Mesoamerican Reef Rescue Initiative

Funding Agreement: 201468594

General Operative Program

2016-2020

LOGICAL FRAMEWORK of the project

INTERVENTION LOGIC	VERIFIABLE INDICATORS	SOURCES AND MEANS OF VERIFICATION	ASSUMPTIONS
MAIN OBJECTIVE (MO)			
Contribute to the conservation of the Mesoamerican Reef	Governments from the four countries have initiated a process to improve regulations and best practices in support of reef restoration. Availability of a permanent source of reef restoration funding for threatened reefs by the end of the project.	Monthly Reports Financial Reports Annual Reports	
INTERVENTION LOGIC	**VERIFIABLE INDICATORS**	**SOURCES AND MEANS OF VERIFICATION**	**ASSUMPTIONS REGARDING THE MAIN OBJECTIVE**
PROJECT OBJECTIVE (PO) 1			
Generate the funds needed to finance restoration and recuperation efforts of the Mesoamerican Reef.	PO1 VIO1: The four countries of the MAR region systematically apply and monitor coral reef restoration and rehabilitation activities. PO1 VIO2: The endowment fund has an annual return rate of at least 4%.	Monthly Reports Financial Reports Annual Reports	Climate change does not have an immediate negative impact on the project. The Technical Project Committee will fulfill its responsibilities in a transparent and effective manner.

			The MAR Fund meets its obligations transparently and effectively.
INTERVENTION LOGIC	VERIFIABLE INDICATORS	SOURCES AND MEANS OF VERIFICATION	ASSUMPTIONS REGARDING THE PROJECT OBJECTIVE
RESULTS			
R.1. The Reef Rescue Initiative sub-account is capitalized and operational	1. Endowment fund and sub-account for the Initiative are operational and are invested as per the approved Investment Policy. 2. Sub-account for the Initiative created and capitalized within the MAR Fund endowment and invested for an annual return rate of at least 4%.	Monthly Reports Annual Reports Financial Reports	The Investment Committee of the MAR Fund will strategically manage the investments and the independent financial advisor will fulfill their role effectively. The return on the endowment fund is satisfactory.
R.2. The Reef Rescue Initiative 5-Year General Operative Program (POG) is implemented based on the proceeds from the endowment.	1. The Emergency Fund has been established with sub-account returns and is growing through returns and/or additional contributions. 2.MAR governments and CCAD commit to establishing and implementing policies and regulations that make effective reef restoration possible. 3.Reef restoration and rehabilitation is carried out effectively in the MAR region, as well as exchanges and knowledge sharing among practitioners.		

	4.Alternative livelihoods and new employment opportunities for local communities are under implementation, derived from coral restoration and rehabilitation activities.		
INTERVENTION LOGIC	VERIFIABLE INDICATORS	SOURCES AND MEANS OF VERIFICATION	ASSUMPTIONS REGARDING THE RESULTS
ACTIVITIES			
A.1: Secure sustainable long-term funding for both continuous and emergency restoration interventions.	A.1a. and A.1.c. VIO1: Emergency Fund for Reef Rescue has been established and is being capitalized annually from endowment revenues and fund contributions. Ultimate goal is $1,000,000.	Account in MAR Fund shows annual capitalization process.	There is adequate technical capacity in the Region to achieve the results.
	A.1b. VIO2: Innovative financial mechanisms to raise funding for reef restoration have been explored.	Private funds contributed to Emergency Fund directly or as a match.	
A.2: Secure CCAD and government commitment to policies and regulations that make reef restoration possible and create the enabling conditions to carry out effective and	A.2.a. VIO3: Coherent protocols and policies for reef restoration in ship groundings have been developed with the participation of CCAD and governments of the four countries, and better policy and recommendations are exchanged and shared.	Resulting protocols and policies shared through CCAD with governments of the four countries.	

