

## THE GEF SMALL GRANTS PROGRAMME

<b>Type of Report:</b>	<b>Final</b>
------------------------	--------------

---

**Grantee:**

Name:	<b>Marine Research Foundation</b>
Address:	<b>136, Lorong Pokok Seraya 2, Taman Khidmat, 88450 Kota Kinabalu, Sabah, Malaysia.</b>
Person in Charge:	<b>Dr. Nicolas J Pilcher</b>

---

**Identification of the project:**

Project title:	<b>Promoting an ecosystem-based approach to fisheries via Turtle Excluder Devices in Malaysia</b>
Project number:	<b>MAL/SGP/OP5/Y3/SP/STAR/BD/14/03</b>
Location:	<b>Pahang, Terengganu, Kelantan, Johor, Sarawak, Sabah</b>
GEF SGP focal area:	<b>Conservation of Biodiversity</b>
Type of project:	<b>Strategic</b>
Start-up date:	<b>01 May 2014</b>
Completion Date:	<b>31 January 2017</b>
Reporting period	<b>01 May 2014 – 31 January 2017</b>

---

**Budget and Finance:**

Total project cost:	<b>USD 223,000</b>
SGP Grant amount:	<b>USD 148,000</b>
Co-funding amount:	<b>USD 75,000</b>
Contribution of the Local CSO:	<b>USD 20,000</b>
Final project expenditure:	<b>N/A</b>

---

**Participants/Beneficiaries:**

Target group:	<b>Fishermen, Department of Fisheries Staff, General Public</b>
Number of male participants:	<b>729</b>
Number of female participants:	<b>71</b>
Number of youth	<b>0</b>
Number of children	<b>0</b>
Number/participation of other stakeholders	<b>74 (media)</b>

Prepared by: N. J. Pilcher

Date: 31 March 2017

# FINAL REPORT

**Project No. MAL/SGP/OP5/Y3/SP/STAR/BD/14/03**

**Project Title:**

Promoting an ecosystem-based approach to fisheries via  
Turtle Excluder Devices in Malaysia.

**Implementing Agency:**

Marine Research Foundation (MRF), Malaysia



Funded by



March 2017

## Table of Contents

PART I.....	1
1.0 Project Background.....	1
2.0 Activities .....	3
3.0 New Developments and Unexpected Outcomes.....	15
4.0 Remarks / Lessons Learned .....	16
PART II.....	18
A – Community Participation.....	18
B – Sustainable Livelihoods.....	19
C – Participation of Indigenous Peoples .....	19
D – Policy Impact .....	19
E – Capacity Building.....	20
F – Gender Focus .....	20
G – Promoting Public Awareness of Global Environment.....	20
H – Innovative Financial Mechanisms.....	21
I – Replication of Project Activities .....	21
J –Scaling Up to a Medium Sized GEF Grant or Non-GEF Grant, or Linkages with Large GEF Projects...	21
K – Project Sustainability .....	22
ANNEX I: Inception Workshop Report .....	<b>Error! Bookmark not defined.</b>
ANNEX II: Terengganu State Workshop Report.....	<b>Error! Bookmark not defined.</b>
ANNEX III: Pahang State Workshop Report .....	<b>Error! Bookmark not defined.</b>
ANNEX IV: Sarawak Workshop Report.....	<b>Error! Bookmark not defined.</b>
ANNEX V: Sabah Workshop Report .....	<b>Error! Bookmark not defined.</b>
ANNEX VI: Kelantan Workshop Report.....	<b>Error! Bookmark not defined.</b>
ANNEX VII: Johor Workshop Report .....	<b>Error! Bookmark not defined.</b>
ANNEX VIII: Training and Awareness Materials.....	<b>Error! Bookmark not defined.</b>
ANNEX IX: GEF SGP Scaling-Up TEDs Case Study .....	<b>Error! Bookmark not defined.</b>
ANNEX X: Malaysia TEDs Implementation Plan .....	<b>Error! Bookmark not defined.</b>
ANNEX XI: Sandakan TEDs Presentation Ceremony .....	<b>Error! Bookmark not defined.</b>
ANNEX XII: Training the TED Trainers Workshop.....	<b>Error! Bookmark not defined.</b>
ANNEX XIII: US State Department – NOAA Preparatory Visit .....	<b>Error! Bookmark not defined.</b>
ANNEX XIV: Financial Valuation of Media Coverage.....	<b>Error! Bookmark not defined.</b>
ANNEX XV: Operationalising the TED Implementation Committee.....	<b>Error! Bookmark not defined.</b>
ANNEX XVI: List of fishermen involved the TED workshops in 2016 / 2017 who will use teds in 2017.	<b>Error! Bookmark not defined.</b>

A project by:

In association with:



# PART I

## 1.0 Project Background

### ***Bycatch***

Bycatch is a pervasive threat to regional fisheries and food security. Bycatch of juvenile fish threatens future fisheries. Bycatch of endangered species threatens tourism revenues and international conservation commitments. Bycatch is mostly accidental, whereby non-target species and juveniles of target species are harvested alongside target species.

Seafood is an important ecosystem product of coastal waters and ocean ecosystems and is a primary source of protein for millions of people. The current rate of seafood consumption in SE Asia is ~25kg per person per year, and the region is projected to have the highest growth in seafood consumption, growing at 1.8 % per year to ~30kg per person per year in 2030. Current non-aquaculture seafood production in SE Asia is approximately 21.2 million tons per year, supporting over 3.5 million fishers. Food security from this sector cannot be underestimated.

Sustaining Malaysia's seafood contributions to food security hinges on the ability of institutions to develop strategies to mitigate present bycatch rates, ensuring regional food security while protecting and improving ecosystem function with regards to loss of non-target and juvenile species.

But bycatch reduction methods are complex to introduce to fisheries. Trawl fisheries benefit from Turtle Excluder Devices (TEDs) and Juvenile and Trash Excluder Devices (JTEDs). Gill nets are starting to see benefits from pingers and flashing LED diodes. Net deployment location and timing are also mitigation options. But these are only a few solutions for the many problems that exist.

Fishers (for the most part) are uninterested in change; concerned that income will be affected, laying blame on other fisheries or fishery sectors. In SE Asia there are few examples of successful bycatch mitigation programmes, although there have been numerous demonstration projects and short-term trials. Few have led to wide-scale adoption, government legislation, and fisher buy-in.

For fisheries to become more ecologically sustainable and resilient, change is inevitable and adaptation plans and programmes are necessary. These need to involve the fishing communities, the government, fishery development agencies, NGOs, and other relevant stakeholders.

### ***Sea Turtles***

Sea turtles are iconic species in Malaysia, and indeed across the entire Indo-Pacific. Their migratory nature means that sea turtles of SE Asia are linked to populations as far away as Palau, Guam, and even Australia. But given their need to breathe and surface frequently, sea turtles generally inhabit shallow coastal habitats which overlap with key artisanal and commercial fishing grounds, and the bycatch of sea turtles in coastal fisheries is considered the number one threat to turtles across the world. In Malaysia, turtle eggs are poached on remote islands, large adult turtles are poached by foreign fishing boats, nesting sites are slowly lost to coastal development. And, by far, the greatest threat to sea turtles is accidental capture in commercial and artisanal fisheries – and of these, shrimp trawl fishing represents the greatest form of sea turtle mortality.

Solving this conundrum has traditionally been a very challenging exercise, as one needs to protect sea turtles but not at the expense of ruining or negatively impacting the livelihoods of fishing communities. This means that fishery closures and spatial restrictions are less successful than gear modifications or changes in fishing practices.

Sea turtles across the planet face a range of pressures. Hunting, egg collection, loss of nesting

beaches, habitat alteration, and possibly most pervasively, bycatch in commercial and artisanal fisheries. The US National Research Council listed shrimp fishing as the most serious threat to turtles back in 1990, as turtles that overlap with fishing grounds become entrained in fishing nets and drown. In the US alone, estimates of thousands upon thousands of sea turtles being killed in shrimp fisheries drove the National Marine Fisheries Service to adopt Turtle Excluder Devices (TEDs) as the primary mitigation measure back in the 1980s; **Figure 1-1**). A TED is usually an oval frame with vertical bars set at precise spacing that allows shrimp and fish to pass through to the cod end, at the back of the net, while turtles and other large objects are forced out through an opening covered by a net flap. Seen from a practical standpoint, TEDs can improve the quality of the catch, as large objects such as logs and large animals do not crush it, and the reduction of debris in the back of the net saves fuel, which is a benefit to fishers

In Malaysia sea turtles have been taken by the thousands in shrimp trawl fleets for many years. But while TEDs have many advantages, fishers are often wary of using them because of the large exit trapdoor in the net which allows the turtles and debris to escape - fishers are concerned that their target catch will also be lost through the opening. Despite some initial investigations into the use of Turtle Excluder Devices (TEDs) in the 1980s by the Department of Fisheries Malaysia (DOFM), there was little traction in TED uptake and fishers did not use them.



