VALUING VOLUNTEERING - **THE PHILIPPINES**

# WHEN THERE ARE NO FISH LEFT IN THE SEA

## Does environmental awareness translate into positive action?

Reporting on the impact of volunteering for environmental education in coastal communities of Palawan

With Tubbataha Management Office 2014

2014

IDS Institute of Development Studies

VSO

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# Abbreviations

| | |
|---|---|
| **4PS** | Pantawid Pamilyang Pilipino Program |
| **ASMES** | Andres Soranio Elementary School |
| **CI** | Conservation International |
| **GEF** | Global Environmental Facility |
| **HEKASI** | Heograpiya Kasaysayan ans Sibika (Geography, History and Civics) |
| **IDS** | Institute of Development Studies |
| **IEC** | Information, Education and Communication |
| **LT** | Long-term |
| **MPA** | Marine Protected Area |
| **NGO** | Non-governmental organisation |
| **PCSD** | Palawan Council of Sustainable Development |
| **ST** | Short-term |
| **TMO** | Tubbataha Management Office |
| **ToC** | Theory of Change |
| **TPAMB** | Tubbataha Protected Area Management Board |
| **WPU** | Western Philippines University |
| **WWF** | World Wildlife Fund for Nature |
| **YP** | Young people |

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# 1. Executive Summary

## The Philippines scores poorly on assessments of ecosystem health, and concerns continue around rates of degradation, particularly where this increases the vulnerability of communities and threatens future socio-economic benefits. One established tool to aid protection of marine ecosystems is Marine Protected Areas (MPAs). The basic idea is to place some restrictions on human activity within some areas of ocean in order to protect the natural environment.

Since 2001, the Tubbataha Management Office (TMO), a government office, has looked after the protection of Tubbataha Reefs Natural Park. Covering 97,030 hectares, the MPA lies at the heart of the Coral Triangle, considered the richest marine site on earth, and a fish bank for the Sulu Sea. In 2009–10, TMO introduced a volunteering programme to carry out environmental education in schools and coastal *barangays* (villages) throughout municipalities in the province of Palawan to increase awareness about Tubbataha and related environmental concerns also affecting local fishing grounds. Its volunteers, usually young people with environmental science degrees, design and deliver Information, Education and Communication (IEC) sessions with schools and fishermen in coastal *barangays* in Palawan. Working to cover a large geographical area, they go on tour each year to provide these education sessions.

Volunteers are often used as educators in development work to introduce new ideas, knowledge and perspectives to communities. This is frequently the case in environmental sectors, where new knowledge is perceived to be an important precursor to action on environmental issues. In the context of the *Valuing Volunteering* project's central research question, 'How, where and when does volunteering affect poverty?, TMO's work was considered an interesting jumping-off point for exploring the role volunteering can play at the intersection between environment, poverty and sustainable livelihoods. TMO were willing to join *Valuing Volunteering Philippines* on a journey of learning, reflection and action to furnish the wider research process with an examination of volunteering that is situated within a specific social, economic and environmental context.

Rather than explore the unique qualities of volunteers as development workers, this case study set out to understand the use and deployment of volunteer educators in short-term community engagements to raise awareness as a mechanism for alleviating poverty. Our starting questions included:

1. What changes for communities and the environment because of volunteer action on environmental education? What mechanisms and pathways support the changes?

2. Does awareness on environmental issues lead to behaviour change?

3. What can be learned from this study to inform the involvement of volunteers in other environmental and conservation initiatives?

This case study report pulls together the learning of four interlinked inquiries in urban and rural coastal communities of Palawan, namely Puerto Princesa, Mangingisda, Roxas and Green Island. Undertaking a series of participatory systemic inquiries each lasting between one and four days, *Valuing Volunteering Philippines* researchers worked with TMO, volunteer educators, community participants in the environmental education programme and the wider community to learn how change happens from locally grounded insights about what works and what doesn't work in a particular context.

During our inquiries we came across other forms of volunteerism taking place at the community level. Where possible we included these efforts in our analysis of how, where and when volunteering affects poverty. The direction of this sub-inquiry prompted more detailed action research with the community of Mangingisda to understand in more detail the efficacy and limitations of volunteering as a tool to support people adapting to environmental change in high-poverty environments (see corresponding case study Aked J (2014) *Riding the waves of change: The challenges of volunteering in highly complex poverty contexts. Reporting on action research among volunteers in Mangingisda, Palawan.)*.

The insights informed an interlinked organisational learning process to help TMO evaluate its IEC programme. This began with TMO staff and volunteer sessions to establish an organisational theory of change about how TMO's use of volunteers for environmental education contributes to improvements in natural resource management and associated socio-economic benefits for communities. The research pointed to ways this may be adapted to improve impact in future IEC work.

## Findings

Our findings are broadly organised around what changed in the communities following the environmental education, how volunteer educators enabled these changes, and what didn't change and why. Seven key issues capture what we learned:

**Volunteer educators provide links to information from outside the community.** We found the degradation of natural resources is continuing apace and is observed in communities while the expertise for understanding complex human and ecological dynamics sits within university departments and government offices. Knowledge is not readily available to communities about the links between natural resource decline and food security or livelihoods. Punitive measures set out in legal frameworks can cost poor families and communities when laws (e.g. no-take fishing zones) are breached. Irrigating information into the villages, schools and local leader networks of coastal communities takes people power. TMO and their volunteers play an important role in addressing the inequality of this knowledge gap.

**Volunteer educators can improve knowledge and awareness through one-off educational inputs.** It is fairly typical that volunteers working on awareness-raising programmes engage with communities for a short period of time to deliver educational sessions. We found evidence that these one-off educational inputs supported people to learn about Tubbataha and wider environmental issues such as climate change. The creative and interactive way that IEC sessions were delivered seemed to help people retain knowledge. TMO's efforts to intentionally recruit young people with environmental backgrounds and tailor its volunteer support were important ingredients explaining how the IEC programme led to improvements in knowledge.

**Community and systemic factors affect the accessibility of environmental messages delivered by volunteer educators.** We found short-term engagements by volunteer educators are limited in terms of the people environmental messages reach. Accessibility can be improved by aligning schedules of sessions to the rhythms of community life and targeting key local actors (e.g. teachers) who could be instrumental in extending the impact of a single IEC session. The relevance of environmental messages in high-poverty contexts could be improved by volunteer educators using techniques that help communities connect the dots between personal and ecological concerns. Enabling dialogue should also improve volunteers' understanding of how communities see natural resources and conservation objectives. This will help improve the flexibility of educational materials to respond to changing attitudes and perceptions over time.

**Behaviour is resistant to change, even when knowledge is high.** A major assumption in the perceived value of deploying volunteers to carry out environmental education is that it changes behaviour in some way. We found some evidence of fishermen avoiding Tubbataha, but fishing behaviour in local fishing grounds has not changed. This is because the drivers of unsustainable behaviour are plentiful and powerful. They are wide-ranging, including:

- ecological
- economic
- lack of alternative livelihoods
- inequalities in the fishing industry
- poor governance and local leadership
- inward migration.

In this context, volunteer action through educational campaigns is not sufficient to dislodge systemic forces to influence a different way of being and doing at the community level. At some point, volunteering for environmental and poverty alleviation outcomes needs to directly address changes to behaviour.

**Volunteer action by residents is not aligned to drivers of unsustainable behaviour.** Volunteer action on the part of residents on environmental issues is happening in the communities we visited. However, it does not tackle the root causes of environmental degradation and the associated food and livelihood challenges. This challenged a hidden assumption in our thinking: an expectation that resident volunteering would be closer to local realities, and therefore responsive to community needs. This energy and commitment could be an important resource for making behaviour change possible. But making volunteering more purposeful at the community level may initially require capacity development from external stakeholders (e.g. government offices, non-governmental organisations (NGOs)) to match volunteer action to potential solutions that work for people and the planet. Outside volunteers may lend additional value to local efforts through their links to organisations and networks that extend beyond the existing social capital of the community.

**A role for volunteer educators in strengthening local action on environmental issues.** A supportive local environment, with active leadership on environmental concerns, was identified as a missing component by many participants in the communities we visited. At the same time, we found pockets of young people, women and fishermen who shared a passion for the environment and genuine concern about its degradation. We saw an opportunity for volunteer educators to begin to address behaviour change by proactively mobilising local champions through environmental education engagements. These individuals, groups and networks could sustain local efforts once volunteer educators from outside the community leave.

**Going from volunteer educator to environmental advocate**. As well as providing specific resource inputs to change initiatives, volunteer opportunities can generate resource outputs, particularly when they create or sustain people's interest in working on environmental issues. Investment on the part of TMO to enable a positive volunteer experience pays off when the young people become "walking promos" and "future advocates" for marine conservation, extending the social network of the organisation and its cause.

## Revisiting the theory of change

*Valuing Volunteering Philippines* sessions with a working group of staff and volunteers in TMO to examine the relationships between volunteer inputs and the ultimate objectives around resilient coral reliefs and socio-economic benefits for communities identified two pathways of influence. The first pathway to impact is anticipated to be determined by increases in awareness that lead to behaviour change, both in Tubbataha and local fishing grounds. The second pathway to impact is via the provision of positive volunteer opportunities that encourage young people to become future advocates for environmental issues.

At the end of the research process we were able to look at the findings generated by our inquiries in light of the assumptions in this theory of change. Key learning points include:

- The link between volunteer-led education and improvements in knowledge and awareness at the community level was verified.
- Closing the gap in knowledge and understanding seemed to be contingent on volunteers' creative and interactive delivery, their personal characteristics (e.g. being young and knowledgeable about the environment) and the support they received from TMO.
- Even when volunteer educators are successful at raising awareness, there is no guarantee this will trigger behaviour change. Understanding may be a necessary condition but it is not a sufficient one.
- A systemic view of poverty highlights the numerous constraints within and from outside communities that prevent shifts in behaviour. This raises important questions for the role of volunteerism in environmental management, once knowledge and awareness is high.
- The links between positive volunteer experiences and future environmental advocacy were supported by our research findings. Important factors like training, support and practice triggered a number of psychological and social mechanisms (e.g. increases in confidence and happiness), which made it more likely volunteers would inform others and stay engaged in environmental issues.

The resulting theory of change should be a useful contribution to the volunteering and environmental sectors by providing a comparative visual map that other programmes can use to inform and understand their awareness-raising/educational programmes.

## Reflections on process

We found the exercise of integrating systemic action research into monitoring processes not only allows a programme to prove its case but also to improve its operations in the future. The research shows the importance of re-evaluating the purpose, focus and role of volunteers in environmental education programmes at regular intervals, and from different perspectives. Environmental education needs to adapt to the specific contexts of communities and changing external circumstances, making use of volunteerism in different ways. A positive organisational culture within TMO towards learning meant that time was committed from busy schedules to interpret and discuss research findings. This helped the process of reflection, opening up possibility spaces for innovation around the use of volunteers in environmental change efforts.

## Key implications

### Support volunteer educators to improve the link between knowledge and action

The research identified that even when environmental education is effectively delivered by volunteers to address inequality of access to information, we cannot assume this new knowledge will lead to behaviour change. In reality, decisions to engage in pro-environmental behaviours are more sensitive to socio-economic constraints than accurate knowledge and information. This reality needs to be more explicitly addressed in the way volunteering programmes use volunteers in environmental and social change initiatives.

### Advance volunteer-led environmental education for practical applications

Initiatives looking to support community change require a different approach to education for straightforward knowledge transfer. Volunteer educators that support behaviour change may need to be more hands-on, connecting environmental knowledge to clear avenues for action at the community level. This has implications for the way organisations use volunteering for educational purposes. For example, the deployment of volunteers to practical models of education may be more effective in supporting more people to become effective, adaptive and self-reliant change agents.

### Integrate systemic research and community insights into volunteer programme monitoring

The research shows the importance of re-evaluating the purpose, focus and role of volunteers in environmental education programmes at regular intervals, and from different perspectives. These learning opportunities can be used to encourage continual improvements to volunteer activity based on locally grounded explanations about what is changing, what remains the same, and why.

# 2. Introduction

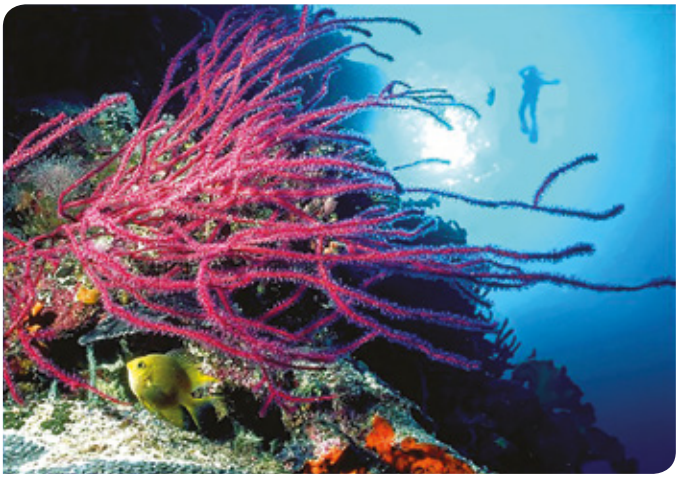
In 2005 the Millennium Ecosystem Assessment concluded that 60% of ecosystem services are severely degraded or being used unsustainably. This is impacting on some of the poorest and most vulnerable groups, who directly rely on ecological services for livelihoods and wellbeing. It is widely acknowledged that fisheries are in crisis globally, threatened by overfishing, habitat loss, inadequate systems of governance and the impacts of climate change. Around 97% of fishers live in developing countries, with strong links between the health of marine ecosystems and food security.

The Philippines scores poorly on assessments of ecosystem health, and concerns continue around rates of degradation, particularly where this increases the vulnerability of communities and threatens future socio-economic benefits. Coastal ecosystems in the Philippines are some of the most heavily fished areas in the world, reflecting high dependency on fishery resources. Overexploitation perpetuates poverty in these communities. The recent national policy emphasis (National Disaster Risk Reduction Management Plan, 2011) on prevention and mitigation has made visible, at least in words, the importance of sustainable living practices (e.g. waste management, ecosystem protection) to mediate additional risks brought about by climate change.

The major international conservation NGOs such as World Wildlife Fund for Nature (WWF) and Conservation International (CI) are all active in the Philippines. The Coral Triangle Initiative is a multilateral partnership of six countries including the Philippines. It was formed in 2007 to address urgent threats facing one of the most biologically diverse and ecologically rich regions on earth, with a particular focus on the links between fisheries and food security. WorldFish are also working with coastal communities in the Philippines, as part of a global participatory action research project to place the capacity for generating and using knowledge into the hands of fishermen, women and youth groups who are trying to improve their lives.

## Tubbataha reefs

One established tool to aid protection of marine ecosystems is Marine Protected Areas (MPAs). The basic idea is to place some restrictions on human activity within some area of ocean in order to protect the natural environment. Restrictions can place limitations on a range of activities, including fishing practices, catch limits, fishing seasons and removal of marine life.



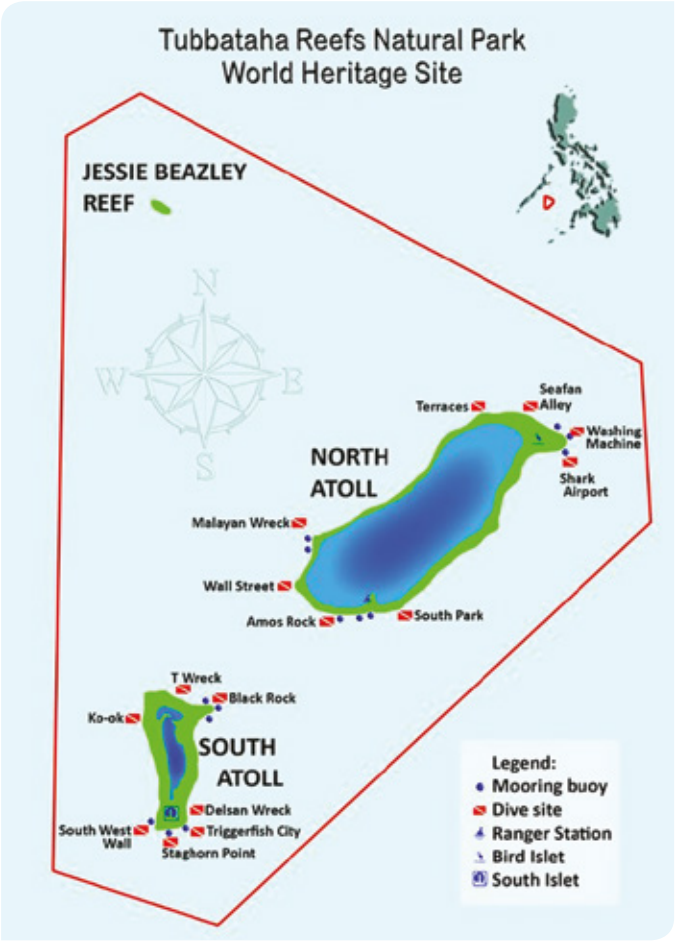
Located 150km southeast off the coast of Palawan, Tubbataha Reefs Natural Park was granted UNESCO World Heritage Status in 1993. Covering 97,030 hectares, the MPA lies at the heart of the Coral Triangle, which rivals the Great Barrier Reef as the richest marine site on earth. Over 1,000 species inhabit the reef, many of which are considered endangered. Its small islets are home to the last intact seabird habitats in the Philippines.

Fishing of any kind is prohibited because the MPA is managed under a no-take policy. This is partly in recognition of the role the reef plays in surrounding fisheries. Research has shown that Tubbataha is a major source of coral and fish larvae, serving as a fish bank that feeds the greater Sulu Sea. Food security, especially for coastal communities of Palawan, in large part depends on protection of the reef.

Since 2001, TMO has served as the executive arm of the Tubbataha Protected Area Management Board (TPAMB). As an office of government it enforces legal protection (RA10067) of the reef through fines and prison sentences.

TMO sees its role as ensuring Tubbataha is effectively conserved to:

- maintain the ecological integrity of Tubbataha reefs
- contribute to the equitable distribution of resources
- sustain socio-economic benefit for the future.




## Background to this case study

One established tool to aid protection of marine ecosystems is Marine Protected Areas (MPAs). The basic idea is to place some restrictions on human activity within some area of ocean in order to protect the natural environment. Restrictions can place limitations on a range of activities, including fishing practices, catch limits, fishing seasons and removal of marine life.