timely restoration interventions.	A.2.b.VIO4: Governments provide MAR Emergency Fund – or a match - a portion of any funds recovered from fines and penalties from legal actions against parties responsible for damage to reefs.	Proven match or deposits in Emergency Fund.	
	A.2.c. VIO5: Obtain permits for interventions by Rapid Response Teams following hurricanes and ship groundings.	Documented permit language and process. Time lag between requests and approval for Rapid Response Team activation.	
	A.2.d. VIO6: Improve channel markers and reef charts to further minimize unintended ship groundings.	Written agreement on marker locations with member governments.	
A.3: Support and develop reef restoration and rehabilitation in the region through exchanges and knowledge sharing among practitioners and CCAD.	A.3.a. VIO7: Effective coral nursery and restoration techniques are piloted, documented and replicated in the MAR, and shared through exchanges throughout Central America	Comparison with baseline Y1 to Y5.	
	A.3.c. VIO8: Seven Rapid Response Teams in place near pre-selected reefs.	Completed training and proven ability to mobilize	
A.4: Develop alternative livelihoods and new employment opportunities for local communities based on conservation	A.4.a. VIO9: Three businesses invested in reef restoration. (*) Three economic alternatives related to new forms of using the reefs sustainably.	Number of nurseries established with private investment.	

rather than consumption of natural resources.			

ASSUMPTIONS REGARDING THE ACTIVITIES
• The Technical Supervisory Committee (TSC) fulfills its function transparently and effectively. • The return on the endowment fund is satisfactory. • The MAR ecosystem does not suffer irreparable damage by the effects of climate change. • The technical capacity exists in the region to achieve the intended results.

(*) Recommendation made by the TSC representative Ricardo Gomez (CONANP)…

INTRODUCTION

The Mesoamerican Reef Rescue Initiative is governed by a Technical Supervisory Committee (TSC) and executed by the MAR Fund. The TSC met in February 2016 in Antigua Guatemala to design the following Five-year General Operative Program (GOP) as well as the Annual Operative Program (AOP) for 2016 – the first year of implementation.

Day to day coordination of the project activities will be done by a small Project Coordinating Unit (PCU), managed by the MAR Fund. The PCU will be staffed by a Project Coordinator to be hired in Year 1 and an Administrative Assistant to be hired in Year 2. The biannual meetings of the TSC will ensure that project implementation is on track and that the overarching goals and anticipated impact of the project are being achieved. The work of the PCU and MAR Fund is guided by this document and the Annual Work Plan. Reports will take the place via bi-annual Project Implementation and Impact Reports.

The overall objective of the Initiative is to contribute to the conservation of the Mesoamerican Reef by increasing the resilience and recovery ability of the MAR and thereby the environmental and cultural services it provides. The project objective is to generate the funds needed to finance restoration and recuperation efforts of the Mesoamerican Reef. The Initiative has the following expected results:

1. The Reef Rescue Initiative sub-account is capitalized and operational.
2. The 5-Year General Operative Program (POG) is implemented based on the proceeds from the endowment.

The first result is under way. The specific sub-account for the Initiative was created within the MAR Fund endowment and capitalized with €7 Million (USD 8,586,382) on December 29, 2014. These funds were granted by the German Cooperation through the KfW. Upon their deposit in the specific bank account established for the sub-account, they began to be invested as per the approved MAR Fund Investment Policy. To date, the account is operational and working to attain an annual return rate of at least 4%.

To achieve the second result, the Initiative will implement four major strategies through activities that include capacity building, recommendations for improved regulations, economic incentives and needed studies. The four strategies are:

1. Secure sustainable long-term funding for both continuous and emergency restoration interventions.
2. Secure CCAD and government commitment to policies and regulations that make reef restoration possible and create the enabling conditions to carry out effective and timely restoration interventions.
3. Support and develop reef restoration and rehabilitation in the region through exchanges and knowledge sharing among practitioners and CCAD.
4. Develop alternative livelihoods and new employment opportunities for local communities based on conservation rather than consumption of natural resources.

STRATEGIES AND ACTIVITIES TO BE PERFORMED

STRATEGY 1. Secure Sustainable Long-Term Funding for Both Continuous and Emergency Restoration Interventions.

