

Extract from:

BUILDING ON NATURE

**Area-based conservation
as a key tool for
delivering SDGs**





SDG 11: Sustainable cities and communities

Summary for policy makers

Over half the world's population now lives in cities, a dramatic shift that still shows no sign of slowing down. Cities have huge footprints in terms of resources and energy, and also face many internal problems from urban pollution, inadequate water supplies, poor sanitation, disaster risk and disease – all challenges that SDG 11 attempts to address. Effective area-based conservation offers many options discussed, for instance, under SDGs 3, 6 and 13, but there are several city-specific issues, including:

- **Disaster risk reduction** through using natural ecosystems for coastal protection, soil stabilisation to prevent dust storms, protection of steep slopes and wetlands and riverine habitats to slow water flow and reduce soil sealing and flood risk
- **Improving air quality** through carefully planned vegetation and the retention of parks and gardens
- Managing, expanding and to some extent rewilding **green spaces** in cities to maximise their potential to supply areas for exercise, relaxation and emotional wellbeing
- **Sustainable livelihoods for communities** by supporting local food production, tourism, buffering against extreme weather, etc.
- Maintaining or restoring habitat **connectivity** within cities to maximise benefits for both biodiversity and people.

Many protected and conserved areas contribute to sustainable cities: nature reserves inside urban areas, larger protected areas adjacent or nearby, and a wide variety of commons, parks, watershed protection areas, zoos, botanical gardens and the grounds of religious buildings, all integrated within a network of green space.

What is the challenge?

We are becoming a global community of city dwellers. This creates two challenges: how to address the needs of rapidly expanding cities and how to support the smaller communities, which may themselves have changed dramatically through out-migration and an aging population.

Today, for the first time in human history, most people live in cities. Many seldom ever leave the city; many people will never move away from the city in which they were born and will have little interaction with the natural world. Others, in all socio-economic classes, move between the city and the country on a regular basis. The dramatic paradigm shift from country to city has profound implications for both rural and urban populations.

Although cities have played a critical role in civilisation since the 3rd millennium BCE, until very recently people lived mainly in rural areas or small settlements. Before 1800, cities contained less than 2.5 per cent of the world's population.¹ Industrialisation witnessed a massive increase, particularly in Europe and North America, so that by 1900, a tenth of the global population lived in cities,² and by 1960, a third.³ In 1990, there were still only 10 cities with over 10 million inhabitants⁴ but by 2017 there were 34,⁵ and by 2030, 13 new megacities are expected to emerge.⁶ In the 21st century, cities are merging, forming massive urban, suburban or peri-urban sprawls.⁷ In 2007, 5,000 years after the first cities, the global balance tipped, with more people living in urban than rural areas.⁸

This shift is likely to continue. Africa is the fastest urbanising continent, from a situation in 1960 when there were only five cities in sub-Saharan Africa with over half a million inhabitants to 2015 when there were 84; by 2030 there will probably be over 140.⁹ Africa's urban population is expected to rise by over 300 million between 2000 and 2030¹⁰ and to be 1.23 billion by 2050,¹¹ with urban land cover likely to increase twelve-fold from 2000 to 2050,¹² particularly in the east and west.¹³ For now, this global trend seems irreversible.¹⁴

Cities cover 3 per cent of the Earth's land,¹⁵ about 200,000 km² in total, but have unprecedented levels of consumption and waste.¹⁶ City dwellers, particularly in developed countries, buy goods and energy that use resources and cause pollution and climate change in many countries.¹⁷ More tightly packed people with higher wages¹⁸ also change consumption patterns, with increasing consumption of meat, dairy and processed foods taking up more land resources.¹⁹ The *footprint* of the city – the impact that it has beyond its boundaries – has components related to food, water, transport infrastructure, biodiversity and climate change. Cities cannot be self-sufficient, but the way in which they are planned and developed can radically influence the size of their footprint.

Within the city itself, there are multiple challenges. Some of the most glittering city centres are surrounded by massive slums where people live desperate, dangerous lives of poverty and deprivation. East Africa's slum population tripled in the last 25 years,²⁰ and includes 72 per cent of city dwellers in sub-Saharan Africa.²¹ Slums encourage crime, threatening everyone. Municipal authorities have not kept pace with provision of clean water, sanitation, housing, transport, healthcare or schools. Urban air pollution causes global death tolls measured in hundreds of thousands a year, driven by transport pollution, unregulated industries and often by use of woodfuel and charcoal. Woodfuel collection is the largest cause of forest degradation in Africa.²² Household air pollution from solid fuels causes more deaths than malaria,²³ 7,350-16,200 premature deaths and six million asthma attacks every year in greater Delhi are due to particulate pollution.²⁴ Cities also act as centres for disease dispersal.²⁵ Poor planning means many people – usually poor – are exposed to disasters caused by climate events or earthquakes in cities like Dhaka.²⁶ Soil sealing – with concrete or tarmac – reduces soil life,²⁷ changes surface albedo (reflection) thus raising temperatures,²⁸ and increases the chances of flooding²⁹ with stormwater contaminated with pollutants.³⁰ Many cities are short of green spaces for people to relax, leading to social tensions and to nature deficit disorder, increasingly recognised as a problem for today's children.

Cities provide many benefits – better jobs, education and lifestyle – which is why people move there. They can also provide important opportunities for sustainable living, with per capita resource consumption much less than it is in more dispersed populations.³¹ But this assumes good planning and infrastructure and at present many cities continue the unsustainable use of ecosystems near and far. Addressing these multiple obstacles is the role of city planners and politicians around the world – a task that is getting more complicated all the time.

At the same time, communities outside cities are facing different but related challenges. Out-migration can alter power balances and undermine traditional farming systems. Out-migration of men from mountain villages has caused pasture degradation in Pakistan; women, children and older people are unable to enforce traditional user limits and outsiders have been grazing large numbers of animals.³² In Nepal, an exodus from upland areas has meant farm soils in these areas are now less fertile due to the fact that labour shortages have led to fewer livestock and less manure.³³ Demands from urban areas conversely put rural communities under pressure; there is an increasing disconnect between cities and their surroundings.³⁴ The rapid spread of cities means that peri-urban areas are often subject to compulsory purchase, land acquisitions and tenure changes that have damaging social and environmental impacts.³⁵

This SDG focuses on the massive task of building safe, pleasant and resilient cities and communities, with “*participatory, integrated and sustainable human settlement planning*”. Target 11.5 aims to reduce disasters, including water-related disasters, with direct links to effective area-based conservation; this issue is examined under SDG 13. Target 11.6 aims to “*reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management*”, while 11.7 focuses on “*universal access to safe, inclusive and accessible, green and public spaces...*”. 11.A seeks better links between urban, peri-urban and rural areas and 11.B aims for “*integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters*” in line

with the Sendai Framework for Disaster Risk Reduction 2015-2030. Target 11.4 is to “*Strengthen efforts to protect and safeguard the world’s cultural and natural heritage*”, which has a key place in our analysis but appears to be aimed at natural and cultural World Heritage sites and seems an odd fit with the other parts of the target.

How can effective area-based conservation help?

Area-based conservation provides many of the ecosystem services that cities and communities need to function, as described elsewhere: for instance, for food security (SDG 2), support for healthy living (SDG 3), to provide freshwater to urban areas (SDG 6), help mitigate climate change and disasters (SDG 13) and support biodiversity conservation (SDGs 14 and 15). Some of the SDG 11 targets outlined above in effect repeat these general aims through an urban lens, others are focused more explicitly on needs that are specific to cities. In all the cases below, both fully protected areas and other natural or semi-natural systems, including OECMs, have benefits to offer.