One mechanism increasingly recognised as a means to enhance government-led development efforts in the Philippines, particularly in agricultural and rural sectors, is volunteering (the Volunteer Act, 2007). In the Philippines, volunteers are often involved in environmental education about the value and threats to natural ecosystems. Under the banner of Information, Education and Communication (IEC), volunteers assume the role of educators to develop and disseminate information in communities. In the *Valuing Volunteering Philippines* case study in Bohol, youth volunteers are used to communicate local government's environmental messages around solid waste management and protection of the watershed because they make effective spokespeople. Through their exchanges, volunteers are an investment of human resource; an additional stakeholder which can inject energy, knowledge and skills into the socio-ecological system.

The use of volunteers as educators reflects wider trends in volunteering for development work, particularly when change is perceived to be contingent on the introduction of new ideas and perspectives to communities. The environment is one of those sectors where research is continually creating new knowledge about the linkages between human wellbeing and natural ecosystems, as well as the implications of a changing climate.

After the highest number of apprehensions for illegal gathering of topshell from Tubbataha in 2007, TMO worked with CI to develop an IEC plan. Topshell species *Trochus niloticus* is protected because it is an important natural 'cleaner' of corals and source of food for marine life. It is highly sought-after to make shirt buttons, jewellery and ornaments. TMO began engaging volunteers to help

- develop environmental education materials
- deliver the public outreach programme.

In 2008–09, TMO had a school caravan, visiting 34 high schools, colleges and some out-of-school youth as the basis of a campaign to support Tubbataha's nomination as a New 7 Wonder of Nature. In 2009, it was time to reflect and consolidate. They streamlined the awareness campaign and joined a three-day training delivered by VSO Bahaginan on volunteer organisation and management.

In 2009-10, TMO introduced a volunteering programme to carry out IEC in schools and coastal *barangays* throughout municipalities in the province of Palawan. TMO volunteers visited 23 schools and 6 *barangays* that year, and 23 schools and 11 *barangays* in 2010-11. In 2011-12 they visited 21 schools and 11 coastal *barangays* between September and February, reaching over 9,000 participants. In 2013 (after the bulk of the research for this case study was carried out), they visited another 7 schools and 2 coastal *barangays*. Materials developed by volunteers include PowerPoint presentations, knowledge quizzes and a theatre production. A team of about eight volunteer educators go on tour in Palawan to run the sessions each year.

After three years of running the IEC programme with volunteer educators, TMO wanted to monitor its impact. They were particularly keen to know whether the environmental education sessions led to

- changes to levels of awareness and knowledge
- changes to behaviour.

In addition, there was interest in identifying effective elements of the approach and wider factors that affect environmental education outcomes.

In the context of the *Valuing Volunteering* project's central research question, **'How, where and when does volunteering affect poverty?'**, TMO's work was considered an interesting jumping-off point for exploring the role volunteering can play at the intersection between environment, poverty and sustainable livelihoods. TMO were willing to join *Valuing Volunteering Philippines* on a journey of learning, reflection and action to furnish the wider research process with an examination of volunteering that is situated within a specific social, economic and environmental context.

Rather than explore the unique qualities of volunteers as development workers, this case study set out to understand the use and deployment of volunteer educators in short-term community engagements to raise awareness as a mechanism for alleviating poverty. Our starting questions included:

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3. What can be learned from this study to inform the involvement of volunteers in other environmental and conservation initiatives?

This case study report pulls together the learning of four interlinked inquiries in urban and rural coastal communities of Palawan. Undertaking a series of participatory systemic inquiries, each lasting between one and four days, *Valuing Volunteering Philippines* researchers worked with volunteer educators, community participants in the environmental education sessions and the wider community to learn how change happens from locally grounded insights about what works and what doesn't work in a particular context.

The insights informed an interlinked organisational learning process to help TMO evaluate its IEC programme. This began with staff and volunteer sessions to establish an organisational theory of change about how TMO's use of volunteers for environmental education contributes to improvements in natural resource management and associated socio-economic benefits for communities. The research pointed to ways this may be adapted to improve impact in future IEC work. In accordance with *Valuing Volunteering*'s commitment to share data that is timely, relevant and useful to those actively involved in its generation, an impact report summarised the findings and key learning points for TMO in 2013. This included recommendations and suggestions which emerged through discussions in the research process.

## About this report

Given the focus of the *Valuing Volunteering* project on the use of volunteering as an intervention for poverty alleviation, this case study report organises the findings into key issues which reveal important relationships between volunteering, IEC and change for people living in poverty.

It is not uncommon to use volunteers to spread information and encourage behaviour change. Other popular areas that use volunteer-led education are health, rights and livelihoods. Where relevant, conclusions about the wider contribution of volunteering to knowledge and behaviour change are discussed. Hopefully, the report's insights can help government agencies and NGOs working in the development sector to enhance the use of volunteering in the future.

## Focus of this case study

This case study connects four distinct community inquiries, carried out between September 2012 and the end of August 2013, with one organisational inquiry within TMO to link emergent findings into discussions about volunteer and environmental education programming.

## Geographical context

Inquiries took place in schools and barangays in Puerto Princesa, Mangingisda, Roxas and Green Island (see Appendix). These were locations of previous IEC sessions run by volunteer educators. We could travel to Roxas from Puerto Princesa by land. We took boats to Barangay Mangingisda from Puerto Princesa and to Green Island, which is located off the coast of Roxas (see Figure 1). Green Island ranks as the most remote community we visited.

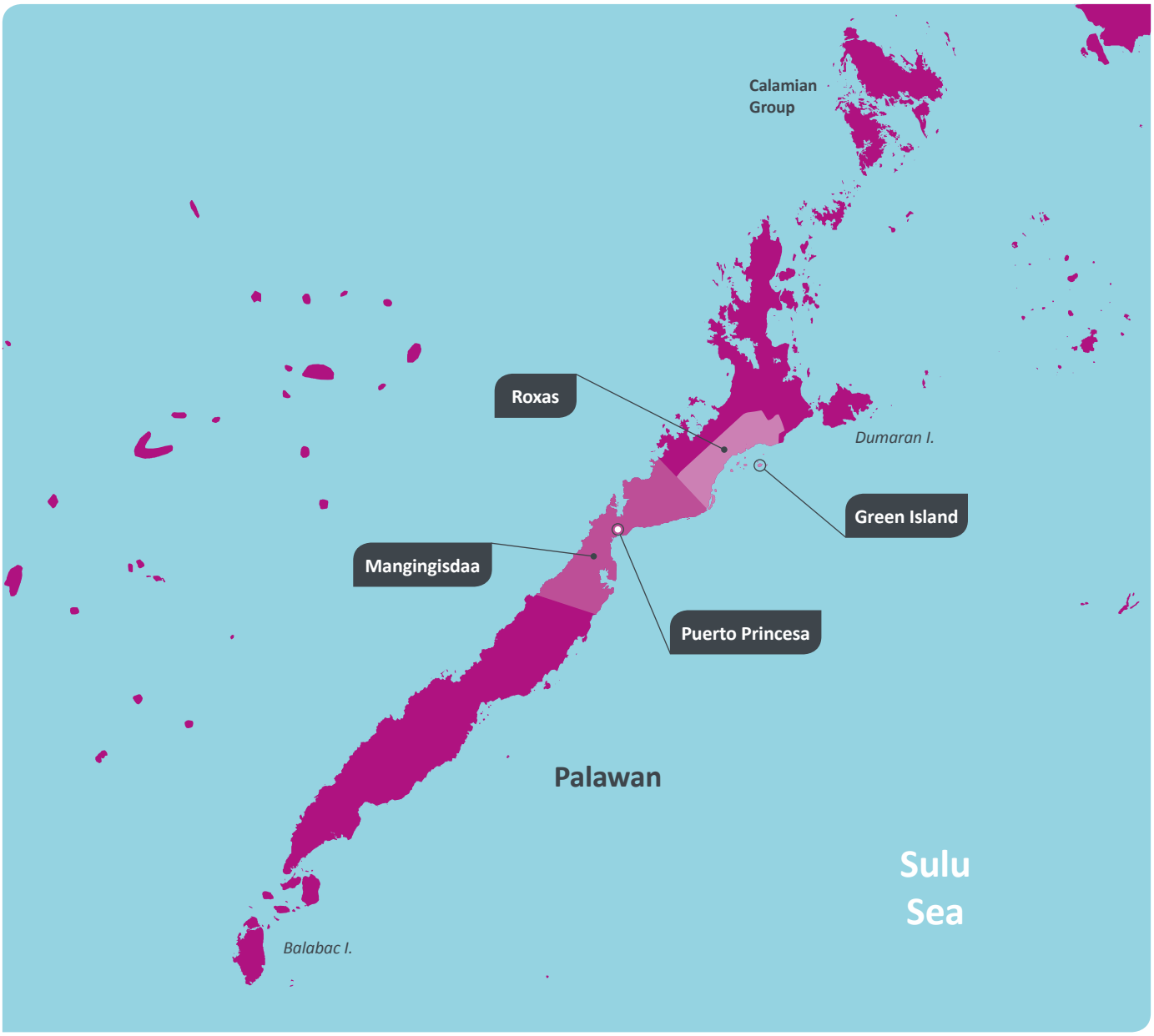
Organisational meetings took place at the TMO office in Puerto Princesa.

## Economic context

In 2006, fishermen comprised the poorest sector in the Philippines, with 41.4% poverty incidence among the population. In Puerto Princesa, just over a third of the 160,000 residents live in households with an income below the poverty threshold, with just over 15% experiencing food shortages. Barangay ng mga Mangingisda is one of 66 *barangays* (a term used to describe the smallest administrative division in the Philippines, usually a village) of Puerto Princesa. It is a rural *barangay*, home to 4,317 residents according to the 2010 census. Its public elementary school enrolled 855 students in 2013-14 and the public high school has 545 students. *Barangay* officials indicated population numbers may be as high as 6,000 following inward migration, with approximately 60% working as fishermen.

At the municipal level, poverty rates are higher in Roxas and its communities in Green Island Bay. Over half of the 61,058 residents live below the poverty threshold, and nearly a third of households experience food shortages. Between 2011 and 2013, Green Island Bay in Roxas was part of a Global Environmental Facility (GEF) project to expand community-based coastal resource initiatives including MPAs in the area and improve the quality of life of people living there.

**Figure 1. Location of inquiries**



## Volunteering context

This case study mostly explores the work of volunteer educators, recruited by TMO to carry out environmental education sessions in coastal communities in Palawan. The volunteer educators are typically in their early 20s having recently graduated from university with backgrounds in environmental science. They often volunteer while looking for work. Although the length of their engagement with TMO varies from person to person, volunteers usually work as educators for several months over a year. They go on tour in Palawan in groups of about eight to deliver IEC sessions in schools and communities. Sessions usually last a few hours. Depending on how many schools and villages the volunteers visit in each place, their total time in any one community lasts one to two days, before they move on to their next location.

During our inquiries we came across other forms of volunteerism, carried out by residents at the community level. Where possible we included these efforts in our analysis of how, where and when volunteering affects poverty (see Table 1). The direction of this sub-inquiry prompted more detailed action research with the community of Mangingisda to understand in more detail the efficacy and limitations of volunteering as a tool to support people adapting to environmental change in high-poverty environments (see corresponding case study (Aked 2014)).

**Table 1. Volunteer activity in our inquiries**

| Type of volunteer | Volunteer work focus | Geographical focus | Support structures |
|---|---|---|---|
| **TMO educator (young environmental graduates)** | Design and dissemination of environmental education | Working within TMO's office in Puerto Princesa<br><br>Visits to coastal communities across Palawan | Supported by structured government (TMO) volunteer programme<br><br>Volunteer stipends and activity costs (e.g. travel, materials) provided |
| **Resident volunteers (young people and parents)** | Environmental management (e.g. coastal clean-ups, mangrove planting, tree planting) | Mangingisda | Supported by school and Barangay<br><br>Barangay pledges money for school activities in exchange for resident efforts |
| **Resident volunteers (poorest members of the community)** | Coastal clean-up | Green Island | Supported by national government programme called Pantawid Pamilyang Pilipino Program (4Ps) a conditional cash transfer programme<br><br>People in poverty receive money in exchange for community work |
| **Fishermen** | Patrolling MPAs or sanctuaries | Mangingisda | Organised informally (and not currently happening)<br><br>No financial support for stipends and activity costs (e.g. fuel for boats) |
| **Student volunteers (Palawan State University** | Coastal clean-up | Roxas | Organised formally by university<br><br>Financial support unknown |

# 3. Methodology

## The Valuing Volunteering project used two research approaches to collect and analyse insights about volunteering; Participatory Systemic Inquiries (PSI) and Participatory Systemic Action Research (PSAR). Both of these approaches enable us to get under the surface of how communities operate and how change happens.

Participatory Systemic Inquiries (PSI) allow a system of actors, actions and contexts to be mapped as a baseline against which change can be assessed (Burns 2012). When identifying the starting points (our baseline) for a project we might typically record those factors that have an obvious direct relation to our intervention. For example, if our aim is to increase girls' access to education, a 'traditional' baseline might record factors such as school enrollment, attendance and participation. PSI allows us to go deeper and reflect on how people, processes and the environment that they are situated within influence one another and the path to change. Doing this involves asking both broad and detailed questions which take us beyond the school walls and into the complexities of social systems such as, 'Are girls' supported by their family and the wider community to attend school?' 'What are the power dynamics within the community and how might these influence girls' attendance in school?'

This data is then used to determine how different factors affect one another, with the aim of learning about why change is or is not happening. While causal links between each part of a system can be identified, they are frequently not linear relationships. By allowing us to observe volunteer practices as part of a wider system rather than in isolation, PSI challenges our assumption that if we do *x* it will automatically lead to *y* and forces us to consider each intervention within the context in which it is taking place. For example, strengthening our understanding of the factors that impact on people's perceptions of volunteering was important in some inquiries to make sense of volunteers' effectiveness. A PSI mapping and analysis might take place over a 2–12-week period and can involve working with many different individuals and groups. In the Valuing Volunteering project we ran many different PSIs at the community, organizational and national levels. Where actors were motivated to respond to emergent findings, PSI formed the beginning of an action research process.

Participatory Systemic Action Research (PSAR) is an action research methodology which embeds reflection, planning, action and evaluation into a single process. The core principle behind action research is that we learn as much if not more from action than from analysis. It incorporates iterative cycles of action and analysis, allowing us to reflect at intervals on a particular action or approach and adapting it according to what we've learnt. The action research used by Valuing Volunteering was participatory because it was led by individuals directly affected by or involved in volunteering for development initiatives, and they defined the action research process and questions. It was systemic because we assessed the impact of these actions by considering the knock-on effects for the actors, actions and contexts comprising the wider social system. SAR typically takes place over a period of 18 months to three years.

### Participatory systemic inquiry

Field visits to schools and fishing villages in four coastal communities took place between September 2012 and end of August 2013.True to participatory research, we varied our methods depending on the particular question at hand and who we were working with, while seeking to develop a set of tools common to all the different inquiries. In most cases we carried out short participatory inquiries over one to four days in

- San Pedro Elementary School, Puerto Princesa City
- Barangay Mangingisda, Puerto Princesa City
- Municipality of Roxas, Palawan
- Sitio Green Island in Barangay, Tumarbong, Roxas.

The lead researcher for the *Valuing Volunteering Philippines* project was supported by TMO volunteers recruited specifically for this purpose. Over the course of the year the lead researcher worked with three different volunteers, local to Puerto Princesa. All were recent graduates in environmental science.

Community-level inquiries were supplemented by an organisational learning process facilitated by the lead researcher. This largely involved interviews and group sessions with TMO staff and members of affiliated organisations like WWF. In addition to this group, we involved three other stakeholders (volunteers, participants in IEC sessions and the wider community) in generating data (see Figure 3). In each location, we had to think carefully about how to engage different members of the community so participants felt at ease. We usually engaged groups one-by-one. At the community level we worked predominantly with:

- fishermen
- women
- students
- out-of-school youth
- teachers
- *barangay* officials.

Time permitting, as in Mangingisda, we held multi-stakeholder meetings towards the end of the visit to collectively review and validate the findings. Interacting with different groups one-by-one and then all together enabled everyone involved to understand the impact of volunteering from different people's perspectives. It helped us to see how volunteer efforts interacted with the wider social ecological concerns of the communities.

## Methods

The learning architecture for this case study can be organised around three main components (see Figure 3). The fourth element of the learning architecture comprised regular reflection sessions at the organisational level to share community level findings and discuss implications with TMO.

### Parameter setting

We held a series of conversations and group discussions to scope and inform the research. These included an inception meeting with TMO. At this meeting we created a core working group within TMO to guide the research process.

### TMO working group

A working group within TMO formed of the IEC Officer, the Volunteer Manager, a Research Assistant and various volunteers met regularly over the course of the research. Initial meetings were focused on understanding the history of TMO as an organisation, the objectives of IEC and the role of volunteers in the process.

### Other informants

Alongside the TMO working group we held a number of meetings and interviews at the early phase of the research to provide context and inputs. These included Executive Committee members of the TPAMB (Tubbataha Protected Area Management Board), including the Palawan Council of Sustainable Development (PCSD) and NGOs like WWF.