The MAR Fund endowment is four years old, and is now worth over US$22 million. It is well positioned to build innovative financing mechanisms and create the Emergency Fund. The activities designed to ensure a long-term sustainable Emergency Fund include:

1.a. Establish the Emergency Fund for Reef Rescue. The ultimate goal is to capitalize it at $1,000,000.

1.b. Explore and implement innovative financial mechanisms to secure funding for emergency reef restoration;

1.c. Raise additional funding for the Emergency Fund by leveraging the Reef Rescue Initiative as match; and

1.d Reach agreements with member governments to use part of the income received from fines for coral reef damage to the Emergency Fund – see Section 2.b.

1.a. Establish the Emergency Fund for Reef Rescue. The ultimate goal is to capitalize it at $1,000,000.

The Emergency Fund will be housed within the MAR Fund. It should be progressively increased until it is fully capitalized at $1,000,000. To achieve that goal, the MAR Fund will pursue the following activities (1.b., 1.c., and 1.d.) as well as fund initial capitalization – that can be used as matching funds - at a rate of $30,000/year. In years when the full Reef Rescue programmatic budget has not been expended, 50% of the unused funding will be used to capitalize the Emergency Fund while the other 50% will go to grant making activities (2.a.).

As with all MAR Fund endowment accounts, the Emergency Fund will be overseen using the same mechanisms as the Reef Rescue Endowment – with investment oversight provided by the Investment Committee of the MAR Fund.

1.b. Explore and implement innovative financial mechanisms to raise funding for emergency reef restoration;

A very exciting innovation that the MAR Fund intends to pursue is the idea of creating catastrophe derivative insurance covers against potential losses following damage to coral reefs. This catastrophe derivative concept – often referred to as "cat in the box" – is based on parametric triggers that allow losses to be calculated quickly based on the severity of the catastrophe as measured by the specific "triggers". These triggers will be based on the physical parameters of the event such as tidal wave height, storm surge or storm intensity. The catastrophe modeling needed for coral reefs is an innovative idea with implications well beyond the Mesoamerican Reef. Modeling will require information on the site locations, and determining the criteria for the physical triggers will be part of the feasibility study and negotiations with insurers. In addition, businesses whose income relies on reef health and who would value such insurance, need to be identified (e.g. hotels, scuba and snorkel tours, and possibly some fisheries).

To explore the idea of catastrophe derivative insurance for coral reefs a feasibility study will be commissioned in Year 1.

1.c Raise additional funding for the Emergency Fund by leveraging the Reef Rescue Initiative as match.

To raise the funds needed there are three major activities to secure additional funding for the Emergency Fund and other restoration activities from private sources:

1) Develop a fundraising plan for leveraging resources by contracting a professional to develop the plan;

2) Implement pieces of the fundraising plan as opportunities and deadlines arise;

3) Identify businesses willing to provide a % of income for restoration or the Emergency Fund to protect reefs that are a critical asset to their business model

1.d. Reach agreements with member governments to use part of the income received from fines for coral reef damage to the Emergency Fund;

This activity is covered in Activity 2.b.

STRATEGY 2: Secure CCAD and Government Commitment To Policies and Regulations that make Reef Restoration Possible and Create the Enabling Conditions to Carry Out Effective and Timely Restoration Interventions.

"Intact ecosystems are the basis of human prosperity."[1] KfW has been a major contributor to Central American developing countries who are struggling to develop stronger governance structures, particularly to protect their globally important ecosystems. The Mesoamerican Reef is one such shared ecosystem that requires greater enabling conditions built on political will and stronger regulations and enforcement. The coral reefs are the backbone for the beaches, bioprospecting, disaster risk management, fisheries and tourism that drives the livelihoods of millions. Based on the Tulum Accord and this reality, the Reef Rescue Technical Supervisory Committee (TSC) is hopeful that additional commitments will enable these nations to better safeguard this ecosystem and support restoration interventions. The four activities that the TSC has chosen to advance this strategy include:

a. Develop coherent protocols and policies for reef restoration in ship groundings with the participation of CCAD and governments of the four countries, and promote exchange and sharing of better policy recommendations.