Providing green space: Parks, gardens and nature reserves within cities are increasingly recognised as vital safety valves to allow space for relaxation, exercise and emotional wellbeing.³⁶ But not all green space is equal. Parks with higher biodiversity were found to provide greater restorative benefits, independent of age, gender or ethnic background.³⁷ While many urban parks will be rather artificial environments and not suitable as protected areas, a growing number of municipal authorities are leaving parts of the area to go back to nature, or with only light management, making them suitable as OECMs. Just as important, protected areas next to, close to or sometimes even within a city provide important biodiversity conservation at the same time as providing a wide range of other ecosystem services. Demand can be incredibly high: Bukhansan National Park, outside Seoul, Korea, receives 5-10 million visitors a year.³⁸

Improving air quality: Green space in cities has an additional benefit: it can improve air quality. Trees mitigate problems of urban heat islands, sequester carbon dioxide and help to trap air pollutants on their leaves,³⁹ although choice and location of vegetation help determine its effectiveness in pollution reduction.⁴⁰ Urban parks, of varying degrees of naturalness, can play an important role in both reducing air pollution and in giving city dwellers cleaner environments in which to exercise.⁴¹

Sustainable livelihoods for communities: Protected areas and OECMs also provide support for communities of any size; including direct provision of food from marine protected areas, various ways of buffering communities against weather-related problems and the role of tourism in boosting local income. These benefits have been described in other sections, but have particular relevance to communities, and several of the case studies describe these.

Disaster risk reduction and climate adaptation: Most of the world's megacities are located in coastal areas,⁴² and many are therefore vulnerable to both sea-level rise and the increased storm events expected under climate change.⁴³ Settlements in arid environments like Kuwait City⁴⁴ suffer increasing dust storms resulting in increased bronchial asthma and mortality.⁴⁵ Soil sealing leads to measurable increases in the scale and severity of flooding.⁴⁶ Breakdown of ecosystem services has been identified as the root of many urban “natural disasters”, perhaps most famously after Hurricane Katrina, which devastated large areas of New Orleans after the natural defences previously provided by coastal wetlands had been degraded and destroyed.⁴⁷ Increasingly, city residents are appreciating the value of natural defences to provide some or all of the buffering necessary to prepare for extreme weather events or tsunamis:⁴⁸ coastal mangroves and swamp forests, coral reefs and wetlands, inland flood plains, riparian forests, vegetation cover on steep slopes and stabilisation of soils in drylands. This can be as a stand-alone form of protection or through integrating eco-DRR with engineering responses,⁴⁹ and research suggests that interest in ecosystem-based disaster risk reduction for cities is growing

fast.⁵⁰ Green infrastructure is identified as a critical element in addressing soil sealing.⁵¹ Green spaces in cities can help to reduce urban temperatures. Restoration often plays a critical role in urban DRR.⁵²

Finally, it is important that urban protected areas and other green spaces do not remain as isolated “islands”, but are connected into a coherent network, ideally also linked to ecosystems beyond the city boundary. The form and extent of these linkages will to some extent be determined by the prior history and design of the city, although increasingly urban planners are trying to restore biological corridors and other linking habitats.⁵³ Such links are not only important ecologically, but also help people living in cities to be more closely connected to a wider environment beyond urban limits. Natural corridors like rivers are particularly important; survival or re-emergence of aquatic animals can provide an important focus of public interest and encourage water clean-up activities.

Approaches that support SDG 11

All the values described throughout this report have relevance to communities and these benefits can come from any management approach or governance type. But in addition, there are several specialised protected and conserved areas that are particularly suited to urban and community resilience:

Protected areas

- **Urban nature reserves:** Are critical elements here and can exist successfully even in huge, crowded cities.⁵⁴ Such places will inevitably have limited biodiversity but provide learning places for children and others. Larger animals that survive there can become locally famous, like the cougar living in the Hollywood Hills of Los Angeles. Here the emphasis is less on protecting intact ecosystems, which are unlikely to have survived within a town or city, but to maintain or restore semi-natural areas that provide both some biodiversity conservation and space for people to appreciate nature.

- **Protected areas adjacent or near to cities:** A surprising number of cities have natural areas that have survived, or been protected, nearby: famously this includes places like Nairobi National Park, where visitors can see a fair proportion of Africa's larger game animals with the skyscrapers of Kenya's capital in the background. But many other cities have similar: places such as Mumbai, Seoul, Helsinki, Rio de Janeiro, Cape Town and Paris. Here nature is likely to be wilder but although visitation can be high, they are one step less accessible to city dwellers and many will need encouragement to visit.
- **World Heritage sites:** Rather confusingly, SDG 11 also refers explicitly to World Heritage. Many natural World Heritage sites are large, near-intact ecosystems like Serengeti, and do not really fit the remit of this SDG. But many urban or peri-urban World Heritage sites, particularly cultural sites, also have important natural values, like the jungle fragments around Angkor Wat in Cambodia or the deserts surrounding Petra in Jordan.

OECMs

- **Commons, nature parks, watershed protection areas that qualify as OECMs:** Most cities contain other green spaces of varying naturalness; one important step in addressing sustainability can be to vary management in such places to encourage wildlife and increase the potential emotional capital to be gained by users. Such restoration efforts often need careful stakeholder negotiations; city dwellers are often wary of projects like woodland restoration because of the perceived risk that such places harbour criminals, but many cities have successfully undertaken restoration activities over the last few years. In cities that expanded very fast, as in much of Europe and North America, former parklands, commons or even natural features not suitable for building have been retained and provide important green spaces. Ravenna Park in Seattle is a half mile wooded ravine bought by the city in 1911, now in a densely populated part of the city close to the University of

Washington but retaining many natural features of the original forest.

- **Community conserved areas:** The type of governance involved is important in these contexts as well. An increasing number of communities are setting up or managing their own protected areas, both within cities and at the edges of smaller communities. These places often do not contain iconic wildlife or rare species but have huge importance as daily places for relaxation for local people. In the industrial city of Birmingham in the British West Midlands, Mosely Bog is a Local Nature Reserve, famous as the childhood play space of JRR Tolkien, author of *Lord of the Rings*, and the wild areas remind fans of key images from the books.

Key complementary approaches

These may be applied in protected areas, or OECMs, or in other effective area-based strategies:

- **Corridors:** Many cities have the potential to maintain biological corridors using existing features, such as natural habitats along rivers, streams, coastline, mangroves, rocky outcrops or similar. Sydney maintains a protected area that functions as an effective corridor along several miles of its coastline, while residents of Washington DC can walk out of the city along the banks of the Potomac to natural woodland, even though this is surrounded on both sides by urban sprawl.

Case study



Co-benefit
SDGs



**Chee Chiew
Leong, Boyi Zhou**
(National Parks
Board, Singapore
Botanic Gardens)
and **Chris Hails**.



A city in nature – Singapore’s vision of restoring nature into the city

Network of urban nature reserves, parks and other green areas, Singapore



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Background: One degree north of the equator, Singapore is situated at the heart of a region of high biodiversity. Before the settlement of the British in 1819 led by Sir Stamford Raffles, Singapore was covered with fairly intact tropical rainforest, swamps and mangroves. The naturalist Alfred Russel Wallace visited the island in 1854 and described it as “a multitude of small hills still covered in virgin forest”.

A rapidly expanding human population soon took its toll, and most of the forests were cleared for agriculture and the creation of settlements. By 1900, 90 per cent of the primeval forest had been cleared. While the British made efforts to designate forest reserves and nature reserves, the efforts waxed and waned, leaving only a few small forest reserves scattered across the island by 1936. It was not until the 1960s, that the then Prime Minister of independent Singapore, Mr Lee Kuan Yew, made a concerted effort to green up Singapore under the Garden City campaign.