In the last half-century there have been limited approaches to ecosystem-based fishery management in Malaysia, and scant involvement of local fishing communities in fishery management decision-making and policy. Due of this, bycatch is a serious concern – not only of smaller juvenile and trash fish but also of large marine endangered species such as marine turtles. Marine turtle populations in Malaysia have been depleted through long-term harvests of eggs and adults, and as bycatch in the ever-growing trawl fisheries, currently being decimated indirectly through mechanised fisheries at a rate of 2000 to 3000 animals per year. Trawl fisheries are considered one of the world's greatest fisheries-related threats to sea turtles (NRC 1990) but Turtle Excluder Devices (TEDs) offer practical low-cost solutions allowing catch to be retained while turtles are excluded.

### **Project Goals**

This goal of this project was to support the development and implementation of a long-term National bycatch reduction programme in partnership with the Department of Fisheries Malaysia (DOFM) as a component of an ecosystem-based approach to fisheries, at the same time improving the conservation status of sea turtles and their habitats in Malaysia while ensuring continued fishery benefits.

The project partnered directly with fishing communities in six key States in the country, namely Kelantan, Terengganu, Pahang, Johor, Sarawak and Sabah, to enhance the effectiveness of conservation of sea turtles, alongside the Government sector, through the adoption of TED technology, the removal of knowledge barriers, National and State mainstreaming activities, and fisher community-based stewardship approaches.

Four species of marine turtles occur in Malaysia, and of these, the Green (*Chelonia mydas*) and Hawksbill (*Eretmochelys imbricata*) are nesters, while the Olive Ridley (*Lepidochelys olivacea*) and

Leatherback (*Dermochelys coriacea*) are virtually extinct. Marine turtles have long been identified with conservation needs, and are protected by law – collection of eggs and adults is prohibited in all but two States, and key nesting sites are protected through National Parks agencies. Recent genetic research (Jensen et al. 2016) and satellite tracking data (Kolinski et al. 2010, Benson et al. 2007, NOAA Fisheries, unpubl. data), link these populations to those of the Western Pacific and other parts of the Indo-Malayan archipelago. Sea turtle bycatch reduction was identified as one of the focal species groups (along with cetaceans, birds and sharks) of the NOAA PIRO-funded multi-species bycatch workshop held in Kota Kinabalu, Sabah, in September 2005, and also is a key priority activity under the Coral Triangle Initiative (CTI) Regional Plan of Action.

This project addresses sea turtle conservation Objective 1 (Reduce direct and indirect causes of sea turtle mortality) of Malaysia's National Plan of Action (NPOA; DoF Malaysia 2008), and the recently adopted tri-partite Regional Action Plan for the Conservation of Marine Turtles and their Habitats in the Sulu-Sulawesi Seascape (Pilcher 2009), and supports the goals of the ASEAN MoU on Sea Turtle Conservation and the objectives of the Sulu Sulawesi Seascape programme.

This proposal also addresses Malaysia's commitment to an ecosystem based approach to fisheries whereby fishery stocks are managed while addressing bycatch of unwanted species, and also addresses key commitments under international agreements including



CBD (Convention on Biological Diversity), IOSEA Turtle MoU (reduction of bycatch, reduction of direct turtle mortality), the Coral Triangle Initiative (Ecosystem Approaches to Fishery Management, and conservation of threatened marine fauna), and the Sulu Sulawesi Seascape programme.

The strategic objectives of this project were to enhance the effectiveness of conservation of sea turtles while working with local fishing communities and the Government sector through the adoption of TED technology, the removal of knowledge barriers, National, and State mainstreaming activities, and fisher community-based stewardship approaches.

The key activities to enable these processes included demonstration trials, dialogue sessions with fishers, targeted training workshops for net makers and Fishery Department officials, the use of evidence-based systems in the form of real-time video and fuel flow measurements, along with enhanced awareness-raising at a National level.

Key outcomes of this project have included 1) removal of barriers to critical knowledge needed for decision-making for effective conservation of sea turtles; 2) incorporation of sea turtle and ecosystem conservation priorities and measures into relevant policy, planning and regulatory framework review processes; and 3) enhancement of local fisher community-based stewardship of sea turtles at selected important sites.

## 2.0 Activities

The key activities of this project include demonstration trials, dialogue sessions with fishers, training workshops for net makers and Fishery Department officials, the use of evidence-based

systems in the form of real-time video and fuel flow measurements, along with enhanced awareness-raising at a National level. Key outcomes include 1) removal of barriers to critical knowledge needed for decision-making for effective conservation of sea turtles; 2) incorporation of sea turtle and ecosystem conservation priorities and measures into relevant policy, planning and regulatory framework review processes; and 3) enhancement of local fisher community-based stewardship of sea turtles at selected important sites.

## 2.1 Project Staff

At the onset of the project, MRF employed two project staff to work on the TED project, both commenced work in September 2014. One staff member was Malaysian (Ms. Ong Fang Sing) and took on the major responsibility for project implementation, while the second (and funded by NOAA) was Spanish (Mr. Marc Sans Bassa), who brought substantial experience of working with fishers on bycatch projects. Subsequently Ms. Ong was replaced by Ms. Cheryl Roland, Sarawakian, who continued implementing the TED project on behalf of MRF until December 2015. Following her departure, the remaining aspects of the project were taken over by MRF's Director. However, by this point the project had been 'adopted' by Jabatan Perikanan, and materials for workshops had already been procured. Marc Bassa remained on the project until all of the workshops had been completed. MRF worked extremely closely with the team from DOFM's Turtle and Marine Ecosystem Center (TUMEC) staff, led by their Manager Mr Syed Abdullah bin Syed Abdul Kadir, and his senior management leaders. Throughout the project, the TUMEC / MRF partnership worked extremely well, with ample communication and collaboration, to implement the TED project.

## 2.2 State Workshops

Across the life of the project we conducted a total of one Inception meeting, six State level workshops, a closing/launch meeting in late 2016, one TED AllStars training workshop, TED handover sessions, along with substantial communication and collaboration between MRF and DOFM.

The national Inception Workshop was organized at the Seasons View Hotel, Kuantan, from 13th to 14th October 2014 and was attended by 33 participants spanning the fishing community, the Department of Fisheries Malaysia and MRF. The workshop provided an opportunity to present the project objectives to key stakeholders from five of the six States that will be targeted by the project. Unfortunately due to logistical difficulties the participants from Kelantan were unable to participate (vehicle breakdown while on the way to Pahang). A detailed description of the Inception meeting can be found in **Annex I**. State workshop reports are provided in **Annexes II** through **VI**

The workshop included presentations by both MRF and DOFM on the background and history of TEDs worldwide and in Malaysia, and included practical demonstrations of TED assembly and insertion into standard trawl fishing nets. On the second day of the workshop the participants participated in a project launch even with the Deputy Director, DOFM, followed by at-sea demonstration trials. These presentations became a standard practice as the workshops were subsequently held in each individual State.

The Terengganu State workshop was organised at the Cukai View Hotel, Kemaman, in the State of Terengganu from 23<sup>rd</sup> to 28<sup>th</sup> February 2015 with a total of 59 participants including 30 fisherman and 29 DOFM officers. The workshop was also attended by Mr. Abdul Khalil bin Abdul Karim, Director of Terengganu State Fisheries Department. This workshop received local press coverage from Harian Metro, China Express, Nanyang Siang Pau, Sinar Harian and Bernama.

The Pahang State workshop was organised at the Seasons View Hotel, Kuantan, from 26<sup>th</sup> to 28<sup>th</sup> March 2015 with a total of 84 participants attending the workshop, including 59 fishermen and 25 DOFM officers from Kuantan. The workshop was also attended by Y.B Dato Haji Shafik Fauzan



Bin Sharif, Chairman of the Committee for Rural Development, Agriculture and Agro-based Industry. This workshop received local press coverage from Utusan Malaysia, Sin Chew Daily, News Strait Times, Bernama, The Rakyat Post and The Borneo Post.