**Figure 2. Stakeholder groups in the research process**

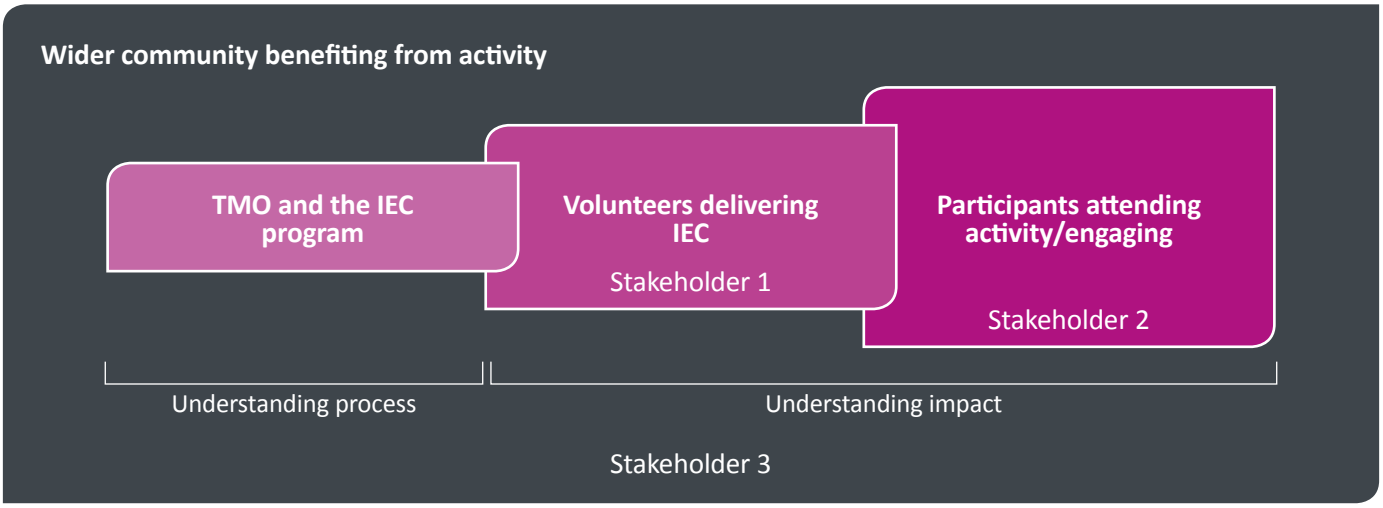


**Figure 3. Case study components and methods across time**

Project stage
Activities
Outcomes


## Parameter setting

Inception meeting with TMO

Context-setting interviews with key stakeholders

Agreed approach, including tools & techniques

Identified community locations

## Participatory inquiries

Effects tree with TMO staff and volunteers

Interview and FGD with school in Puerto Princesa

Multi-stakeholder, mixed methods inquiry in three locations:
- Mangingisda
- Roxas
- Green Island

Peer research:
- Roxas
- Green Island

Working theory of change for IEC

Community experience of IEC and changes

Local volunteers trained and using methods

## Systems mapping

Mapping links between issues

Validating and discussing findings with participants

Seeing the impact of IEC in the context of the wider system

New questions to consider and inform the inquiry

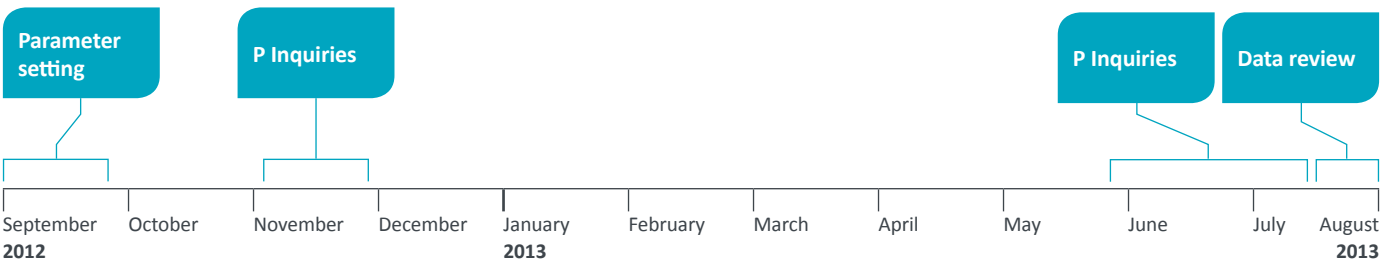
## Regular reflection sessions

Discussions on research process

Feedback on findings with TMO staff

Implications for research direction

Implications for IEC programme



## Participatory inquiries

Our intention was to select methods that would be fun, engaging and insightful, both to us as researchers but also to people participating. Viewing community members as co-participants in the research process, it was important that, as much as possible, our approach created value for everyone involved. Our particular focus was to enable greater understanding of the root causes of problems and effects, as well as prominent links between issues.

### Impact mapping with effects tree

We used an adapted version of the Problem Tree to map the effects of volunteer efforts in two workshops with

- TMO staff
- TMO volunteer educators.

In the first half of these sessions, participants were asked to

- brainstorm all the possible effects of volunteer action, as leaves of the tree
- cluster them by theme, around branches
- examine the sequence of changes, exploring what leads to what.

In the second half of these sessions, participants were asked to look at the roots of the tree – ie the things that enabled the effects. They were asked to

- brainstorm all the possible enabling factors of effective volunteer action
- cluster them by theme, around major roots
- examine the sequence of factors to take the roots as deep as they would go.

Aerial roots were used to depict any instances where effects fed into roots to make volunteer efforts more or less impactful.


### Drawing and describing relationships

We asked participants to draw a picture of the community's relationship with nature and the environment. The adults were split into three groups: (1) Past – 10–20 years ago; (2) Present – now; (3) Future – 10–20 years from now. Young people took part only in the latter two groups. Participants were encouraged to discuss in groups how they wanted to depict their community in relation to the environment and to specifically focus on detailing :

- Who/what is in your picture?
- How do they behave/think?
- What is positive and what is negative?
- Who/what else influences the community's relationship with the environment?

Groups took it in turns to explain their picture to the wider group in the order of past–present–future using one or several spokespeople. Listeners were encouraged to ask questions. The explanations of the drawings provided insights into how the interrelationships between human and environmental ecosystems are understood. It allowed researchers to ask specific questions and facilitate good discussion and feedback. The sorts of questions we asked included:

- How do they move from where they are now to where they want to be in the future? What needs to be done (priorities)? Can volunteering help?
- Who remembers the TMO IEC campaign? What happened? What were the volunteers like? Was it useful? How have people made use of the information?

### *Chika chika*

Where it was difficult to organise group sessions or more appropriate to be informal, we just talked to people about the issues. With out-of-school youth this happened in groups. With teachers and *barangay* officials this often happened in short one-on-one exchanges at the beginning or end of group sessions. With community members, we usually talked on a one-on-one basis.

*Chika chika* sessions were guided by a story-telling approach. They began with us hearing about a story from the community. Sometimes we collected stories from bus stations and from going house-to-house. We always asked one storyteller to recommend the next, using a snowballing technique. We always checked people were happy for us to include their insights in the research. We used the following loose structure to guide the conversation:

- Do you have any stories about environmental issues affecting people's lives?
- Why is this story important?
- Have you heard of Tubbataha? What do you know about it? Who talks about Tubbataha in the community (prompt: do young people talk about it? Fishermen?)
- Do you remember IEC? If they say yes:
  - Why did you participate?
  - What did you learn?
  - What did you share?
  - What did you do with that knowledge (prompt: have you used it? told anyone about it?)
  - Did it change anything for you or your community?

### Quiz

While stranded on a boat to Green Island on one of our trips, we learned that a quiz is a fun way to engage people. Bad weather kept us stranded for most of the day and into the evening. As a way of entertaining bored passengers, we worked up a quiz and gave prizes to the winners. We used questions that TMO educators use to assess knowledge and understanding before and after IEC sessions. We continued to use this method to gain a quick overview of the information on Tubbataha and wider environmental issues which could be recalled by people (see Appendix for quiz questions). It provided instant feedback to communities about their level of awareness and knowledge.

### Peer research

One of the trips to Green Island was cancelled because of bad weather. Rather than reschedule the research to be led by the lead researcher, we took the opportunity to use a peer research model to build internal organisational capacity in the participatory tools and techniques. Two TMO volunteers who had been working on the Valuing Volunteering Philippines project with the lead researcher conducted their own research. Together, we worked up an itinerary, stakeholder engagement plan, research activities outline and ethics and documentation guidance for TMO volunteers to use in their inquiry work. They used the same tools identified above to run sessions in Green Island and to engage some of the schools and one barangay included in the Roxas inquiry.

The volunteers documented their work with photos and notes from sessions. In keeping with the requirements of a systemic action research approach, as much as possible they used direct quotes. A session was facilitated by the lead researcher at the end of this process to consolidate, analyse and map emergent issues.

### Systems mapping

Systems mapping is a technique used to better understand issues and relationships in complex environments, bringing together information and views from a number of participants onto one page. Towards the end of each participatory inquiry, we created maps of the social, economic and environmental issues prominent in the communities we had visited to see where the efforts of TMO volunteers fit into this wider system.

After an initial brainstorm of emergent issues, we organised data according to standard colour coding to allow comparison across maps:

**RED** = Issues

**BLUE** = Stakeholders

**GREEN** = Factual Information/Observations

**BLACK** = Possible Solutions/Actions or New Questions

We added quotes in ballpoint pen. Lines between any entries were drawn to indicate a relationship. We discussed whether the links should be one-way or two-way. To be specific, the process of visually mapping the data helped us to look at the 'how' and 'why' of specific issues. It helped us to identify:

- possible links or causal pathways between entries on the map
- realities that challenge assumptions
- barriers and opportunities to change
- ideas for action
- what information is missing.

In the case of the Mangingisda inquiry, the map was added to and scrutinised from different stakeholder perspectives at a series of subsequent meetings with TMO staff, fishermen, *barangay* officials, City Agriculture, Western Philippines University (WPU) and the wider community. This process deepened knowledge and facilitated group learning of the themes, issues and solutions that resonated across different participants.

Unfortunately we did not have the time or resource to take maps back to Roxas and Green Island. These were used to inform the interlinked organisational learning inquiry within TMO.

**Photo set 1: Photos of peer research sessions in communities and schools in Green Island and Roxas**


## Regular reflection sessions

The TMO working group held regular sessions to make sense of what we had seen and heard in the communities. The purpose of these reporting and reflection sessions emerged as twofold: Firstly, the formulation of ideas for the next stage of the inquiry process. We asked ourselves questions such as:

- Are we still 'on track' with our underlying research purposes?
- What new questions do we need to ask?
- What new inquiries do we need to open up?
- What new data do we need to collect?
- Which new organisations and people do we need to involve?
- What practices and methods do we need to use at this stage?
- Do we need to produce any outputs or feedback from our work at this stage?

For example, it was through this ongoing dialogue that we made some important methodological decisions to:

- continue using visual techniques. As well as being more fun, they provided people with the opportunity to express things that they cannot fully express in words
- include a comparator site so we can look at patterns of impact across different locations
- try and access groups who had not participated in the research (e.g. out-of-school youth), as a marker of the geographical stretch of the IEC sessions
- introduce a quiz as a fun way to test levels of knowledge.

Using an iterative research approach like systemic action research, these sessions performed an important function, ensuring that the direction of the research remained in touch with the agreed aims and objectives.

The second purpose of the regular reflection sessions was to discuss the implications of the findings for different ways of 'thinking' or 'doing' IEC in the future. These insights are woven into the findings.

# 4. Findings

## This section pulls together the findings to answer the central Valuing Volunteering research question of 'How, where and when does volunteering affect poverty?', and the three sub-questions of interest for this case study:

1. What changes for communities and the environment because of volunteer action on environmental education? What mechanisms and pathways support the changes?

2. Does awareness of environmental issues lead to behaviour change?

3. What can be learned from this study to inform the involvement of volunteers in other environmental and conservation initiatives?

This section begins by reviewing the current theory of change articulated by TMO to explain how and why university volunteer educators further the organisation's aim for resilient coral reefs that provide socio-economic benefits into the future. To examine its validity and inherent assumptions, our findings are broadly organised around what changed in the communities following the environmental education, how volunteer educators enabled these changes, and what didn't change and why. We then revisit the theory of change in light of our analysis, to incorporate the findings.

### A working theory of change

Theory of Change (ToC) is a tool that helps to articulate and present the (often complex) pathways through which an intervention can or cannot be successful. It provides an important visual basis to examine how volunteer educators affect poverty in the context of data from real people's experiences about routes to impact.

At the early stage of the case study research, we carried out a series of discussions and participatory sessions with TMO staff and TMO volunteer educators to articulate a working theory of change about the use of volunteers in environmental education work (see Figure 6).

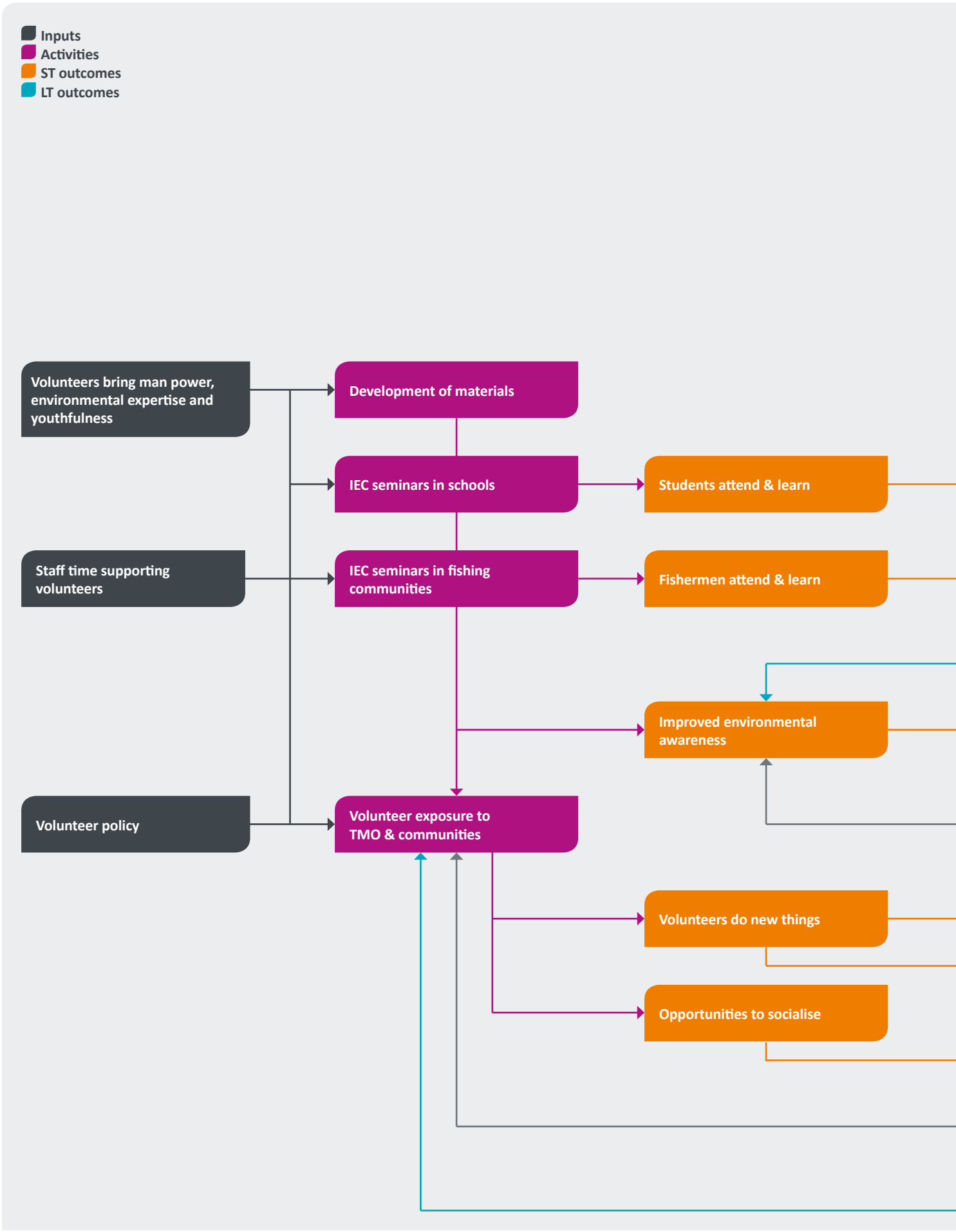
The ToC links inputs and activities on the left and outcomes on the right with arrows and feedback loops. Inputs summarise the main resources required to support volunteer-led environmental education programmes, and the activities list what volunteers actually do. Short-term (ST) outcomes list the immediate things that happen as a result of taking environmental education to coastal communities. The green boxes outline changes to attitudes, perceptions and feelings. These are perceived to be an important stepping stone to realising long-term (LT) outcomes. These are more about changes to behaviour, which contribute to resilient coral reefs.

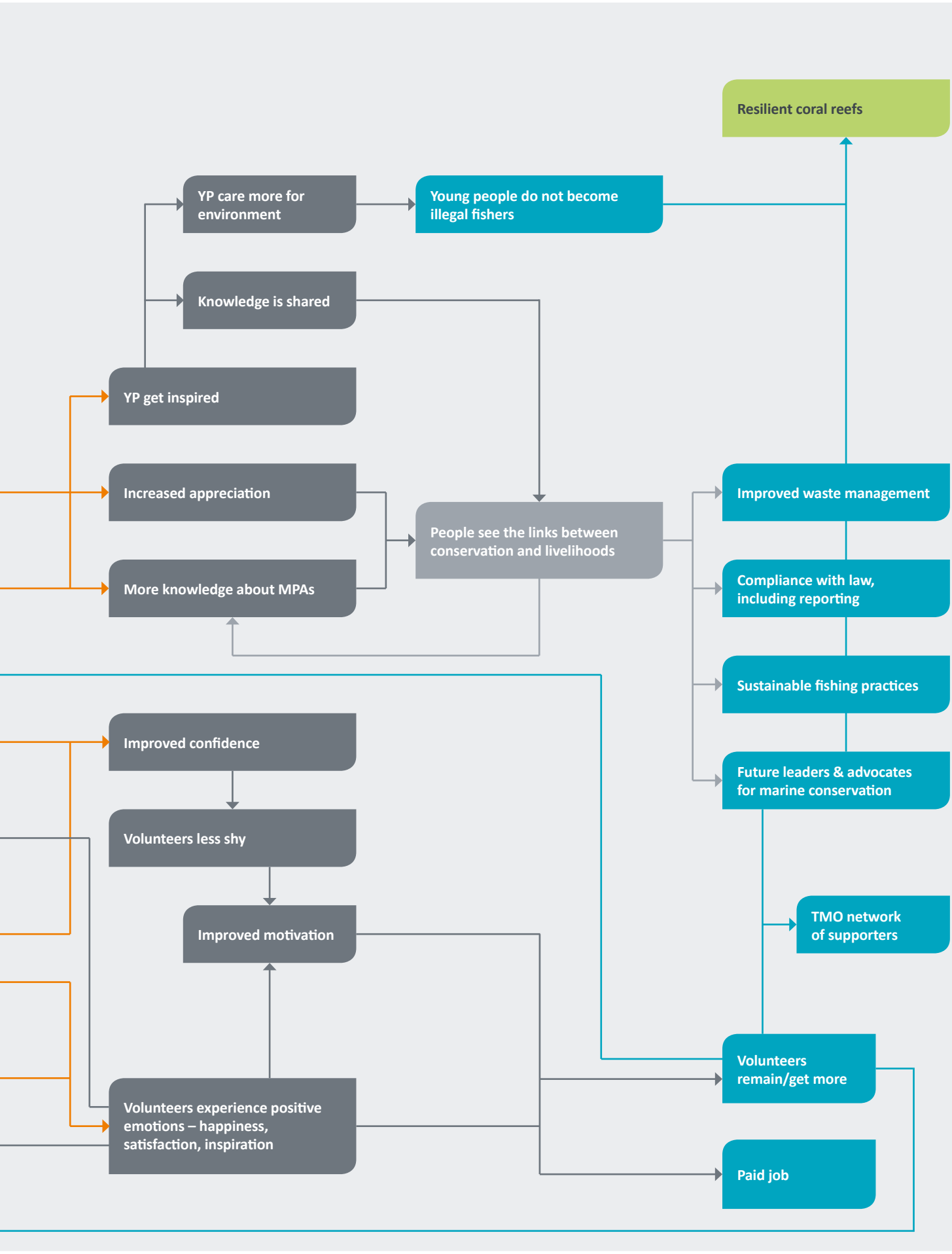
The top half of the map relates to changes in communities that follow from being involved in TMO's IEC programme. The theory proposes that where a change in attitude takes place, a change to behaviour will follow. For example, learning about Tubbataha and the environment increases appreciation and this helps people to behave in a more environmentally responsible way (e.g. via adopting sustainable fishing practices). This is an important assumption that Valuing Volunteering Philippines has found in other environmental campaigns using volunteer educators in the Philippines.