Sustainability Challenge: Mr Lee Kuan Yew had the daunting task of developing a country which had no natural resources, dominated by squatters and deplorable living conditions; it had none of the traditional sources of income and its people were the most precious resource. While preparing to develop the city, Mr Lee Kuan Yew had a clear vision of the environment he wanted to create, “*I have always believed that a blighted urban landscape, a concrete jungle destroys the human spirit. We need the greenery of nature to lift up our spirits*”. He envisioned that a clean and green environment would enable Singapore to “*distinguish [herself] from other Third World countries*” and gain a competitive edge by encouraging “*businessmen and tourists [to make her] a base for their businesses and tours of the region*”. In order to achieve Mr Lee’s vision, a balance between development and the conservation of greenery was needed.

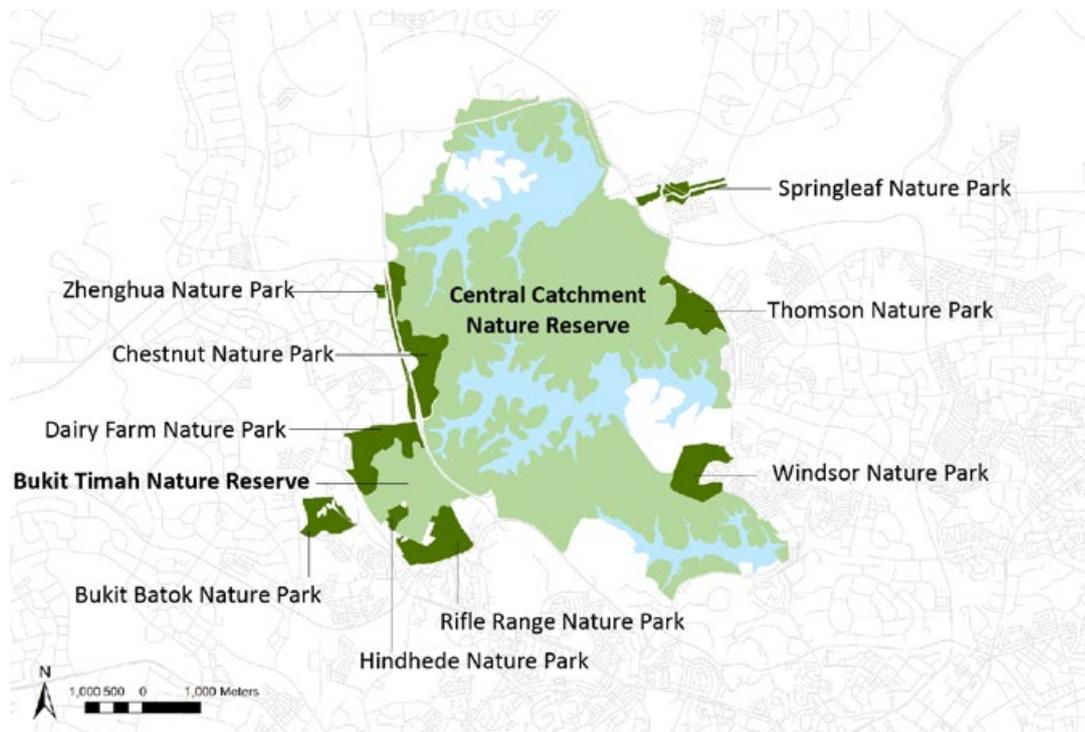


Figure 11.1: Nature Parks that buffer the Central Catchment Nature Reserve and Bukit Timah Nature Reserve

Conservation Solution: In the early years, Singapore established clear parameters for greenery through park provision standards and road codes, to ensure greenery was incorporated in the planning process. A national tree planting campaign was launched in 1963, and subsequently an ambitious “Garden City Campaign” in 1967. The initial focus was on tree planting for greenery and shade, and by 1974 nearly 160,000 trees had been planted. The activity became a community affair engaging civil society groups, and government and private developers were required to include green areas and trees in all new construction schemes.

In the 1980s, the government commissioned a study which took a more ecological approach to the conservation of remaining biodiversity-rich habitats, urban and parks plantings, and the development of ecological corridors. Birds were the indicator group around which these initial plans were built: if habitats for birds could be conserved, created and connected, it would be the first step towards an ecologically sound planning system.

In 1990, the government formed the National Parks Board (NParks), which in 1996 took over the management of all aspects of Nature Reserves and green spaces in the country. Singapore signalled its commitment to the

environment by signing several international agreements including the Convention on Biological Diversity, the UN Framework Convention on Climate Change and the UN Convention to Combat Desertification, which were opened for signature at the Earth Summit in Rio de Janeiro in 1992. Singapore also became part of the UN Forum on Forests, and a signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

The Garden City established Singapore’s basic network of gardens, parks and greenery, linked by a network of green corridors called Park Connectors. From this momentum, the concept of the “Garden City” evolved into a “City in a Garden”, which strived to make greenery even more pervasive island-wide. The Park Connector Network was extended further. In the built environment, work began to simulate the services of tropical rainforest by creating multi-layered vegetation both in green space plantings and on buildings. These initiatives improved the environment and made Singapore more liveable amidst a growing population.

In 2015, NParks launched a holistic Nature Conservation Masterplan,⁵⁵ which charts the course of Singapore’s future biodiversity conservation efforts through the four key

Case study

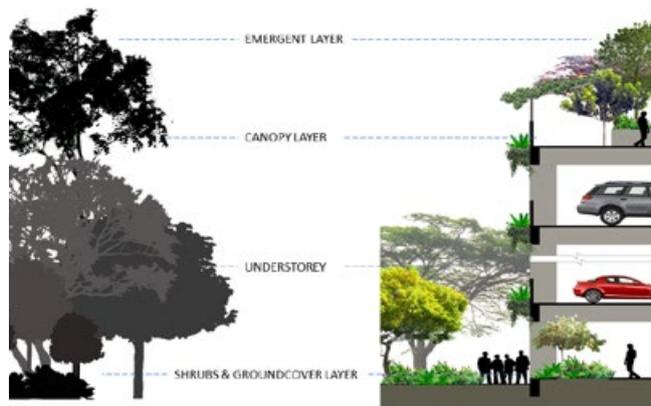


Figure 11.2: Replicating the structure of tropical rainforests in the built environment.

areas of (i) conservation of key habitats, (ii) restoration, enhancement and species recovery, (iii) research on conservation biology and planning, and (iv) public outreach and community stewardship.

Four nature reserves, two of which are listed as ASEAN heritage parks (Bukit Timah Nature Reserve and Sungei Buloh Wetland Reserve), currently provide the core refugia for biodiversity, covering representative habitats such as lowland rainforests, freshwater swamp forest, mangroves and mudflats. The boundary between these reserves and the urban environment is often a sharp one, so a series of “nature parks” are being established to buffer the nature reserves, to protect them against the impact of urbanisation, and provide more space for nature-based recreation, such as hiking and bird watching. These nature parks also help take the visitor pressure off core biodiversity areas.

Beyond securing buffer parks adjacent to the Nature Reserves, NParks adopts a science-based approach to nature conservation. For instance, agent-based modelling predicting the movement and settlement of coral propagules⁵⁶ helped validate the suitability of Sisters’ Islands as Singapore’s first Marine Park.⁵⁷ The Mandai Mangrove and Mudflat was recently identified for conservation as a nature park following ecological studies demonstrating the complementary role the habitat played in providing a rich feeding ground for migratory shorebirds roosting in Sungei Buloh Wetland Reserve.⁵⁸

Within this matrix, ecological connectivity between green spaces is being enhanced. “Least resistance” pathways for various fauna have been modelled using GIS

technology so that ecological corridors have a sound scientific basis.⁵⁹ To establish these corridors, greenery along streetscapes are intensified, resulting in multi-tiered planting replicating the natural structure of forests, known as Nature Ways. Nature Ways are also planted with native flora, with a special emphasis being placed upon food plants for indigenous birds and butterflies to facilitate the dispersal of native biodiversity. Further extended walking and cycling trails for nature and recreation, such as the Round Island Route and the Coast-to-Coast Trail, help to strengthen the connectivity between Singapore’s pockets of green spaces and create a more extensive Park Connector Network.