MRF and DOFM then conducted the two largest State workshops, in Sarawak from 9<sup>th</sup> to 12<sup>th</sup> June 2015 and in Sabah from 14<sup>th</sup> to 17<sup>th</sup> October, 2015 – each of these States being as big as all of peninsular Malaysia

A total of 96 participants attended the Sarawak workshop, including 53 fishermen (23 from the district of Kuching, 9 from the district of Sibu, 8 from the district of Bintulu, 7 from the district of Miri, 3 from the district of Sarikei and 3 from the district of Mukah) and 43 DOFM officers (40 from Sarawak, 2 from Rantau Abang and 1 from Putrajaya). Additionally, 78 participants attended the Sabah workshop, including 46 fishermen (33 from the district of Sandakan, 7 from the district of Beluran, 2 from the district of Kudat, 1 from the district of Lahad datu and 3 from Kampung. Tanjung Aru), 32 Officers (7 from the district of Sandakan, 1 from the district of Tuaran, 2 from the district of Tawau, 3 from the district of Kuala Penyu, 2 from the district of Lahad Datu, 1 from the district of Kunak, 2 from the district of Semporna, 1 from the district of Sipitang, 2 from the district of Kota Kinabalu, 3 from the districts of Beluran, 1 from the district of Papar, 1 from the district of Pitas, 1 from the district of Kota Belud, 1 from Taman-Taman Sabah, 1 from TUMEC, 4 from FRI Rantau Abang and 1 from Terengganu. The workshop was officiated by Dr. Ahemad Sade, Assistant Director of Sabah Fisheries Department. We also welcomed Miss Lee Shin Shin (GEF SGP National Coordinator, Malaysia) and Miss Lai Sook Mei (GEF SGP Malaysia), who attended part of the workshop.

An additional State workshop was held in Kelantan from 21<sup>st</sup> to 24<sup>th</sup> February 2016. MRF also assisted in convening a third meeting of the TED Implementation Task Force. A total of 58 participants attended the Kelantan workshop, including 24 fishermen (22 from the district of Tumpat and 2 from the district of Kota Bharu) and 27 DOFM officers (22 from Kelantan and 5 from Rantau Abang). Kelantan State has ten different districts, but only four of



them are coastal (Kota Bharu, Tumpat, Bachok and Pasir Puteh). The Kelantan TED workshop welcomed participants from two of those four districts (Tumpat and Kota Bharu), which comprised the highest proportion of the state trawl fishing community.

The final State workshop in Johor was held from 20<sup>th</sup> to 23<sup>rd</sup> March 2016. A total of 45 participants attended the Johor workshop, including 21 fishermen (17 from the district of Mersing and 4 from the district of Kota Tinggi) and 11 DOFM officers (8 from Mersing, 2 from Johor Bahru and 1 from Kota Tinggi), together with 11 TUMEC officers and 2 MRF staff. The workshop was officiated by Tuan Haji Munir Bin Mohd Nawi, Director of Johor Fisheries Department.

### **2.3 TED Training “Allstars” Workshop**

MRF also ran a targeted training session for 17 TED constructors from the Department of Fisheries Malaysia in April 2016. MRF also helped arrange and participated in the landmark visit by the US State Department to Malaysia on the initial trip to secure certification under the PL609 programme, and continued to build stronger ties between MRF and DOFM. MRF also assisted in convening a third meeting of the TED Implementation Task Force, along with enhanced communication and collaboration between MRF and DOFM.

A standardised agenda was adopted for each of the State workshops, consistent with initial phases of this project, which included presentations on the background and history of TEDs, demonstrations of TED assembly, and demonstrations on insertion into standard trawl fishing nets. The workshops also provided an opportunity to convene dialogue sessions with fishers, and to conduct training of net makers and DOFM officers. These workshops, along with the at-sea fishing trials and building TDs on the fishing jetties, were the primary mechanism through which MRF liaised with the fishing communities, and the number of days at each location allows MRF and DOFM staff to conduct at-sea paired trials, dialogue sessions with the fishers, training of net makers, and capacity building for DOFM officers.

Complete detailed reports for all workshops, which contain specific activities and descriptions of the fisheries in Terengganu, Pahang, Sabah, Sarawak, Kelantan and Johor are presented in **Annex II** to **Annex VII**.

## **2.4 Fisher Dialogue Sessions**

During each of the workshops, time was set aside to allow participants to raise questions and concerns about TEDs formally in the dialogue sessions and also informally in other sessions during the workshops. Questions during the workshops in Sabah and Sarawak addressed such issues as whether TEDs would be made mandatory by law, costs of the TED, the use of smaller chafing lines, single versus double flap TED covers, and the need for additional trials and research. MRF welcomed and took into account any suggestions from fishermen on improvements and making the TED design more suitable for Malaysia's fisheries. Specific questions and responses are detailed in each workshop report. These differed by State, understandably, given the variety of fishing conditions, socio-economic situations of fisher communities, and government involvement.

## **2.5 Net Makers Training**

Throughout the project, fishermen and DOFM staff had the opportunity to practice and learn how to build TEDs with the help of MRF technicians. The sessions were spread over two days during each workshop, allowing fishers to assimilate the new knowledge and put this into practice. As in past workshops, on the first day, fishermen observed MRF staff demonstrate the correct steps in the complete construction of a TED, from basic materials to the finished product ready for installation. Subsequently, on the second day, MRF staff observed while fishermen built the TEDs using lessons learnt on the first day of training. DOFM officers assisted with translation and additional explanations, in the very open and dialogue-based training sessions. During the Sabah workshop DOFM staff took on a more active role in this training, with MRF providing more of a back-up role. This was then continued in Kelantan and in Johor, culminating in a TEDs Allstars training session, where a team from DOFM became 'TED Experts' able to construct, modify, adjust and install TEDs nation-wide. Details of the training are provided in **Annex XIII**.

## **2.6 Field Demonstrations**

Sea trials were conducted with underwater video cameras attached to the TED and also with the TEDCam (live real-time streaming of TED footage to the vessel bridge) to record additional information about the TEDs operation and behaviour. At the end of the trial sessions, catch comparisons took place to compare TED effectiveness between vessels equipped with TEDs and those without TED. Catches were sorted, weighed and catalogues for detailed comparison. DOFM officers arranged for multiples of two vessels, with varying numbers from six to 12 vessels at each workshop, to participate in these trials. Fishers from all States and districts were able to be on board and document TED successes. Both the net makers training and the field demonstrations sessions played important roles in the project, enabling MRF and DOFM staff to communicate and interact directly with the fishermen, while building and using the TEDs, providing opportunities to detect any possible problems during the trials and formulate solutions.

## 2.7 Development of Learning Aids

MRF has developed a series of learning aids for both fishers and DOFM staff to support the implementation of TEDs in Malaysia. These materials include practical manuals on TED construction, assembly and deployment; handling guidelines; brochures and other awareness materials. MRF staff have developed these with input from DOFM officers and existing resource materials. The set includes a waterproof slate on TED construction and measurements, a waterproof booklet for fishers, a turtle handling procedure pamphlet, a training manual for fishery officers, along with a number of awareness materials such as posters, caps, T-shirts, stickers and other awareness materials. Inputs from DOFM and fishers about possible improvements on these materials have been taken into account for edits and modifications. All information, including the original files, have been provided to DOFM, seeking their involvement on distributing these public awareness and outreach materials throughout the country. Samples of all the materials are provided in **Annex VIII**.



During the first months of the project sufficient TED-making materials and equipment were purchased, made ready and stockpiled at two stocks (Putrajaya and Sabah). Nets, TED grids, angle meters, sewing materials, etc. are available since that time for TED-making, TED-inspection and at-sea trial demonstrations performed at every workshop. The stock is being continuously resupplied for new TEDs and materials while they are used and given away at the workshops.

An intense search from DOFM and MRF has also been carried out to find and secure the best material suppliers at each State. Aluminium workshops and net shops are currently familiarised with the specific characteristics of the TED materials required, and local fisher communities are aware of these suppliers if needed. As this is the first phase of the project, all materials and TEDs

are given away for free by DOFM and MRF to all interested parties who use a turtle excluder device on their trawl nets.

A great deal of information about sea turtles and TEDs is available worldwide. However, there is always the need to removing language and cultural barriers so that knowledge can be easy to understand by local fishing communities in Malaysia. For this reason the various awareness and outreach materials have been developed in both Malay and English, and are being disseminated throughout the different states while the workshops take place. TED outreach materials that have been developed are:

- An informative and educational booklet for fishery officers and a different informative and educational booklet for fishermen. The booklets contain general information about sea turtles and TEDs, the history and evolution of the TEDs designs and information needed about how to construct TEDs (for fishermen) and how to proceed with TED inspections (for fishery officers).
- A TED construction & Installation Instructions waterproof slate has been created, with the objective to make available to fishermen a TED-making simple summary that can be used as a quick reference at sea or on shore.
- Sea turtle handling procedures brochures in Malay, Chinese and English. These pamphlets contain simple information for the fishing communities can use related to the steps that should be taken if they catch a sea turtle accidentally while fishing or encounter one in trouble.
- A mini-trawl net sample with a small TED inserted was also built and is brought to all the workshops. The sample acts as a first explanation, to help fishermen understand what is the real location and functionality of the TED in the trawl nets.
- T-shirts, caps, mugs and stickers have been also designed and given away at the workshops seeking the dissemination of public awareness around the local fishermen communities.

