



## CHAPTER 6 BRIEF

# MEETING FUTURE ENERGY NEEDS IN THE HINDU KUSH HIMALAYA

The Hindu Kush Himalaya (HKH) is interconnected biophysically and socioeconomically across sectors, affecting energy supply and demand, their underlying drivers, and solutions to energy poverty. Mountain specificities such as inaccessibility, fragility, and marginality further lead to different manifestations of energy demand patterns and trends. The challenge for the HKH is to simultaneously address the issues of energy poverty, energy security, and climate change while attaining multiple UN Sustainable Development Goals.

The growing sectoral interdependencies in energy, climate, water, and food make it crucial for policy makers to understand the cross-sectoral policy linkages, and their effects at multiple scales. This chapter critically examines the energy outlook of the HKH in its diverse aspects, including demand-and-supply patterns; national policies, programmes, and institutions; emerging challenges and opportunities; and possible transformational pathways for sustainable energy.



## KEY FINDINGS

- The Hindu Kush Himalaya (HKH) remains energy poor despite its huge hydropower potential of around 500 GW.
- Measures to enhance energy supply have had less than satisfactory results because of low prioritization and a failure to address challenges of remoteness and fragility.
- Inadequate data and analyses are a major barrier to designing context-specific interventions.

## POLICY MESSAGES

- Quantitative targets and quality specifications of alternative energy options, based on an explicit recognition of the full costs and benefits, should be the basis for designing policies and prioritizing actions and investments.
- Governments of the HKH countries need to prioritize use of locally available energy resources.
- A high-level, empowered, regional mechanism should be established to strengthen regional energy trade and cooperation.

### LINKS TO





# OBSERVATIONS AND TRENDS

## DESPITE ITS VAST POTENTIAL OF HYDROPOWER AND OTHER RENEWABLES, THE HKH REGION REMAINS ENERGY POOR AND VULNERABLE

Despite its vast potential of hydropower and other renewables, the HKH region remains energy poor and vulnerable. Climate change is posing a major threat and a new challenge to energy security and livelihood resilience in the climate sensitive HKH region on account of factors such as receding treelines, the contribution of biomass burning to short-lived carbon pollutants, altered rainfall patterns, and unpredictable water stocks and flows, with devastating impacts on public health, environment, and livelihood security.

Despite notable progress made over the past decade to expand access to modern energy services in HKH countries, more than 80% of the rural population in HKH countries relies on traditional biomass fuels for cooking and about 400 million people still lack basic access to electricity. Although a large percentage of these energy deprived populations live in rural mountain areas – falling far behind the national access rates – mountain specific energy access data that reflects the realities of mountain energy poverty barely exists.

- Even though a large percentage of energy deprived populations in the Hindu Kush Himalaya live in rural mountain areas, little data exists to help decision makers understand related mountain specific needs and challenges.

In most HKH countries, existing national policy frameworks primarily focus on electrification (power sector) for household lighting, with limited attention paid to energy for clean cooking and heating, while productive energy use promotion has remained a neglected area in historical development practice. As a result, there has been limited progress in access to energy for clean cooking compared to the progress in electricity access in all HKH countries.

Some HKH countries have scaled up off-grid initiatives that are globally recognized as successful. However, the

Providing sustainable energy access in mountain regions is a challenge due to limited access to technology, infrastructure, and finance. Investment in the renewable sector is required to harness the full energy potential of the HKH.

special challenges faced by mountain communities – in terms of scale economics, inaccessibility, fragility, marginality, access to infrastructure and resources, poverty levels, and capability gaps – thwart large-scale replication of several best practice innovative business models and off-grid renewable energy solutions that are making inroads into some HKH countries.