The bottom half of the map relates to changes in volunteer educators that follow from being involved in TMO's IEC programme. The theory proposes that exposure and experience with the IEC programme results in changes to volunteer capabilities and feelings about environmental work. When this happens it is more likely they stay involved and/or become future advocates for marine conservation. They may even be able to expand the organisational reach of TMO through expanding its network of supporters.

As it stands, the ToC is a programmatic view of what should happen and why. Inquiries carried out in schools and fishing communities helped us to understand the realities of change pathways, from the perspective of people's lived experience.

Figure 6: TMO's working theory of change for volunteer-led environmental education




Resilient coral reefs
YP care more for environment
Young people do not become illegal fishers
Knowledge is shared
YP get inspired
Increased appreciation
More knowledge about MPAs
People see the links between conservation and livelihoods
Improved waste management
Compliance with law, including reporting
Sustainable fishing practices
Future leaders & advocates for marine conservation
Improved confidence
Volunteers less shy
Improved motivation
TMO network of supporters
Volunteers remain/get more
Volunteers experience positive emotions – happiness, satisfaction, inspiration
Paid job

## Key issues

### Volunteer educators provide links to information from outside the community

What role are volunteer educators playing in the wider ecosystem of efforts to sustain natural resources for their socio-economic benefits?

**We found the degradation of natural resources is continuing apace and is observed in communities we visited. While the expertise for understanding complex human and ecological dynamics sits within university departments and government offices, knowledge is not readily available to communities about the links between natural resource decline and food security or livelihoods. Punitive measures set out in legal frameworks can cost poor families and communities when laws (e.g. no-take fishing zones) are breached. Irrigating information into the villages, schools and local leader networks of coastal communities takes people power. TMO and their volunteers play an important role in addressing the inequality of knowledge on environmental issues.**

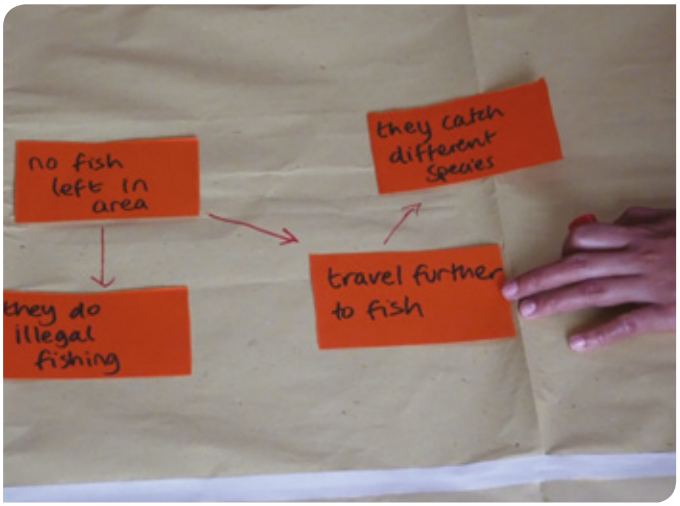
### Poverty impacts of environmental degradation

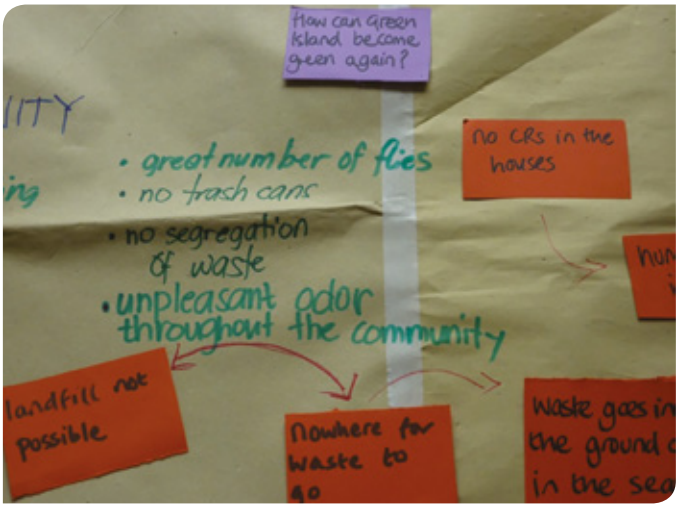
On field trips to communities we were able to observe and learn about the extent of environmental degradation and its impact on communities (see Photo set 2). In Green Island, a remote and once idyllic spot, the community reported loss of sea life they used to observe by the shore, such as octopus, turtles and dolphins. They used the term 'yellow submarine' to refer to human waste in the sea. We observed the smell, the flies and the levels of trash. In Roxas, coral is being destroyed by waste and illegal fishing practices like hubolt and trawl. Many of the MPAs established through an eight-year WWF programme in the 2000s in Roxas were reported to be no longer effective.

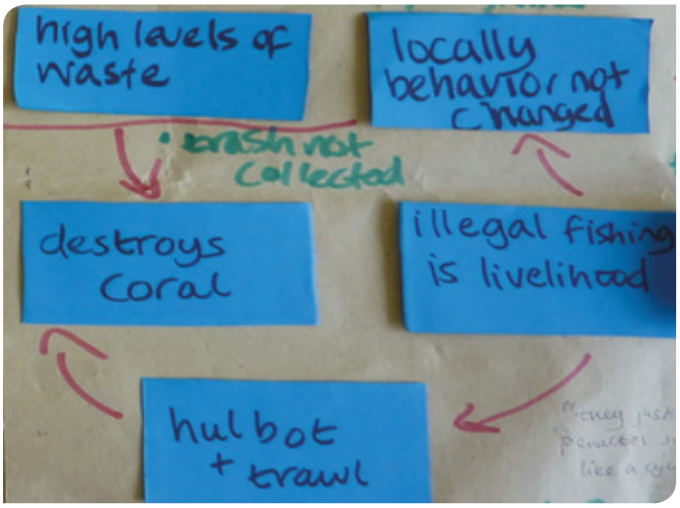
**"We go 30–40 miles now before we catch fish. For 12 litres of gasoline we may only catch 10 kilos. We have a lot of expenses like schooling."**
Fisherman in Roxas

In every community, fishermen talked about a decrease in fish catch. One might assume that this fact would discourage further illegal fishing. However, low fish catch actually creates a powerful feedback loop which intensifies illegal fishing because the alternative is that fishermen have to go further to fish. There are social consequences to this. In Mangingisda, residents told us of family breakdown due to absent fathers. Children told us how they miss spending quality time as a family.

**Photo set 2. Extracts from systems maps for Mangingisda, Green Island and Roxas**

The alternative is that fishermen catch fewer fish but using sustainable practices like hook and line. This usually results in lower household income for families. The need for food and money today encourages the use of techniques that destroy coral reefs and catch endangered species, which creates resentment between responsible fishermen and illegal fishers.

**"It is unfair. Ordinary fishermen use hook and line but there are big trawl boats and they use active gear and nets."**
Resident, Barangay 1, Roxas

Fishing restrictions associated with MPAs are also perceived to create direct hardships for similar reasons. Fishermen have to be satisfied with fishing trips that cost more in fuel (to go further) for a lower fish return in the immediate future.

A third strategy is to give up fishing altogether. In Roxas, fishermen reported that overfishing had left them no option than to do other things for an income. One man told us how he has become a carpenter but he still misses his work as a fisherman. In Mangingisda, efforts to adopt an alternative livelihood in seaweed farming have been hindered because the illegal use of cyanide in fishing affects the yield. In Green Island, disease undermines the effectiveness of seaweed farming as a viable livelihood.

These links between natural resources and poverty make fisheries a key area of concern for development efforts in the Philippines and a target for conservation activities.

## Addressing an inequality of access to information

As global understanding of complex socio-ecological systems like fisheries has improved, this trend is not always replicated at the community level. On talking to TMO volunteer educators about challenges they faced disseminating information to communities, some of the discussion revealed knowledge gaps held at the level of the community,

**"Sometimes they laugh because they do not realise that small fish need to be protected."**
TMO volunteer

In Green Island, a teacher explained they only tackle Tubbataha "briefly" because their knowledge is limited, even though we learned teachers are important communicators of environmental messages because of their access to children and young people.

**"Kids do not talk so much about the environment. It depends on the teacher."**
Adult, Barangay 1, Roxas

Coastal residents are dealing with the day-to-day fallout of degraded marine resources but have fewer opportunities to learn about the bigger picture.

While knowledge is shared at academic and policy conferences and laws are put in place to protect valuable ecosystems, this same knowledge is not put in the hands of the people who depend most on these resources for their livelihoods. It is in this context that the use of volunteer educators for environmental information dissemination on links between natural resources, food security and livelihoods is deemed so important.

**"There came a time when we could get access to funding to support awareness-raising activities but what we really needed was manpower"**
Staff member, TMO

Knowledge of the law seemed particularly important for communities with high apprehension rates. Given the social and economic impact of a household wage earner being sentenced to 20 years' jail time, this is not surprising. The awareness that comes through the IEC at least makes it possible for people to make informed choices, based on an understanding of the risks involved.

**"They distributed books with the photo of apprehended boat and the children recognized the boat. The owner of the boat was from Roxas."**
Community member, Roxas

A few community members and teachers expressed appreciation that time had been taken to explain the rules and regulations. There seemed to be particular value in volunteer educators physically visiting communities to deliver environmental messages, especially because field trips to visit TMO's principal site of conservation (Tubbataha reefs) to understand its value are not possible due to its location 150km off the coast of Palawan. Of course, visiting communities one-by-one is intensive work, so the willingness of young volunteers with environmental backgrounds to engage in these sorts of programmes helps.

**Summary of implications:**
**Volunteer educators provide links to information from outside the community**

- Environmental degradation and illegal fishing practices are negatively affecting the livelihoods and food security of coastal communities in Palawan.
- The consequence of fishing further and longer is causing social problems, including family breakdown.
- Low fish catch actually drives further illegal fishing as opposed to serving as a disincentive.
- The efforts of volunteer educators to relay information to communities is valued and important for addressing local knowledge gaps.

## Volunteer educators can improve knowledge and awareness through one-off educational inputs

Does the use of volunteers as educators make a difference to communities?

**It is fairly typical that volunteers working on awareness-raising programmes engage with communities for a short period of time to deliver educational sessions. We found evidence that these one-off educational inputs supported people to learn about Tubbataha and wider environmental issues such as climate change. The creative and interactive way that IEC sessions were delivered seemed to help people retain knowledge. TMO's efforts to intentionally recruit young people with environmental backgrounds and tailor its volunteer support were important ingredients explaining how the IEC programme led to improvements in knowledge.**

### Knowledge retention

An easy way to get a quick overview of knowledge retention is to examine the quiz data. The quiz is a combination of ten pre- and post-evaluation questions used during IEC sessions. Scores compiled from 31 participants from communities in Green Island and Roxas demonstrate high levels of awareness (see Table 2). Most of the scores are above 8 out of 10.

**Table 2. Summary of quiz scores for 31 participants of Green Island and Roxas**

| Participants | Score (10 items quiz) |
|---|---|
| **Out of School Youth (Green Island)** | |
| **Male** | 10 |
| **Female** | 7 |
| **Male** | 10 |
| **Male** | 8 |
| **Male** | 7 |
| **Women, Fishermen, and Seaweed Farmers (Green Island)** | |
| **Women** | 9 |
| **Fishermen** | 10 |
| **Seaweed Farmers** | 10 |
| **Elementary Students of Green Island** | |
| **Female (grade 5)** | 10 |
| **Female (grade 5)** | 10 |
| **Female (grade 5)** | 10 |
| **Male (grade 5)** | 9 |
| **Male (grade 5)** | 9 |
| **Female (grade 4)** | 9 |
| **Female (grade 6)** | 9 |
| **Female (grade 6)** | 9 |
| **Male (grade 6)** | 9 |
| **Female (grade 6)** | 9 |
| **Female (grade 4)** | 8 |
| **Female (grade 4)** | 8 |
| **Male (grade 6)** | 7 |
| **Female (grade 4)** | 6 |
| **Female (grade 4)** | 5 |
| **Magara School for Philippine Craftsmen** | |
| **Third Year Students** | 2 students scored 9 |
| | 2 got scored 8 |
| **Fourth Year Students** | 4 students |
| | All of them scored 10 |

The questions people got correct and incorrect highlights gaps in knowledge. Table 3 summarises the same data, but examines how the scores relate to each quiz question

**Table 3. Analysis of score by quiz question for 31 participants in Green Island and Roxas**

| Summary of question | Results |
|---|---|
| **1. The ocean is the natural collector of carbon dioxide (CO2)?** | Correct - 20 |
| | Incorrect - 11 |
| **2. The sea grass is not important in the ocean?** | Correct - 28 |
| | Incorrect - 3 |
| **3. Coral reef is the richest ecosystem in the world?** | Correct - 27 |
| | Incorrect - 4 |
| **4. Fishing is allowed in Tubbataha?** | Correct - 28 |
| | Incorrect - 3 |
| **5. The continuing rise in temperature of the ocean is dangerous to fishes and other sea creatures?** | Correct - 29 |
| | Incorrect - 2 |
| **6. Fishes and other marine organisms are given the chance to propagate if their habitat is a protected area?** | Correct - 30 |
| | Incorrect - 1 |
| **7. Coral reefs are species that could be damaged or depleted if not protected?** | Correct - 30 |
| | Incorrect - 1 |
| **8. Fisheries are protected if ocean is kept healthy?** | Correct - 28 |
| | Incorrect - 3 |
| **9. It is important to maintain the number of all wild species in the ocean?** | Correct - 26 |
| | Incorrect - 5 |
| **10. Tubbataha is the only purely marine world heritage site in South East Asia?** | Correct - 23 |
| | Incorrect - 8 |

The scores reveal that people had most difficulty with question number 1. We learned this is because most people are aware that trees and plants are natural collectors of CO2 but they did not realise the ocean performs the same environmental function. Interestingly, the next lowest score corresponded to the final question about Tubbataha's status as a UNESCO World Heritage Site. Community members had not realised the uniqueness of Tubbataha as the only marine world heritage site in south-east Asia.

It was difficult to compare scores on this quiz with data from the quiz carried out at the time of the IEC session because data was not readily available for analysis. And reliability of quiz data is not straightforward because people sometimes helped each other out with answers. As much as possible we asked people to complete the quiz on an individual basis and honestly. Reviewing the scores we can be 100% confident that knowledge about Tubbataha and environmental issues exists in Green Island and Roxas, even if there is more variability in levels of competence than these scores reveal. Later in this section we look at what knowledge can be attributed to TMO's volunteer educators. First we look at what the qualitative data revealed about people's understanding.

## Schools – young people

In all the communities we visited, knowledge about Tubbataha and awareness about environmental issues more generally among young people was impressive. Teachers at a session in San Pedro Central School in Puerto Princesa reported that exposure to IEC had changed things for the students. It had helped to:

- create awareness of the environment, as pupils in elementary are more aware
- encourage a love of nature
- encouragee waste segregation
- make students realise they can help.

But it was our direct engagement with young people that revealed how literate they were on environmental issues.

**- *Valuing Volunteering*: How does no fish affect the community?**
**- Grade 6 student: If there are no more fishes and we destroy the home of the fishes, there are less fish and people are hungry.**


**- *Valuing Volunteering*: You have drawn a net. Why is net size important?**
**- Grade 6 student: The smaller fishes are free. They grow. They lay their own eggs. They have children.**
**- *Valuing Volunteering*: And then?**
**- Grade 6 student: It produces a good reproduction of the sea. They have a chance to grow and it will increase the population.**
**- *Valuing Volunteering*: And why is that important?**
**- Grade 6 Student: Because our population grows too.**

When going into schools to talk to children it is not always possible to know as researchers whether you are accessing students of a range of ability or whether teachers are providing their brightest scholars. We did encourage teachers to select students at random, trying to include some who had attended an IEC session delivered by TMO volunteer educators. And in some cases we definitely did not have all honours students but we became keen to engage out-of-school youth as a comparator group. Accessing young people not in school is logistically more difficult and we definitely spoke to far fewer out-of-school than in-school young people. Out-of-school youth in Green Island had heard about Tubbataha through school when they were still studying, suggesting it is important for IEC to be working with elementary children as well as high school children, as many leave after grade 6. They said they learned about the violations and penalties and the 'samong' (local name for top shell Trochus niloticus) that was not allowed to be taken from the reef.

If you talk to the teachers they will tell you that student knowledge on environmental issues has certainly improved over the years. Staff at Mangingisda National High School informed us that, prior to 2009, students who graduated before didn't know anything about Tubbataha. But more recently it is different. And teachers are also finding that students come to high school with more awareness on environmental issues.

According to one teacher in Roxas, levels of understanding have improved over the 27 years of her career. There are more media to share, making it easier to spread information via the TV, computer, etc. For her, there was specific value in educating young people, as well as adults, in fishing communities. She is hopeful that if they continue to educate the young people in the next 10 years all the illegal activities will be gone.

**"The students come into the high school with knowledge about Tubbataha. They know it. They know it is rich in marine life. It is part of their heritage."**
Teacher at high school

On a more negative note, the importance of educating young people is that they themselves are the illegal fishers. As one fisherman in Roxas informed us, illegal fishing is carried out by children and young people. Some of these are out-of-school youth. But it can also be grade 5 and grade 6 children.