Besides our intention of creating public awareness on sea turtle conservation and use of TEDs for the fishermen communities, all materials that have been developed are also educational materials for the Department of Fisheries Malaysia and can be used in the future once the project ends and DOFM takes over the responsibility for future development of the TED programme.

## **2.8 Development of Dedicated Website**

MRF has established a TED resource website ([http://www.mrf-asia.org/mrf\\_project/malaysia-turtle-excluder-device-programme/](http://www.mrf-asia.org/mrf_project/malaysia-turtle-excluder-device-programme/)) which it continues to expand with new information and resources for visitors. MRF originally contracted JuiceAPAC Sdn. Bhd. to develop a dedicated website platform for public to access materials relevant to TEDs and turtles in Malaysia. Unfortunately this company failed to deliver and MRF found a new website developer during this reporting period, and eventually settled with MX Elements Sdn. Bhd., who have developed an extensive content-based website as a dedicated platform.

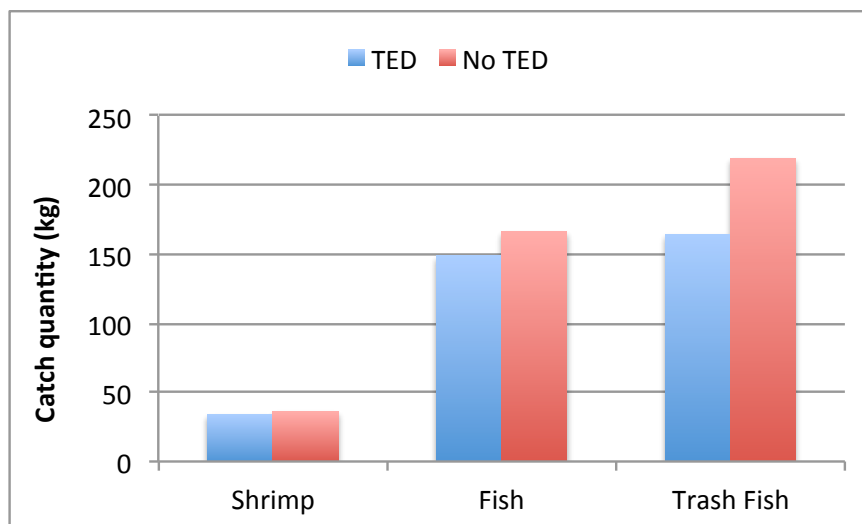
Back-end features for the website Administrator include the ability to create / edit / delete Articles on Conservation, Research, Consultancy, TEDs & News; the ability to upload photos / videos / documents related to TEDs; the ability to manage content in the About Us section; the ability to add points on Project Map with short description and link to project articles; and the ability to manage main page slideshow. The website has been up and loaded with content since early 2016.

## 2.9 Catch Comparisons

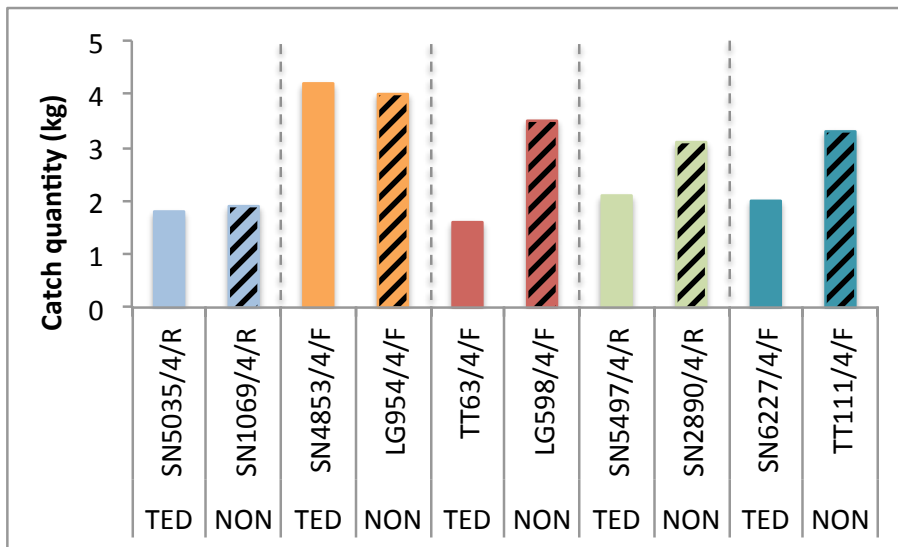
We found substantial variability across catches in the differing States, given the differences in gears, vessel sizes and engine powers, and numbers of vessels participating in the trials at each location. Overall however, we have found that TEDs did not cause substantial impacts to fishing operations and catch quantities, and the data collected during the trials backs up the presentations by the Department of Fisheries at each workshop, and concur with past trials conducted by MRF between 2007 and 2010.

Actual weights for catches were collected during each of the State workshops are presented below. In Sabah, there was an overall 25% reduction in trash fish which is a benefit to fishers (less sorting, less unwanted catch in the net), but countering this there was a slight (~5%) decrease in shrimp catch and a ~10% decrease in fish catch when using the TEDs, although there was substantial variability across days and vessels (**Figure 2-1**).

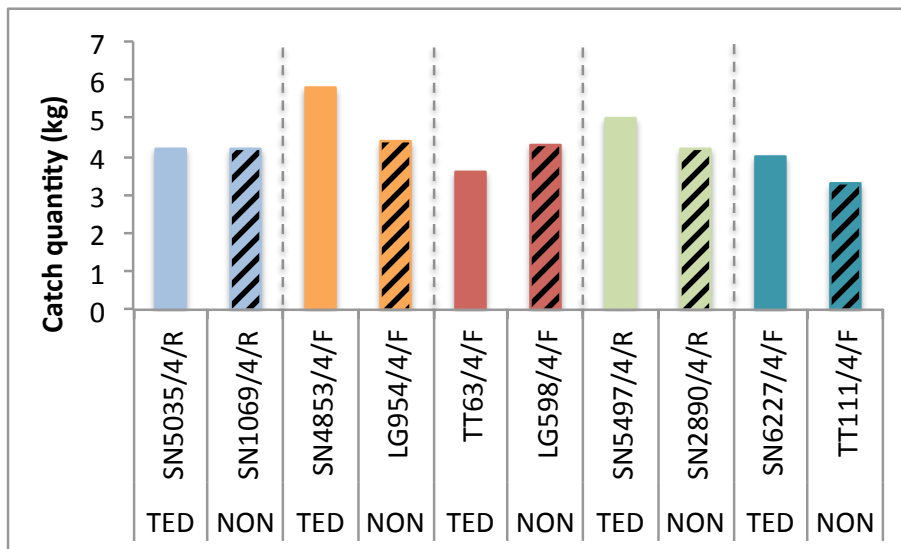
**Figures 2-2** and **2-3** highlight the variability of catches with the same vessels across different days during paired tows in Sabah. Each coloured pair represents a pair of similar-sized vessels towing side by side, with the patterned shrimp catch column representing the vessel without TED (solid colours depict catches from vessels with TEDs). Catches on day 1 (**Figure 2-2**) were notably lower than catches on day 2 (**Figure 2-3**). Across days, the 'orange' TED vessel consistently outcaught its partner, while the 'red' TED vessel recorded consistently lower catches. The 'blue' pair of vessels brought home reversed catches across the two days, while the light blue vessels recorded similar catches on both days. On day 1 the orange pair doubled the catches reported by the light blue pair, but on day 2 these were much more comparable. These results highlight the substantial variability across vessels, locations (on the same day) and over time. These results also reinforce the notion that is explained to fishers during the workshops whereby catches vary by day, by location, by vessel and by gears. Only following longer-term trials (for a month, for instance) can catches really be compared usefully.



