

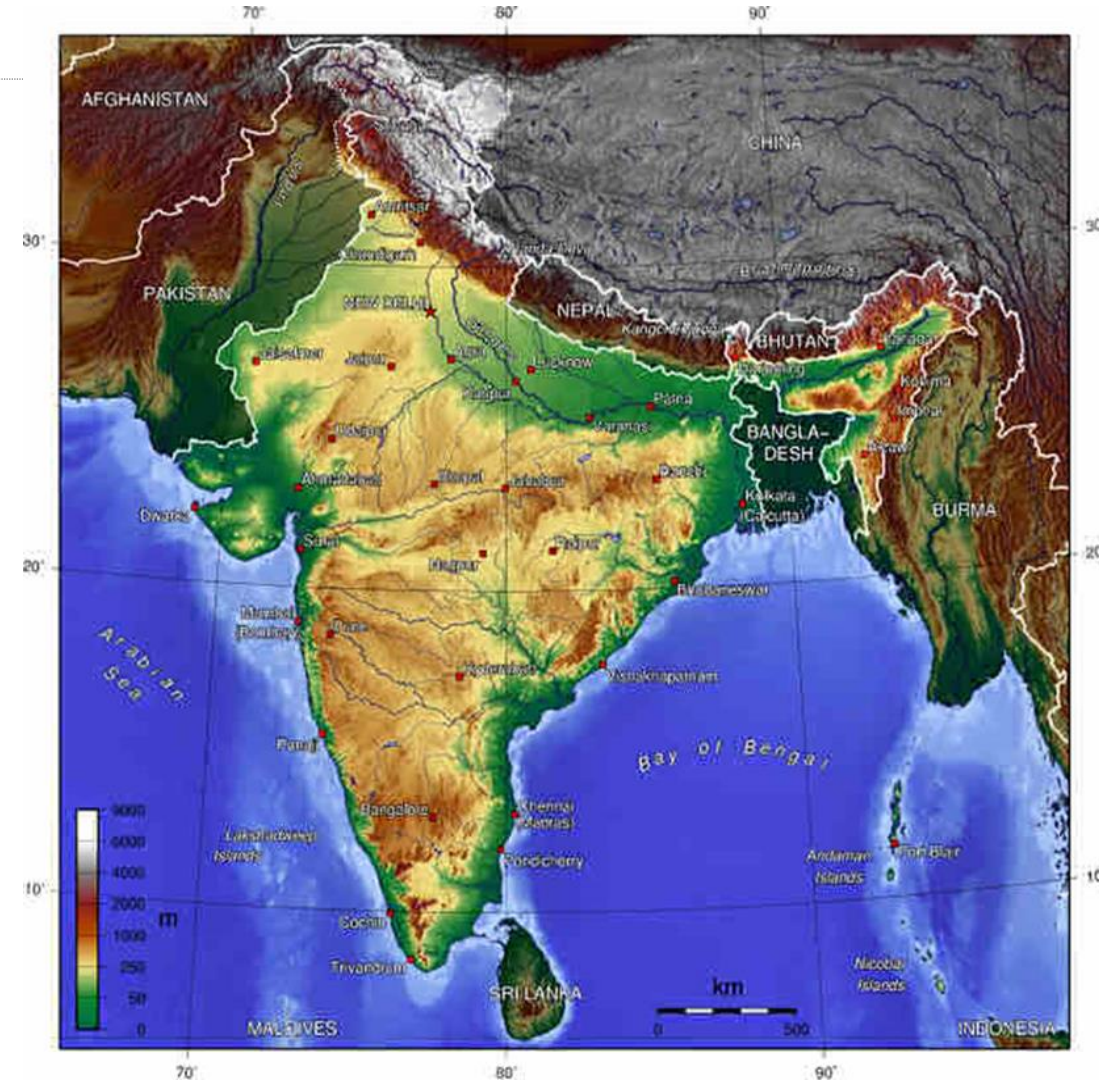
Alternative Development for Sustainable Development of Mountain and Highland Areas

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Characteristics of Mountains and Highlands

- **Limited Accessibility**-Isolation, remoteness, difficult terrain
- **High Fragility & vulnerability** - steep slope, high altitude
- **Poor infrastructure**, high transportation cost
- Sparse population, small production - **low economies of scale**
- **Marginality** - socio-economic & environmental
- Poses **Environmental & economic constraints**



Niche & Comparative advantage of Mountains & Highlands

- **Climatic, biological & natural resource diversity**- unique products & services
- Significant comparative advantages to
 - Hydropower, Tourism
 - Horticulture, Timber, medicinal herbs
 - Biodiversity, Indigenous knowledge
- Mountains are the water towers of the world