To ensure that the 2 million urban trees in parks and streetscapes are healthy, NParks has put in place a comprehensive tree management regime that includes regular inspections and pruning, professional certification of staff, and leveraging on technology. Advanced tree assessment is carried out using diagnostic equipment such as the resistograph and tomograph. Drones are used to conduct aerial inspections. Data models, such as the Tree Structural Model, are used to project the stability of trees under different wind speeds.

Habitat enhancement and species recovery programmes have been put in place to further conserve threatened, native biodiversity. For example, seamless water–land interfaces are created by breaking open concrete canals and re-wilding of rivers. Together with the reduction of pollution and the cleaning of waterways, these efforts have resulted in a natural re-establishment of the once extirpated Smooth-coated Otter (*Lutrogale perspicillata*) with a population now numbering more than 80 individuals which have penetrated the city centre.

Once locally extinct, a small group of 15 Oriental Pied Hornbills (*Anthracoceros albirostris*) were discovered on an offshore island in 1994. This triggered trials with nest boxes that eventually resulted in a healthy population of these magnificent birds living wild, right in the heart of the city, thriving off the ecological corridors and green spaces and the now-mature fruiting trees planted there. Other species recovery programmes covering

plants to invertebrates are underway covering marine, freshwater and terrestrial habitats.

Today, the City in a Garden is home to more than 400 species of birds, 330 species of butterflies and over 250 species of hard corals, accounting for more than 30 per cent of known global hard coral diversity. At least 2,400 native vascular plants have also been recorded, of which more than 1,845 species are classified as extant in Singapore. NParks and its partners continue to monitor biodiversity closely through regular surveys, in both terrestrial and marine areas. Since 2009, 225 species of native vascular plants have been discovered or rediscovered, including the endemic Singapore Ginger (*Zingiber singaporensis*), *Hanguana rubinea* and *Hanguana triangulata*. Surveys in Singapore's natural areas have also yielded notable faunal records, including the Neptune's Cup Sponge (*Cliona patera*), which was once presumed to be globally extinct and *Asiophlugis temasek*, a species of katydid new to science.

NParks has also started to introduce biophilic design in gardens and parks, creating recreational spaces that support both ecological and social communities. The Learning Forest is a 10-ha secondary forest that lies within the buffer zone of the Singapore Botanic Gardens UNESCO World Heritage site. Using historical maps and spatial modelling, NParks restored the original extent of freshwater swamp in the area and extended the forest buffer around them using the framework species reforestation methods. The landscapes in the Learning Forest, such as the Discovery Wetlands and the Walk of Giants, were designed to provide immersive experiences in nature. Today, the Singapore Botanic Garden stands out as the world's premier tropical botanic garden, with its newly developed Seed Bank and arboretum of dipterocarp trees, playing a vital role in safeguarding plant biodiversity in Southeast Asia.

NParks developed active outreach programmes for communities. For example, the Community in Bloom (CIB) gardening movement fosters community spirit and brings residents together to develop a sense of ownership of the greening. Today, there are



The naturalising of a concrete canal in Bishan-Ang Mo Kio Park through the Active, Beautiful and Clean (ABC) Waters programme.

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Biophilic design of the Learning Forest in the Singapore Botanic Gardens.

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more than 1,500 community gardens across Singapore, including outdoor and indoor gardening groups. Similar to CIB, Community in Nature (CIN) is a national movement to connect and engage different groups in the community to conserve Singapore's natural heritage. NParks involves schools, volunteers and partners for its CIN programmes that promote and raise awareness of biodiversity and conservation. More than 4,300 citizen scientists have participated in NParks' biodiversity surveys, and more than 400 schools and 58,000 students have taken part in CIN programmes.

Next steps: In March 2020, Singapore announced its new vision of City in Nature. This new vision builds on what Singapore has achieved as a biophilic City in a Garden, to strengthen Singapore's distinctiveness as a highly liveable city, while mitigating the impacts of urbanisation and climate change. As Singapore moves towards becoming a City in Nature, NParks will further restore nature into the urban fabric. Singapore's

Case study

transformation into a City in Nature will be guided by four key strategies – (i) the protection and expansion of Singapore’s natural capital, (ii) intensifying nature in gardens and parks, (iii) restoring nature into the built environment, and (iv) strengthening connectivity between Singapore’s green spaces.

To protect and extend its natural capital, Singapore will expand its Nature Park Network to our nature reserves, increasing the land area of nature parks by over 50 per cent by 2030. Landscapes in gardens and parks will be curated to make them more natural, bringing forth benefits to health and wellbeing. As part of this effort, our gardens and parks will serve as nature-based solutions for flood mitigation around coastal and riverine areas through the naturalisation of waterbodies. NParks will also work to restore nature into the built environment to mitigate the harshness of the urban environment, through intensifying the implementation of Nature Ways and skyrise greenery, with a focus on greening the hotter areas on the island, including industrial estates. Skyrise greenery has been found to be capable of reducing ambient temperatures by 1.5°C and surface temperature by 18°C.⁶⁰ Connectivity between Singapore’s green spaces will be further strengthened such that every household will be within a 10-minute walk of a park by 2030, making gardens and parks even more accessible. NParks also aspires to make every road a Nature Way.

A City in Nature will enable the community to forge closer bonds through active stewardship of the environment. Therapeutic gardens and nature play-gardens will bring Singaporeans closer to nature, thereby bringing benefits

to health and wellbeing. NParks has also launched the OneMillionTrees movement to plant a million trees across Singapore between 2020 and 2030. Communities will also be invited to take part in the design, building and management of more than 50 parks. The current nature volunteer base of 48,000 is targeted to expand to 70,000 by 2030.

Lessons Learned: The lesson from Singapore is that a small land-constrained island state of 721.5 km², with a population of 5.6 million people, can remain rich in biodiversity and have a community of partners and stewards in nature combined with exceptional economic development. From the early years of its independence, forward planning and concerted efforts to green up the city allowed Singapore to become one of the greenest cities in the world, according to the MIT City Lab Treepedia Index.⁶¹ A home-grown Singapore Index on Cities’ Biodiversity,⁶² which serves as a self-assessment tool to monitor progress of their biodiversity conservation efforts, has been adopted by 30 cities in the world. In addition, NParks has been awarded the UNESCO Sultan Qaboos Prize for Environmental Preservation in 2017 and the Stephen R. Kellert Biophilic Design Award in 2019.

This has been a huge achievement from such a challenging start only a little over 50 years ago and has placed Singapore as a global leader for integrating modern city living with biodiversity conservation.

Community conserved areas as building blocks for sustainable communities

Community-conserved areas, State of Nagaland, India



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“We are now so used to seeing the youth of the villages observing wildlife and plants, that we make a point of guiding them to the areas where we see something interesting!”

– By the women of the villages –

“On my exposure tour to Pakke in Arunachal Pradesh I was amazed to see so many wild hornbills. It was then that the conservation message really hit me.”

– Bokato Muru –

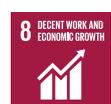
Background: The case study site is located in the mountainous state of Nagaland in Northeast India, bordering with Myanmar. The communities in Nagaland have full ownership of the land, which is unique in India. Faced with the destructive way of hunting and fishing practised in recent years, the people of three villages (Sükhai, Kivikhü and Ghükhüyi in Zunheboto district) have taken a bold decision to protect parts of their land from hunting, and use them as the nucleus of alternative livelihood sources based on ecotourism. Around this activity, new scientific information is generated and social infrastructure is being developed.