There is a strong demand for decentralized sustainable energy solutions in the HKH due to its distinct topographic features, dispersed settlement patterns, grossly underdeveloped markets, low capabilities, and poor economies of scale. Yet, a broad range of barriers, including policy and regulatory obstacles, outdated technology, and a lack of capacity and of finance have prevented the region from taking full advantage of existing and potential renewable energy sources for decentralized sustainable energy solutions in off-grid mountain areas. This highlights an urgent need to establish supportive policy, legal and institutional frameworks and innovations in mountain-specific technology and financing, and enhanced multi-stakeholder capacity building at all levels, for upscaling of successful energy programmes in off-grid mountain areas.

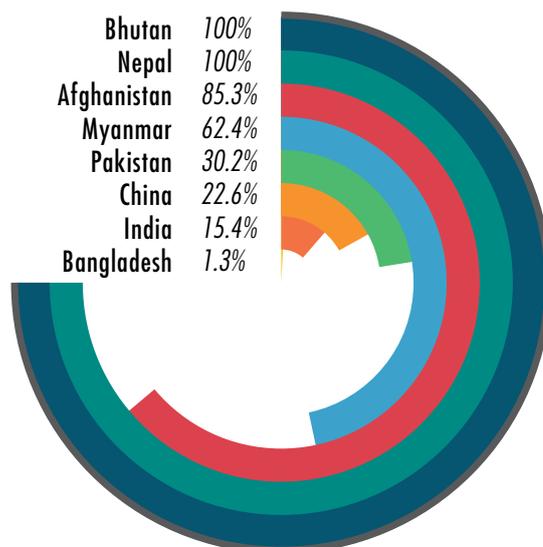
Improving energy efficiency is the most cost-competitive low hanging fruit to bring additional energy to meet the increasing demand for energy services. Given the excessive traditional biomass usage for cooking and space heating and the resulting deforestation and widespread biomass loss in HKH mountains, there are huge opportunities for improving the efficiency of biomass use, particularly for household use, making it more sustainable or substituting it completely by moving away from the highly inefficient combustion of biomass fuels primarily used in this sector.

## THE HKH CAN ATTAIN ENERGY SECURITY BY TAPPING INTO THE FULL POTENTIAL OF HYDROPOWER AND OTHER RENEWABLES

How the region handles its water, energy, and forest resources has a significant impact on the health of the Himalayan mountain ecosystems, the health and wellbeing of its populations, the vulnerability of its people and those living downstream to glacier melting and associated impacts, and the opportunities to mitigate climate change impacts at a wider scale.

By tapping into the full potential of hydropower and other renewables, the HKH can overcome its energy poverty and attain energy security, while mitigating and adapting to climate change. Success, however, will critically depend on removing policy, institutional, financial, and capacity barriers that now perpetuate energy poverty and vulnerability in mountain communities.