Niche & Comparative advantage of Mountains & Highlands

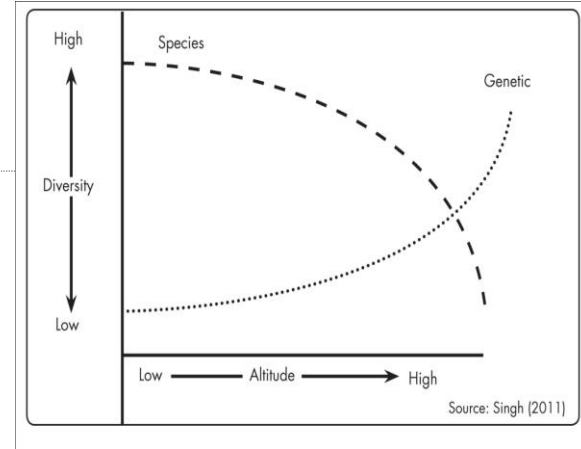
Biodiversity

- Mountains support 25% of the planet's biodiversity, have 50% of the world's biodiversity hotspots
- 32% of global Protected Areas (PA)are in mountains
- Himalayan has 488 PAs covering 39% of the region's terrestrial area

Agrobiodiversity

- Six of 20 plant crop species that supply 80% of the world's food originated in the mountains

Mountains: a source of cultural, spiritual & recreational resources





Niche Products for Agribusiness from Mountain Agroforestry

ICIMOD



Mountain and Highlands are home to many tribal & indigenous peoples: Languge's & Cultural Diversity

