

2021-03

Blue Communities in Southeast Asia

Cheung, VV

<http://hdl.handle.net/10026.1/17256>

The Environmental Scientist

the-ies.org

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[title] GCRF Blue Communities in Southeast Asia in Southeast Asia

[standfirst] Victoria Cheung, Andy Bell, Lota Creencia, Lora E. Fleming, Hong Ching Goh, Carya Maharja, Karyn Morrissey, Isabel Richter, Amy Yee-Hui Then and Melanie C. Austen describe how the Blue Communities programme is growing interdisciplinary marine research capacity and application in Southeast Asia.

[A head] MARINE ECOSYSTEM SERVICES

The global ocean and its marine resources play an important role in the livelihoods, food and general wellbeing of humanity. This is especially relevant to the coastal communities in Southeast Asia where almost all the countries have extensive coastlines and a long and rich history of marine-related activities that are key contributors to their economies, social structures and human health.

The Southeast Asian seas link the Pacific and Indian Oceans and are characterised by high diversity habitats including coral reefs, mangroves and seagrass meadows, favoured by the tropical climate and heavy precipitation that transports nutrients to the sea. These factors make the Southeast Asian seas some of the most resource-rich on the planet, providing many goods and services that support the human population. With increasing coastal development and expanding population levels, the demands on those goods and services from fisheries, oil and gas extraction, shipping and transport, the armed forces, mining, tourism, recreation and conservation are greater pressures than ever before.

More than 80 per cent of those globally involved in the fisheries and aquaculture sector are in Asia, where they generate billions of pounds for the region's GDP. Southeast Asian countries are among the top countries globally for seafood consumption per capita. However, overfishing coupled with destructive fishing practices (including cyanide and blast fishing as well as trawling) greatly affect the rich resources, in particular the coral reef ecosystem. Concurrently, tourism has been one of the fastest-growing economic sectors in Southeast Asia, with beaches and coral reefs amongst the most popular destinations. This includes conventional tourism as well as ecotourism (which aims to conserve the environment and sustain the wellbeing of local people). The exponential growth of tourism has both economic and social effects, creating jobs and generating revenue, but also having negative impacts on the environment, culture, society and human rights in the region.

Overfishing and tourism are just two examples for the multiple pressures that create conflicts between users (user–user conflicts) and between users and the environment (user–environment conflicts), especially among the most vulnerable and in regions where the waters are highly exploited.

On a regional scale, initiatives such as the Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF) are guided by principles of integration, inclusive stakeholder participation and multilevel governance mechanisms. Typically, they use spatial planning tools such as marine protected areas (MPAs) to help preserve marine and coastal resources. At the same time, they address food security, climate change and marine biodiversity. To support systematic conservation planning, guidelines have been formulated for designing marine reserve networks within broader spatial planning and management frameworks. This is to address biodiversity conservation, fisheries management, climate change adaptation and coastal management.²

[A head] HUMAN HEALTH LINKED TO PLANETARY HEALTH

Recent research has highlighted the multitude of ways that human health and well-being are directly and indirectly linked with the coasts, seas and ocean (see **Figure 1**). These range from culture, history and livelihoods to protein and other nutrients from seafood and, more recently, evidence of physical health and mental well-being benefits.³ Evidence for the latter comes primarily from studies in the global north, but the findings point towards people from all over the world benefitting from high-quality marine environment interactions.⁴

