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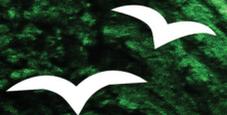
Sustainable Development of Mountains and Mountain People in Chittagong Hill Tracts, Bangaladesh

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Introduction

Nearly one-tenth of the global population depends directly on mountain resources, the majority of which are from diverse ethnic groups. The environment of mountains represents major ecosystems which are vital to the existence of the global environment, as well as to the people living there. However, the mountain scenario has been changing rapidly due to severe environmental degradation and low local adaptive capacity to the effects of climate change. Globally, the mountain regions including Chittagong Hill Tracts (CHT) in Bangladesh are the most disadvantageous and lag in almost all development indicators, such as poverty, income, food security, health, education, infrastructure, and peace and stability. Therefore, globally sustainable development of mountains and mountain people is very important.

Although CHT faces many challenges, it has great potential that can be yoked to improve the lives of the mountain people and the mountains. The Sustainable Development Goals (SDG) provide a framework for addressing various socio-economic and environmental challenges globally, including those related to mountain development and the well-being of the mountain people of CHT in Bangladesh. The SDGs emphasise the sustainable management, conservation, and use of all natural resources, including forests, and mountains, and the protection of biodiversity, ecosystems, and wildlife, which has a great impact on the socio-economic development of a country. Specifically, SDG 15 focuses on protecting, restoring, and promoting sustainable use of terrestrial ecosystems, sustainable forest management, combat desertification, stopping and reversing land degradation, and stopping biodiversity loss. Target number 1 of SDG 15 explicitly mentions mountains among the ecosystems to be conserved, restored and sustainably used in line with international agreements.[1] In this context, the development of mountains and mountain people of CHT is very much linked with SDG 15.

Chittagong Hill Tracts (CHT): A Brief Overview

The Chittagong Hill Tracts (CHT) is a region located in southeastern Bangladesh, bordering India and Myanmar. It is characterized by hilly terrain, lush forests, and diverse ethnic communities that cover an area of approximately 13,295 square kilometers, making up about one-tenth of the total land area of Bangladesh. The region is primarily mountainous, with peaks

reaching heights of 1,000 meters above sea level. It is known for its scenic beauty, including rivers, waterfalls, and dense forests. The population is approximately 1.8 million with 13 ethnic communities including the Chakma, Marma, Tripura, Mro, and Baum among others. All possess diverse cultures, languages, and traditions that contribute to the region's rich cultural heritage.[2]

But, more than 60% of families of CHT live below the poverty line which is much higher than the national average. More than half of families do not have access to safe drinking water and/or sanitation amenities. Most people are engaged in subsistence farming, which is locally known as Jhum farming. Although the CHT posses huge natural resources, it remains one of the most susceptible regions in the country and lags economically.[3, 4]

CHT has diverse natural resources such as hills, forests, rivers, lakes, various flora and fauna, and areas with exceptional scenic beauty (See Figure 15.2). With each resource playing a significant role in national economic development. Nearly 40% of forest land exists in CHT which contributes to biodiversity conservation, regional environment protection, erosion prevention, water quality maintenance, regulation of water flow, reduction of the severity of floods, and regulation of local and regional climate in Bangladesh.[5]