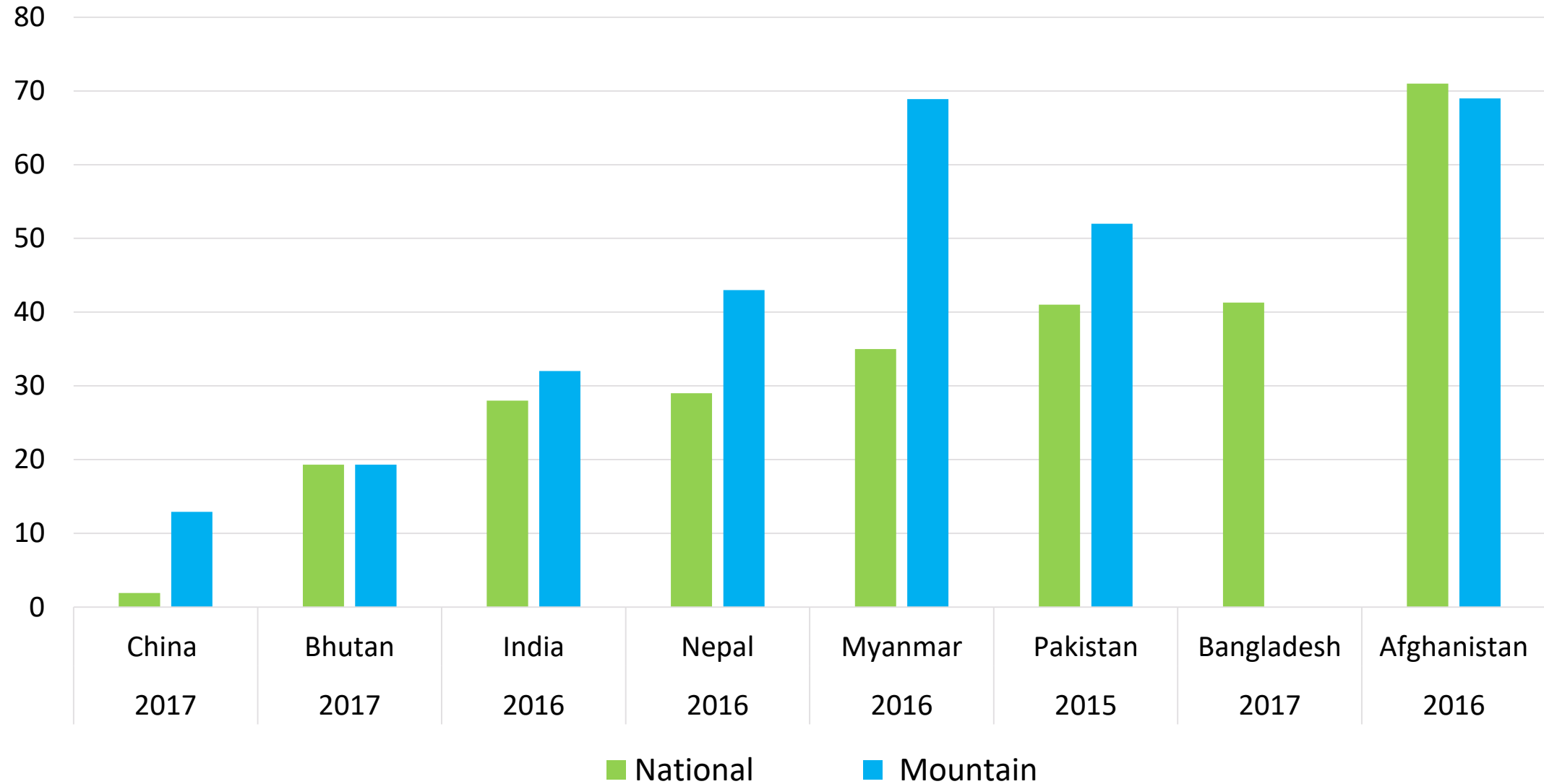


Growing Environmental & Social Risks

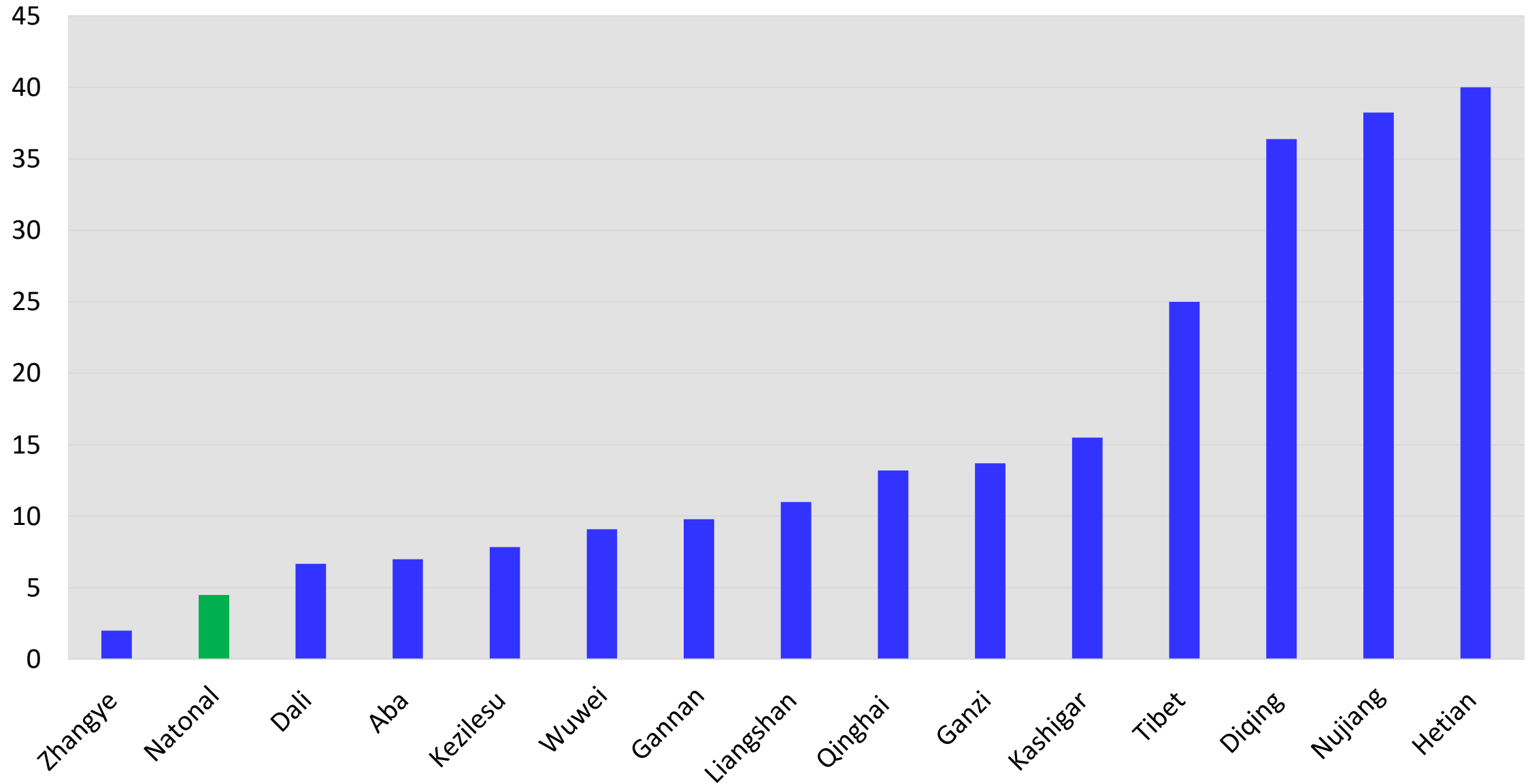
- Conventional economic model failed to sustain economic growth, reduce poverty, protect environment
- High carbon emissions, climate change, accelerated melting of glaciers, Sea Level Rise
- Resource depletion, loss of biodiversity, energy crisis, water shortage, food insecurity
- Persistent poverty & growing inequality
- Economic inequality reinforces inequalities between regions, ethnicity, race, caste- leading to protracted conflicts