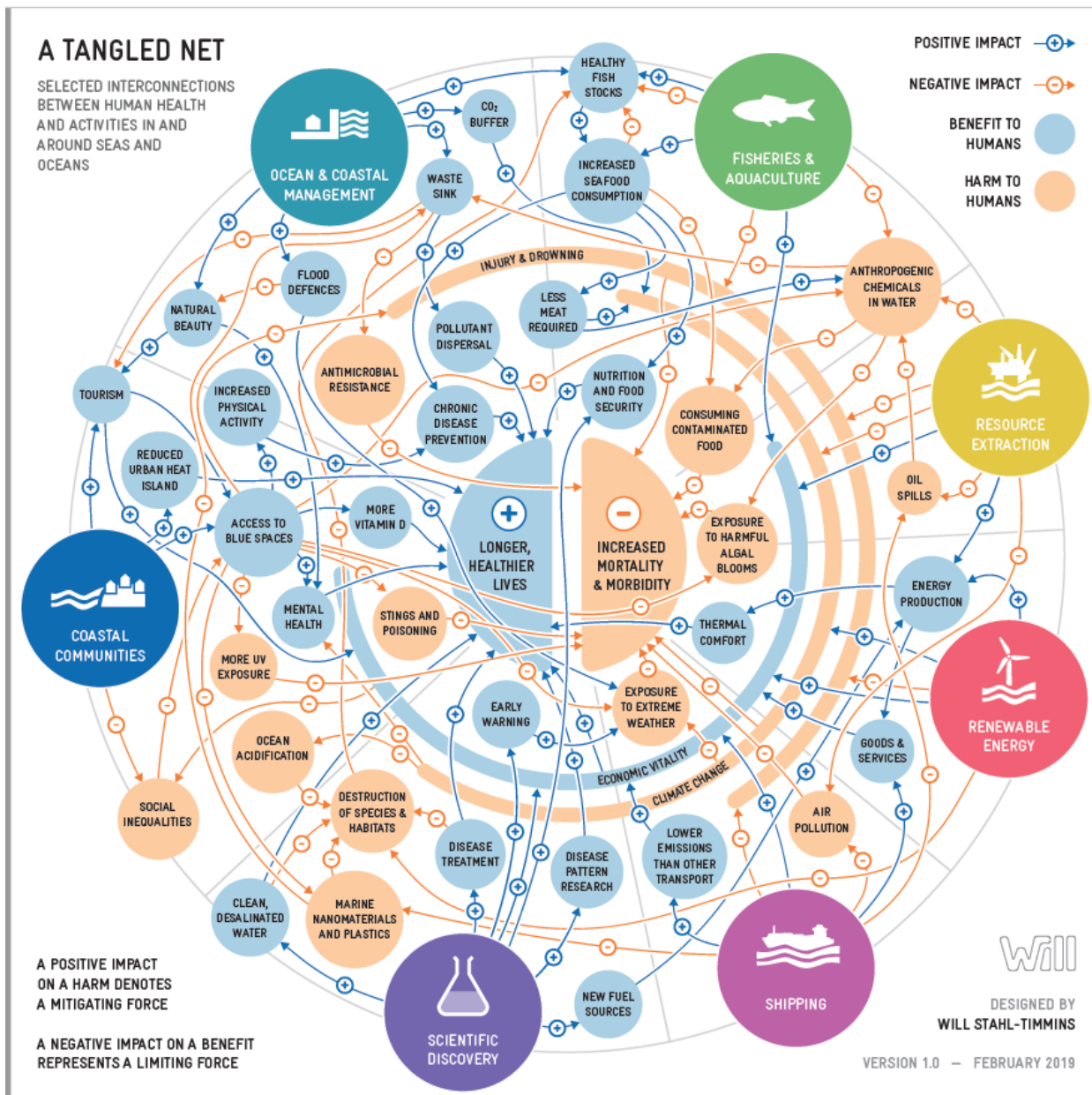


Figure 1. A tangled net. There are a multitude of interconnections between human health and the coasts, seas and ocean. (© Dr Will Stahl-Timmins)

However, potential human health benefits from the marine ecosystem have not been well researched for coastal communities in Southeast Asia, which are experiencing the very real and negative impacts from the ocean due to climate change (including extreme weather and sea level rise), pollution (chemicals, including plastics), harmful algal blooms and increasing environmental degradation.

Planetary health joins other framings of the interactions of humans with the natural environment (including One Health and Ecological Public Health) in stressing the inextricable linkages between the health of humans and the planet. Over the past 50+ years, with increased understanding of the causes and impacts of global pollution, climate and other environmental change, biodiversity loss and general ecosystem degradation, we have become aware of the negative impacts of humans on the planet, and how these impacts come back to haunt us. At the same time, there is an increasing appreciation that when humans can live sustainably with natural environments, our own health and well-being are improved and we flourish.