b. Secure commitments to return to the MAR Emergency Fund a portion of any funds recovered from fines and penalties from legal actions against parties responsible for damage to reefs.

c. Obtain permits for interventions by Rapid Response Teams following hurricanes and ship groundings.

d. Improve channel markers and reef charts to further minimize unintended ship groundings;

2.a. Develop coherent protocols and policies for reef restoration in ship groundings with the participation of CCAD and governments of the four countries, and promote exchange and sharing of better policy recommendations.

Two sets of baselines are needed to advance this activity:

2.a.1 Establish a baseline of region-wide vulnerable reefs and shipping routes;

[1] Scholl, Johannes, *The Importance Of Natural Resources For Jobs And Qualitative Growth*. KfW-Positions Paper, February 2013.

Develop a GIS map of the vulnerable coral reefs in the region – overlaid by navigation maps of shipping channels in Year 1-2. This will help determine areas of highest vulnerability to unintentional ship groundings. This is a first step towards working with the International Maritime Organization (IMO) of the United Nations on shipping regulations in the MAR, particularly a review of key routes for environmental protection. The Initiative will make a proposal to the IMO that the reef or portions of the reef be considered Particularly Sensitive Sea Areas (PSSA). Both national governments and the IMO will be given copies of these maps and presentations on the need for areas of the MAR to be designated a PSSA and ensure agreement on important channel markers and additional signage by Year 5.

An additional important matter to be considered for reef restoration is coral bleaching, as a result of warm water/climate change. Although some reefs of the MAR Region may have survived bleaching events and other impacts of climate change better than others, research to identify and map reefs that are already under threat, facing coral bleaching is still needed for the MAR; since climate change is one of the biggest stressors in the region[2]. Therefore, those reefs should be identified, and special efforts should be undertaken to protect them.

Consequently, developing GIS maps of most vulnerable reefs due to bleached corals will help policymakers and Mar Fund decide which reefs need to be prioritizing to support reef restoration and rehabilitation in the region. Plus, the Healthy Reef Initiative could play an important role for providing information or become partners, in order to update the coral reef bleaching maps on a yearly basis.

Establish a baseline of region-wide vulnerable reefs includes providing information about the reefs that have been most impacted by hurricane activity in the region. This activity will add valuable information for modeling the insurance schemes, and raise awareness and interest in the private sector of the region in insuring their "reef". Creating a GIS map of the reef most impacted by hurricane activity is a Sub activity of Activity 1.b.1. However due to the type of data, sources of information, skills and technology needed for the creation of the maps, we suggest that the elaboration of GIS maps are combined in one consultancy, which major products will include: 1) map of reefs historically most impacted by hurricane activity in the region; 2) map of reefs with bleached corals; and, 3) map of vulnerable reefs and shipping lanes.

2.a.2. Assess the level of current legislation and regulations of each government that guide damage assessment, fines, and funding use.

A baseline of current legislation and regulation is needed. Belize and Mexico have regulations in place, while it is unclear to what extent Honduras and Guatemala have clear regulations. The baseline needs to establish what is the current process by which fines are collected, where funds are held, and how they are ultimately used (or not) for reef restoration. Specifically, the MAR Fund will retain a legal firm/s to identify the current regulations and legislation relevant to ship insurance, ship grounding, and fines in each MAR country. Beginning in Year 1, this high priority activity will continue into Year 2. Specific questions include:

- What regulations are currently in place in each of the four MAR countries to collect fines and mitigation for damages to coral reefs?
- What regulations are in place but have not yet been applied or proven effective in ensuring that funds are actually used to restore reef health?
- How is reef damage currently assessed?