**"They [the children] destroy the coral to get the fishes out. They need their money for schooling, for their food etc."**
Ex-fisherman, Barangay 1, Roxas

## Schools – teachers

In most schools we visited, teachers saw it as important to educate children and young people on environmental issues. For example, as one teacher in Magara explained,

**"IEC is a good thing because it encourages young people to appreciate the environment at an early age because sooner they'll be the next generation to protect it."**

As an observational indicator, most schools showed us copies of the Tubbataha primer brought by TMO volunteer educators, which they still used.

San Pedro Central School in Puerto Princesa was our first community engagement on the impact of IEC. We asked the teachers for their ideas on the best way to assess the impact. One participant suggested an important indicator would be the extent to which teachers in science subjects have integrated the knowledge into lessons plans.

Exploring this in a little more detail in follow-up school visits, it was surprising for us to learn that teachers included information on Tubbataha in HEKASI classes, as well as science classes. HEKASI means Heograpiya, Kasaysayan ans Sibika (Geography, History and Civics). It deals with physical, cultural and political aspects of life in the Philippines. This was an important finding because education on Tubbataha and environmental sustainability is usually tailored to science teachers and curriculum. At Andres Soriano Elementary School (ASMES) in Roxas we spoke to a teacher who incorporates news and current events concerning Tubbataha into HEKASI classes. She uses the primer as a reference. But she reflected that it is "usually the science teachers who attend the IEC".

The HEKASI subject represents another avenue for raising awareness about Tubbataha, other than through science subjects. But HEKASI teachers have not been a group traditionally targeted by TMO volunteer educators as part of the IEC programme. In general terms, teachers stood out as a group who were particularly important to ongoing environmental education in communities. Our final inquiry in Green Island raised an important question: how can IEC include teachers as important stakeholders?

## Fishing communities - fishermen, women and seaweed farmers

There was evidence of information delivered through IEC changing the view of the community in Barangay IV of Roxas. Most of the fishermen were once illegal fishers. They reported that the environmental education delivered by TMO volunteer educators has helped to change the way they think. And they thought it was important that they were kept informed on issues related to the marine environment. In Mangingisda, a TMO staff member revisiting the community with us reflected how conversations between residents and *barangay* officials showed they have many more ideas about MPAs and developing tourist infrastructure since IEC was carried out there.

Levels of understanding on the links between conservation and livelihoods were generally good across communities. In Mangingisda, adults and young people were able to articulate the links between healthy seas and a good fish catch. For example, seaweeds were identified as an important home for fish. They explained how the environment was in better condition before and many hoped it would improve in the future. Illegal fishing practices were directly connected to destruction of corals. Most people made the link between the destruction of coral and the loss of homes for fishes. And residents recognised this affected their families and communities in a negative way. Sadly it was often the fishermen – who are most directly experiencing and witnessing changes to the ocean – who painted the most negative pictures about the future (See Box 1 for an example).

A smaller proportion of children and adults had not internalised the link between healthy marine environment and a good livelihood. For them, the fish still hold more value caught than alive.

### Box 1: The past, the present and the future in Green Island

Residents of Green Island were asked to draw the relationship between the environment and their livelihood in the past, present and future. The left-hand image is a representation of the change. It was presented by a fisherman, representing his group (see right):

**Past:** "There are an abundance of fishes, which can be found anywhere here. We only have few numbers of boats and the octopus came just near the coast but now you can't see any without going far from the shore. The fishes are just near the shore. We have great number of trees. Seaweeds don't have yet diseases."

**Present:** "This 2013, the fishes are miles away. There are no fishes now surrounding the Island unlike before. You need to use at least 2 litres or 1 gallon of gasoline, that far to catch fishes. We have average number of trees. Seaweeds now have many diseases. The 'ice-ice disease', seaweeds melt down maybe because of the trash that buried in pits. The chemicals that seep in sand and during rainy days it flows in the water through run-off. The cause of poison to water, that's why fishes never came near our shore."

**Future:** "This one, I see our future with ship sailing here, there's no small boats because there's no already fishes. No trees at all."

## Knowledge sharing

On the assumption that people usually share information that is important or interesting to them, we tried to ascertain whether information learned from volunteer educators was passed on locally. It was difficult to get a clear picture. Some adults said they did not hear of young people talking about Tubbataha. In Green Island, the out-of-school youth we engaged said they had heard about Tubbataha but it is not often that people talk about it.

In other cases people reported that they had passed information on or that they had heard about it from friends. As an example, one student on Green Island said he shared the knowledge with his family, especially his father and siblings. He warned his father never to go to Tubbataha to fish and he shared what he had learned about endangered species.

In Roxas, one teacher told us that they teach children how to approach their parents. For example, they teach the children the size of the hole in the net and how far they should be fishing from the shore. They discuss the Republic Acts with the children. Rather than talk in general terms, it seemed like the approach was to provide the children with practical facts that they could use to discuss fishing practices with adults. A more systematic study examining how information spreads through social networks would be interesting and potentially useful as a way of extending the knowledge gains achieved by volunteer educators.

## Attributing knowledge gains to the work of volunteer educators

Aside from TMO volunteer educators' IEC sessions, community members reported learning about Tubbataha and environmental issues from various sources, including:

- school science subjects
- television
- books and articles
- fishermen who visited Tubbataha and fished there
- from friends that actually attended TMO's IEC sessions
- teachers who tackled Tubbataha in their HEKASI subject
- education sessions in schools through the civil action groups of the military government.

Most of the people we talked to could recall that it is prohibited to fish in Tubbataha. They were able to provide information about penalties for violation and about the Republic Act stating it is a protected area, which are strong messages of the IEC sessions. Other knowledge indicators suggest that levels of awareness can be attributed to the work of volunteers. For example, some specific aspects of the IEC delivery were memorable for people, including:

- "the plays with people wearing costumes of birds, turtles and goddess of the sea"
- the PowerPoint presentation
- the question-and-answer game
- hearing it because "of the loud sound system"
- the booklet or primer
- the distribution of bags, pins
- the TED (online presentation) talk.

**Sometimes people's memories extended to who delivered the IEC, "A guy with short hair and a pleasing plump lady"**
High school students in Magara

The attention given by volunteers to using visual materials, theatre and visualisation techniques added important value in terms of 'connecting' people to reef and the endangered species that live there. One of the teachers told us that she uses imagination methods like "Let's pretend we are on the boat, going to Tubbataha to do snorkelling. Put your goggles on. Let's go dive." This is a technique used by TMO volunteers in the IEC sessions.

Even where teachers recognised they were doing a lot of work on pro-environmental issues at school before the "TMO symposium", they reflected that afterwards,

**"There was an addition of value formation related to the environment – particularly around the waste. The emphasis given to trash – the idea that what you throw away will go back into you – we often quote that back."**

It is testament to the quality of information and its delivery that teachers told us about replicating messages and techniques.

## Factors enabling the effectiveness of volunteer educators

We explored what made it possible for volunteers to realise these sorts of knowledge outcomes in the communities they educated. The two most important contributing factors seemed to relate to the profile of the volunteer educators and the level of support received by TMO.

### Not just any volunteer

In 2009, TMO took part in volunteer management training delivered by VSO Baghaginan. This engagement led to a volunteer policy, which resulted in clearer guidelines, set qualifications, standard procedures, and processes like handling conflict and feedback systems. With a volunteer support officer on the staff, TMO focused on who to recruit as volunteers. The top two priorities were to be able to

- ensure quality and consistency of IEC delivery
- create future advocates for marine conservation, extending the social network of TMO and long-term support for its cause.

Previous experience had taught them that young people were particularly good at conveying environmental messages. They are effective at communicating in a fun, creative and non-threatening way with other young people and adult community members. But TMO also wanted to feel confident in the quality of the information provided to communities, so they added knowledge requirements on the environment to their volunteer specification. They drafted a volunteer profile that they could use to carry out a need-qualification matching to prioritise young people with relevant backgrounds in marine biology or environmental science. As such, most of the volunteer educators at TMO are recent graduates from either WPU or Palawan State University located in Puerto Princesa.

Even though the volunteers are plugging an important resource gap within TMO to achieve its awareness-raising goals, they are not seen as a cheaper, more cost-effective alternative to paid labour. They are perceived to be providing a valuable service that only a certain profile of volunteer could do. This is why the recruitment of local youth volunteers was very deliberate. It wasn't just about what the volunteers would be doing – providing information on protection of the environment – but about how they are able to interact with the children in the school, low literate community members (e.g. wearing costumes in the environmental skit) and local people in positions of influence (e.g. the primer for teachers).

### Not just any volunteer experience

TMO volunteer educators receive support and encouragement from TMO staff, especially the Volunteer Manager. Usually at least one staff member accompanies volunteer educators on tour. As volunteer educators are at the beginning of their careers, confidence to engage communities and hold an audience can be low. Continuous encouragement on the part of TMO staff is especially important as volunteers are designing new materials and learning how to handle their delivery. Informal feedback and performance run-throughs all seemed to add to the confidence of volunteers once in front of communities.

**Summary of implications:**
**Volunteer educators can improve knowledge and awareness through one-off educational inputs**

- Short-term engagements between volunteer educators and communities can lead to improvements in knowledge and awareness on environmental issues.
- Creative ways of communicating add value to environmental education. This is especially important when trying to 'connect' people to a natural resource they cannot see or easily visit like the underwater world.
- Environmental education programmes should think about how different volunteers bring different strengths to communication and outreach work.
- Organisations should match the volunteer support they offer to the profile of their volunteer educators.

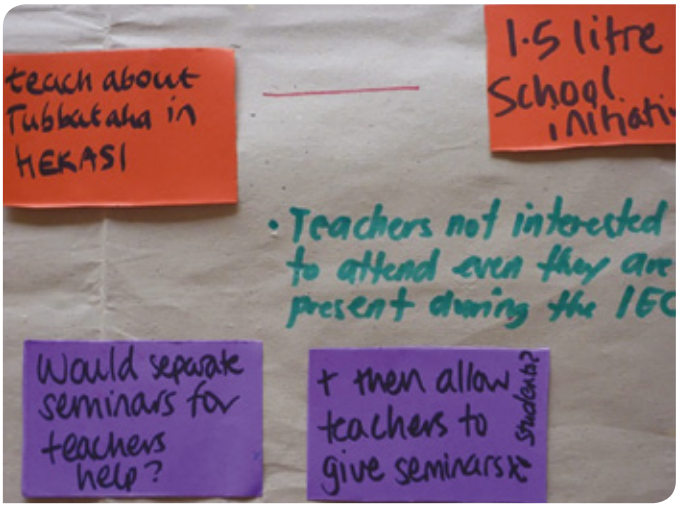
## Community and systemic factors affect the accessibility of environmental messages delivered by volunteer educators

We wanted to know how accessible the environmental education sessions were to people, and the factors that affect the accessibility of environmental messages, so we looked at how easy it was for people to attend sessions and how relevant they felt to people.

**We found short-term engagements by volunteer educators are limited in terms of the people environmental messages reach. Accessibility can be improved by aligning schedules of sessions to the rhythms of community life and targeting key local actors (e.g. teachers) who could be instrumental in extending the impact of a single IEC session. The relevance of environmental messages in high-poverty contexts could be improved by volunteer educators who use techniques that help communities connect the dots between personal and ecological concerns. Enabling dialogue should also improve volunteers' understanding of how communities see natural resources and conservation objectives. This will help improve the flexibility of educational materials to respond to changing attitudes and perceptions over time.**

### Attendance at volunteer-led educational sessions

There were mixed reports on levels of attendance at the IEC sessions. Some community members reported having not received invites. Sometimes other activities were going on at the same time, including school graduations and livelihood responsibilities.




Based on what people told us, attendance by teachers seemed to be especially low. For example, in Green Island it was reported that most of the teachers did not attend because of other school-based activities such as the school commencement exercise day at the elementary school. While some teachers did see the IEC sessions as an opportunity to learn for themselves, many saw it as an activity for the students only. As a consequence, only enough teachers attended to provide support managing students. This raised a question for us about whether separate seminars targeted at teachers could help. These sessions could be more focused on how to use techniques and materials so teachers themselves could give follow-up seminars.

Reachability of short-term engagements with the community was an issue. For example, the IEC sessions did not reach every grade or every student at each school. IEC has made repeat visits to some schools, but it is clear that individual sessions cannot educate the entire school. The Magara School for Philippine Craftsmen and Faculty responded to this challenge and tried to cascade the knowledge to other grades that could not attend the IEC session. Students told us they were called to present and repeat what Tubbataha presenters had said. But they reported difficulty relaying all the information because they could not remember everything.

### Relevance of environmental messages

On talking to some of the women, fishermen and seaweed farmers of Green Island who had attended the IEC session, some reflected how they "always liked to listen" and how they thought "it was a good topic". They also mentioned that some residents did not go and, while they shared what they had learned with their children and neighbours, "some were still not interested", which may be an indicator they did not see the relevance of the educational sessions.

**"They ask, why do we need to protect this species more than humans? We need to live and eat."**

**"Sometimes they did not understand."**

TMO volunteers reflecting on challenges delivering IEC

While enthusiastic volunteer educators can encourage people to consider the environment, it is worth remembering that saving the environment will not be every community member's first priority. A challenge for environmental education is that people see conservation messages as adding to household or community problems, and therefore not enhancing their situation. As one teacher in Puerto Princesa reflected, "Rural areas complain they do not have sources of food. Now it [development] is being prohibited because they do not have a source of living" because they are prevented from cutting trees to create charcoal, for example. "As we conserve the environment, the livelihoods are not kept at the same time. It is a fallacy in the system. It is not creating shock absorbers."

The challenge in these circumstances is for environmental education to be able to make the link between the community concern and the environment explicit, so it becomes relevant to people. Seeing the links can help to mobilise local energy. It was surprising, for example, that the involvement of one community leader in Barangay Mangingisda was motivated by data in the systems map indicating reported increases in family breakdown now that fishermen have to go away for longer periods to fish. His focus was not conservation of coral reefs, per se, but he began to see the links between this and something he did care deeply about.

This insight indicates the importance of people discovering for themselves the links between conserving natural resources and their own, often more immediate, concerns. Those issues that seemed to have most resonance with community members, and also impacted environmental outcomes, included:

- wanting their children to have a better future ("We want to continue fishing but in the proper way")
- loss of quality family time (identified by children)
- stopping family breakdown as a result of fathers being away for long periods of time to fish
- household income
- health concerns related to fishing with a compressor
- local leadership on environmental issues
- resources to patrol and enforce.

It would be possible to introduce a participatory mapping exercise into IEC sessions to facilitate people to make their own links between the personal and the ecological. As we see below in the section "Behaviour is resistant to change, even when knowledge is high", 'seeing the links' also needs to be supported by 'seeing the solutions'. This means creating demonstrable benefits at the community level for improving environmental outcomes (e.g. increases to household income, better livelihood options, etc).

## Responding to changing attitudes and perceptions

As with any long-term initiative, environmental education like TMO's environmental education programme does not operate in a vacuum. We learned how outside events also influence how fishermen, young people and the wider community perceive Tubbataha and the rules and regulations that protect it.

The recent grounding of the US Navy minesweeper USS *Guardian* on 17 January 2013 and of a Chinese fishing vessel on 8 April 2013 generated a lot of headlines about Tubbataha. For example, according to one teacher at the Magara School for Philippine Craftsmen and Faculty, most of the students know about Tubbataha as it was on television, especially during the grounding of USS *Guardian*. While this raises awareness about Tubbataha in a general sense, some comments suggest it has caused confusion in coastal communities about what foreign vessels were doing there. It is well known that you need a permit to enter the area, so how did foreign craft get so close to the reef unless they are allowed to go there?

The dialogue we opened up with communities as part of this research revealed it is also not fully understood why foreigners such as scuba divers are allowed to visit Tubbataha. When explaining why fishermen do not fish in Tubbataha anymore because of the rules, the fishermen we were talking to added,

> **"We know now that only tourists and those with money could go there."**
> Fishermen, Barangay IV, Roxas

In one household interview in Roxas, residents felt that there should be equal treatment, and that they should not be excluded from Tubbataha because they "are poor and live in the low class of the society". These sentiments feed into more general preoccupations in coastal communities about inequalities in the fishing system.

The efforts that TMO has undertaken to ensure proper compensation and future protection of the reef will not be fully known by communities. The cultural and economic value of receiving tourists may not have been fully communicated. These community-level insights present an opportunity to update materials. For example, content on these events and TMO's response could be woven into IEC materials used by volunteer educators. Another possibility is to ask divers to speak to community members (either directly or on film) about why they visit Tubbataha. This expression of appreciation may help communities to see the aesthetic and heritage value of coral reefs. It may also help to position TMO as an organisation that is working hard to protect important fishing resources for communities.

### Summary of implications: Community and systemic factors affect the accessibility of environmental messages delivered by volunteer educators

- Environmental education needs to be easy for people to take part in. One simple improvement is to ensure scheduling of IEC sessions matches availability at the community level, avoiding special events and respecting livelihood routines.
- Volunteer educators could consider running sessions for teachers spanning science and HEKASI subjects. TMO volunteers could assist in the development of age-specific material that teachers in elementary and high schools could easily incorporate into fun sessions. This could improve the impact of environmental education by (1) making sure the teachers are on board and well equipped and (2) extending reach to students unable to participate in IEC sessions.
- Participatory activities like systems mapping could be incorporated into environmental education to facilitate people to make their own links between community and environmental issues and propose their own solutions.
- A key outcomes indicator of IEC sessions should be that participants leave with clarity about how their personal concerns relate to conservation goals. Volunteers should leave with greater clarity about how environmental messages are received and interpreted.
- Environmental education programmes need to carry out a regular 'temperature check' to gauge changes in attitudes and perceptions that affect the relevance and receptivity of key messages.

## Behaviour is resistant to change, even when knowledge is high

To establish whether volunteer efforts to deliver environmental education have any impact on pro-environmental behaviour, we also asked people if they go about their day-to-day lives differently.