[A head] GCRF BLUE COMMUNITIES

The [Blue Communities](#) project is one of 37 projects funded by the UK's Global Challenges Research Fund (GCRF) to grow interdisciplinary and international research capacity. The aim is to strengthen and broaden skills and expertise in developing regions and countries, enabling them to address specific challenges and generate long-lasting partnerships, ideas and knowledge. The project is led by the University of Plymouth in partnership with four universities in Southeast Asia (Hanoi National University of Education, Viet Nam; Universitas Nasional, Indonesia; University of Malaya, Malaysia; and the Western Philippines University, Philippines), the University of Exeter and Plymouth Marine Laboratory, UK, and three non-governmental organisations (Blue Ventures, International Pole and Line Foundation, and the North Devon Biosphere Foundation). The Blue Communities project is building capacity for sustainable interactions with marine ecosystems for the benefit of the health, well-being, food security and livelihoods for coastal communities in Southeast Asia (see **Figure 2**).

There are currently 714 UNESCO biosphere reserves in 129 countries that belong to the [World Network of Biosphere Reserves](#). These have been identified as sites for testing interdisciplinary approaches to understand and manage changes and interactions between social and ecological systems. They are also a means of testing and developing policy and practice for wider use. From this network, Cu Lao Cham–Hoi An Biosphere Reserve in Vietnam, Palawan Biosphere Reserve in the Philippines, Taka Bonerate-Kepulauan Selayar Biosphere Reserve in Indonesia, and Tun Mustapha Marine Park in Malaysia have been selected as case studies for the GCRF Blue Communities project. As aligned with [UNESCO's Man and Biosphere Programme](#)'s objectives, they are providing a focus for the promotion of north–south and south–south collaboration, and represent a unique platform for international cooperation through sharing knowledge, exchanging experiences, building

capacity and promoting best practices. For example, the work in the North Devon Biosphere Reserve with the UK's Department for the Environment, Food and & Rural Affairs' marine pioneer has been a focus for exchange of practice between the sites.



Figure 2. Blue Communities is building research capacity through partnerships between 10 organisations in five countries. The research focuses on four case study sites, three of which are UNESCO biosphere reserves and one of which is a designated marine park. (© Blue Communities)

[A head] HOW BLUE COMMUNITIES' RESEARCH HELPS

To promote the sustainable use of marine resources, Blue Communities has 12 highly interlinked, interdisciplinary sub-projects that provide:

- Training, resources and tools to researchers, such as systematic methods, data, GIS maps, reports and models;
- Many (but not all) of the resource requirements for a holistic approach to marine planning;
- Access to Earth observation data that facilitate understanding of marine habitat distribution and aquaculture distribution;
- Co-creation of ecosystem models and fish models that project the outcomes of climate change in the region;

- Identification of future opportunities for the development of marine renewable energy;
- A deeper understanding of marine ecosystem services and their benefits in the region, as well as of the activities that cause pressure on these services and goods, and how they might be reduced;
- Information on the key and strategic governance issues concerning the use and management of coastal resources, as well as the trade-offs that are inevitable, when there are conflicting uses and users; and
- A deeper understanding of the perceptions and expectations of the local communities with regard to their environment, and how it affects their health and well-being.

These approaches are being developed while engaging with diverse stakeholder groups. At the same time, data and evidence are being gathered to inform policy-makers and enable them to make informed decisions about the management of their coastal areas that would benefit both their communities and the environment.

By building research capacity via the 12 sub-projects, Blue Communities addresses a series of six challenges that will in turn feed into the United Nations Sustainable Development Goals (SDGs) for a better and more sustainable future for all (see **Figure 3**).