### RENEWABLE SHARE IN TOTAL ELECTRICITY GENERATION IN HKH COUNTRIES



## SUSTAINABLE ENERGY IS A SHARED RESPONSIBILITY

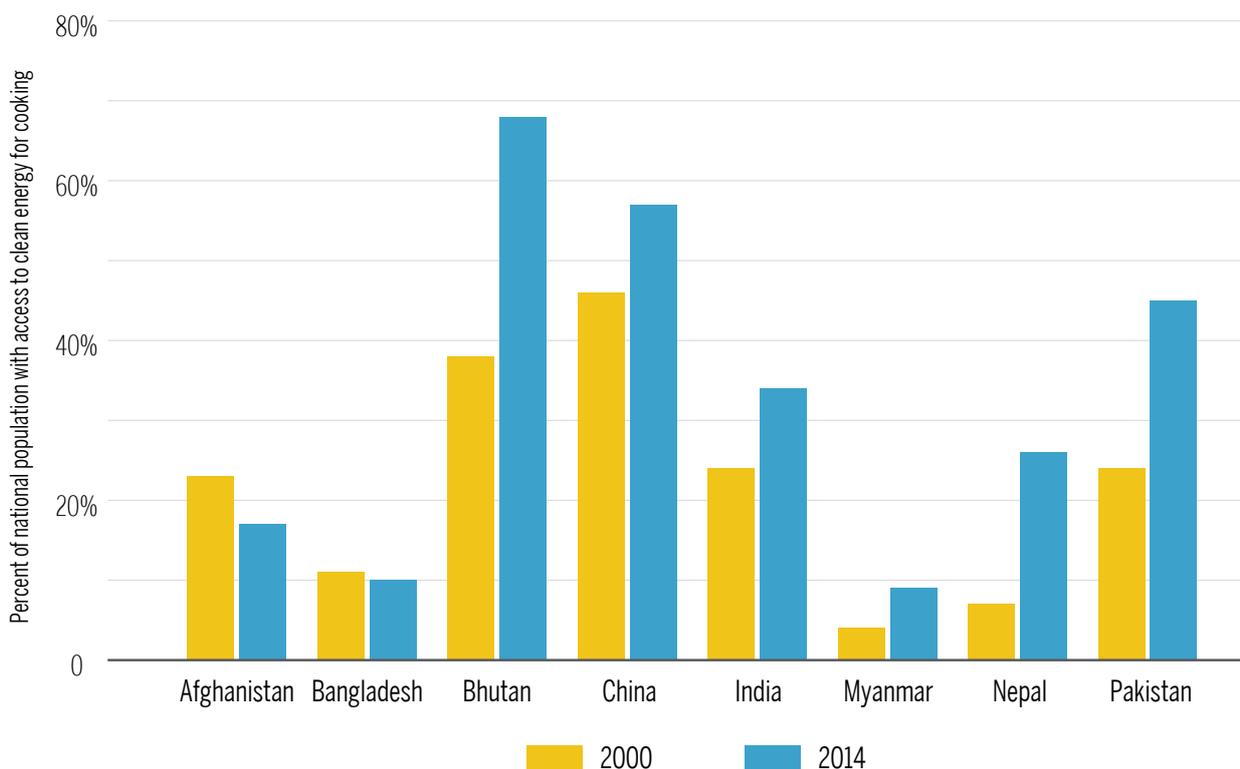
The region requires a radical energy transformation that ensures universal electricity access, through grid-connected and off-grid power for lighting and productive uses, and the complete replacement of traditional, inefficient sources for cooking and heating energy with clean, sustainable energy options that are efficient, reliable, affordable, and demand-driven.

Sustainable energy transition is a shared responsibility. To accelerate progress and make it meaningful, all key stakeholders must partner with one another and work synergistically for a sustainable energy transition. The world

needs to engage with the HKH to define an ambitious new energy vision: one that involves building an inclusive green society and economy, with mountain communities enjoying modern, affordable, reliable, and sustainable energy to improve their lives and the environment.

## ALTHOUGH IMPROVEMENTS HAVE BEEN MADE AT THE NATIONAL LEVEL, 80% OF RURAL POPULATIONS LIVING IN HKH COUNTRIES STILL LACK ACCESS TO CLEAN ENERGY FOR COOKING

*This figure shows the differences in access to clean fuels and technologies for cooking in 2000 and 2014 (percentage of national population)*

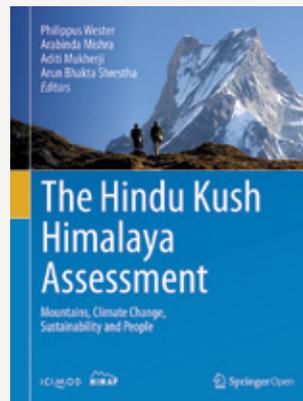




## ACTION POINTS

The four-point priority action agenda presents a way for sustainable energy transition to ensure energy security for all in a climate-resilient manner, through hydropower and other renewables. It also highlights the urgent need to customize UN SDG 7 targets and indicators to the specific needs and priorities of the HKH region.

- Making mountain-specific energy policies and programmes an integral part of national energy development strategy.
- Establishing monitorable quantitative and qualitative targets for each energy end use and tracking the progress of different attributes of clean energy access.
- Scaling up current investments and ensuring access to finance through capacity building at different levels.
- Accelerating the pace of regional trade and cooperation in sustainable energy through a high-level, empowered, regional mechanism.



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