Multidimensional poverty: Mountain vs National

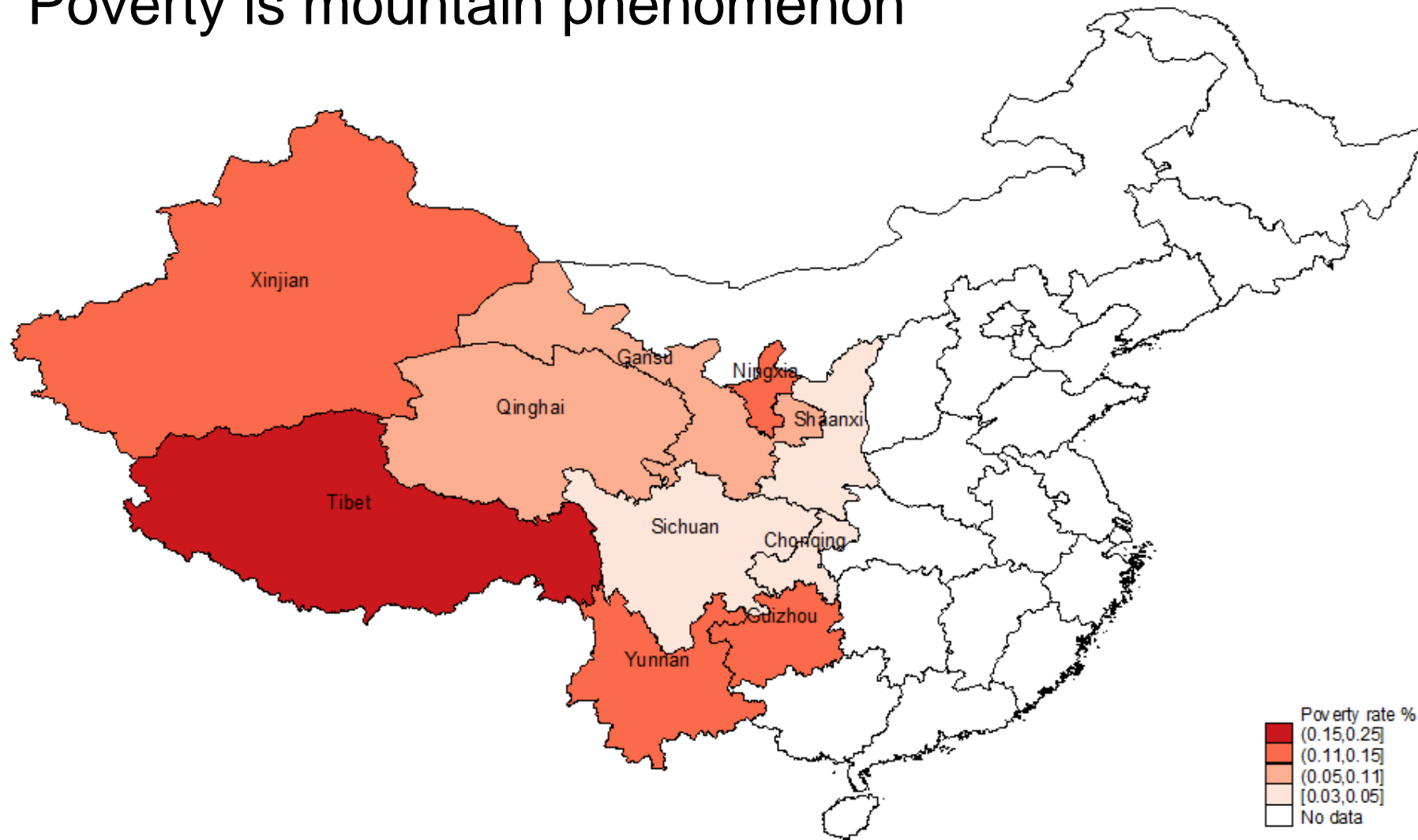


China - Rural Mountain Poverty

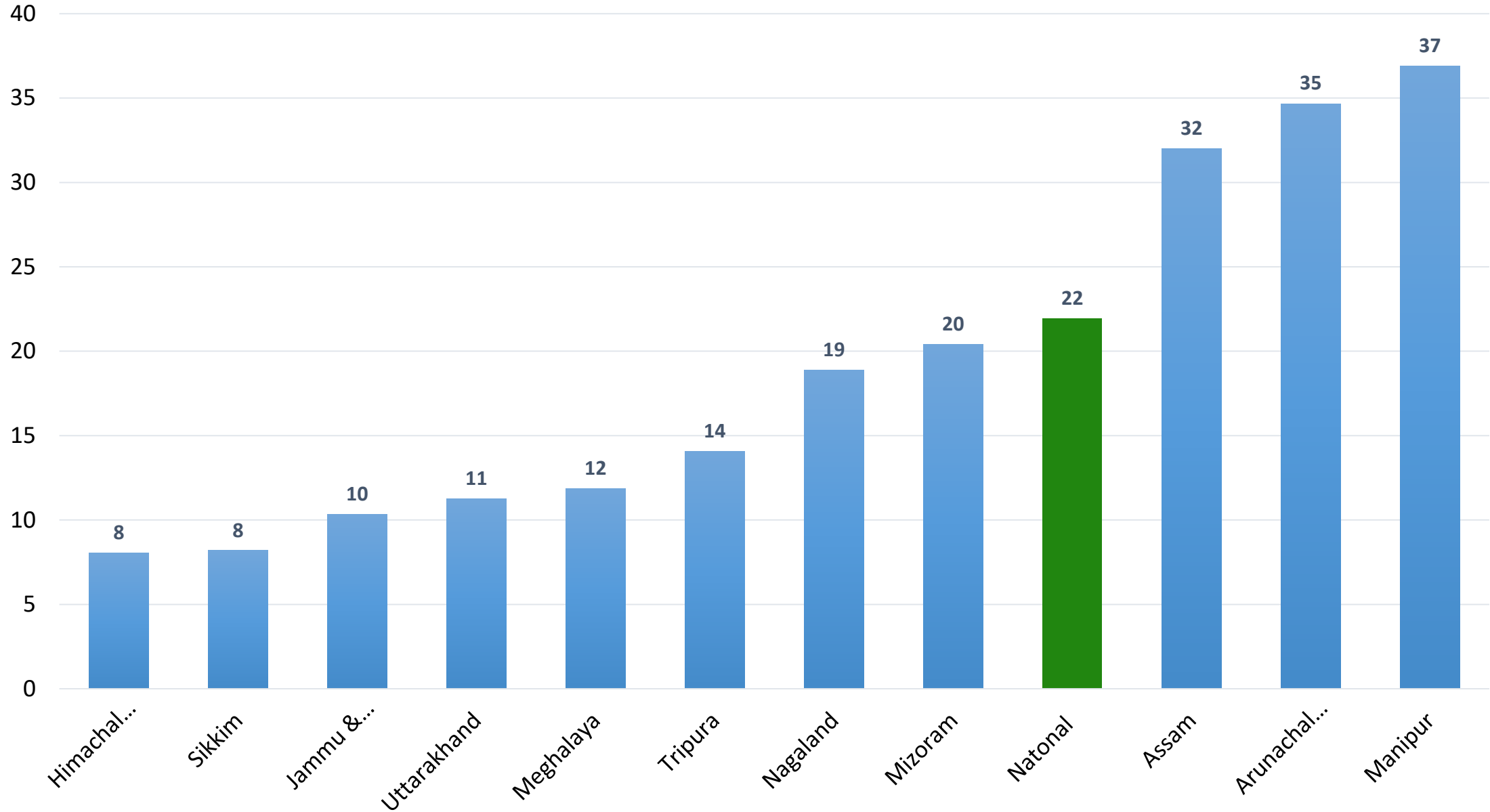