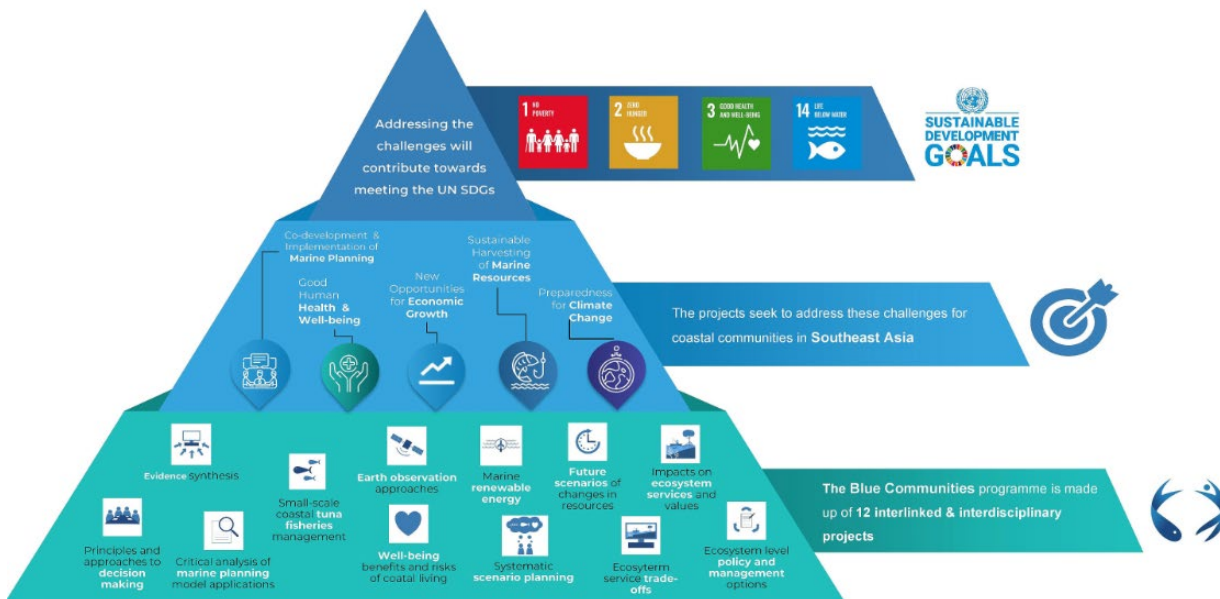


Figure 3. Through 12 interlinked and interdisciplinary projects, Blue Communities is addressing challenges for coastal communities in Southeast Asia and aims to meet the SDGs. (© Blue Communities)

‘Ocean Science, supported by capacity development, is essential not only to inform SDG14 but also other SDGs that have an ocean dimension’ – Peter Thomson, UN Special Envoy for the Ocean.

[A head] BEHAVIOUR CHANGES REQUIRED

It is a common misconception that telling people what the problem is, is enough for them to change their behaviour. However, human decisions and behaviour are complex and influenced by a variety of factors such as emotions, norms, values, attitudes, habits and situational constraints (see **Figure 4**).

To develop a strategy for behaviour change, we need to identify the barriers, benefits and motivators of people’s actions. By understanding what drives behaviour, we can tailor our strategy; this is called community-based social marketing.⁵



Figure 4. Human decisions and behaviour are complex, and affected by a variety of factors.

Strategies for sustainable behaviour change can be context-based (such as nudging or legislation) or communication based (such as education programmes or campaigns). Nudging and legislation often require infrastructural changes. They have proven to be successful for some behaviours relevant to sustainable development. These are, however, top-down approaches that can lead to low community acceptance. There is also the question of whether policies designed to nudge people towards desirable actions are ethical. It has also been argued that, as ever with any top-down approaches, delineation of what could be considered to be coercion, manipulation, incentivisation or persuasion should be made transparent to ensure their efficacy and ethical status.⁶

In contrast, the act of communicating reasons or ideas for why changes are important or desirable is an important part of a bottom-up approach, where behaviour change arises from the communities themselves. To communicate effectively, messages should be tailored to the audience (in terms of language and personal relevance) and kept simple (ideally using visuals or local narratives). Emotive messaging has been found to encourage action. Integrating co-developed solutions and a shared vision into the communication strategy can maximise people's self-efficiency and feelings of ownership.

