountability in the extractive industries presents great opportunity – where TCF has expressed interest in combining parallel activities, which could see the "Quarry Rehabilitation Champions" created through this action finding future employment through legislatively required and enforced rehabilitation efforts into the future.
	9. What are the main risks and their mitigating factors? Political Risk – where several partners for the project include National Agencies (National Quarries and EMA); an election change could disrupt personal relationships built within these organizations. As a mitigation measure, this project is being launched where there is still 2+ years before elections, which should see the project sufficiently advanced or completed before any political party change. Social/Technical Risk – Members of the community whom are selected to be 'leads/champions' do not remain committed and fall-off during the program. This will be mitigated by ensuring key team individuals and partners with experience and expertise from having completed the VEEP project, and other community projects, aiding in both selection of lead persons, and facilitative capacity building expertise throughout implementation.