**Figure 2-1: Overall catch comparisons for trials during the Sabah workshop.**



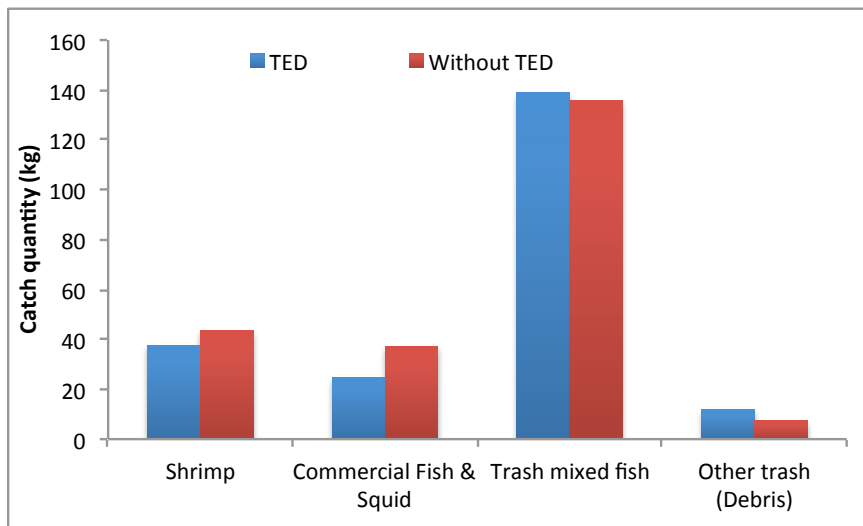
**Figure 2-2: Individual vessel catch comparisons for trials during Day 1, Sabah workshop. Shaded boxes represent vessels without TEDs. Vertical dashed lines denote the paired trawl arrangement.**



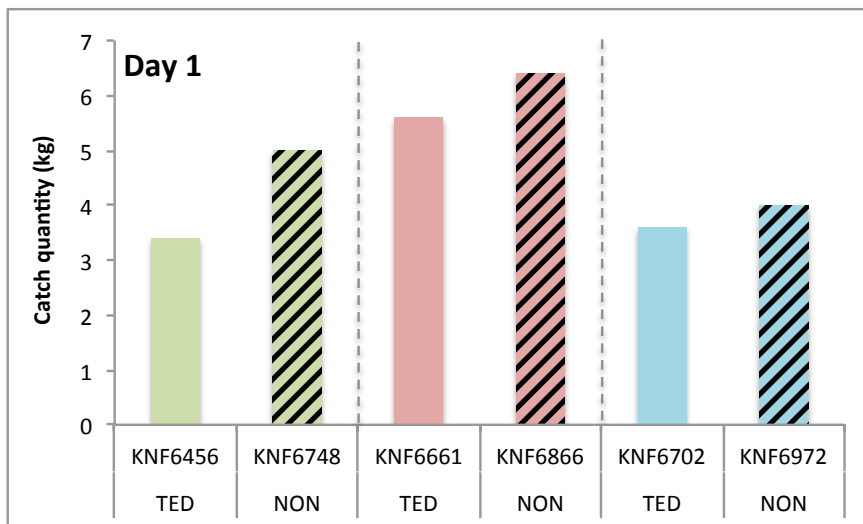
**Figure 2-3: Individual vessel catch comparisons for trials during Day 2, Sabah workshop. Shaded boxes represent vessels without TEDs. Vertical dashed lines denote the paired trawl arrangement.**

In Kelantan, catches dropped substantially through the use of the TED (**Figure 2-4**). On Day 1 one of vessels (KNF6456) deployed the net with a twist prior to the TED, resulting in decreased catch. On Day 2 there were no twists, but the overall catch records indicated a ~13% decline in shrimp catches and a 34% decline in fish catch. While these were partially offset by 58% reduction in trash in the net, they are worrying figures.

There was far less variability between the catches across days and vessels, with each performing similarly relative to its 'partner' vessel. As depicted in **Figures 2-5 & 2-6**, the TED-equipped boats mostly had slightly lower landings overall than the non-TED partner vessels.

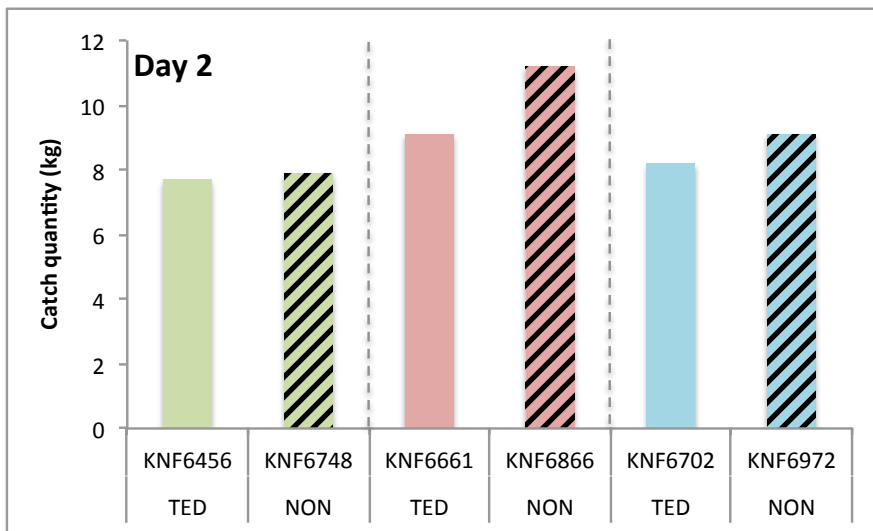


**Figure 2-4: Overall catch comparisons for trials during the Kelantan workshop.**

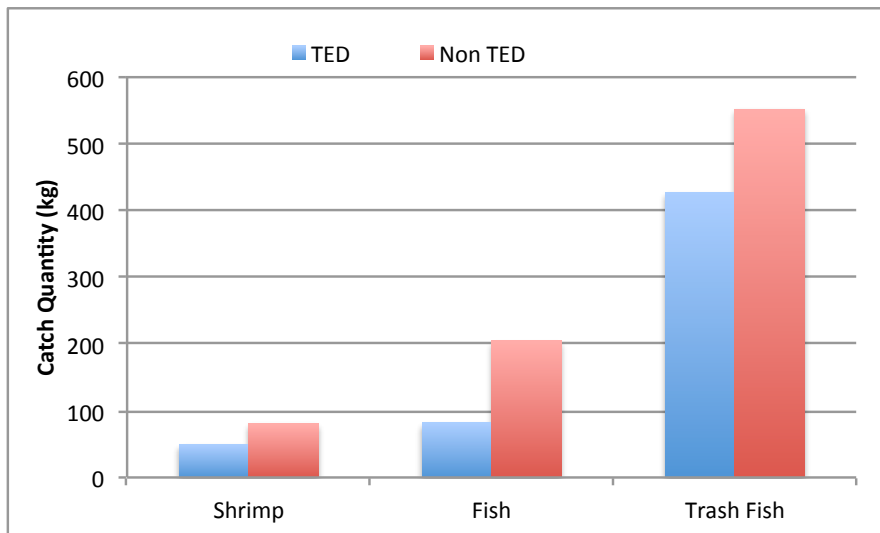


**Figure 2-5: Individual vessel catch comparisons for trials during Day 1, Kelantan workshop. Shaded boxes represent vessels without TEDs. Vertical dashed lines denote the paired trawl arrangement.**

We found a notable reduction in catches on vessels using TEDs during the paired trials in Johor, and believe this to be linked primarily to losses during net retrieval. Actual weights for catches were collected during the workshop, there was an overall ~20% reduction in trash fish which is a benefit to fishers (less sorting, less unwanted catch in the net), but countering this there was a ~25% decrease in shrimp catch and a ~60% decrease in fish catch when using the TEDs, although there was substantial variability across days and vessels (**Figure 2-7**). While one vessel towing the TED had a twist in the net and thus reported zero catches (driving the trend in Figure 1) it is also important to note that these trials were first-time fishers had used the TEDs and they did not indicate they were unsatisfied with the results.



**Figure 2-6: Individual vessel catch comparisons for trials during Day 2, Sabah workshop. Shaded boxes represent vessels without TEDs. Vertical dashed lines denote the paired trawl arrangement.**



**Figure 2-7: Overall catch comparisons for trials during the Sabah workshop.**

Given these were the very first time the TEDs were used on these vessels, we expect that the catch differences will be minimised with experience and adjustments to fishing methods and gear arrangements in the future. For example, one of the main reasons why catches declined with the use of TEDs was related to the haulback procedures employed on the Malaysian vessels: all nets are retrieved by winch until they are close to the vessel, and then are hauled on board by hand. Because of this the vessel comes to a complete stop, during which the TED flaps fall open and allow fish catches to escape. The problem is not so much with the TED during towing, it occurs when already-caught fish and shrimp can escape from the cod end as the net is being retrieved.