**A major assumption in the perceived value of environmental education is that it changes behaviour in some way. We found some evidence of fishermen avoiding Tubbataha, but fishing behaviour in local fishing grounds has not changed. The drivers of unsustainable behaviour are plentiful and powerful. In this context, educational campaigns are not sufficient to dislodge systemic forces to influence a different way of being and doing. At some point, volunteering for environmental and poverty alleviation outcomes needs to directly address changes to behaviour.**

## Changes to fishing behaviour in Tubbataha

Our conversations with fishing communities suggested people had largely (but not exclusively) stopped fishing in Tubbataha. It is difficult to assess whether people would ever be wholly truthful when talking to a set of outsiders they do not know well. However, reasons to trust in these accounts were found in people's explanations. Fishermen in particular reported that they are too afraid to fish there anymore. As a wife of a fisherman in Barangay IV of Roxas recounted,

> **"Many fishermen here still have criminal cases in Tubbataha so they're afraid to go there now. IEC is important because it informed us the rules and regulations of Tubbataha."**

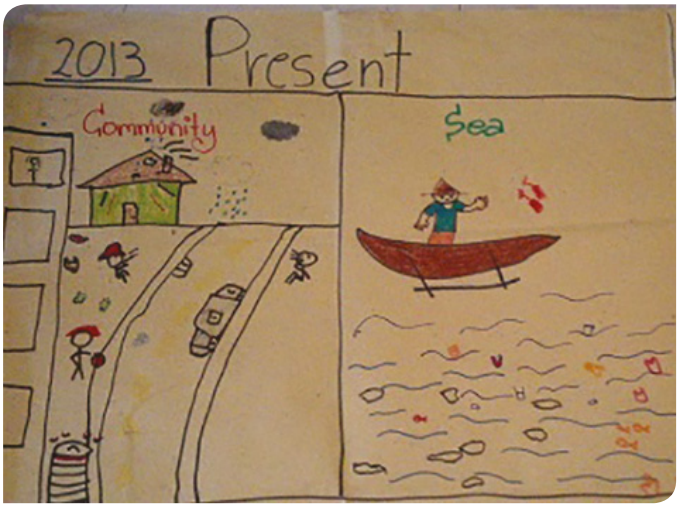
In large part, compliant behaviour is the result of rules and restrictions that fishermen feel have been imposed on them. And the regulations have direct implications for the way they fish. Some community members did say people won't change behaviour because they want "to make easy money". From a conservation perspective, this reluctance may be rooted in poor attitudes, but a parallel reality is that fishermen lack viable alternatives (see below). As such, the protection of Tubbataha has not become something that is personally important to people, or something that they do willingly. This means the long-term threat of illegal fishing in Tubbataha has not been neutralised and its protection is still reliant on concurrent monitoring and enforcement efforts.

It is not clear whether a reduction of fishing activity in highly profitable Tubbataha has been replaced by equally risky fishing behaviour closer to home. For example, many people told us about fishing with compressors for the live fish trade. They fish with small air tubes, going 30m and further below the ocean surface to fish for endangered species like Napoleon Wrasse and Grouper. Historical data on incidences of compressor fishing is difficult to come by, so compressor fishing could be an unrelated trend. This is an example where our research created more questions that needed further investigation. What we can be sure of is that the fishing technique exists and comes at great human cost. Mangingisda, Roxas and Green Island could all recall recent stories of this behaviour resulting in paralysis and death of (usually young) fishermen. Informal follow-up inquiries with dive shops found one in Palawan, Coron, that has been approached in the last year by communities to use de-compressor chambers but the injured arrived too late for symptoms to be treated. This is an area of follow-up.

## Changes to fishing behaviour in local fishing grounds

We found little evidence of behaviour change on environmental concerns at the local level. The group work to depict the past, present and future relationship between communities and the environment revealed some honest reflections. For example, in Mangingisda a group of fishermen drew pictures of fishermen with cyanide and dynamite, and they drew a picture that represented an incident that happened the night before when their net damaged the coral when they were pulling it in. Incidences of illegal fishing were also prevalent in children's drawings across all communities we visited. They also drew examples of fishing with timbog, active gear, a technique called *hulbot-hulbot*, sodium, trawl nets and referenced the size of the net holes in relation to the fish.

**Photo set 3. Drawings illustrating illegal fishing activity**

## Drivers of unsustainable behaviour

Over the course of our fieldwork we amassed lots of information about the drivers of unsustainable behaviour. We have grouped these into six main categories.

### Ecological

Difficulty catching fish was the most common reason for engaging in unsustainable fishing practices. Communities are stuck in a dynamic where low fish numbers caused them to fish illegally, which contributed to low fish numbers and so on. In Green Island, fishermen reported they still fish in no-take zones, explaining that it took courage to fish in Tubbataha because they are aware of the consequences of what they are doing.

### Economic

The economic incentives for illegal fishing practices are twofold. On the one hand, low household income and concern about providing for the family creates a need to catch fish. On the other hand, the high market value of endangered species is enticing, so much so that people will risk their lives catching them, as will compressor fishermen. The live fish trade in Hong Kong and China is cited as being a particular driver of this activity.

Even at the other end of the food chain, economic markets have been created to capitalise on overfishing. Fish that used to be able to grow into bigger fish because when young they were too small to sell for human consumption are now sold for animal feed.

### Lack of alternative livelihoods

Sometimes communities did reflect that alternatives had made them "more content to fish legally" as in the case of Green Island where people combined seaweed farming with fishing. In many cases, efforts to pursue other options have not been successful or are under threat. For example, in Green Island, disease is threatening the viability of seaweed farming.

We visited the City Government in Puerto Princesa to ask about livelihood alternatives and they talked us through some of the initiatives (e.g. land for food growing, provision of water buffalo) they had granted Mangingisda. They told us that if you were to look at the inventory of projects you would have to ask why the community is not flourishing. We took this insight back to the community. Support from city and local governments to establish livelihoods was often described as having no lasting impact because the initiative was short-term, lasting only one to three months. There is no follow-up once the project is initiated, and only some members of the community benefit.

The other interesting thing we learned about fishermen is that they are passionate about being fishermen. They don't have the same interest in land-based agriculture, for example. This trend has been found in academic research, including studies in the Philippines. And yet, in Mangingisda the livelihood alternatives on offer from the City Government were not designed to match the passions of the fishermen who needed them.

### Inequalities in the fishing industry

A lack of fairness was mentioned for lots of different reasons. One of the major issues was the discrepancy between small-scale and commercial fishing operators. The community of Mangingisda said they paid the same for a fishing licence even though the profits of larger operators are higher. In Green Island, trawl fishing by bigger operators leaves little for the local fishermen. Hook-and-line fishermen talked of envying illegal fishers. There is no such thing as *barangay* waters, meaning anyone can fish anywhere, regardless of where they live. Fishermen wondered why this is the case, arguing that restrictions would better protect supply for local fishermen. Feelings of injustice can affect people's willingness and motivation to engage in pro-environmental behaviour or work together for shared outcomes.

### Poor governance and local leadership

Unfairness in the fishing industry is compounded by corruption. People who can afford it pay bribes when they are caught and people in power accept this money. This means that not everyone is playing on the same field, with dispensations made for some fishermen and not others.

Every community is struggling to manage its MPAs. Often there isn't a sense of unity among residents, so when sanctuary plans and ordinances for MPAs are not strictly implemented, everyone goes their own way. A lack of leadership and resources for proper governance was identified as a contributing factor. In Mangingisda, fishermen did not feel they had the support of *barangay* officials. They were willing to consider a patrol roster for the local MPA but could not access fuel money or food/volunteer stipends to complete the task. There were complaints that livelihood opportunities were unequally distributed, based not on need but on who residents were connected to.

**"Awareness does not necessarily move people because there are constraints. So you need a policy. This is a reality you have to contend with. It is not as easy to do it as see it. IEC + enforcement + livelihoods needs participation by local government units."**
WWF staff member

In Roxas, where communities had had substantial help from WWF to establish MPAs,, residents explained that local officials did not plug the gap in leadership provided by the NGO. When the programme ended, fishermen told us, management plans began to break down.

In other examples local leadership was explained as an enabler. The leadership of the Mayor in Puerto Princesa was cited by teachers as encouraging their work in schools on solid waste management and food growing.

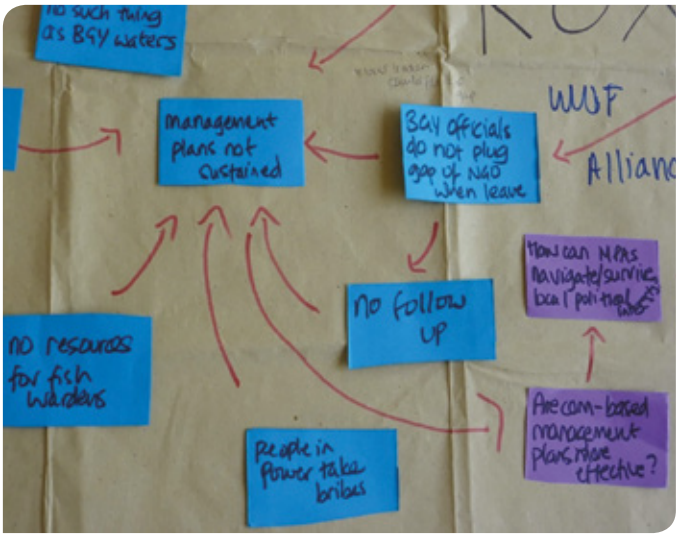
## Inward migration

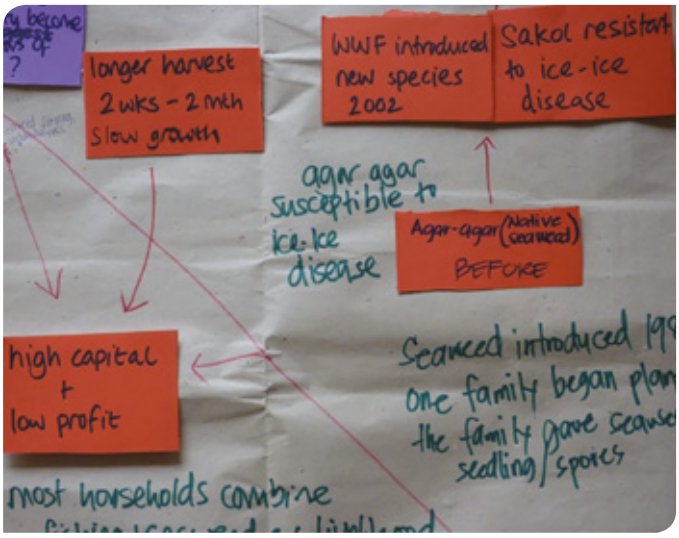
In Mangingisda and Roxas, residents commented that it has been difficult to adopt different practices because of inward migration. As one kagawad (local village official) reflected,

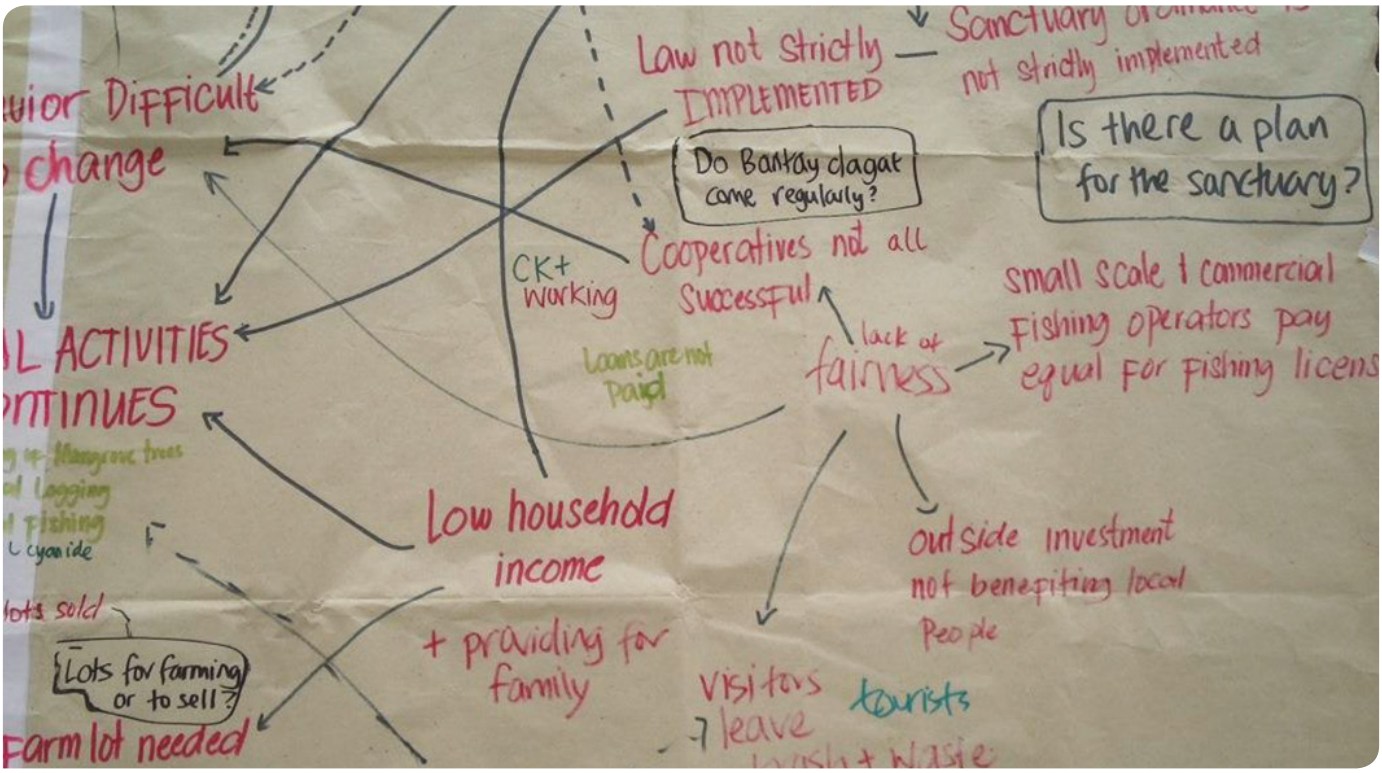
> **"People are from different walks of life. They have a different mental mind set and it takes time to change behaviour."**

In Roxas, residents reflected that migrants introduce illegal fishing practices. This perception of others seemed to affect people's expectations about the possibilities for change to take place. It may indicate the role of social cohesion in creating enabling change environments. In Mangingisda the migration has political origins. People were granted land as part of a resettlement programme from the island's capital, Puerto Princesa. Frequently, community members talked about a lack of discipline among community members. This seemed to make the trust required for everyone to cooperate – e.g. for the adoption of MPA rules – difficult.

**Photo set 4. Extracts from systems maps from Roxas, Green Island and Mangingisda**



## From knowledge to action: the missing links

These findings about how the structural, economic and policy issues identified above intersected with the potential for practical solutions prompted a range of questions on our systems maps:

For Mangingisda:
- Is there a plan for the sanctuary?
- Are livelihoods on fisheries (as opposed to agriculture only) available?
- Would another MPA closer to shore help?
- What organisations can the community connect with?

For Roxas:
- Are the human costs of live fish catch well-known?
- How can fishermen directly sell their products, cutting out the middle man?
- How can solidarity be built?
- Are communities always aware of institutions they can tap?
- Are MPAs closer to the residents more successful?
- How can MPAs survive/navigate local political interests?
- Are community-based management plans more effective?

For Green Island:
- How can the community be mobilised on environmental issues?
- How can the community support the efforts of 4Ps (Pantawid Pamilyang Pilipino Program) members? (4Ps members are the poorest members of the community who receive cash transfers from the government in return for community services like coastal clean-ups.)
- How can Green Island become green again?

We were unable to answer all these questions over the duration of our inquiry, but they offer insights into the barriers preventing transformative change. As a one-way didactic tool, environmental education does not create much space for volunteer educators to either uncover some of the missing links between knowledge and action, or do anything to respond once issues surface. At some point the deployment of volunteers at the intersection between environment, poverty and sustainable livelihoods will need to directly address some of the wider socio-economic factors influencing changes to behaviour. A key consideration for organisations using volunteers as environmental educators is when to make the shift in focus from awareness raising to behaviour change.

**Summary of implications:**
**Behaviour is resistant to change, even when knowledge is high**

- Decisions to engage in pro-environmental behaviours are more sensitive to wider social norms and expectations than accurate knowledge and education.
- Even where communities have an appreciation of the socio-economic benefits of MPAs , wider system dynamics (e.g. inequalities in the fishing industry; poor governance and local leadership) can create barriers to adopting pro-environmental behaviour.
- Transformative change at the intersection between environmental, poverty and sustainable livelihoods relies not only on awareness. It requires action. Volunteer educators using one-way didactic approaches to delivering environmental education may be limited when it comes to uncovering the missing links between knowledge and action.
- Organisations will need a strategy on the use of volunteers to support behaviour change if educational efforts are to more reliably impact on the drivers of unsustainable practices and persistent poverty.

## Volunteer action by residents is not aligned to drivers of unsustainable behaviour

We found that the efforts of TMO volunteer educators are complemented by examples of local volunteer action to protect the environment. So we also considered how these activities affect environmental and community concerns.

**Volunteer action on the part of residents on environmental issues is happening in the communities we visited. But it does not tackle the root causes of environmental degradation and the associated food and livelihood challenges. This challenged a hidden assumption in our thinking: an expectation that resident volunteering would be closer to local realities, and therefore responsive to community needs. This energy and commitment could be an important resource for making behaviour change possible. But making volunteering more purposeful at the community level may initially require capacity development from external stakeholders (e.g. government offices, NGOs) to match volunteer action to potential solutions that work for people and the planet. Outside volunteers may provide additional value to local efforts through their links to organisations and networks that extend beyond the existing social capital of the community.**

Local volunteer action on environmental issues was usually focused on tree planting or coastal clean-ups. These tended to be one-day, annual activities involving the whole community . Some activities were tied to incentives, such as school materials provided by the *barangay* in return for participation in Mangingisda, or payments to 4Ps families in Green Island as part of the national government's conditional cash transfer programme. When we asked the young people what they could do to reach a future they want, ideas included activities like tree planting; avoiding using dynamite fishing; waste segregation; signs to prevent illegal fishing; and a project to make the community clean.

When we delved deeper into the issues in Mangingisda, we realised that volunteer efforts within the community to conserve the environment were not aligned to the issues that were driving illegal activity. Coastal clean-ups, mangrove planting and tree planting are one-off activities that may help to galvanise passion for the environment. However, their impact on day-to-day community concerns that affected people's fishing behaviour – such as low household income, lack of alternative livelihood and poor implementation of the law governing the 18-hectare fish sanctuary – was limited. This disconnect stood out because I think we assumed that if any volunteer efforts were going to map most closely to needs, it would be community-led initiatives because they are closer to local issues than, for example, volunteer educators.