Policy Strategies Toward Development of CHT

Bangladesh has taken several policy strategies for the development of mountains and mountain people in CHT since its independence. In 1976, the CHT Development Board Ordinance was adopted, and the Chittagong Hill Development Board (CHTDB) was established to strengthen the capacity of the institutions in planning and implementing development activities. In 1989, three Hill District Councils (HDC) were established to look after civil administration, law and order, and development activities in CHT. In 1997, a Peace Accord was signed to reduce ethnic tensions, establish peace and security, and inclusive development.
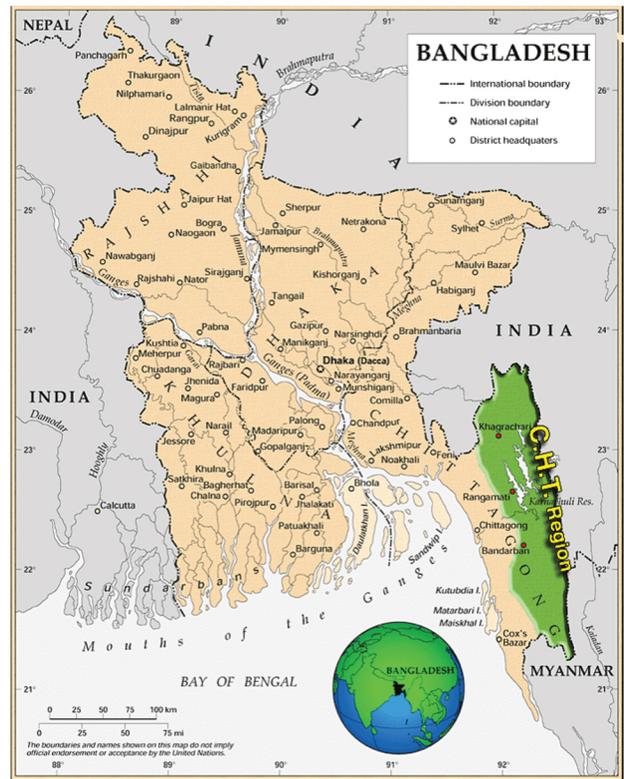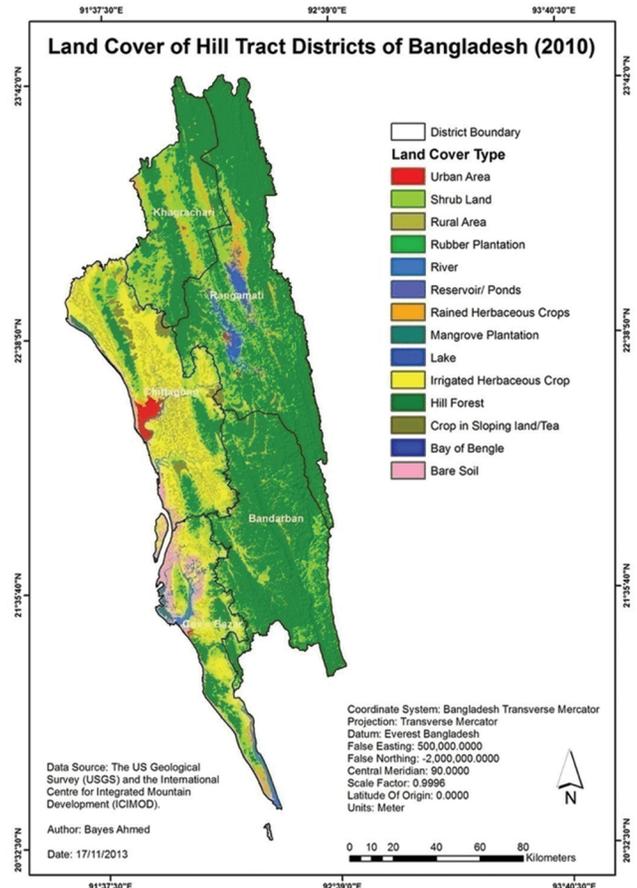
FIGURE 15.1 MAP OF BANGLADESH

FIGURE 15.2 MAP OF CHT

Following the peace accord, the Chittagong Hill Tracts Regional Council (CHTRC)—a top politico-administrative body to coordinate and oversee the activities of HDCs—was tasked with addressing the apprehensions of the mountain people, as well as reducing ethnic tensions, alongside a Land Commission; and the Ministry of Chittagong Hill Tracts Affairs (MoCHTA) were established.

In 2013, the Chittagong Hill Tracts Regional Council Rules were passed, and again in 2014, the Chittagong Hill Tracts Development Board Ordinance replaced the ordinance of 1976. But, still, there is a lack of appropriate directions for the sustainable development of mountains and mountain people in CHT.

Why Sustainably Develop the CHT?

The reasons for the sustainable development of mountains and mountain people in CHT are manifold. Mountains provide the natural resources upon which all mountain livelihoods depend. But globally, mountains are experiencing severe environmental degradation. The CHT continue to face many development challenges, including poverty, inadequate infrastructure, limited access to education and healthcare facilities, and environmental degradation.

People of the CHT face poverty due to limited access to resources, infrastructure, and economic opportunities. They face additional challenges related to food security and nutrition due to factors such as limited agricultural productivity, land degradation, and inadequate access to markets.

Moreover, they have limited access to healthcare services which leads to poor health outcomes, lack access to quality education, as well as access to clean water and sanitation facilities which are crucial for improving living conditions and preventing waterborne diseases. Electricity inaccessibility continues to also hinder overall economic development and quality of life.