[2] Document Tulum+20. Mesoamerican Reef 2017 – A vision for the future. December 2016

- How are appropriate fines then established? Can they be built around estimated restoration costs over a set multi-year time frame?
- How are fines actually collected and held and what is the process by which they can be used for reef restoration?
- What insurance do commercial vessels and private vessels need to carry to be allowed passage in the MAR area and ensure they can pay if coral reef damages are incurred?
- What international agreements, in addition to the Tulum Accord, would be supported by improved legislation and regulations in this arena?
- What permits are needed and how can they be set in advance or fast tracked for Emergency Rapid-Response Teams to operate in each country? Given how quickly Coral Reef Crime Scene Investigation (CSI techniques – see 3.c.) must be applied to assess damage – and then immediate restoration techniques to restore and limit coral death – the teams need fast track permit processes in place.

Once the current status of the legislation and regulations is understood, the current functioning regulations will be included as part of the training for Rapid Response teams (see 3.c.).

2.b. Secure commitments to return to the MAR Emergency Fund a portion of any funds recovered from fines and penalties from legal actions against parties responsible for damage to reefs.

Once the legal teams have completed their review of current legislation and regulations, they will share best practices from within and without the region and recommend (where necessary) more appropriate language. Specifically, MAR Fund will request the legal team to:

- Share best practices among the four MAR countries;
- Recommend improved language for legislation or regulations;
- Recommend ways to ensure the funding is applied to reef restoration either directly in the Emergency Fund or as a national match;
- Incorporate IMO requirements and recommendations for boat insurance to be carried in the MAR region to ensure effective payout for unintended groundings;

It is important to note that the CCAD will be a very important player in advancing the needed legal frameworks – and promoting any changes recommended above with the appropriate ministries and with the IMO. CCAD advocacy is essential to ensure that the activities in both reef restoration and in emergency rapid responses (to both storm and ship damage), have the full support of the four MAR governments. Solid response capacity and contribution is a necessary precondition prior to additional investments of the Reef Rescue Initiative to build capacity in each country.

Based on the information that is gathered on vulnerable reefs overlaid by navigation maps, a proposal to designate the MAR (or portions of it) as a PSSA will be prepared and submitted to the IMO. IMO engagement will be of additional help in securing the regulations needed from each of the four governments.

The CCAD, Initiative Coordinator, and members of the TSC, will all support these changes within the appropriate government agencies. The CCAD will take the lead on sending letters

to the Ministries explaining the importance of the Reef Rescue strategies and the regulatory alignment needed in country. Countries will be told that their implementation of effective mechanisms are essential for access to the Emergency Fund, trained and equipped rapid-response teams, and funding to support needed channel markers and navigation signage. The TSC felt it was important to be clear that the policy framework is critical prior to additional investments being made in activities whose effectiveness requires an effective national regulatory framework.

2.c. Obtain permits for interventions by Rapid Response Teams following hurricanes and ship groundings.

The activities for this strategy align with 2.b. above, with specific attention given to the legal language for permits for Emergency Rapid-Response teams to effectively operate.

2.d. Improve channel markers and reef charts to further minimize unintended ship groundings

The Project Coordinator will distribute the GIS map of the vulnerable coral reefs in the region – overlaid by navigation maps of shipping channels (2.a.1). This should help ministries - particularly each national Navy Ministry - identify areas where new navigation rules may be needed as well as areas of highest vulnerability to unintentional ship groundings -- where additional signage is needed. The formal proposal submitted to the IMO (2.b.) that the reef or portions of the reef be considered Particularly Sensitive Sea Areas will also influence the signage requirements. Further work on signage requirements (e.g. lit channel markers, buoys, beacons, dayboards, etc.) will be needed to fully budget next steps post Year 5.

STRATEGY 3: Support and develop reef restoration and rehabilitation in the region through exchanges and knowledge sharing among practitioners and CCAD.

The Initiative will advance three major activities as part of this strategy:

3.a. Effective coral nursery and restoration techniques are piloted, documented and replicated in the MAR, and shared through exchanges throughout Central America.

3.b. Effective coral nursery and restoration techniques are funded as new pilots and/or for replication in the MAR.