Follow-up action research with Mangingisda revealed the exceptionally low capacity among residents to self-organise and configure responses to the more complex challenges (see corresponding case study Aked 2014). We didn't hear of any examples where they had been given the opportunity to practise things like teamwork, action planning or minute taking. Making volunteering more purposeful at the community level may require opportunities to practise matching volunteer action to potential solutions that work for people and the planet. This was a focus of our action research inquiry. It revealed three important things (discussed in detail in the case study report) for enabling alignment between issues and volunteer effort at the community level:

## More needs to be done to support communities to make sense of change pathways

Communities are often positioned as the 'recipients' of government programmes or volunteer action to improve outcomes, rather than partners. This means that community-level learning is not supported, making it very difficult for communities to become effective, adaptive and self-reliant change agents. For example, while the visible consequences of natural resource degradation are apparent to people, the relationships between intent, action and change are not always clearly understood at the community level. While the issues maps we drew with our community-level data were complex they also told a powerful story (to us and the communities) about the wider system of 'social ecology' to which volunteer efforts are contributing. The maps make the connections and misalignments easier to see.

## Spaces for meaningful participation need to be created

The various livelihood projects in which residents had taken part may have had small wins for the individuals involved but they had not built capacity at the grass roots to understand and respond to the local degradation of natural resources in a meaningful or viable way.

One practical example is decisions to grant ordinances for MPAs, purely based on the ecological integrity of the site. If they are granted with no additional financial support it is almost impossible to mobilise voluntary action to patrol marine sanctuaries that are far from where residents live. MPAs that are too large become unmanageable at the human scale, making intrusions and violations more likely.

A balance has to be struck between identifying the ecological and human limits of natural resource solutions. A staff member with expertise in environmental management at WPU reflected that "natural resource management comes down to people management". Through our action research we learned that a people-focused approach which develops capacities at the community level requires a long-term commitment over many years which can model a process that community members can actively take part in and sustain.

## Supporting pro-environmental behaviour requires multidisciplinary teams

We learned that laying the foundations for more pro-environmental behaviour is not a one-person job. To explore the feasibility of community ideas in our action research the Valuing Volunteering Philippines and TMO volunteers needed to draw in

- local knowledge (e.g. of tides, tourist initiatives, experiences of past livelihood projects)
- people who knew about marine sanctuaries (e.g. TMO, WWF)
- people who could make ecological checks for livelihood assessments (e.g. TMO, WPU students conducting reef checks)
- agencies who knew about the livelihood projects available (e.g. City Government)
- experts in community organising, livelihoods and financial management (e.g. national volunteer)
- facilitators who could sustain community momentum (e.g. resident, local and international volunteers)
- people who knew about volunteer management and programming (e.g. TMO, international volunteer).

The challenge of inspiring and connecting all these inputs to form some semblance of an integrated approach stretched beyond the existing social capital of the community, highlighting the potential additional value of outside volunteer support. For example, volunteers from outside had links to organisations (e.g. WPU) which could be approached to support local efforts.

### Summary of implications: Volunteer action by residents is not aligned to drivers of unsustainable behaviour

- It is easier for volunteer educators and volunteer residents to respond with one-off activities (e.g. environmental education sessions, coastal clean-ups) than tackle deep-seated drivers of unsustainable environmental behaviour.
- Enabling pro-environmental behaviour requires that volunteers assume different roles to deliver (e.g. volunteer educators) and receive (e.g. resident volunteers) information on environmental issues.
- Proposed solutions by organisations (e.g. government) to improve the health of marine resources tend to be more in tune with ecological components than human dynamics, making their sustainability unlikely.
- Building capacity at the community level to reflect and learn about how efforts relate to desirable outcomes is not currently enabled by volunteer educators or government actors. This closes down the possibility of working on wider structural constraints.
- Viable and meaningful spaces for resident volunteers to take action need to be created by volunteers and their supporting agencies.
- Providing links to organisations and networks beyond the community's existing social capital may be an area where outside volunteers (e.g. volunteer educators) can lend additional value to change efforts.

## A role for volunteer educators in strengthening local action on environmental issues

On learning that an uplift in awareness does not translate into an improvement in pro-environmental behaviour, the TMO working group asked, "Where people are all aware, what next?"

**A supportive local environment, with active leadership on environmental concerns, was identified as a missing component by many participants in the communities we visited. At the same time, we found pockets of young people, women and fishermen who shared a passion for the environment and a genuine concern about its degradation. We saw an opportunity for volunteer educators to begin to address behaviour change by proactively mobilising local champions through environmental education engagements. These individuals, groups and networks could sustain local efforts once volunteer educators from outside the community leave.**

A common reason why awareness does not translate into behaviour change is a lack of mobilisation and action within communities. Changes to behaviour that have an impact at an ecological scale require collective action. Individual resolve is not sufficient if, say, declining fish stocks are to be reversed. Our action research in Mangingisda (see corresponding case study Aked 2014) confirmed change also needs to happen to address institutional and economic barriers. Neither reality seems to be adequately reflected in assumptions underpinning links between knowledge and behaviour change in environmental education programme documents, and this affects decisions about how volunteers are mobilised.

The environmental education programme developed by TMO volunteers is interactive: it involves audience participation and quizzes, for example. And it is successful in interesting people. Some participants told us they attended IEC sessions because they wanted to gain the knowledge or because they were curious to know more about Tubbataha. Some adults reported helping to invite participants to the session. Young people wanted their community to look and feel more environmentally friendly.

In fact, in every community we found people with a passion and alignment to TMO's conservation goals. These could be mobilised to join the effort. The limitation to the way current environmental education is configured is that the audience remains relatively passive, at least in comparison with the efforts exerted by volunteers delivering IEC sessions. These efforts can inspire and engage but they do not leave a legacy of local capacity to sustain the momentum.

There is a significant body of research that demonstrates leaders can be found in all sorts of social spaces, from formal hierarchical structures to informal community groupings. Qualitatively different from leadership as an individual endeavour, distributive leadership is an emergent property of a group or network of interacting individuals where varieties of expertise are distributed across this network. Actively encouraging leaders other than the 'usual suspects' (e.g. local government officials) is an intentional process, especially when people need support to believe in their own capacities to collectively organise and challenge institutional limitations and associated structural barriers to change. The creation of new leaders through volunteering could be important here.

A lot can be learned from TMO's use of volunteer opportunities to create environmental advocates. For example, we learned that actively using knowledge of the environment deepens volunteers' understanding. And happiness through engaging in volunteering increases appreciation of human nature. Safe spaces to practise at protecting the environment help people to see what they are capable of.

We discussed a number of potential options with TMO and WWF staff over the course of the research to nurture local champions and leadership:

- **Providing a structured outlet for young people.** At the International Youth Forum Go 4 Biodiversity Conference in India, TMO learned how young people could be supported to actively support the implementation of MPAs.
- **Training local trainers.** Locally based volunteers could be identified to receive training in IEC materials so they can teach and act as formally recognised 'go-to' people for advice.
- **Actively sharing good practice.** To make change feel more tangible for communities we discussed sharing experiences from other localities, including a community in Mindoro where women are volunteering as rangers for MPAs.
- **Linking environmental education with mentoring and volunteering.** WWF has been exploring how to create a framework that integrates environmental education, volunteering and mentoring into one programme. This may be an important step in creating multidisciplinary teams that support community capacity for effective resource management.

### Summary of implications: A role for volunteer educators in strengthening local action on environmental issues

- There is an exciting opportunity to build on successful volunteer-led environmental education programmes to bridge the gap from awareness to action.
- Creating the momentum for community collaboration and collective behaviour change may require that volunteers play an active role in encouraging local leadership.
- Actively linking and connecting passionate people could be a key component of education initiatives delivered by volunteers.

## Going from volunteer educator to environmental advocate

It is not uncommon for people working in the international development sector to speak of volunteering as a platform for greater civic mindedness. How do volunteering opportunities increase people's passion for environmental, poverty and livelihood issues?

**As well as providing specific resource inputs to change initiatives, volunteer opportunities can generate resource outputs, particularly when they create or sustain people's interest in working on environmental issues. Investment on the part of TMO to enable a positive volunteer experience pays off when the young people become "walking promos" and "future advocates" for marine conservation, extending the social network of the organisation and its cause.**

When it came to discussing TMO's theory of change, a clear cluster of outcomes centred on the changes that happen within volunteers (see Figure 6). Examples were personality development, learning opportunities and environmental awareness. Sometimes these changes led to jobs. At other times they led to a sense of satisfaction for the volunteer. These effects were intricately linked to goals for TMO around increasing appreciation of biodiversity and creating future leaders and advocates for marine conservation.

We wanted to test some of the thinking based on volunteer experiences. From the small session a TMO volunteer facilitated with other volunteers, it seems they gain a great deal from volunteering with TMO on the environmental education programme. It is a positive experience that they learn and grow from.

Volunteers identified four main clusters of effects from their work.

**Environment** – contributing to conservation and management

> **"I was well informed on how to preserve waste … and the value of conserving Tubbataha."**

The best success story was described as Roxas.

> **"Before they do illegal fishing but we educate them on conservation and marine environment and the law. If we return I would estimate 80% had absorbed this."**

**Teamwork** – building relationships; time management; excitement to help

> **"I build team work and leadership – now I use the skills and knowledge for next work as coordinator of mangrove paddle boat tour."**

**Personal improvement** – more knowledge of marine life and environmental issues; happiness; inspiration; expanded horizons ("without walls"); opportunity to get to know Palawan

> **"Tubbataha is the training ground for me to improve myself."**

Straddling this cluster and the cluster on community, there were a bunch of cards around being more confident to communicate with new people.

> **"Before, I was shy."**

**Community** – awareness; alertness to the community (referring to an increase in their knowledge of community issues); clarify the community (referring to their efforts providing information to communities); inspiring young/students.

Volunteers identified a number of positive feedback loops between the outcomes of their efforts and the enablers that supported their continued engagement and effectiveness:

- between knowledge (outcome) and contribution of their skills (enabler)
- between inspiration (outcome) and being involved (enabler)
- between building strong leadership (outcome) and contribution of skills (enabler)
- between happiness (outcome) and appreciation of Mother Nature (enabler)
- between excitement to help (outcome) and the opportunity to take part (enabler)
- between alerting the community (outcome) and deep understanding of conservation issues (enabler)
- between building strong leadership (outcome) and socialising with other volunteers (enabler).

The structure given to the volunteers through TMO's volunteer policy and staff complement seemed to be important, especially in enabling them to overcome challenges, and to realise what they have achieved. A sense of happiness gained through their experiences actually helps to develop an appreciation of nature. And the opportunity to teach about the environment deepens volunteers' own understanding of conservation issues.

This does not mean that working on IEC was always easy. Volunteers identified a number of safety and health challenges, including travel in bad conditions and sickness. Other challenges were psychological, suggesting the development of empathy.

> **"Getting emotional for seeing poor. It is hard on the heart."**

The volunteer researchers on the *Valuing Volunteering* project can relate to this last comment. During the course of this research it was difficult not to leave conversations with young people risking their lives with compressor fishing or visits to the homes of hook-and-line fishermen without feeling affected by the situation afflicting these coastal communities.

The attention given to matching volunteers so they work in a field of interest to them, and the requirement that volunteers complete accomplishment reports seemed important for enabling volunteers to reflect on the overall volunteering experience. In addition, the opportunity the environmental education programme gave volunteers to make new friends was an important motivating factor for those we spoke to. They also welcomed the opportunity to get to know different parts of Palawan.

While it is difficult to assess how much volunteers have become "walking promos" for conservation, some informal chats did reveal that they talk to friends and family about environmental issues outside the TMO office. The fact that volunteers recommend the experience to get their friends involved is a good indicator that they talk positively about the work of TMO.

**Summary of implications:**
**Going from volunteer educator to environmental advocate**

- Active engagement of volunteers helps government organisations like TMO to get their knowledge and advocacies out to a wider network of people.
- Investment in volunteer policies and organisational support contribute to a positive volunteer experience.
- There are important psychological and social feedbacks between a volunteer's experience and their energy and effectiveness. Nurturing these through volunteer programme design is one route to impact.

## Revisiting the theory of change

Based on the key issues raised in this report, it is possible to articulate a more nuanced theory of change about the drivers, barriers, enablers and mechanisms which shape the outcomes that contribute to resilient coral reefs (see Figure 4).

Black arrows map onto the relationships articulated in the first theory of change. The blue arrows illustrate the complexity of change trajectories between environmental education and the protection of socio-economic benefits associated with natural resources. Dotted lines represent hypothetical links founded in ideas that people had over the course of the research. These have not been tried and tested but may offer clues as to where to start in tackling some of the entrenched social and environmental issues that limit the community impact of volunteer action.

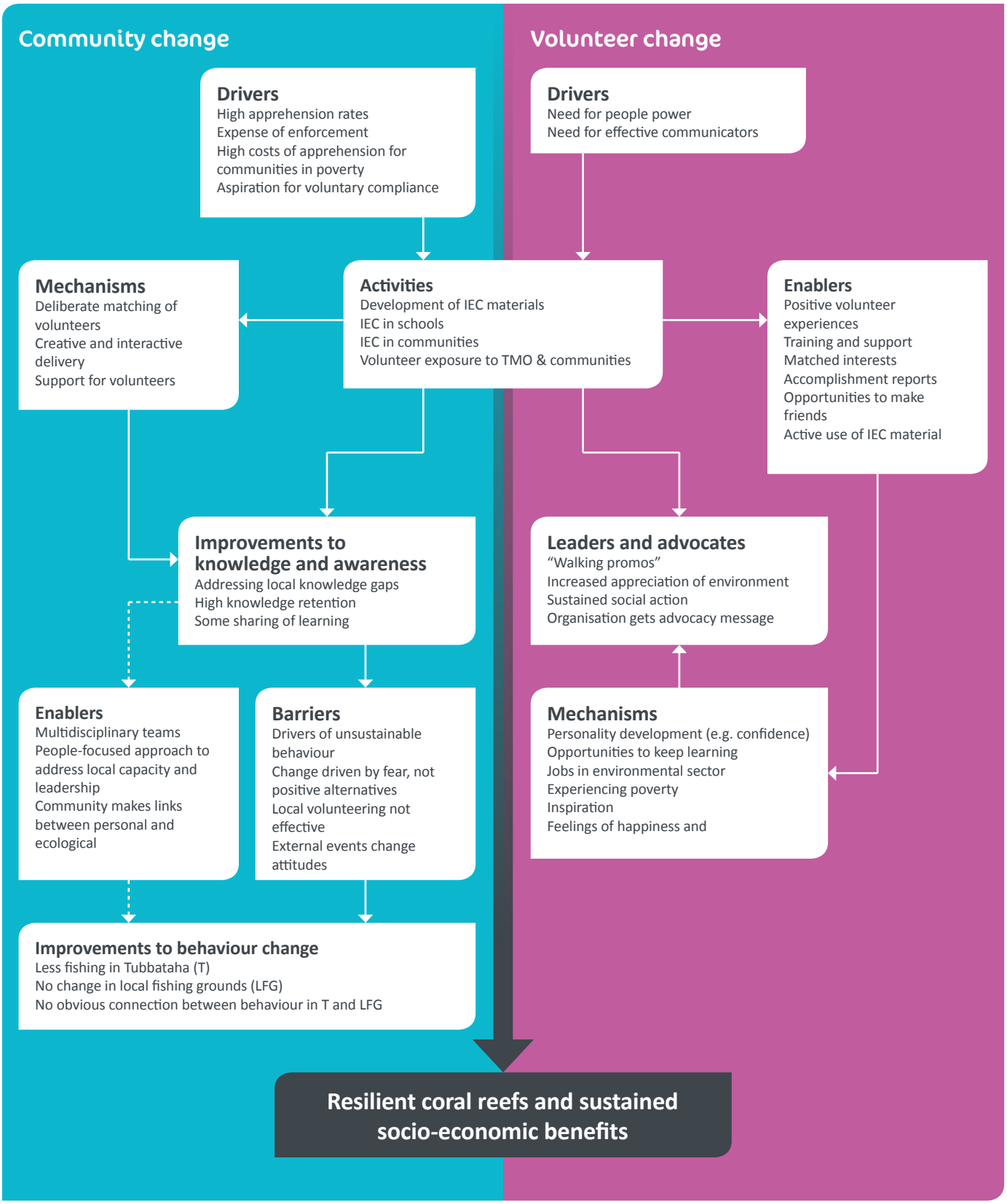
In the top pathway, exploring community change, we could verify the link between volunteer-led environmental education and improvements in knowledge and awareness at the community level. Volunteers reduced knowledge gaps and improved community understanding of socio-ecological systems, which is typically limited to academic and policy arenas. We identified some mechanisms that characterised how volunteers achieved this outcome, including creative and interactive delivery, their personal characteristics (e.g. being young and knowledgeable about the environment) and the support they received from TMO.

Pathways to behaviour change were less clear cut. We found evidence of reduced activity in Tubbataha but little impact on local fishing grounds. We could not find evidence for feedback loops between the two, where a change of behaviour in one locality positively or negatively reinforces another. This would require more research. The assumption that awareness and understanding translates to pro-environmental behaviour on the part of communities challenges how volunteers are deployed at the intersection of poverty, environmental and livelihood issues. The missing links between awareness and action are particularly problematic for environmental education programmes more generally. There were a number of constraints that acted as attractors in the system, preventing a shift in behaviour. These included numerous powerful drivers of unsustainable behaviour, which keep current patterns of fishing as they are, a lack of positive alternatives, and external events contributing to changing perceptions and attitudes that environmental education would need to respond to. In addition, we found little evidence that community volunteering efforts had much effect beyond galvanising passion for the environment. Much like the environmental education, the efforts were unable to tackle the root causes of problems like overfishing (e.g. ecological, economic, lack of alternative livelihoods, inequalities in the fishing industry, poor governance and local leadership, inward migration).

Through our discussions with TMO, WWF, CI and the communities we were able to make some untested suggestions about how to advance environmental education in communities for practical applications. Possible enablers included multidisciplinary teams, a people-focused approach that actively builds local capacity and leadership, and tools that facilitate community learning about the links between the personal and ecological.

In the bottom pathway, looking at volunteer change, we found some evidence to suggest that volunteers use what they have learned to inform others and stay engaged with environmental issues. While we were unable to take a long-term view within the parameters of this inquiry, early indicators are that TMO is having some success at creating the conditions in its volunteer programme to support further volunteer action and advocacy on environmental issues.