By working with coastal communities living in and around UNESCO biospheres and marine parks in Southeast Asia, the Blue Communities project is focusing on an overall case study for the future of humans and the planet, since these sites are rich in natural resources with communities that live in overt and daily interdependence. By co-developing strategic communication techniques together with the communities, their livelihoods, health and the sustainable use of the coastal environments can be improved. Researchers have much to learn from these communities: they face the increasing pressures of climate and other environmental change as well as economic and political forces, while trying to live sustainably and in ways that are good for their health and the natural world around them.

[A head] NEXT STEPS FOR GCRF BLUE COMMUNITIES

According to the Sustainable Development Solutions Network, more than two-thirds of the SDG agenda cannot be fully achieved if the global goals are not translated to a local scale, which relies upon the involvement of urban and local actors. Therefore, local actors are needed to co-create and co-define strategies

and policy implementation towards the SDGs and monitor them against the global targets. Local success stories can be up-scaled and shared between regions and countries and thereby create a feedback circuit between global and local resource management.

The scientific community around the world shares the responsibility of bringing disciplines, projects and communities together to develop evidence-based solutions for sustainable marine stewardship, integrating human and natural systems. By doing this, we can build greater understanding of the complexity of marine systems in a planetary health context, and identify common issues and share solutions.

In addition to reinforcing cross-disciplinary communication, it is paramount to integrate local stakeholders and communities as equal collaborators and discussion partners. Truly involving local populations can not only offer insights into indigenous knowledge to policy-makers and resource managers but also elicit strong commitment, ownership and support from the communities themselves to protect their environment.

Through the collaborations and partnerships built through Blue Communities' activities, the co-creation and continuous development of research tools and new ways of working have evolved. By engaging with stakeholders from the outset, they have been empowered with new knowledge to make decisions that affect their own futures, improve their coastal environments and consider alternative livelihoods. All Blue Communities' researchers (from early-career stages and beyond) have been encouraged to increase their capacity through interdisciplinary approaches and to engage with the local stakeholders. As a result, they have become empowered with better understanding and new skills and experiences. The research community has been able to learn lessons from the stakeholders as well as sharing the knowledge they have gained from their research. This has enabled the research team to take a holistic view of coastal communities' challenges and how to address them using a systematic, informed and sustainable approach.

[Biographies]

Victoria Cheung is the Project Manager for the GCRF Blue Communities programme at the University of Plymouth. She has a PhD in genetic ecotoxicology in marine organisms.

Andy Bell is the originator of the North Devon Biosphere Foundation, which was the first of its type in the UK. He was the Chairman of the UK National Committee for the Man and Biosphere programme and is now the international projects development lead.

Lota Creencia is the Case Study Leader for the GCRF Blue Communities at the Western Philippines University. She has a PhD in fisheries science with a focus on aquaculture.

Lora E. Fleming is the Lead for the GCRF Blue Communities for the University of Exeter. She is a physician and epidemiologist focusing on ocean(s) and human health.

Hong Ching Goh is the Malaysian case study co-lead for the GCRF Blue Communities based at the Department of Urban and Regional Planning of the University of Malaya. She has a PhD in geography with a focus on sustainable natural resource governance and management.

Carya Maharja is a researcher in environmental science at Universitas Nasional, Indonesia, specifically focusing on small island ecosystems and communities. He is also a filmmaker, whose documentaries have been screened on television in Indonesia and at international film festivals.

Karyn Morrissey is Project 6 lead and based in the European Centre for Environment and Human Health at the University of Exeter. She is an economist whose work focuses on the economics of the marine resource.

Isabel Richter is a post-doctoral research fellow in perceptions and behaviour change for the GCRF Blue Communities programme at the University of Plymouth. She has a PhD in environmental psychology with a focus on sustainable marine resource use.

Amy Yee-Hui Then is a senior lecturer at the University of Malaya, Malaysia and the Malaysian case study co-lead. She has a PhD in fisheries science and her current work focuses on mangrove ecosystem services and marine megafauna conservation.

Melanie C. Austen is Principal Investigator for the GCRF Blue Communities project. She is Professor of Ocean and Society at the University of Plymouth, a title that reflects her belief that collaboration across the disciplines is essential for the sustainable management of our seas and oceans so that they can underpin both good environmental stewardship and the needs of coastal communities and global populations.

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