Sustainability challenge: Despite its rich natural forested landscapes, the local biodiversity in Nagaland in Northeast India is threatened by hunting, tree felling and habitat destruction through reduced fallow shifting cultivation (or “*jhuming*”). Hunting is an important part of the culture of Naga people; as one Naga man told us, “we, the Nagas, eat everything that moves”. Species such as the hornbill are iconic in Naga attire and folklore. The local tribe of Sumi traditionally used a variety of traps and snares to hunt. However, guns and destructive fishing practices, such as dynamite and electric currents, replace traditional hunting methods today. This has led to alarming declines in wildlife to the point the Naga people themselves notice empty forests and degradation of their culture by their own actions.

Jhuming is a traditional land use which was sustainable in that the land produced sufficient agricultural produce for families without external nutrient inputs in rotation cycles as long as 15-30 years. Due to increasing village population sizes, cultivation now occurs in shorter rotational cycles (half the traditional duration or



Co-benefit
SDGs



Yoji Natori (Akita International University and Conservation International Japan). **Pia Sethi**, (Centre for Ecology, Development and Research – CEDAR). **Siddharth Edake** and **Yatish Lele** (The Energy and Resources Institute – TERI).



Case study

less).¹ The losses of productivity in crops, forests and soil erosion have become major sustainability concerns.

Conservation solution: In Nagaland, traditional conservation and wise-use practices helped protect biodiversity over the centuries.

The revival of traditional conservation practices through the creation of Community-Conserved Areas (CCAs) offers hope for conservation, as communities set aside parcels of forests within productive, jhum landscapes.

To ensure the future of Nagaland's CCAs and thereby its biodiversity, a multi-pronged approach has been taken, which includes alternative livelihood opportunities through the development of wildlife ecotourism, legal recognition, ecological restoration and ecological monitoring.

The villages of Sükhai, Kivikhü and Ghükhüyi in Zunheboto district of Nagaland have respectively established CCAs and brought them together to jointly establish the Tizü Valley Biodiversity Conservation and Livelihood Network (TVBCLN). A total of 939 ha of forest are protected by revived traditional resource management methods. TVBCLN decided to ban any form of hunting, tree felling, collection of non-timber forest products and destructive forms of fishing in the CCAs. They also worked with the state government to have the CCA formally recognised, so that administrative support becomes available. The village councils went beyond CCA boundaries and banned hunting and destructive fishing in all land within their territory, totalling 3,751 ha.

Researchers from The Energy and Resources Institute (TERI) helped villagers to build a biodiversity database of the area.⁶³ Members of village youth have been trained in wildlife photography and videography so that they can document the wealth of local biodiversity. A WhatsApp group provides a platform for them to share the photos and videos and for experts to correctly identify the species and to

archive the information. The feedback from the experts creates incentive for the youth to continue the biodiversity documentation activities and improve their skills, while the database is updated at the same time. As of 2019, 222 species of bird, 31 species of reptile, 11 species of amphibian, 200 species of butterfly and more than 200 species of moths have been recorded.

The National Biological Diversity Act 2002 mandates the preparation of People's Biodiversity Registers (PBRs). The villages prepared Nagaland's first three with the support of TERI researchers. The production of PBRs is significant as they are a documentation of traditional ecological knowledge from an oral culture. These publications have become not only great sources of information on biodiversity and traditional knowledge and practices, but also the references for other communities to follow, as well as a pride of the community. They also act as a starting point for access and benefit sharing arrangements for the local people.

Two of the CCAs of Sükhai and Ghükhüyi have CCA patches that comprise abandoned *jhums*. In the case of Sükhai, many of the village people do not have the time to *jhum* in distant areas of the forest. Some of the village people, for example, use cars to reach farm sites, but the more distant areas are permanently abandoned back to forest. Population size of the village is dwindling as people move out; hence smaller *jhumed* areas are probably sufficient for meeting people's agricultural needs. Moreover, following the start of community conservation, the people are now cultivating each *jhum* patch for three years instead of just two (Ivan Jhimo, personal comment).

Measures put in place at CCAs to support conservation and sustainability objectives include:⁶⁴

- Useful skills and knowledge for ecotour guides are being built through the training of youth in photography and videography and through the access to expert feedback from online platforms. [SDG 4; Target 4.4]

¹ Though there is some evidence that jhumming may be reducing and/or occurring closer to villages as populations migrate out.

- CCA regulations protect a stretch of the Tizü river to restore the freshwater ecosystem. [SDG 6; Target 6.6]
- CCAs contribute to preservation of the Naga culture and natural heritage of Nagaland. [SDG 11; Target 11.4]
- Ecotourism revenues contribute to those who are economically disadvantaged. [SDG 10]
- Protection of forest contributes to climate change mitigation as forests here store carbon, estimated at 120.77tC/ha. Besides TVBCLN, there are 407 CCAs in Nagaland, 82 per cent of which, covering more than 1,700 km², enforce conservation regulations including logging bans. TVBCLN as a model can lead the work of REDD+ in India (North-eastern states account for 25 per cent of India's forest cover). [SDG 13]
- CCAs directly contribute to conservation of terrestrial ecosystems. [SDG 15; Targets 15.1, 15.2, 15.4, 15.5, 15.7]

Key benefits to sustainability: Article 371A of the Indian Constitution respects Naga's customary laws and processes, and traditional rights, including land ownership, are fully protected. Village councils have full control over how to manage their land. Thus, all decisions regarding the CCAs are made by TVBCLN which also has members of the Village Councils on board. Decisions are discussed regularly in village meetings so that the entire community knows what is happening. PBR preparation, participatory planning and mapping generated awareness and ownership of CCA activities.

Alternative livelihood means that compensating the lack of income by giving up hunting is a priority for TVBCLN. The village people are developing nature and cultural ecotourism. Due to the remoteness of the site (7-hour drive from the nearest airport on rough terrain), it is intended, at least for now, for committed ecotourists. Nonetheless, an increasing number of ecotourists are attracted to the site for its diversity of birds and butterflies, scenic views, cultural practices and the presence of rare species. The biodiversity monitoring, which is an important aspect of CCA management from the ecological perspective, also enriches the ecotourism experience. Villagers trained

in wildlife documentation through the monitoring activities function as ecotourism guides. Youth, women's groups and the marginalised members of the community reported increases in their household income including through the sale of traditional products and handicrafts. The protection of a stretch of the Tizü river provided by the CCA has increased the fish catch downstream.

Interaction with ecotourists increases the villagers' ecological awareness, and further leads to better management of common resources, such as *jhum* practices. The conservation initiative has also spurred additional related livelihood activities including the sale of local produce from homestead gardens, handicrafts and the learning of new skills such as pebble art.