China- Mountain Poverty

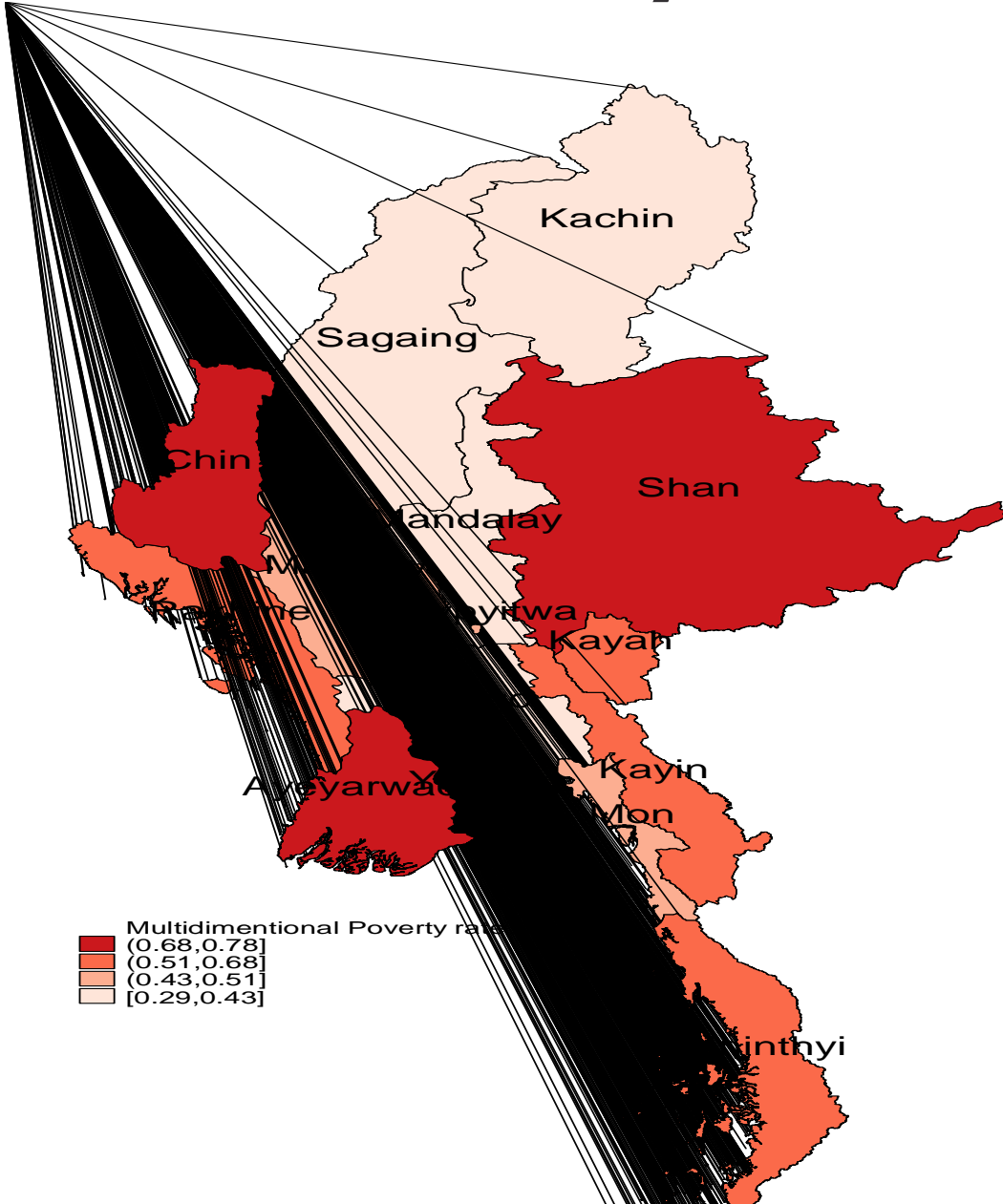
- Poverty is mountain phenomenon



India – Mountain Poverty (Income)