Unplanned urbanisation, hill cutting, and population growth in CHT lead to environmental degradation. Overall, the CHT is highly vulnerable to climate change impacts such as landslides, and changes in precipitation patterns.[6] However, globally, mountains are often regarded as areas with less potential, so the existing potential of these regions remains underused. As a result, mountains have sluggish economic growth, imperfect economic opportunities, and poorer socioeconomic conditions than the adjacent plain lands of the country.[7,8]

Most national policies for the development of mountains and mountain people including Bangladesh have been developed as an extension of national policies which are found sometimes inappropriate. As a result, areas like CHT are lagging and create a history of social tensions.

Potential for Sustainable Mountains and Mountain People Development in CHT

The CHT in Bangladesh has enormous prospects for sustainable development that, if used properly and managed sustainably, will improve the living standards and quality of life of the mountain people of CHT, as well as maintain equity, dignity, and cultural identity. Specifically, CHT has scope for growth in horticulture, beekeeping, livestock, fisheries, high-value agricultural products, agriculture-based micro-enterprises, forestry, and water resources management. Developing a value chain with agroindustry may also enhance livelihoods. It has significant tourism potential due to its natural beauty, cultural diversity, and opportunities for adventure activities such as trekking, hiking, and river rafting.[9]

Moreover, the CHT is situated in the southeast part of Bangladesh. It has boundaries with India and Myanmar. Bangladesh has repeatedly enquired about maturing economic and trade relationships with countries in the East, especially Myanmar, Thailand, and China. So, CHT may provide an ideal gateway for developing an economic corridor across the region.[4]

Governance Challenges

The CHT has a large degree of decentralisation and devolution of power. These institutional interventions could support sustainable development through the provision of clearer policy targets. Moreover, CHT is currently experiencing significant socio-economic changes. Specifically, formal education, construction of communication networks, and internet connectivity have been altering the aspirations of the mountain people and augmenting their opportunities in CHT.[11]

Yet, the region is often subject to governance challenges, which are related to politico–structural, socio-economic, and local apprehensions.[7]

Politico–structural challenges include lack of transparency in national government, lack of due process, lack of participation in decision making, contradictory policies, lack of enforcement of environmental regulations, and lack of political commitment to sustainable use of natural resources.

Socio-economic challenges include the presence of highly valuable non-renewable natural resources, a large gap between the rich and poor, extreme poverty, and external control over the natural resources, while challenges related to local governance apprehensions include lack of employment, low income, environmental degradation, increasing vulnerability, and economic recession.

Concluding Remarks

We are living in an age of continuously better connectedness and economic integration. With better connectivity, the CHT can gain knowledge about effective livelihood practices from other global mountain regions and can implement them where suitable. Economic integration of CHT with the rest of the country, as well as globally can provide a path for transforming the poverty of the mountain people into prosperity.[9] In this context, an economic corridor between Bangladesh and the neighboring countries to the east can be established (CHT is the gateway) through regional cooperation. It may create a favourable environment for the sustainable economic development of CHT through better trade shipment.

The Agenda 2030 is not merely about safeguarding from vulnerability, but also for the broader socio-economic and political transformation. So, for sustainable development of mountains and mountain people, all the nations need to reinforce cooperative actions with the involvement of relevant stakeholders and adopt a long-term vision and a holistic approach. It is also necessary to incorporate mountain-specific policies into national sustainable development strategies.[1]

However, considering the spatial drawbacks, as well as the development potential, cultural diversity, and opportunities for CHT, a long-term vision and appropriate action plans are needed. The engagement of various stakeholders such as government, local communities, development organisations, private sector organisations, NGOs, academia, and research organisations may contribute to the successful implementation of these action plans effectively.

Policy Proposals/ Recommendations

Considering existing situation of CHT the following recommendations may be put forward:

1 The country must explore the opportunity for increasing its effectiveness in adopting mountain-specific policies at different levels in CHT. These policies need to focus on the qualitative adaptations in mountain livelihoods, and diversified landscapes to overcome the hurdles and take advantage of the distinctive prospects of the mountains.

2 Agroforestry, an alternative land use system could be applied to grow diverse species of woodland perennials in association with field crops, which is specifically suitable for the mountain regions like CHT where shifting cultivation is widely practiced. It may help to control soil erosion, and reverse environmental degradation through the biological interactions of trees, crops, and livestock, and increase income from farmland.

3 Indigenous knowledge of the environment is extremely important to understand and learn what can protect the hills and mountains. So, to stop hill-cutting and landslides, indigenous environmental knowledge must be incorporated into the development plan of the country.