3.c. Establish and train seven Rapid Response Teams to field-coordinate emergency restoration interventions in pre-selected reefs.

3.a. Effective coral nursery and restoration techniques are piloted, documented and replicated in the MAR, and shared through exchanges throughout Central America.

To strengthen the scientific and technical capacity of organizations to carry out science-based restoration, rehabilitation and re-population of coral reefs, the Initiative will promote partnerships and exchanges between scientists, NGOs, universities, CCAD, governments, municipalities, private sector and local people interested in coral reef restoration, in the MAR

region and Central America. The TSC is committed to building on the accomplishments and work already underway in the region. The Reef Restoration Network is a nascent community of engaged researchers and organizations in the four countries. It can serve as a convener and regional coordinator to build the scientific and technical capacity of organizations to carry out science-based restoration, rehabilitation and re-population of coral reefs.

Oceanus was the lead coordinator of an initial meeting in 2012 and will be given first option for organizing this ongoing Reef Restoration Network strengthening.

The Network is the only group currently coordinating exchange between practitioners in the MAR. As such, it will be supported through this program to further build the science capacity; create an open-source sharing of information ethic between members; and build the baseline for the verifiable indicators that we can all use in the Mesoamerican Reef. Products from the network will be shared with other practitioners in Central America. Specific activities to build and strengthen the Network include:

3.a.1 Host biennial meetings for the Reef Restoration Network scientists, practitioners and CCAD to share their findings and methodologies in the MAR and along Central America.

Specific products for the first meeting will be:

- Agreement on a charter for the group including open source sharing of information and data;
- List of key actors in reef restoration in the MAR region;
- Map of reefs where restoration projects have worked – and have not worked – in the MAR to date;
- Data on number and survival rates of nurseries and transplanted corals at this time;
- List of priority research and field tests required to further advance the field of coral restoration in the region;
- Criteria for choosing sites for nurseries and restoration programs (e.g. synergy with fish refuges, greater impact on fisheries etc.);
- List of people trained in Coral Reef Crime Scene Investigation and rapid restoration in the MAR (3.b.1.)

3.a.2. Hire a part-time coordinator for the Reef Restoration Network.

Most networks fail to function as full communities of practice because they lack consistent outreach, shared files, virtual work spaces, regular updates, and engagement opportunities. A part-time person for the Network will create a website for sharing information about coral reef restoration for the wider public, create a shared library and file exchange protocols, share innovations and best practices, arrange group calls and organize the biennial meetings.

3.b. Effective coral nursery and restoration techniques are funded as new pilots and/or for replication in the MAR.

MAR Fund will use its decade long experience in managing grant programs to enable local scientists to apply and test reef restoration techniques. We will provide grants to support coral nurseries, re-planting, sexual recruitment and other reef restoration-related pilot projects using strict scientific monitoring and evaluation protocols (including a baseline for quantifiable success criteria and the efficacy of the restoration effort).

The MAR Fund will use the list of priority research and field tests that emerge from the Reef Restoration Network to set grant criteria. Annual grants will be provided in line with those

priorities. $50,000/ year has been set aside for the grant pool. At the same time, other organizations and donors will be asked to help build this grant pool and match donations. In years when the full Reef Rescue programmatic budget has not been expended, 50% of the unused funding will be used to enlarge the grant pool while the other 50% will be used to capitalize the Emergency Fund (1.a.1).

3.c. Establish and train seven Rapid Response Teams to field-coordinate emergency restoration interventions in pre-selected reefs.

The goals of the Rapid Response Teams are to assess, document and repair physical damage to coral reefs resulting from hurricanes and ship groundings. The teams will salvage and re-attach live corals (which will die if buried under sand) and prevent ancillary damage, such as that resulting from having tree trunks or debris repeatedly hit the reef due to wave action. In the case of ship groundings, the teams will document damage to help the relevant authorities pursue legal action leading to fines and penalties to be used to finance restoration efforts.