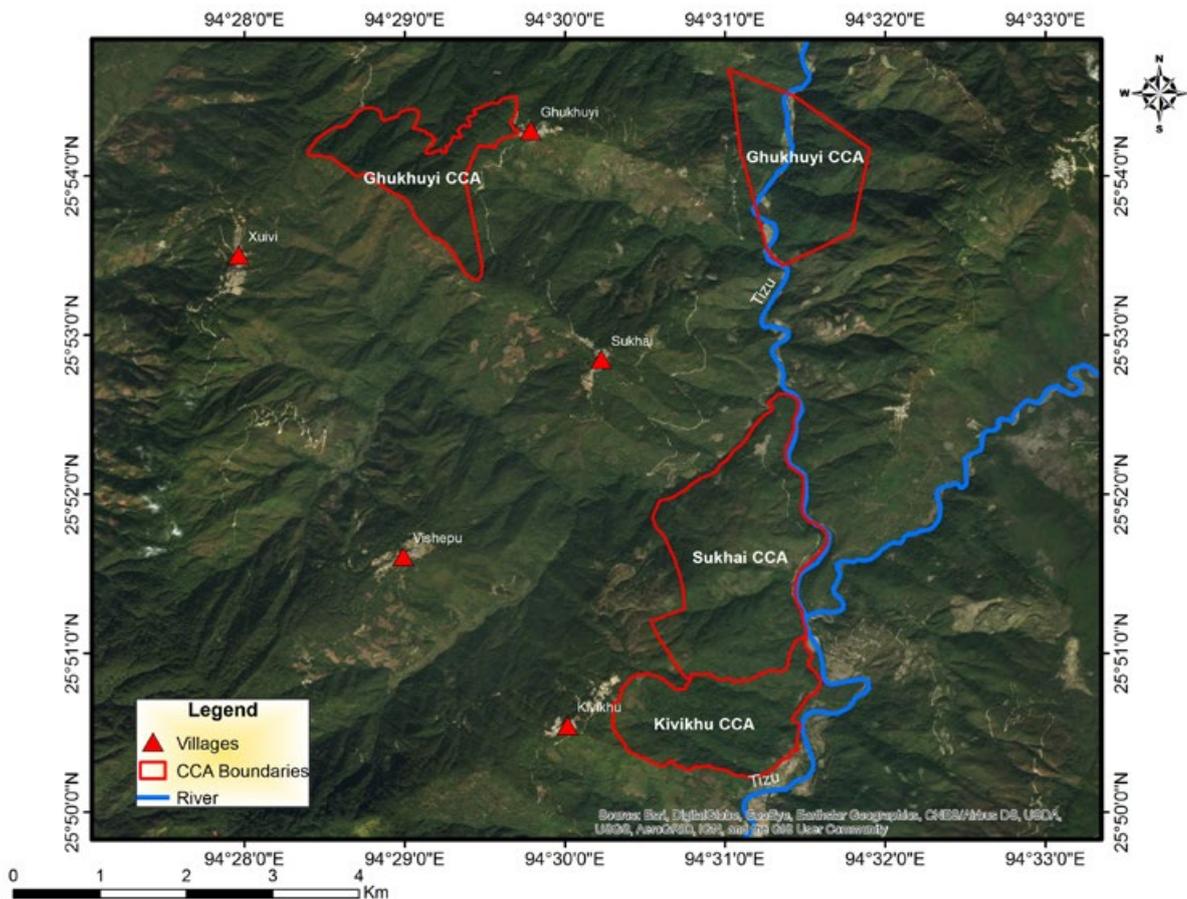
Lessons learned: The creation of community-conserved areas generated benefits not just for biodiversity, but also in livelihood and cultural aspects. The involvement of communities, through local champions and stimulating local initiatives, has been key for successful mainstreaming of nature in sustainable development and enhanced awareness of sustainability.⁶⁵

- If communities are well-informed and empowered, they can take steps to protect their natural resources and use them judiciously.
- Having local champions is key to give thrust to the initiative and for the communities to own it. This also leads to rapid spread of such conservation successes and sustained motivation.
- Providing the right incentives is critical. Developing working, alternative conservation-linked livelihoods is the lifeline of conservation initiatives that incur financial burdens. A platform that motivates stakeholders to participate facilitates the impact of capacity building activities to last and expand.
- Tapping into traditional knowledge and drawing upon the rich cultural traditions and biological heritage of local communities gives them a sense of pride in their heritage and enhances conservation outcomes. Documentation of the PBR by Sükhai village was an excellent entry point for enhanced conservation

Case study

Figure 11.3. Boundaries of the Community Conserved Areas discussed in the case study.

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- activities. All the neighbouring villages wanted to document their biodiversity too.
- A good conservation success story can work as a model for other communities to emulate leading to the spread of such activities.
 - Conservation can be at the nucleus of related livelihood activities. The people are now tapping additional local entrepreneurial opportunities on a small scale.
 - Cohesive social capital and active local institutions promote speedy decision making and ensure community support and involvement.

Next steps: Local communities interact across the landscape depending on interlinked resources. The health of one community, therefore, depends on well-functioning ecosystems across the landscape. In particular, the TVBCLN depends on the Tizü river, but while they protect their stretches of the river, other villages use batteries and destructive fishing methods. At the same time, neighbouring villagers and outsiders illegally hunt in the network's landscapes. Therefore,

the next steps are to expand conservation education activities amongst villages across the landscape. Creation of People's Biodiversity Registers is required across villages so that the rich tribal knowledge is documented at the earliest. The marketing of ecotourism is to be strengthened so that the ecotourist footfall is enhanced. In the future, two steps are urgently warranted a) tapping into PES mechanisms such as REDD+ and others and b) developing access and benefit sharing opportunities based on PBRs.

Information linked to this case study can also be found through the PANORAMA initiative.

Combining conservation and cultural tourism to support local livelihoods

Blue and John Crow Mountains National Park, Jamaica



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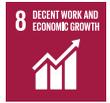
“The work of managing the Blue and John Crow Mountains National Park and World Heritage site has consistently been focused towards the preservation and promotion of the cultural heritage of the Maroons, in conjunction with conservation of the flora and fauna of the site. The Jamaica Conservation and Development Trust (in collaboration with the Government of Jamaica), continues to lead in this, with a focus on sustainable use of the national park and World Heritage site through local community engagement, promotion and support of cultural heritage through training, festivals and employment, all of which redound to the benefit of Maroon and other local communities.”

– Debra-Kay Palmer, Director, World Heritage and Cultural Conventions, Ministry of Culture, Gender, Entertainment and Sport, Jamaica –

Background: The Blue and John Crow Mountains National Park established in 1993 is 41,198 ha and protects rain and cloud forest on the central ridge of three mountain ranges in eastern Jamaica. Within 2 km of its boundary, there are about 50 rural farming communities with a population of just over 52,000. Three of these (Moore Town, Charles Town and Scotts Hall) are formally recognised Maroon communities with their own leadership, maintaining the traditions of the escaped, enslaved Africans who mixed with the first peoples of the island, the Taino. The way the Maroons used the mountains, streams, flora, fauna and natural landscape to secure their freedom and sovereignty from British colonial powers in 1740 is recognised in the inscription of the Core Preservation Zone of the National Park as a World Heritage site in 2015. The main recreation area “Holywell” is located just 25 km from Jamaica’s capital with a population of almost 1 million. Kingston is a UNESCO Cultural City recognised particularly for its music including reggae and dancehall.



Co-benefit
SDGs



Susan Otuokon
(Jamaica
Conservation and
Development
Trust).



Case study

Sustainability challenge: Many of the rural communities around the park are shrinking and cultural heritage is being lost due to migration of youth to cities, seeking employment as there are very limited income-generating opportunities in their communities. Consequently, in order to keep Maroon communities alive, there is a need to find attractive and viable means of livelihood for people in the area. There are also issues with unsustainable land management practices around the park area undermining both conservation efforts and long-term sustainability of local communities. While the park has proven to be a significant contributor to sustainability (see below), funding for its management is limited as the Government of Jamaica provides only about 30 per cent of recurrent operational expenditure and other more general support through relevant agencies. In addition, through a co-management agreement, the non-government organisation manager (Jamaica Conservation and Development Trust – JCDT) is allowed to retain user fees collected at the two recreational areas – Holywell and the Blue Mountain Peak Trail. Funds are needed for ongoing community outreach, particularly aimed at changing land management practices to more environmentally sustainable ones, for restoration of degraded lands and enforcement of related legislation.

Key benefits for sustainability:

The National Park safeguards and promotes the cultural heritage of the Maroons of Jamaica, intrinsic to which is their reverence for the mountains as the fortress which supported their ancestors' successful freedom fight and as the burial ground for many of those who lost their lives. Furthermore, the National Park protects rich biodiversity including the unique Greater Antillean broadleaf cloud forest that also provides water and green space for the Greater Kingston Metropolitan Area.⁶⁶

Conservation solution: Tourism and recreation as well as educational opportunities for students have been identified as a way to address the above challenges.