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Increasing Connections Between People and Nature

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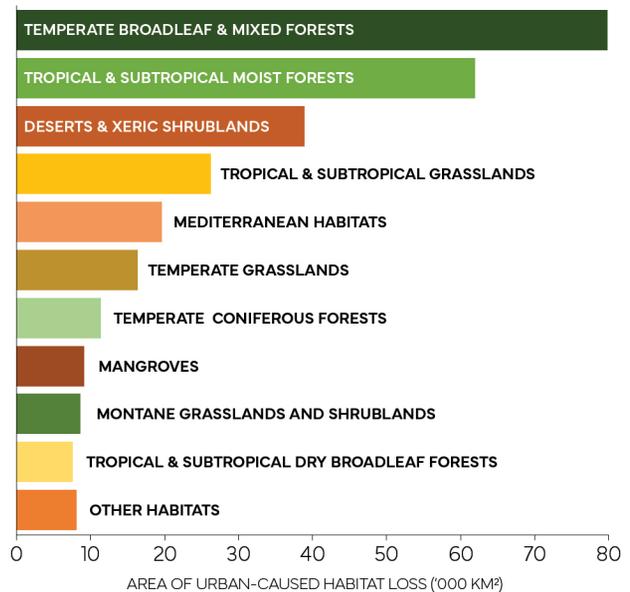
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Introduction

Almost every global index tracking the condition of ecosystems has documented a continuing decline in the quantity and quality of natural habitats. While Sustainable Development Goal 15 (SDG 15) emphasises the importance of preserving terrestrial ecosystems and species, there is limited mention of the relationships between people and nature. Urban areas are absent from SDG 15, even though cities have a large direct and indirect ecological footprint (Figure 15.3). Between 2000-2030, global urban growth is predicted to clear an area the size of New Zealand, placing increasing strain on global ecosystems.[1]

By 2050, the UN predicts that nearly 70% of people will live in urban centres. In Australia, 75% of the population already live in cities of 100,000 or more people. Having opportunities for people in cities to connect with nature can increase the likelihood of adopting 'pro-environmental' behaviours (such as more

FIGURE 15.3 GLOBAL HABITAT LOSS TO CITIES, 2000-2030 [1]

TEMPERATE BROADLEAF & MIXED FORESTS
TROPICAL & SUBTROPICAL MOIST FORESTS
DESERTS & XERIC SHRUBLANDS
TROPICAL & SUBTROPICAL GRASSLANDS
MEDITERRANEAN HABITATS
TEMPERATE GRASSLANDS
TEMPERATE CONIFEROUS FORESTS
MANGROVES
MONTANE GRASSLANDS AND SHRUBLANDS
TROPICAL & SUBTROPICAL DRY BROADLEAF FORESTS
OTHER HABITATS

AREA OF URBAN-CAUSED HABITAT LOSS ('000 KM²)

sustainable consumption choices) that could help address global biodiversity decline.[2] The importance of urban nature is made clear in Target 12 of the Convention on Biological Diversity's COP15 targets for 2030.

Protecting the remnant vegetation in urban areas is crucial for biodiversity. To augment urban nature beyond strengthening conservation programs and nature reserves, we provide examples of how initiatives in urban ecology and the use of nature-based solutions in planning and design can help foster beneficial human-nature connections, build 'nature-positive' cities, and progress conservation goals and SDG 15.

Engaging with Wildlife in Cities

Globally, cities and urban areas are home to a diverse range of plants and animals. Urban landscapes provide a mosaic of complex habitats that can be used by common and threatened wildlife. Within Australia, 30% of threatened species are present within cities[3], and three state capital cities (Perth, Brisbane, Sydney) are set within global biodiversity hotspots. Additionally, engaging with urban nature can provide people with a range of psychological, cognitive and physiological benefits.[4]

Recent research in southwest Western Australia (WA) has demonstrated the value of residential areas and wildlife-friendly gardening for biodiversity and human wellbeing.[5] Based on almost 16,000 wildlife observations completed by 243 citizen scientists, residential gardens in the region were found to support over 200 vertebrate species (i.e., birds, mammals, reptiles and frogs), with 77 species making use of habitat structures installed by householders (such as refuges and water sources, see Figure 15.4).