Establishing effective teams will involve substantial up-front work to put in place all the financial and logistic arrangements such as: a) secure permits and partnership arrangements with local authorities (2.c.1.); b) arrange financing and swift flow of funds in response to emergencies (1.a.); c) purchase and store needed equipment (3.c.4), etc.). The actual training and implementation work will be coordinated with the existing Coral Reef Crime Scene Investigation (CSI) program[3] of the Coral Reef Alliance. The TSC feels that seven Rapid Response Teams are needed in the region – two each in Honduras, Mexico and Belize and one in Guatemala. To build these teams the following major activities are planned.

3.c.1. Develop guidelines for selecting the Rapid Response Team sites.

The guidelines for selecting sites will be done between the MAR Fund PCU coordinator and advisors from Reef Restoration Network (Y1 and Y2):

- Build a list of regional people who have been trained in Coral Reef Crime Scene Investigations;
- Determine their current level of engagement and interest in the Rapid Response teams;
- Set criteria for where rapid response teams would be best located - based on historical reef damage areas (hurricane and ship groundings), reefs adjoining important fisheries; and ability of a team to quickly transport themselves to other important reef areas;
- Set criteria for the pre-selected reefs that will be prioritized for rescue. This includes reefs adjoining fisheries, reefs with strong support from local businesses and communities and those contiguous to or in protected areas.
- Set criteria for team member selection – based on skills such as scuba diving experience, interest and desire, mobilization speed via communications and

[3] Crime scene investigation (CSI) techniques are now being used underwater via the Coral Reef CSI program. Through the program's field training workshops, participants learn underwater forensic investigative techniques applicable to vessel groundings, destructive fishing and other human impacts that threaten coral reefs. Participants learn proper procedures for gathering and preserving evidence in the marine environment and get instruction in providing clear and concise analysis during decision-making processes such as court trials. http://www.coral.org/coral_reef_csi.

transport availability, and the benefit of the supplementary income as a contribution to 4.a.

3.c.2. Host a workshop in Year 2 for current CSI practitioners and other restoration experts.

The workshop will:

- Invite CCAD as a learning and exchange opportunity;
- Adapt best practices in current CSI applications for the Mesoamerican Reef and set a training agenda for Rapid Response Teams in Year 3;
- Develop a manual for practitioners to evaluate and record damage in the MAR;
- Develop a manual with clear "how to" instructions and methods for rapidly restoring damaged reefs;
- Lay out the equipment that every Rapid Response team will need including:
    - Communications
    - Transportation
    - Team member equipment like scuba gear
    - Purchase equipment for the team like concrete, rebar, tools etc.
- Establish who will activate emergency response teams and how team captains will be chosen.

3.c.3. Train and Establish Seven Rapid Response Teams in Year 3

The experts engaged in the Year 2 workshop and manual creation (3.c.2) will be the presenters and experts used to train the teams.

- Host a workshop with at least two selected leaders from each team (more as funding permits);
- The workshop may be bifurcated based on language skills (e.g. Belize and another for participants from Honduras, Guatemala and Mexico);
- Use and distribute the manuals and materials developed in Year 2 (3.c.2.);
- Train members in the current legislation and protocols from their respective countries (2.a.2.); and
- Provide a list of all needed equipment.

3.c.4. Equip and Monitor the Rapid Response Teams in Year 3

Once the teams are trained and clear fast-track permit processes or approvals have been granted by government authorities (See 2.c.1):

- Ensure appropriate storage area for equipment;
- Purchase needed items;
- Ensure boats, scuba equipment, oxygen tanks and other rented or team member equipment is readily available for rapid response;
- Ensure protocols are established for communications and transportation to sites;
- Ensure protocols are established to move Emergency Fund money to support the teams.

3.c.5. Update and maintain training/coordination with Rapid Response teams

Provide a coach to visit with teams at least 1x a year to practice simulations, learn new techniques train new team members and/or visit restoration sites.

STRATEGY 4: Develop Alternative Financing Mechanisms for Reef Restoration.