Myanmar – Multidimensional Poverty

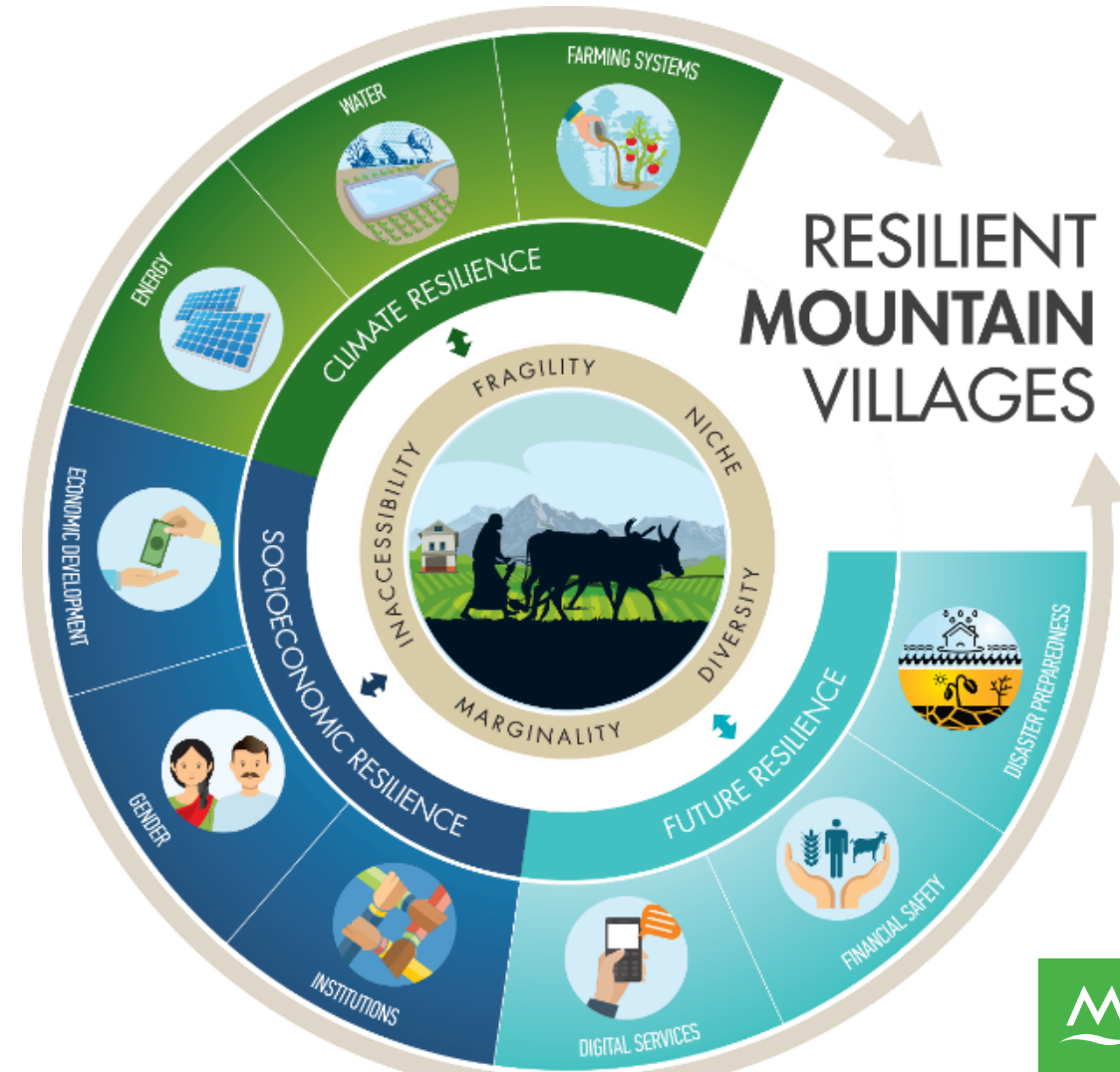


Challenges to sustainable development

- How to overcome mountain environmental challenges & harness niche products & services for sustainable development?
- How to integrate mountain/ highland communities to mainstream economies & societies?
- How to increase productivity without degrading resources?
- How to adapt with stress, shocks (scarcities/floods/droughts) and rising pressure on fragile resources?
- What pathways are available?

Pathways to sustainable development

- Understanding biophysical, socio-economic, & cultural context & specificities
- Adopting Site-specific strategies & approaches
- Recognizing and addressing the trade-offs between the immediate economic gain & long-term risks
- Integrated solution



A few examples from different countries of the Himalaya Regions



Harnessing Hydropower for Clean Energy: Bhutan

- Bhutan Rich in water resources -30,000 MW of hydro-electricity potential
- Currently, it generates 1, 600 MW electricity
- More than 98% of households in Bhutan have access to electricity
- 80% exports to India
- Power exports generates 25% of GDP & expected to increase by 56% by 2025
- Hydropower is the major source of export earning
- Hydropower is the backbone of Bhutan economy
- Bhutan- carbon negative, 70% land under forest



Horticulture based development in Himachal Pradesh, India

Himachal Pradesh suitable agro-climatic for growing subtropical & temperate fruits