MRF plans to continue working with DOFM to solve the catch loss issue, and has already sought assistance from Jack Forrester at NMFS on possible solutions. These could potentially involve elastic drawstrings, self-closing funnels, and buoyant flaps to close the net during retrieval. The retrieval process is the most exposed to catch loss, as the nets are retrieved by hand with the vessel coming to a complete stop. The nets are not losing catch while towing, they are losing the catch because it is able to swim out while the net is being hauled in. This has been documented several times visually by MRF and DOFM staff.



## 2.10 Modification & Trials of Video System

As a key component of evidence-based gears to educate fishers on the operation of TEDs, we developed a novel underwater video system with live streaming to a fishing vessel, enabling live-video feeds of TED and net performance underwater. In recent months we have improved upon original designs of this system, names *TEDsCam*, as follows:

We purchased and adapted existing ‘off the shelf’ materials and used a low-cost underwater video system (GoPro Hero3™) linked to wireless technology used in drone systems, and engineered a waterproof float and housing for the transmitter. Key design specifications we considered for a system such as this to be effective were that the system had to be lightweight; it had to be easy to deploy and retrieve, and practical to ship from location to location. It would need to be waterproof to at least 30m, operate on readily-available power supplies, and be constructed from off-the-shelf components.

Construction of the final system was as follows: As a camera base we opted for the GoPro Hero3 (<https://gopro.com>); the GoPro housing was modified by Eye of Mine Inc. (<http://www.eyeofmineactioncameras.com>) and supplied with 30m of cable. The GoPro housing was affixed to an MRF-designed base plate used in past TED video trials. We used a 12" HD Styrofoam float as the base of the integrated float - antenna system, and 1¼" PVC tube and fittings to make the housing for the antenna and power supply. We removed the video connector from the cable and used a stainless steel cable gland seal through a 1¼" PVC end cap and reconnected the video connector to the inside cable section. We used an Immersion long range FPV Immersion DUO5800 200mw Race Band 15 Channel transmitter (<http://www.windrider.com.hk>) powered by a Storm 11.1V2200mAh large capacity battery (<http://www.helipal.com/storm.html>). At the receiver end we used a Fat Shark™ dual antenna receiver transmitter (<http://www.windrider.com.hk>) linked to an 8" LCD monitor and powered by a 12V sealed lead acid battery. These were secured inside an AMRO™ 3100 waterproof box for easy storage and shipping.

We tested signal continuity and strength on land and determined that the signal was reliable for distances up to 400m, which was more than adequate for the at-sea conditions. A graphic depiction of the real-time wireless video system is provided in **Figure 2-8**. A screenshot comparison between the footage obtained by the GoPro recording at 10m depth and some 200m behind the vessel alongside the same exact time stamp on the video screen being watched in the vessel bridge is presented in **Figure 2-9**.

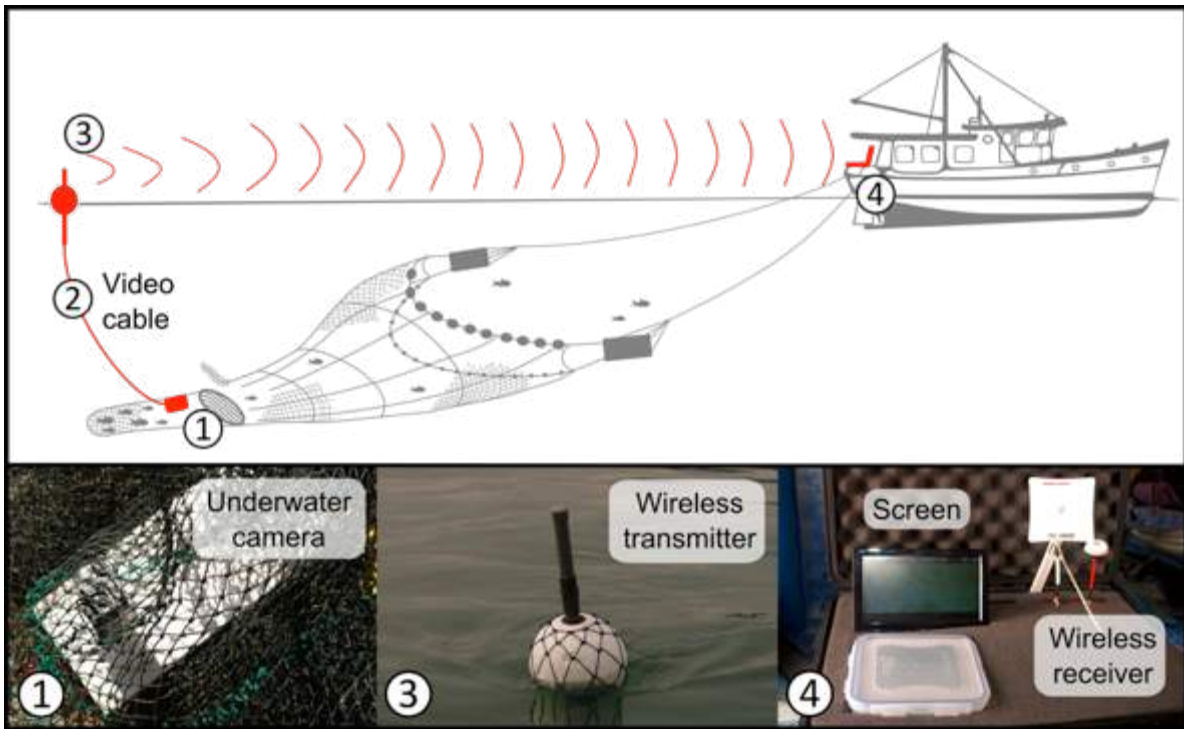


Figure 2-8: Real-time wireless video system developed to improve awareness and understanding of TED function and use. A GoPro camera is affixed close to the TED (1). The video signal is relayed via a reinforced coaxial cable (2) to an integrated transmitter-buoy assembly (3), which sends a wireless signal to the receiver on the vessel (4).



**Figure 2-9: Comparison between the screenshots of the footage obtained by the GoPro recording at 10m depth and ~ 200m behind the vessel and the same time stamp on the video screen on the vessel.**

### **3.0 New Developments and Unexpected Outcomes**

Several significant developments have occurred during this reporting period: The first has been the official request in December 2016 by DOFM for Section 609 Certification through the US State Department. This commitment was made by Dato' Ismail Abu Hassan, Director General of the Department of Fisheries Malaysia, at the TED Task Force meeting in Putrajaya on 30 October 2015, and officially communicated to the US Department of State in December 2016. Discussions are currently underway and a tentative inspection agenda is being agreed-upon between Mr. Joseph A. Fette from the US Department of State and DOFM officers to conduct the first US Certification visit in October 2017.

A second piece of news was that MRF received a prize for sustainability for this TED project from the The Green Organisation ([www.thegreenorganisation.org](http://www.thegreenorganisation.org)) in recognition of the positive impacts of the TED project on sustainability of fisheries in Malaysia and the conservation of sea turtles. Dr. Pilcher and his wife were presented with the official plaque and certificate during a presentation in London in November 2015.



More recently, MRF was shortlisted for the Seafood Champions Award – Vision presented by the SeaWeb programme of the Ocean Foundation in the USA <http://seaweb.org/>, for organisations of individuals who recognise a problem and even though the solution might be many years down the road, pursue the goal with enthusiasm, eventually deriving success from the efforts investment.



In September 2016 the TEDs project was also chosen as one of two flagship workshops conducted during the US Pacific Fleet's Marine Environment Security Workshop in August 2016, and was selected as one of the GEF UNDP Small Grant 'Scaling up community actions for international waters management' case studies (**Annex IX**). The project also receives a fair share of press and online coverage (see material embedded in **Annexes I through VII**).

#### 4.0 Remarks / Lessons Learned

In Malaysia the TED adoption story is an interesting one, as it entwines government policy, politics, international diplomacy and, of course, fishers and turtles. It started in the early 1980s, as the global threat of trawl fishing on sea turtles gradually emerged. The Department of Fisheries Malaysia (DOFM) attempted to introduce TEDs in Malaysian shrimp trawl fisheries, but the effort was short-lived and lacked funding and technical expertise. These efforts were confounded following the enactment of the U.S. shrimp embargo. In the 1990s, when the US adopted legislation requiring countries that exported shrimp to the US to use bycatch-reduction devices such as TEDs. Malaysia and several other countries took the case to the World Trade Organization, arguing (at its most basic) that this imposed the laws of one country upon another. The WTO agreed and the US had to re-open the trade. For several years this went back and forth, until the WTO finally recognised the US's position and what it was trying to do – save turtles. In Malaysia though, TEDs were by then a sore topic and sea turtles continued to suffer. For this reason, introducing TEDs in Malaysia brought with it an additional series of challenges: not only did the fishers' concerns need to be alleviated, but the government itself needed to change its attitude towards TEDs.