A range of activities have been initiated by the park to promote tourism and related livelihoods in the area. Celebrating nature and

culture have long been part of management of the Blue and John Crow Mountains National Park. Aside from the involvement of Maroon communities, formal celebrations started in 2000 with the first hosting of Misty Bliss – a cultural festival at Holywell in honour of the anniversary of the designation of the National Park. Maroon drummers and dancers have always been a major part of the entertainment package along with the sale of traditional food and craft – from the Maroon and other communities. A music festival featuring reggae and other music genres was held at Holywell in 2014 and 2015. The Kongkongkraba (Abeng) Symphony was performed by the Immaculate Conception High School Symphony Orchestra at Holywell in 2018 to celebrate the 25th Anniversary of the National Park. In addition, Park management supports the festivals of the Maroon communities – helping to seek sponsorship and promote the events. JCDT is working with Maroon communities and those near to the National Park's recreation areas to build their capacity for tourism and hospitality through planning, training and marketing.

These events and the newly established Discovery Centre help promote Maroon heritage and build pride in their contribution to the protection of the forests of the Blue and John Crow Mountains. This has led to an interest in visiting Maroon communities thus helping their tourism businesses to grow. Since the promotion of Maroon heritage through the Park's events and more so since the World Heritage site inscription, Maroon communities have seen increased visitation. Young, local entrepreneurs, in particular, have been able to organise guided tours and a tour company which helps ensure income generated remains within the communities. In addition, recreation and tourism are an important source of funding for the park, especially as the organisation can retain legislated user fees and any other income earned at recreation areas (e.g. for guided tours, accommodation and events).

At the same time, JCDT aims to keep the user entry fees low enough to keep access inclusive. Schools are targeted for educational tours and with a recent change in school curricula, there has been an upsurge in demand. Despite this,



Kongkongkraba Symphony at Holywell celebrating Maroon heritage and the Blue and John Crow Mountains.

few inner-city and local, rural community schools were found to be visiting and since 2019, a partnership has been formed with a private sector foundation to support the participation of 10 schools/year from these low-income communities.

Lessons learned: Although the populations of Kingston and St Andrew, who are potential visitors to Holywell, are at least 300,000, the site has only about 16,000 visitors per year, mainly Jamaican residents. This indicates a need for enhanced marketing and transportation improvements. Cultural events in the natural setting of Holywell attract a new public who have never been to the site and this leads to subsequent visits to enjoy nature and learn about cultural heritage. Promotion of Maroon heritage on the National Park's website and through events and the new Discovery Centre has increased visitation to Maroon communities and hence business opportunities particularly for the young who are willing to learn new skills and livelihood options.

Next steps: As income from the National Park's Recreation and Tourism Programme is used for the operation of the recreation areas and management of the wider National Park, support for marketing is a challenge. JCDT involve volunteers to assist with social media and other promotions and used the 5th Anniversary of the World Heritage site inscription in July 2020 to highlight the significance of the site and encourage visitation to the National Park and Maroon communities.

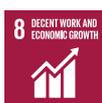
This case study was prepared by the Executive Director of the JCDT who was the Manager of the National Park until August 2019.

Information linked to this case study can also be found through the PANORAMA initiative.

Case study



Co-benefit
SDGs



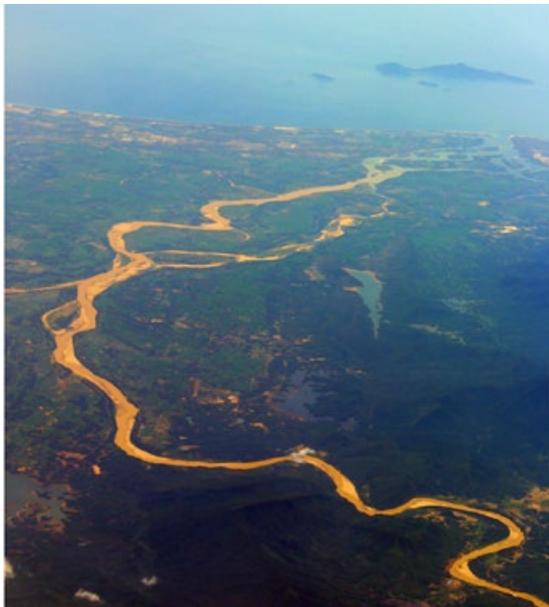
Chu Manh Trinh,
Research and
International
Cooperation
Division, (Cham
Islands Marine
Protected Area).

**Ashley
Hollenbeck,**
Executive Director,
(Institute for
Village Studies).



Evolving management of protected areas as a solution towards a resilient eco-city

Cham Island Marine Protected Area and Hoi An Biosphere Reserve, Vietnam



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“Effective management should come from the people. Without the people, the Cu Lao Cham Marine Protected Area and Hoi An Biosphere Reserve will not be successful because they oversee a large geographic territory, which makes it impossible for them to understand the unique context of each local area. Through asset-based community development, people can combine science with their own knowledge about the place where they live and create strategies to promote conservation and socio-economic development.”

– Farmer, Thanh Dong Organic Garden –

Background: The Vietnamese government began to work on Cham Island in 1999 to conserve dwindling fish populations. To overcome tensions between conservation efforts and local fisheries, key stakeholders worked together between 1999 and 2005 to create a co-management framework that included government officials, scientists and local people. As a result, the Cham Island Marine Protected Area (MPA) was created in 2005 with the long-term objectives to (i) protect natural resources and cultural and historical values of the Cham archipelago, and (ii) stimulate socio-economic development.⁶⁷

The success of conservation initiatives implemented by the MPA led the neighbouring city of Hoi An to be nominated by UNESCO as a World Biosphere Reserve in 2009. This status recognised the city’s unique relationship with the Thu Bon estuary, and its reliance on local mangrove, seagrass and coral reef habitats. People in this area have always lived in harmony with nature and implemented sustainable livelihood practices. To hold the UNESCO World Biosphere Reserve certificate, Hoi An city had to adopt global criteria that included requirements on ecological and biodiversity conservation together with environmentally friendly economic development.⁶⁸

Geographically, Cham Island now falls under the jurisdiction of Hoi An city, and the Cu Lao Cham and Biosphere Reserve Management Board oversees both areas; the Vice-Chairman of the Hoi An People’s Committee plays a crucial role in coordinating activities between the two sites. The creation of the Biosphere Reserve necessitated innovative mechanisms to manage natural resources and the distinct heritage of the region, while simultaneously encouraging continued economic growth through ecotourism and livelihood development.

Cam Thanh is the name of one commune in Hoi An city that lies in the Thu Bon river mouth and is upstream of Cham Island (Figure 11.4). It includes 100 ha of nypa palm mangrove forest and is an ecological buffer zone for Cu Lao Cham Island and the Hoi An Biosphere Reserve. This unique habitat is home to approximately 10,000 people who rely on fishing, aquaculture, agriculture and tourist services for their livelihood. A plan to manage this sensitive ecological system was set up in 2015-2020 and included substantial participation from local people, conservationists, government managers and the private sector.



Figure 11.4: Map depicting Cam Thanh Commune and the UNESCO Biosphere Reserve in relation to the Cham Island Marine Protected Area.⁷⁰

Sustainability challenge: Previously successful strategies to manage natural resources and support local community livelihood needs on Cham Island were not directly transferable to the wider context of Cam Thanh and the Biosphere Reserve. The region has struggled to confront new environmental stressors from a dramatic increase in tourism, including erosion, increased solid waste and wastewater in Hoi

An that is carried to the island via Cam Thanh and the Thu Bon river mouth ecosystem. These challenges have been exacerbated by commercial fishing and private sector investment in the area.

The limitations of the MPA co-management structure became obvious in 2013-2016 when government staff adopted a well-intended but narrow-scoped approach to managing land

Case study

crabs as an indicator species on the island. Despite its success at facilitating community-based environmental management on Cham Island, this issue-based approach only presented one solution to a multifaceted problem. It did not transcend geographic boundaries between Cham Island and the Cam Thanh nypa palm habitat. It also became clear that the community did not have the capacity or power to direct private sector actors that were having a more substantial impact on local ecosystems than farmers and fishers.

