Environmental systems and societies
Standard level
Paper 1

Practice Paper (Standard Level)

1 hour

Instructions to candidates

- This booklet contains all the resources to answer paper 1.

Figure 1(a): World map showing the location of Nepal

NEPAL

Figure 1(b): Map showing the location of Nepal

Figure 1(c): Fact file on Nepal

- Nepal has extremely varied terrain, ranging from lowland plains in the Terai in the south to the high Himalayan mountains in the north, including the world's highest peak, Mount Everest (8,848 m).
- Its land is physically divided into three main regions: the flat fertile Terai (about 17 % of land), the forested hilly middle region (about 68 %), and the high Himalaya region with snow and ice (about 15 %).
- The steep and rugged mountains make construction of infrastructure (roads, bridges, rail) costly and challenging, especially in remote valleys.
- Nepal's rivers originate largely in the Himalayas and are fed by glacial melt and monsoon rainfall, creating high flows during wet seasons that are ideal for hydroelectric power.
- The landscape supports rich biodiversity and forests, but forest cover is under pressure from firewood harvesting, clearing for agriculture, and development. Around 39 % of Nepal's land area is forested and nearly 30 % is agricultural land.
- Only about 16 % of Nepal's land is arable (used to grow crops), with much farming concentrated in the Terai and valley regions.
- Nepal has approximately 3,252 glaciers covering about 3.6 % of its area; these glaciers are retreating due to climate change, increasing risks of glacial lake outburst floods and landslides.
- Since the Forest Act (1993), Nepal has expanded community forestry, with government forest parcels handed over to locally managed Community Forest User Groups (CFUGs) under approved management plans.
- Community forestry has been linked to significant forest-cover gains in many hill regions through improved local stewardship and protection.
- Rural out-migration and agricultural land abandonment have contributed to forest regrowth in some areas over recent decades.
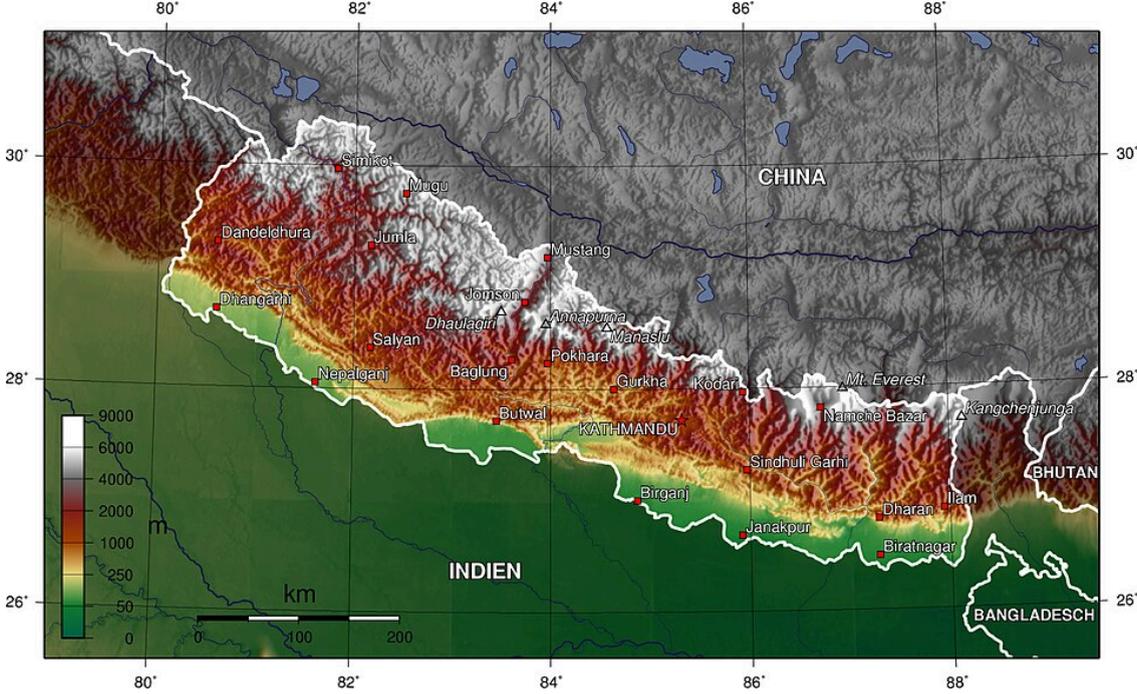
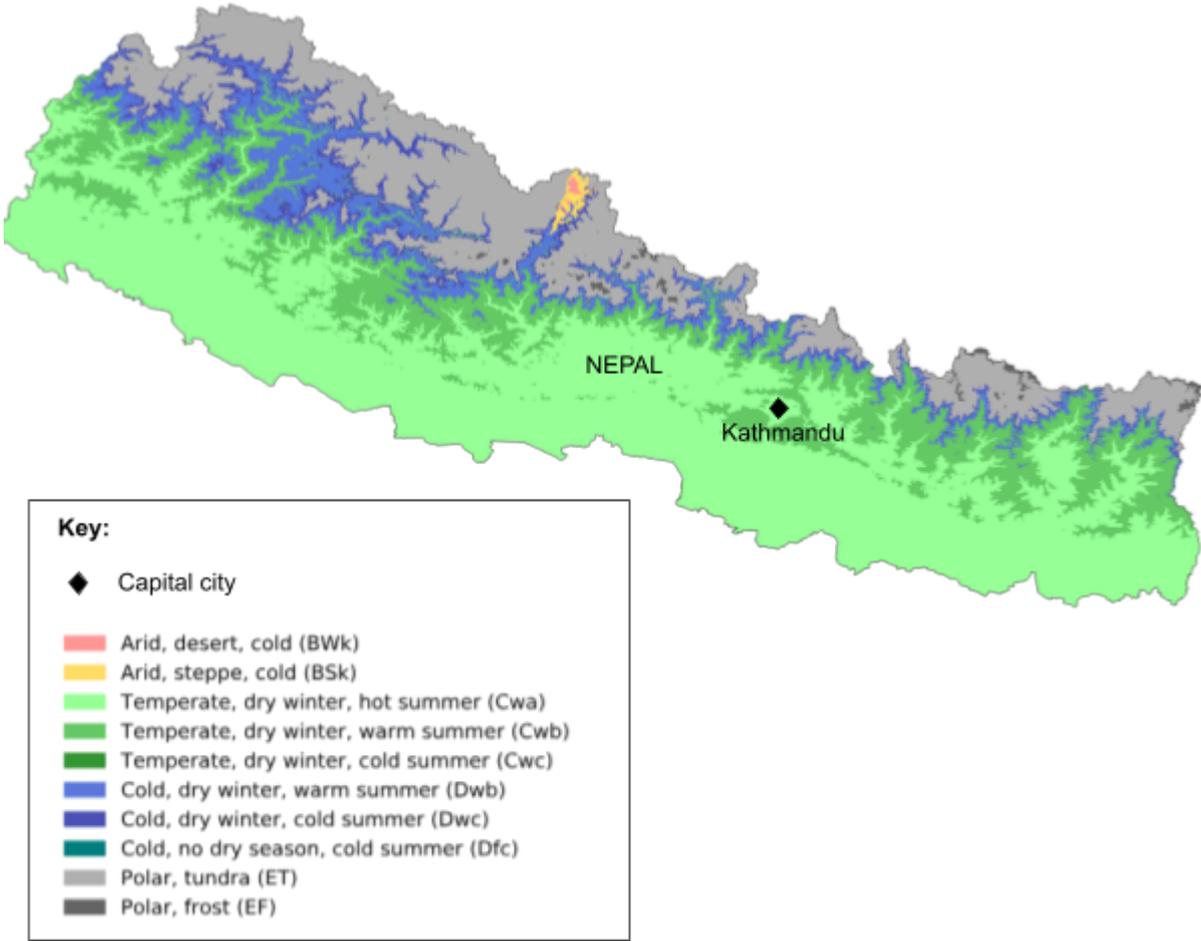# Figure 1(d): Elevation map of Nepal