The Initiative will use three major activities to advance this strategy:

a. Encourage at least three businesses to invest in reef restoration and benefit through their hotels, dive shops and other tourist-dependent enterprises that may derive added benefits from improving the snorkeling and diving sites their clients use.

b. Create new tourism products centered on tours to coral reef nurseries and restoration areas (snorkeling and lectures) and creating volunteer conservation opportunities for divers and snorkelers.

c. Develop training and certification programs on reef restoration.

4.a. Encourage at least three businesses to invest in reef restoration and benefit through their hotels, dive shops and other tourist-dependent enterprises that may derive added benefits from improving the snorkeling and diving sites their clients use.

To ensure financial sustainability of coral nurseries and rehabilitation areas, private partnerships and investment will be needed. Through the other strategies the Initiative has been building a database of businesses that rely on healthy coral reefs for their business success. The plan is to offer various "products" to this group of business owners, including:

a) Insurance for "their" reef – 1.b.

b) Opportunities to contribute to the Emergency Rapid Response Fund – 1.c.

c) Contribute to reef restoration research and field trials through grant funding. – 3.b.1; and/or

d) Support and or/host a nursery and restoration program for "their" reef.

This last product will require additional promotional efforts and matching support. Specific activities will include taking the criteria discussed during the Reef Restoration Network meeting during Year 1 (3.a.1) for reef nursery sites, and cross indexing it with reefs where businesses are willing to invest. In these areas, determine if local community fishermen/guides, with snorkeling and scuba diving skills, would be interested in the activity as a supplement to their income and as a contribution to the reef.

Once there is interest on the part of businesses and local workers, then laying out the business plan, general costs and timeline is needed. A business plan will be developed at a general level – and then adapted for individual reefs. The Plan will lay out:

- Costs of various scales of restoration efforts;
- Costs and timing of working with various species of corals;
- Convergence of timing of restoration efforts with fishing lulls;
- List and costs of equipment and materials needed;
- Average cost of day laborers with the skills needed;
- Costs for boat rentals for transplants and monitoring.

The idea is that these annual costs would be assumed by the business/businesses in the area. Having ballpark expense estimates from the initial business plan will be extremely helpful in negotiating with business owners. In addition, the Business Plan would review the costs and value of what the Reef Rescue Initiative would contribute, specifically:

- Develop communication materials for businesses clients/guests about the value of the nurseries and restoration efforts – that could tie into new products such as nursery tours (4.b).
- Training a manager and local workers for the nursery and restoration efforts (4.c);
- Provide scientific oversight and a coach to visit the site at least 2 x a year to ensure it is well managed and coral survival is good (4.c);

4.b. Create new tourism products centered on tours to coral reef nurseries and restoration areas (such as snorkeling and lectures) and create volunteer conservation opportunities for divers and snorkelers.

While the businesses that engage in hosting nurseries and restoration programs will develop their own products and business lines, the Initiative will develop communication materials for businesses clients/guests about the value of the nurseries and restoration efforts. The idea is that the Initiative is better positioned to share the science and rationale behind the programs, whereas the businesses will be responsible for their own product development and marketing.

4.c. Develop training and certification programs on reef restoration.

The Initiative will support businesses willing to install and support nursery and restoration efforts by providing training and certification programs for the business and employees (sub contractors) that will build the nurseries. Ideally, the training programs will benefit businesses in the four countries (2 each from Honduras, Belize and Mexico and 1 from Guatemala) so that success will encourage more private engagement. The training programs, developed with experts from the Reef Restoration network, will cover:

- Experience with coral nurseries to date;
- Types of coral and coral growing techniques;
- Methods and equipment needed;
- Site selection criteria for nursery;
- Permits needed to use small bits of coral from donor sites to grow the nurseries;
- Ideal sizes and timing for transplanting from the nursery to the reef for restoration.

In addition, trained practitioners will need to be present to construct the initial nursery and to visit on a periodic basis (at least 2x per year) to ensure that the nursery is thriving and that corals are well prepared to be transplanted for reef restoration.

Synoptic Chart