As the dust settled on TEDs politically in 2007, with the approval of the Department of Fisheries Malaysia and with the first USD 47,000 seed funding from Malaysia's GEF Small Grants Programme (GEF/SGP), the Marine Research Foundation set about contacting fishermen at the largest shrimp fleet base in Sabah. MRF's initial intentions were simply to ask local fishers to trial TEDs for short periods. Several ingredients that were key to the long-term success of the TED programme were all in place, albeit at extremely modest levels: government support, funding, technical expertise and commitment. Through this initial project phase TEDs slowly gained recognition, if not overwhelming acceptance, among a small group of fishers, and the programme was 'officially' under way.

A chief concern among fishers and a key reason why TEDs were not initially adopted by Malaysian trawl fishers was the need for a large exit 'trapdoor' in the net that allows turtles and debris to escape, and which goes contrary to much of what a fisher has learnt over his lifetime. Malaysian trawl fishers spend substantial amounts of time repairing holes in their nets. Any hole is a potential for catch loss, and fishers argued that the large trapdoor exit was bad for business. Indeed, as MRF pointed out in a grant application at one point, "When fishers have a good day, it's a good day. But when they have a bad day, it's the TED's fault!" Convincing fishers to actively create a 1m<sup>2</sup> hole in their nets was a difficult-bordering-on-impossible task, particularly when the suggestion came from an outside agency, and from turtle experts who were not themselves fishers and were regarded suspiciously by fisher communities.

In light of this challenge, MRF adopted a slightly different strategy and chose to focus less on sea turtles themselves. Rather than presenting TEDs principally as a way to reduce turtle bycatch, MRF presented TEDs first for their other abilities, such as reducing fuel costs, improving catch quality, and decreasing net repair and down time, with turtle bycatch reduction presented as a secondary benefit. Field data sheets were testament to this, whereby data collection centered primarily on catch quantities and values, and only offhandedly on number of turtles caught.

MRF's initial plan was to tackle the problem by working with fishermen first, long before taking it up with the government. But fishing communities across the world are the least willing to change and demonstrate incredible inertia when it comes to adopting new practices, even if such practices will be beneficial to them. And Malaysian fishermen, worried that they would lose catch and income, had a particular aversion to TEDs. They were adamant that the devices would not work as advertised. Because of this, and drawing from lessons learned in the United States, Australia and elsewhere, MRF's efforts in Sabah focused on developing personal relationships with fishers and creating a collaborative process for TED trials and implementation. MRF staff and interns worked side by side with fishers to test and adapt TEDs to local boat designs and fishing practices, meanwhile developing personal relationships that became critical to the program's long-term success. MRF staff spent time on their boats, fixed nets alongside them, and took TEDs to sea during paired trials to test their applicability in Malaysian vessels. We built trust and friendships with key members of the fishing industry, which we now rely on to push for more sustainable fishing.

And while developing personal relations with fishers was crucial, solving the technical challenges, breaking down knowledge barriers (often with creative thinking and design solutions), solving funding requirements, developing close and trusting relationships with the Government, and dogged commitment were also the foundations of the Malaysia TEDs story.

But it was the trust-building and joint-project nature in partnership with DOFM which really led to change. The site visits to the US in 2009, 2012 and 2013 were instrumental in bringing about change – particularly so in the latter two cases. The first site visit in 2009 was mostly with fishers. They came back enthused and knowledgeable, but not in a position to effect change from within DOFM. The 2012 site visit, with four senior government officers, ensured that TEDs became relevant at the policy level. And the final 2013 site visit with the Director General himself was the tipping point in the TEDs

programme. The DG was so impressed with how other countries ran their TEDs programmes that within one month of his visit a National TED Implementation Committee was established – with MRF as a Technical Advisor – and from that day onward the government commitment has allowed the project to flourish.

Via the State and National workshops we conducted in partnership with DOFM, MRF has continually expanded the capacity-building role for both fishers and the Department of Fisheries Malaysia. By the end of the project DOFM officers implemented nearly all major aspects of each of the workshops, whereas in the past this role was taken up by MRF. For instance, during the first workshops MRF was responsible for 90-95% of all activities (organisation, liaising with fishers, lectures, hands-on training, explanations etc.), but by the end of the project DOFM staff took on that leading role, with MRF providing technical and financial assistance.

The materials that were developed by MRF for this project have gone a long way in helping fishers understand the role of TEDs and how to use them, and have also helped DOFM in developing the elements of a National training and outreach programme so that TEDs will be efficiently introduced to the multiple fishery communities.

The development of the evidence-based systems – the TEDsCam and the fuel flow system – have provided direct evidence to fishers of the functionality of TEDs and the positive impacts they can have on fishing operations, which have gone a long way in securing commitment from the fishers. Indeed the evolution of the initial uses of GoPro cameras to the development of the TEDsCam have been a great lesson in how to bring fishers on board. In earlier phases of the TEDs project we used GoPro cameras attached to the metal frame of the TED. This provided some good imagery, but limited in scope because of the placement of the camera. We later developed a nylon board as the base for the GoPro which could be attached to the net itself – basically a modified breadboard with holes in each corner, and this board allowed the camera to be positioned on the net itself, allowing for greater flexibility in the field of view. However both of these options meant that the fishing crew only got to review the footage when the camera and net were retrieved. The advances made with the TEDsCam – live viewing of the imagery via cable and wireless transmission – meant that the fishers could watch how the TED performed as *they were fishing*, which generated nearly immediate buy-in.

Finally, we feel that the commitments made by the Director General of DOFM, and the active participation of DOFM staff and communication between DOFM and MRF has significantly advanced the future of TEDs in Malaysia. Today there is continuous email and phone communication between MRF and DOFM, and MRF continues to be a Technical Advisor to the National TED Task Force. DOFM have, in addition, developed their own core team of officers who will be able to lead the TED programme into the future.

## **PART II**

### **A – Community Participation**

In our project we use the term ‘community’ to refer to the fishing community, who are the direct recipients / stakeholders in this work. During the inception workshop and the State workshops we ensured that fishers were involved and participated in discussions and demonstration activities, and these fishers are now the key points of contact for us as we continue to build on project activities. MRF worked with over 1000 fishers and fishery department officers through the course of the project, and many of these became ‘instant’ TED believers. We feel that the multiplier effect means that we reached many more than just the 1000 or so we worked with directly.

We had a great example of this in Sandakan, where a lady who owned a boat with her husband came on Day 2 of the workshop asking for an additional 17 TEDs. Apparently she and her husband had returned to their kampong (village) and spent the evening in the Surau (mosque) explaining its use and

function to the rest of the villagers. By the end of the evening the entire community of boat owners had decided they too wanted TEDs for their vessels – without even attending the TED workshop.

We also had a lot of support from fishermen and boat owners along the way. In Johor we ran into fishers who had participated in the Inception meeting, and they became key allies in explaining TEDs to the new participants. In Sabah our long time allies from past workshops were instrumental in standing up and convincing others to pay attention and to understand that TEDs were going to be part of their futures one way or another. These fisher-to-fisher interactions were important components of the project and allowed us to integrate far more easily with fishing communities across the country.

## **B – Sustainable Livelihoods**

This project was aimed at enhancing ecosystem-based fisheries, providing for long-term access to fishery resources. The project also aimed to reduce the costs of fuel increase the revenues from catches, while protecting key marine biodiversity. Overall, the use of TEDs will be beneficial to fishers, and will provide an incentive to the Government of Malaysia to consider extending the use of trawlers in the country – which possibly might be phased out over time – and providing the near shore fishers with a continued source of revenue.

Up until the end of 2014 the Minister of Agriculture and Agro-Based Resources (the DOFM is a Department of this Ministry) had considered eliminating trawl fishing in Malaysia on the basis of unsustainability. The TED project was seen as a way to allow fishers to continue fishing but in a more sustainable manner – and the Minister delayed a decision on trawling while the TED project developed. Since that time shrimp trawling has been reviewed in a more positive light, and does not face closure in Malaysia in the immediate future. The reduction of bycatch and the more responsible fishing via the TEDs project are Malaysia's first efforts at addressing fishery sustainability over a large scale, and will become the building blocks of greater efforts aimed at other fishery types in the coming years. Indeed, DOFM and MRF have a GEF Medium Scale Grant application in process at present which would expand beyond TEDs and look at circle hooks in long-line industries, and juvenile and trash fish excluders in all fish and shrimp trawl fisheries.