In response to growing tensions and rapid environmental degradation, the MPA organised the first-ever multi-stakeholder dialogue in Vietnam between the government, scientists, private sector and local citizens on marine management and conservation.

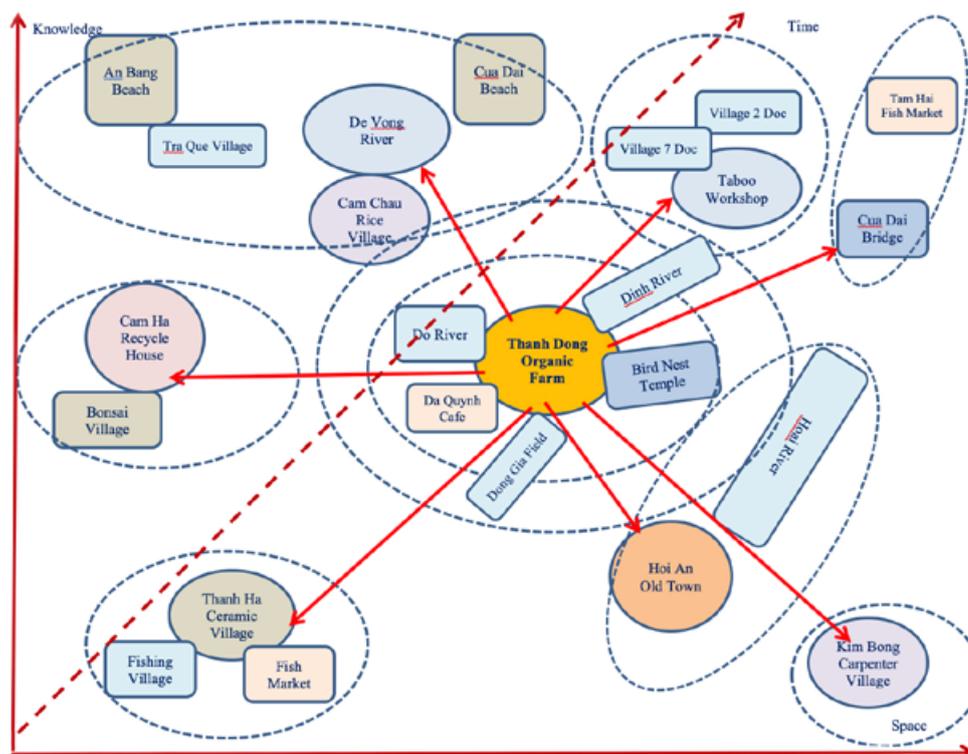
Conservation solution: The above realisation encouraged the MPA to move beyond narrow and hierarchical management approaches authored by scientists and experts and implemented by local government and community actors. By prioritising the opinion of the professional class, these approaches consistently lacked funding and resources to implement global “best practices”.

Furthermore, during the aforementioned dialogue, it quickly became apparent that involved stakeholders already knew about the problems; they did not, however, have a feasible, locally-based solution to mitigate ecosystem stress.

As the environmental impacts from tourism and development continued to multiply, it became clear that a new approach was needed to protect critical habitat, better engage the local stakeholders and demonstrate that conservation measures could promote socio-economic development.

In 2017, the MPA began to use asset-based community development (ABCD) as a part of their co-management structure to harmonise the relationship between conservation, livelihood improvements and socio-economic development. The goal was to overcome the shortcomings of issue-based approaches that by themselves may undermine resilience, discount local knowledge and create a culture of dependency in communities.⁶⁹ Instead of engaging scientists to write the Nypa Palm Forest Ecosystem Management Plan for Cam Thanh, the MPA and Biosphere Reserve staff developed an array of activities and trainings utilising the teachings of ABCD. Over time,

Figure 11.5: Asset map created by farmers at Thanh Dong Organic Farm in 2017 that serves as a guide when showing visitors the region.



Year	Study / Research Visits (Person)	Tourist Visits (Person)	Total (Person)	Entrance fees (Million VND)	Conical boat fees (Million VND)	Total Income (Million VND)
2017	1,116	592	1,708	16	61	337
2018	1,245	1,110	2,355	38	92	495
2019	2,361	1,702	4,063	55	152	439
Total	4,722	3,404	8,126	109	305	1,271

Table 11.1: The number of tourists and student visitors taking part in community workshops on ABCD, and the associated income from entrance fees and conical boat tours from 2017 to 2019 in the Thanh Dong Organic Garden, Cam Thanh, Hoi An, Quang Nam, Viet Nam.

local people became active participants in MPA initiatives in Cam Thanh and better understood their relationship to Cham Island.

For example, one aspect of the management plan was to ensure that farmers will have adequate resources and income to support their livelihood. When farmers began to look at the Thanh Dong Organic Farm already in operation as an asset central to their livelihood, they were able to create an asset map and identify critical linkages to surrounding areas (Figure 11.4). Through a process of co-production, farmers worked together to identify significant geographic sites and local stories and built their own capacity to be tour guides for visitors to the area. Instead of simply answering survey questions for scientists to better understand the local community and ecosystem, they became the primary agents to facilitate change and support the management plan.

Today farmers lead community workshops with students and visitors on conservation and livelihood development through the lens of organic agriculture using the asset-based community development approach they learned from MPA staff (Table 11.1). Their efforts have had an exponential impact; in 2017-2019, the Thanh Dong Organic Farm was able to host 4,722 researchers and students from around the world. In total, this has contributed an additional 1,271,000,000 VND (approx. 49,100 EUR) to their income, a substantial increase in three years.

By combining an issue-based approach with ABCD and working directly with local community members, plans for conservation and socio-economic development have

become a reality. The Cam Thanh Commune recently implemented an education campaign to encourage residents to say no to pesticides and fertilisers because they now see the unique value of the organic farm. In allowing local community members to take the lead through ABCD, others have been more receptive to the MPA and Biosphere Reserve's advice on conservation and livelihood development. Instead of focusing primarily on private gain, many now see the importance of public goods to improve their quality of life. Adopting the ABCD approach in community engagement processes has built greater trust within the co-management frameworks in place that are fundamental to the success of the MPA and Biosphere Reserve.

Lessons learned: Ecosystem services should be recognised in the management of the Cu Lao Cham Marine Protected Area Management Plan, as well as for the Hoi An city tourism development. However, this is impossible without understanding the relationship between communities and their environment. Therefore, capacity building should focus on local people as the first priority when planning and carrying out conservation and livelihood building initiatives. ABCD methodologies have proven to be an instrumental tool to ensure these activities reflect communities where desired policy and programme implementation is to take place. Through the “learning by doing” approach inherent in ABCD, stakeholders can build the trust necessary for the commitment it takes to ensure conservation and socio-economic development programmes are successful.

Case study

Cham Island
Vietnam



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Next steps: Partnerships have been the main objective for the Cu Lao Cham Marine Protected Area and Biosphere Reserve since conservation efforts were introduced in 1999. The next step in this process will be building a network of communities from the Cu Lao Cham islands to Cam Thanh and eventually up the Thu Bon river to include traditional villages in Hoi An, such as Tra Que Vegetable Village, Cam Kim Carpenter Village and Thanh Ha Ceramic Village. These are all tourist centres and have a substantial impact on downstream ecosystem health.

Local farmers who have become teachers in Thanh Dong Organic Garden in Cam Thanh have expressed an interest in creating a Community School to increase their capacity. Future students may include more people from neighbouring villages, which will be the first step in expanding the community network to harmonise the relationship between conservation, livelihood improvements and socio-economic development.

Information linked to this case study can also be found through the PANORAMA initiative.

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