FIGURE 15.4 URBAN BIRDS USING ARTIFICIAL STRUCTURES [6, 7]

Semi-structured interviews with participating citizen scientists demonstrated that gardening for wildlife is also gardening for wellbeing, offering opportunities for outdoor activities, sensory engagement, physical movement, relaxation, meditation and social connections within the community.[3] For some, urban gardening provided a platform for taking affirmative action and alleviating feelings of eco-grief or eco-anxiety, while others enjoyed the hands-on experience in identifying species, learning about ecology, observing wildlife responses, and adapting gardening practices based on new knowledge. Similar human-nature connections have been identified by residents in the of planting native flora species along road verges in Perth.[8]

By providing habitat resources and supporting reproductive opportunities for plants and animals, wildlife-friendly gardening can actively benefit biodiversity, help species adapt to habitat loss and climate change, and contribute to human well-being.

Designing cities with nature

Beyond the household-scale actions exemplified by wildlife gardening, urban biodiversity, and by extension SDG 15, can be supported through urban planning and landscape design initiatives that deliberately incorporate nature. Ecologists, landscape architects and urban planners are increasingly working together to adopt 'nature-based' solutions and green infrastructure for liveability and biodiversity.[9]

Until recently, urban landscapes in Australia reflected European design with mostly non-native plants, many of which are not well adapted to hot summers and scarce water. Contemporary approaches to landscape architecture seek to mimic natural processes that emphasise naturally occurring biodiversity, rather than reduce the number of plants used in landscape planting.[10] Approaches such as biophilic urbanism seek to bring people and nature together.

Further, there is a growing interest in landscape design that embraces Indigenous knowledge, culture and spirituality. This approach is exemplified in two public gardens in southwest WA, designed around the six seasons of the Noongar nation[11] (Figure 15.5).

FIGURE 15.5 SIX SEASONS OF THE NOONGAR NATION [12]

The Ballardong Noongar six seasons garden in the town of York represents koora-korra (the past), yey (the present) and mila (the future) of Budjar (Country). The Muminbulah Wilak six seasons garden in the Perth suburb of Jandakot features plants that traditionally provided food, medicine, shelter and other resources during each season.[11] Indigenous landscaping reflects deep understanding of Country, culture and nature. By engaging with Indigenous landscape designers, those who know how best to care for Country lead urban greening projects and efforts. Such initiatives honour Indigenous traditions, aid in restoring Country through nature-culture connection, and provide an inclusive, cross-cultural space for community members.[11, 13]

Biodiversity sensitive urban design (BSUD) embraces the concept of incorporating on-site benefits for biodiversity in urban development (rather than offsetting the impacts of urbanisation elsewhere), resulting in increased environmental justice and social equity when people have everyday access to nature.[14] Design frameworks can help to identify where designing for biodiversity aligns with other urban development goals, while providing a site-specific, step-by-step process for identifying target species and any potential threats that need to be mitigated.

Successful urban biodiversity conservation not only needs to identify novel design solutions for restoring and enhancing natural resources but also coordination, habitat restoration and protection based on evidence-based priority-setting. Spatial planning tools have been developed based on ecological connectivity, to help planners assess the merits of different urban planning and design scenarios to bring nature back into cities and allow for wildlife to move between habitats.[15]

Policy Proposals/ Recommendations

Cities have a key role in societies becoming 'nature-positive'. This being an initiative promoted by the UN Convention on Biological Diversity—a net-gain in nature by 2030. Achieving nature-positive cities will help drive progress towards SDG 15, as well as several other related SDGs, namely, climate change (SDG 13), sustainable cities (SDG 11), water availability (SDG 6), inequality (SDG 9) and health (SDG 3).

Effective partnerships (SDG 17) between community, government, research and industry will be needed to restore and conserve urban nature. Here, we outline a number of practical recommendations.

1 **Community members and land managers should add simple habitat substitutes to the urban form,** providing crucial resources for urban wildlife. These elements can include insect 'hotels', bird and bat nesting boxes, biodiverse retaining walls, elevated bird baths, ponds and rock (or log) shelters.

2 When designing public spaces (including parks, parklets, street verges and open spaces, **agencies and developers should seek out a diverse range of local native plant species;** including groundcovers, low and medium shrubs, plants that flower across the year, and canopy trees for shade.

3 **Planners, developers and landscape architects should seek to bring people and nature together in new and refurbished outdoor spaces,** through embracing Indigenous landscaping, including opportunities for nature education, and evaluating impacts on community health and wellbeing.

4 **Coordinating biodiversity actions across local governments, developers and communities** will overcome the complexity of land use planning in urban contexts, where changing responsibilities during development can lead to tension and trade-offs.

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