Government supported horticulture development

Horticulture revolution in Himachal

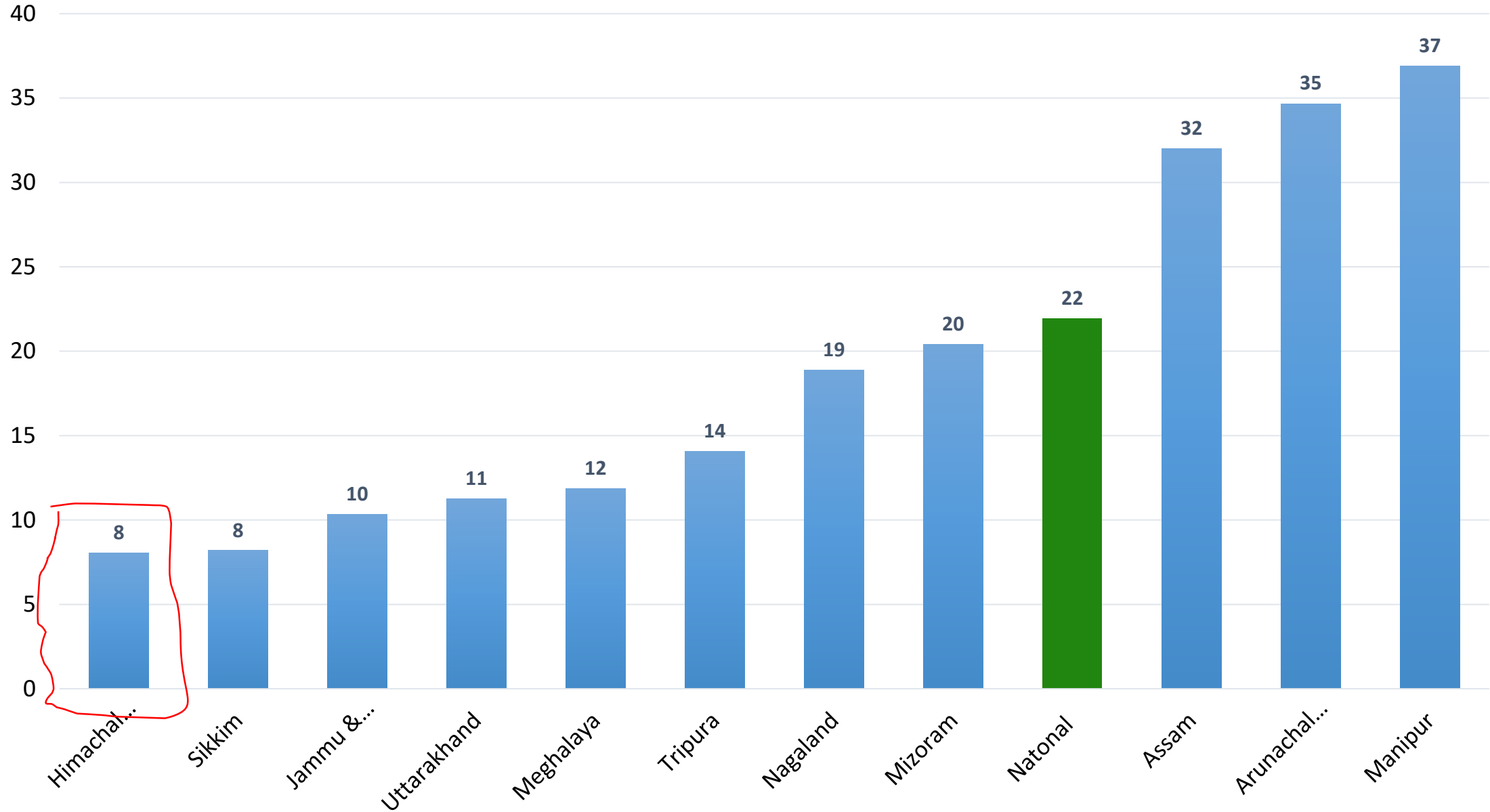
About 500,000 farmers are engaged in Horticulture

Himachal - Fruit Bowl of India

Employment Generation- livelihood diversification- high economic growth, low poverty



India – Mountain Poverty (Income)



Organic agriculture in Sikkim, India

- Sikkim is not suited for intensive agriculture
- Sikkim moved to organic agriculture for health & ecosystems
- Sale & use of chemical fertilizers & pesticides are banned
- Productivity of a few fruits reduced slightly, but many crops has remained stable
- Premium price for organic food
- New organic image - New attraction for tourists
- Carbon neutral- First organic state in the world



High value nutritious crops: High Mountain of Nepal



Trout farming in Terraces in Nepal



Large cardamom based agroforestry - marginal lands

Cash-crop, high value, low-volume, low-input, not labor intensive, non-nutrient exhaustive, non-perishable

Fulfilling Mountain Specificity



Nitrogen fixing Himalayan Alder shade tree with large cardamom

Resource use efficiency: Byproducts from Cardamom



Diversification of high value cash crops



Diversifying livelihoods: Off-farm activities

Diversifying Livelihoods of CHT Hill Tribes



Tourism



Trophy Hunting in Chitral, Pakistan

- Mountain goats (Markhor) were at the verge of extinction in Chitral due to illegal poaching
- Community based conservation introduced in 1990
- A hunting trophy license is issued after a proper auction
- Annually, four hunting trophy licenses are issued for Markhor hunting
- 80% of the money collected is distributed among the local community, 20% is kept by the wildlife department
- Trophy hunt tourism



Integration of REDD+ in forest management

- REDD+ : Forestry for prosperity
- Community based forest management & carbon storage



2010



Community Forestry in Nepal

Thank you

Protect the pulse.