## **C – Participation of Indigenous Peoples**

This project is not designed as an indigenous peoples project given these are not the key trawl fishing communities in Malaysia. However, the project is aimed at Malaysian fishers which comprise many races, and these include numerous bumiputra (people of the land) races of Malaysia: Malay, Iban, Kadazan, Dusun, Melanau, etc.

## **D – Policy Impact**

The greatest outcome of this project has been the change in policy with regard to TEDs requirements in shrimp trawl fisheries in Malaysia, which become legally required in peninsular Malaysia (east coast) fisheries as of 2017. This will be followed by legal requirements in Sabah by 2019, and full National adoption via legal licencing requirements by 2022. It is not often that small NGO-led initiatives can lead to policy change, but in the case of TEDs in Malaysia this is exactly what has occurred. We believe the long-term involvement and vision of MRF, coupled with the interest and commitment by the Malaysian government, have led to a complete reversal in policy (from the early anti-TED days) to the current TED requirements and commitment to US Certification.

The background phases of this project led to the establishment of a TED Implementation Task Force (to which MRF is Technical Advisor) at the National level, and since project inception the Department of Fisheries Malaysia has made a commitment that TEDs will be mandatory and legislation to this effect will exist as of 2017. Given this, it is clear this project has had a profound impact on policy in Malaysia as is related to fisheries and bycatch reduction. In addition, as noted above, this project has led to the development of a GEF-6 medium-size proposal submitted by DOFM for USD 1,250,000, the largest funding allocation for bycatch reduction in the history of Malaysian fisheries.

## **E – Capacity Building**

One of the greatest examples of capacity building to emerge from this project has been the 'TED Allstars' team from DOFM's Fisheries Research Institute in Kemaman (**see Annex XIII**). This team possess all the skills and knowledge necessary to build TEDs, to modify them and maintain them and install them in fishing nets. The team will be instrumental in the coming years in rolling out TEDs in other States, and helping train similar teams from Sabah and Sarawak, where implementation lags behind due to the sheer size and number of fishing vessels.

Our approach to running the project has been to work collaboratively with DOFM and develop their capacity to conduct the training workshops and develop the agendas and organise the vessels for the trials. MRF provides the technical know-how during the workshops and demonstration trials. Over the course of the last 12 months we have witnessed an incredible increase in the engagement of DOFM officers and staff in the TED programme, and adoption of the skills and materials MRF has provided.

At the same time, we work tirelessly to ensure we communicate clearly with the fishers during the workshops, as they will be the ones using the TEDs on the boats. During the workshops the DOFM team has been able to lead part of the presentation sessions and work together with MRF staff during the demonstrations on the installation and assembly of TEDs, in a first step towards knowledge transfer. With hundreds of fishers already passing through the programme, we are confident that this process is slowly gaining momentum at a National level.

Finally, we ensure that there is sufficient awareness being spread at the National level, via press releases and news dissemination via digital and printed press.

## **F – Gender Focus**

MRF understands the SGP goal of gender-equality, but unfortunately the fishing industry is predominantly male-oriented in Malaysia. That said, MRF has made every attempt to include women from the Department of Fisheries Malaysia in the workshops, and as we travelled from State to State, we have made every effort to include women from the downstream fisheries sectors. In Sabah in particular, a large majority of the vessel owners are women, and they played a key role during the Sabah workshop. Women's participation in this project was almost 10% of all participants, which for a male-centric industry, we feel is a significant achievement.

## **G – Promoting Public Awareness of Global Environment**

MRF has made substantive efforts to promote the project and the plight of sea turtles and sustainable fisheries at a number of international events and workshops, via the dedicated project website, and via mass media outlets. MRF's Save our Seas blog has repeatedly highlighted the TEDs project (see the following websites for examples of promoting global awareness:



1. <http://saveourseas.com/project/sea-turtles-malaysia/>,
2. <http://saveourseas.com/update/malaysian-fisheries-delegation-on-teds-site-visit-to-us/>,
3. <http://saveourseas.com/update/the-smile-which-saves-sea-turtles/>,
4. <http://saveourseas.com/update/malaysia-teds-make-a-splash-back-home/>,
5. <http://saveourseas.com/update/the-ted-convert/>,
6. <http://saveourseas.com/update/turtle-exclusion-is-trending-in-borneo/>, and
7. <http://saveourseas.com/update/the-power-of-small/>

In addition there is MRF's own dedicated TED website, website ([http://www.mrf-asia.org/mrf\\_project/malaysia-turtle-excluder-device-programme/](http://www.mrf-asia.org/mrf_project/malaysia-turtle-excluder-device-programme/)) which also helps promote TEDs, and Malaysia's DOFM website (set up to also promote TEDs) <http://www.dof.gov.my/index.php/pages/view/2354>. DOFM have also developed their own training tools (modelled along the lines of that used by MRF) and have the staff and experience to continue to run the TEDs project independently.

Awareness-raising materials were completed and given to each participants of the two State workshops. After revision input from DOFM staff and fishers, the materials have been further improved and made context- and language-sensitive. All the documents and original electronic files have been shared with DOFM to allow them to duplicate and modify as needed during future project evolutions.

## **H – Innovative Financial Mechanisms**

This project does not employ innovative financial mechanisms. However, the approach taken by MRF to focus less on saving turtles and more on the financial sustainability of TEDs use has played a key role in gaining fishery buy-in. MRF has continually promoted TEDs for the potential to improve catch quality as large objects such as logs and large animals do not crush the catch, and the reduction of debris in the back of the net saves fuel, which is a cost benefit to fishers.

## **I – Replication of Project Activities**

One of the major tenets of this project is replication and upscaling. This project has been replicating activities and processes developed during SGP-funded Phases I and II and continues to build on the success of these and other TED project components. We have developed a replicatable system via the collaboration with DOFM and the standard printed and electronic documentation via the State workshops, and envision this process continuing and building momentum as we progress into a medium-scale GEF grant to continue addressing sustainable fisheries and reductions of bycatch in Malaysia.

## **J –Scaling Up to a Medium Sized GEF Grant or Non-GEF Grant, or Linkages with Large GEF Projects**

MRF and Department of Fisheries Malaysia prepared a medium-sized GEF proposal to address comprehensively the issue of bycatch in Malaysian fisheries, including juvenile discards, megafauna such as turtles and sharks and marine mammals, gillnet bycatch. The project addresses this via circle hooks, juvenile fish and trash fish excluders, Acetes excluders and TEDs. The proposal has already been supported by the Ministry of Natural Resources and Environment, and has been forwarded to the

GEF Secretariat in Washington with recommendations for funding. The proposal has two primary Focal Area outcomes, namely “Improved sustainability of marine finfish and shrimp fisheries in Malaysia” and “Population recovery among marine endangered species currently impacted by fishing activities”. The project aims to accomplish this via four Project components: Improved management of marine biodiversity resources; Reduction of threats to marine biodiversity, Removal of knowledge barriers; and Mainstreaming sustainable use into marine fisheries sectors. We currently await the final decision on the project support by the Ministry of Natural Resources and Environment, and hope they will endorse the project and seek Malaysia’s UNDP support as an Implementing Partner. Following this MRF will develop the Project Information File (PIF) and eventually the full project proposal for GEF Secretariat endorsement.

## **K – Project Sustainability**

Until recently, the Department of Fisheries Malaysia has not had a budget allocation for addressing bycatch in multiple fisheries. Recently, DOFM have co-funded the inception and State workshops, and various States have agreed to support logistics for the project during the training workshops. DOFM has also pledged to introduce legislation requiring TED use in trawl fisheries starting in 2017, indicating a commitment to long-term TED implementation. DOFM contributed MYR 200,000 in late 2016 to equip every single vessel along the east coast of peninsular Malaysia with TEDs. This contribution alone amounts to a 30% matching funds contribution in addition to the matching funds already provided by NOAA for this grant. In Sabah, the TED presentation ceremony and efforts to promote TEDs at the State level in 2016 were funded entirely by the Sabah Fisheries Department, in a further indication of government commitment at both policy and finance levels.

MRF also calculated the value of media coverage as a form of co-funding and as a way to indicate just how much the media plays a role in promoting projects such as these. Cumulative equivalent values of press coverage from 2000 to 2006, which can be thought of as a form of co-funding, ranged from **a low of MYR 404,000 to a high of MYR 831,000**. (see **Annex XIV** for details).

To our knowledge this is among the first times in SGP history in Malaysia where the process has led to National policy changes and conversion from NGO-led initiatives to National government adoption, with matching contributions in cash and in kind to support the TEDs programme.