**Figure 4. A revised theory of change informed by the research findings**



We were able to identify a number of enablers helping this change pathway, including positive volunteer experiences, which were helped by training and support, matched interests, having to reflect in accomplishment reports, opportunities to make friends, and active use of IEC materials. These factors triggered a number of important psychological and social mechanisms including increases in confidence, opportunities to keep learning through community exposures and use of materials, experiences of poverty, and overall feelings of happiness and satisfaction. Some volunteers were able to stay engaged in environmental concerns through successful attainment of jobs in the sector following volunteer placements with TMO.

Further research could explore all these pathways in more detail. But as it stands, this theory of change should be a useful contribution to the volunteering for environment sector. It provides a comparative visual map that other programmes can use to inform and understand the deployment of volunteers in environmental education programmes.

# 5. Reflections on process

The exercise of integrating systemic research into monitoring processes not only allows a programme to prove its case but also to improve its operations in the future. The research shows the importance of re-evaluating the purpose, focus and role of volunteers in environmental education programmes at regular intervals, and from different perspectives. Environmental education needs to adapt to the specific contexts of communities and changing external circumstances. TMO staff understood the value of iterative reflection, learning and adaptation, committing time from busy schedules to interpret and discuss research findings.

## Community-level learning

Participatory techniques with the community worked well to support in-depth, context-sensitive insights on how engagement with volunteer educators had changed things for people in communities. It modelled how 'theory of change' work needs to gather multiple, locally grounded perspectives if it is to make sense of the complex pathways between intention, action and effect. The drawing exercises proved to be particularly informative about the level of understanding people had about the links between ecological and human systems. Asking them to tell the story (rather than answer a set of predefined questions) was open-ended, making issues of leading questions and response bias less prominent. The techniques, including the quiz, were enjoyed by participants, giving them instant feedback about levels of knowledge within their community. The systems maps enabled them to see the complexity of their situation, which subsequently informed our learning as *Valuing Volunteering Philippines* researchers.

The visual techniques also enabled self-expression on the part of community members, helping us to see what knowledge and attitudes people had internalised. It is hoped that the process may have reinforced further community learning too. Sometimes, different community groups were surprised by the perspectives of others when insights were shared across stakeholder groups (e.g. men to women, adults to children). In this way, the conversations that followed helped community members to make their own links between personal and ecological concerns.

The spaces we created could easily be integrated into environmental education delivery to support ongoing learning from and with the communities involved. In this model, the transfer of information naturally becomes more of a two-way process, with communities learning from volunteers and volunteers – and the programme – learning from the changing and complex reality of people's lives.

## Working with TMO volunteers

The lead researcher worked with three TMO volunteers from Palawan over the course of the year-long research. The project had to deal with volunteer turnover. One volunteer got a job in local government, another got a job at TMO and the third is luckily still with the project. Each time, we had to invest resources getting to know one another, the project and volunteer goals. We were lucky, however, with the quality of volunteers we had, which is credit to the volunteer recruitment process at TMO and the willingness of previous volunteers to recommend friends who they thought would be suited to the position.

The volunteers learned the techniques quickly, adding significant value and translation help to the facilitation of sessions. We always met before and after each session to plan what to do and to learn from what happened. The TMO volunteers also helped to organise sessions. After getting stranded on a boat to Green Island for a night because of stormy weather, we had to give up on this trip. We took the opportunity to use a peer research model to build internal organisational capacity into the participatory tools and techniques. Two TMO volunteers carried out the work and documented the findings.We worked up an itinerary, stakeholder engagement plan, research activities outline and ethics and documentation guidance for local TMO volunteers to use in their inquiry work. Over the course of the next visit, the lead researcher facilitated systems-mapping exercises using the data because this was the most difficult technique for others to learn. The lead researcher was excited to discover, however, that the peer researchers had already begun causal maps of issues that we could build from.

## TMO as a learning organisation

The research with TMO felt like a learning journey. We had a working group of staff who took the time after each major engagement with a community to consider the findings and their implications. These reflections sometimes shifted the direction of an inquiry or resulted in decisions to include another stakeholder group (e.g. out-of-school youth). There were also tangible examples where TMO adopted some of the techniques in their own work, including the adaptation of visual techniques for their own planning exercises and the use of the drawing exercises in the next round of IEC towards the end of 2013. Valuing Volunteering was also invited into a more formal space to discuss the future of TMO's environmental education programme in March 2014, which combined findings from this research and a survey of communities who received IEC. The lead researcher could not attend but it was hoped insights from the IEC impact report would contribute to discussions.

At the beginning of the process, there was a mixed reaction to the broad nature of the data emerging from our community engagements. A staff member who had been part of initial engagements thought the systems map was a good and useful output, especially to summarise all the issues we had heard and seen onto one page. Other staff members questioned the breadth of the issues we had covered given the focus was on whether people had learned and changed their behaviour following engagement with the environmental education programme. This insight went to the core of ongoing debates about how to approach programme evaluation.

Typically measurement and evaluation work is undertaken for accountability reasons so programme impact and success are measured and understood against programme goals (e.g. in the theory of change). Its limitation is that it often fails to review success against the changes that have occurred in real people's lives. The interpretative methods we used respond to this challenge by focusing on individual and community perspectives and locally grounded explanations. But these insights can take you to unexpected places, which can make the approach, initially at least, seem unfocused, messy and time-consuming.

We were lucky that TMO had a positive culture around creativity and learning, which allowed us the space to experiment and learn as we went. Over time we got better at interpreting the community-level data in terms of what it meant for IEC and environmental education more generally. The rich data we had amassed about the drivers of unsustainable behaviour and barriers to change became really valuable when TMO staff realised the question that they really needed to answer was, "Where people are all aware, what next?" Our systemic analysis suggested opportunities for volunteers to approach knowledge awareness and behaviour change simultaneously through environmental education. This is a different theory of change to a linear process which sees behaviour change as contingent on raising awareness first.

In many action-learning cycles during the Valuing Volunteering project in the Philippines it has been difficult to get decision makers to move beyond what academics studying adaptation and innovation in the context of climate change call 'single loop learning'. This means people absorb some of the research findings but only enough to fix errors under the current programmatic model. By proactively joining the research process TMO were able to enter 'double-loop learning', interrogating what works and why. This did lead to some trends that were surprising to the programme (e.g. the missing link between knowledge and action) and unexpected connections (e.g. viewing resident young people as local champions for environmental change), but the insights also opened up the space to meaningfully discuss opportunities with TMO and WWF about how to tackle persistent social and environmental problems that negatively impact the health of coral reefs in the Philippines.

TMO's active engagement in the learning process also enhanced the quality of this research as they were able to lend a historical and organisational perspective that other participants in the process – the lead researcher, TMO researchers, and communities – would have missed.

## Our own resource constraints

Systemic inquiry and action research is an intense process to do in a participatory way. We uncovered a number of issues and barriers, which warranted further investigation, but we didn't have time to follow them up. In these situations, we took these insights and reported on them but we didn't join community members to try and find solutions to these problems. Distance to community sites, logistical issues around diary alignment, resource committed to the organisational learning process in this case study, and a small research team made follow-up with every community we initially engaged difficult. In these circumstances, our research process resembled more traditional qualitative research. With the community of Mangingisda, we were able to bridge the systemic inquiry process with a feedback and validation process and a follow-up phase of action research, making us more responsive as volunteers to the situation of the people we had engaged as co-participants in our learning journey.

# 6. Conclusion

A reality clearly articulated in this research is that conservation goals are intricately linked with human dynamics. As a tool for learning, the insights in this case study emphasise the entrenched nature of social and environmental problems that contribute to the poor health of coral reefs and fishing stocks in the Philippines. The missing links between environmental education and behaviour change demonstrate how these problems are unlikely to go anywhere without a sustained and systematic effort to address them. This has implications for the way volunteers are deployed at the intersection between environment, poverty and sustainable livelihoods.

Volunteers – both from outside and within affected communities – have an important contribution to make. Volunteer educators can be a good foundation for improving accessibility to up-to-date knowledge on issues like climate change and advances in our understanding of socio-ecological system interactions. The efforts of resident volunteers provide a resource which could be mobilised to sustain efforts once short-term visits from volunteer educators are over.

New ways of using volunteers for environmental education would help to make volunteering more fruitful as a transformative change tool. For example, a more practical focus with techniques that encouraged communities to think and discuss issues could support people to make their own links between personal and ecological concerns. It could begin to shape positive alternatives with communities. Greater focus on the leadership opportunities catalysed through volunteering could help to enable effective, adaptive and self-reliant change agents at the local level.

Wherever volunteers feature in the ecosystem of development efforts, they require support. As TMO's relationship with its volunteers demonstrates, people contribute the greatest value to government efforts to protect the natural environment when they are provided with viable and meaningful ways to participate. *Valuing Volunteering Philippines* couldn't reconcile a view of communities as recipients of government education and livelihood initiatives. They are people with families, concerns and dreams who experience first-hand the repercussions of natural resource degradation. They are a resource to the socio-ecological system, and their time, passion and realities could be more intentionally harnessed in change efforts.

# 7. Recommendations

This case study reports on key learning about role of volunteering at the intersection between environment, poverty and sustainable livelihoods. This section identifies some key considerations and opportunities for improving involvement of volunteer effort in environmental education as a transformative change tool, with suggestions aimed at government, NGOs, environmental education programmes, and volunteering programmes. They represent what we believe are some of the key steps to making volunteer efforts on environmental education more effective. They fall into three categories which set out the need to: support volunteer educators to improve the link between knowledge and action, advance volunteer-led environmental education for practical applications, and integrate systemic research and community insights into volunteer programme monitoring.

## 1. Support volunteer educators to improve the link between knowledge and action

### Implication

The research identified that even when environmental education is effectively delivered by volunteers to address inequality of access to information, we cannot assume this new knowledge will lead to behaviour change. In reality, decisions to engage in pro-environmental behaviours are more sensitive to socio-economic constraints and social norms than accurate knowledge and information. This reality needs to be more explicitly addressed in the way volunteering programmes use volunteers in environmental and social change initiatives.

### Recommendations

- **Environmental education programmes need to explore possibilities for creating viable alternatives that can address systemic barriers to change.** For example, an integrated approach may need to combine consideration of natural resource plans, livelihood feasibility studies and human resource management.
- **Supporting pro-environmental change in communities requires multi-stakeholder teams, which in our experience requires connections to people that extend beyond the existing social capital of the community.**
- **Environmental education programmes should think about how different stakeholders – including volunteers – bring different strengths to communication and change work and build change teams accordingly.**
- **Government offices and NGOs need to consider how to complement volunteering inputs with resources (e.g. stipends, activity costs) that provide viable and meaningful avenues for people in poverty to participate in change efforts.**

## 2. Advance volunteer-led environmental education for practical applications

### Implication

Initiatives looking to support community change require a different approach to education from straightforward knowledge transfer. Volunteer educators that support behaviour change may need to be more hands-on, connecting environmental knowledge to clear avenues for action at the community level. This has implications for the way organisations use volunteering for educational purposes. For example, the deployment of volunteers to practical models of education may be more effective in supporting more people to become effective, adaptive and self-reliant change agents.

### Recommendations

- **Government offices and NGOs should actively explore different environmental education frameworks which are more hands-on and which provide clear avenues for action at the community level.**
- **Different leadership models should be catalysed through volunteer efforts on the environment – e.g. distributive leadership – to make it possible for more people to become effective, adaptive and self-reliant change agents.**
- **A key outcome of environmental education campaigns should expect participants are clearer about how their personal goals relate to conservation goals.**
- **Environmental education programmes need to support communities to make sense of change pathways by using tools that support community-level learning about how volunteer efforts relate to desirable outcomes.**
- **NGOs should learn from how TMO has used volunteer opportunities to create environmental advocates to nurture volunteers at the community level.**

## 3. Integrate systemic research and community insights into volunteer programme monitoring

### Implication

The research shows the importance of re-evaluating the purpose, focus and role of volunteers in environmental education programmes at regular intervals, and from different perspectives. These learning opportunities can be used to encourage continual improvements to volunteer activity based on locally grounded explanations about what is changing, what remains the same and why.

### Recommendations

- **Government offices and NGOs should integrate systemic and participatory approaches into volunteering on environment initiatives to support a two-way process where the programme and the community can ground its improvements in the changing and complex realities of people's lives.** For example, systems mapping can be used with communities and programme staff to surface assumptions, surprising trends and unexpected connections. We wanted to experiment with social network mapping techniques to visualise how new knowledge is shared in communities, identify the most effective targets and extend the reach of education sessions.
- **Government offices and NGOs should follow TMO's approach to creativity and learning, promoting a culture which allowed space for us to experiment as we went, and which can support innovative thinking about entrenched problems.**

# 8. References

For more information on:


**Other Valuing Volunteering Philippines reports related to this case study:**
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**Learning for adaptation and innovation, including theory on single-loop and double-loop learning:**
Tschakert P and Dietrich K A (2010) Anticipatory learning for climate change adaptation and resilience. Ecology and Society 15(2): 11.

Tanner T M, Jackson C, Seballos F and Clark J (2013) Learning to tackle climate change: innovative approaches to knowledge sharing and co-production in highly dispersed development organisations. *Knowledge Management for Development Journal* 9(1): 9–23.

**GEF project in Green Island Bay, Roxas:**
https://sgp.undp.org/index.php?option=com_sgpprojects&view=projectdetail&id=16928&Itemid=205

**The TED talk used in TMO Information Education and Communication sessions:**
https://www.youtube.com/watch?v=M7K-nq0xkWY

**The Go 4 Biodiversity Conference in India, October 2012**
http://go4biodiv.org/india-2012/

# 9. Appendices

## 1. Materials

The quiz we used is a combination of pre- and post-evaluation questions used during IEC sessions. We compiled it to assess retention of knowledge about Tubbataha and related environmental issues, using it with participants who had and had not taken part in an IEC session.

**IEC Quiz**
*Answer true (tama) or false (mali)*

| | |
|---|---|
| **1)** | The ocean is the natural collector of carbon dioxide (CO2) |
| **2)** | The seagrass is not important in the ocean |
| **3)** | Coral reef is the richest ecosystem in the world |
| **4)** | Fishing is allowed in Tubbataha |
| **5)** | The continuing rise in temperature of the ocean is dangerous to fishes and other sea creatures |
| **6)** | Fishes and other marine organisms are given the change to propagate if their habitat is a protected area |
| **7)** | Coral reefs are species that could be damaged or depleted if not protected |
| **8)** | Fisheries are protected if the ocean is kept healthy |
| **9)** | It is important to maintain the number of all wild species in the ocean |
| **10)** | Tubbataha is the only purely marine World Heritage Site in south-east Asia |

## 2. Participants

Table 4 identifies the number of people that engaged in our activities across the four communities. In total we worked with 234 community members. In total 3,720 residents from these four sites participated in IEC sessions run by volunteers.

We used a diversity sampling approach to selecting participants. It is not a predetermined sampling method. We used our own analysis to decide who to engage with next – for example, to begin engaging with out-of-school youth. And we used snowballing (e.g. following people's recommendations about others we should speak to). When we began hearing the same issues and seeing the same patterns emerging in the data, we took this as an indicator that we had reached saturation point. More research activity was unlikely to unearth new ideas.

**Table 4. Participants by location and information on methods**

| | | | Number of participants | |
|---|---|---|---|---|
| **Location** | **Participants** | **Methods** | **Male** | **Female** |
| Puerto Princesa<br>San Pedro Central School | Teachers and educational professionals | Group discussion with District Supervisor and teachers | | 11 |
| Mangingisda National High School | Teacher | Chika chika discussion | | 1 |
| Mangingisda National High School1\ | Students | Focus group discussion/session | 1 | 3 |
| Mangingisda National High School | Students | Focus group discussion/session | 2 | 6 |
| Bgy Mangingisda | Fishermen | Focus group discussion/session | 41 | |
| Bgy Mangingisda | Women | Focus group discussion/session | | 60 |
| Bgy Mangingisda | Barangay officials and fishermen | Validation of issues map | 3 | 1 |
| Bgy Mangingisda | Barangay officials | Validation of issues map | 5 | 1 |
| Bgy Mangingisda | Residents | Validation of issues map | 5 | 9 |
| ROXAS ASME school | High school | Focus group discussion/session and quiz | 5 | 3 |
| ROXAS ASME school | Teachers | Chika chika discussion | | 2 |
| On the boat with Green Island residents | Fisher | | | |
| Green Island | Out of School Youth | *Chika chika* discussion and quiz | 6 | 1 |
| Green Island | Women | Focus group discussion/session and quiz | | 9 |
| Green Island | Fishermen | Focus group discussion/session and quiz | 10 | |
| Green Island | Seaweed farmers | Focus group discussion/session and quiz | | |
| Green Island | Elementary School Students | Focus group discussion/session and quiz | 17<br>(15 grade school and 2 teachers) | |
| Green Island | Teachers | *Chika chika* discussion | | 2 |
| Magara Roxas | High School Students | Focus group discussion/session and quiz | 5 | 5<br>(2 teachers) |
| Magara Roxas | Teachers | *Chika chika* discussion | | 1 |
| Barangay IV Roxas | Fishermen and Buyer | *Chika chika* discussion/household interviews | 3 | 2 |
| Barangay 1 Roxas | Fishermen and ex-fishermen | Chika chika discussion/household interviews | 4 | 1 |
| **TOTAL** | | | **108** | **126** |

*Valuing Volunteering* was a two year (2012 – 2014) global action research project, conducted by VSO and the Institute of Development Studies (IDS) to understand how, where and when volunteering affects poverty and contributes to sustainable development. This case study is part of a series of inquiries conducted in the Philippines, Kenya, Mozambique and Nepal which explore the role of volunteering across different development contexts and systems. Using Participatory Systemic Action Research it asks local partners, communities and volunteers to reflect on how and where volunteering can contribute to positive, sustainable change.

For more information about the global *Valuing Volunteering* study please contact: enquiry@vso.org.uk

Jody Aked was Lead Researcher for *Valuing Volunteering* in the Philippines. She has over 12 years of experience leading, managing and applying behavioural science research for organisational and social change. She supports social learning and innovation with the use of participatory approaches, action research, systems thinking, social network tools and human-centred design.

She is a Doctoral Researcher with the Institute of Development Studies, exploring how interpersonal well-being influences the effectiveness of volunteering as a strategy for managing natural resources. She is Associate to the consulting arm of the New Economics Foundation (nef) and previously worked for nef's award-winning centre for well-being.

Jody's passion is the design of socio-economic contexts that support greater human well-being, social justice and environmental sustainability. She has lived and worked in the UK, Nicaragua, Costa Rica, the Philippines, Malaysia and China, alongside fishermen, farmers, factory workers, young people and organisational leaders to understand and influence how change happens.

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