Figure 1(d): Elevation map of Nepal

Figure 1(e): Climate classification map of Nepal

Figure 1(e): Climate classification map of Nepal

Key:

◆ Capital city

- Arid, desert, cold (BWk)
- Arid, steppe, cold (BSk)
- Temperate, dry winter, hot summer (Cwa)
- Temperate, dry winter, warm summer (Cwb)
- Temperate, dry winter, cold summer (Cwc)
- Cold, dry winter, warm summer (Dwb)
- Cold, dry winter, cold summer (Dwc)
- Cold, no dry season, cold summer (Dfc)
- Polar, tundra (ET)
- Polar, frost (EF)

Figure 2(a): Fact file on demography of Nepal, 2024/2025

Total population	~29 620 000
Natural increase rate	~1.17 %
Birth rate	~17.3 per 1000 population
Death rate	~5.6 per 1000 population
Total fertility rate	~1.9 children per woman
Life expectancy (total)	~72.7 years
Population of Kathmandu (capital)	~1 570 000

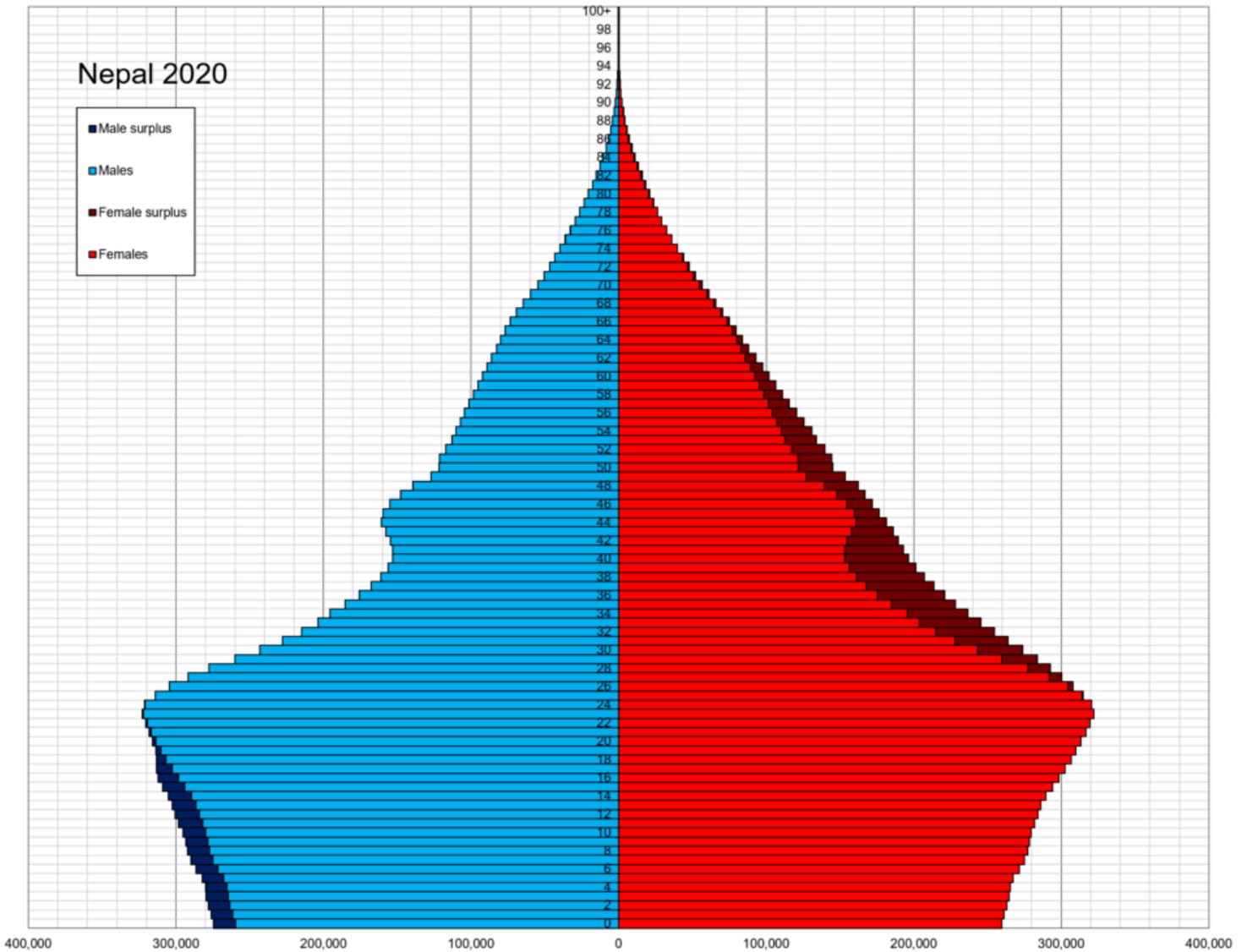**Figure 2(b): Population pyramid for Nepal, 2020**

Figure 3(a): Sources of energy used in Nepal, 2023

Oil and oil products

Coal and coal products

Hydropower

Solar, wind and other renewables

19.3%

7.2%

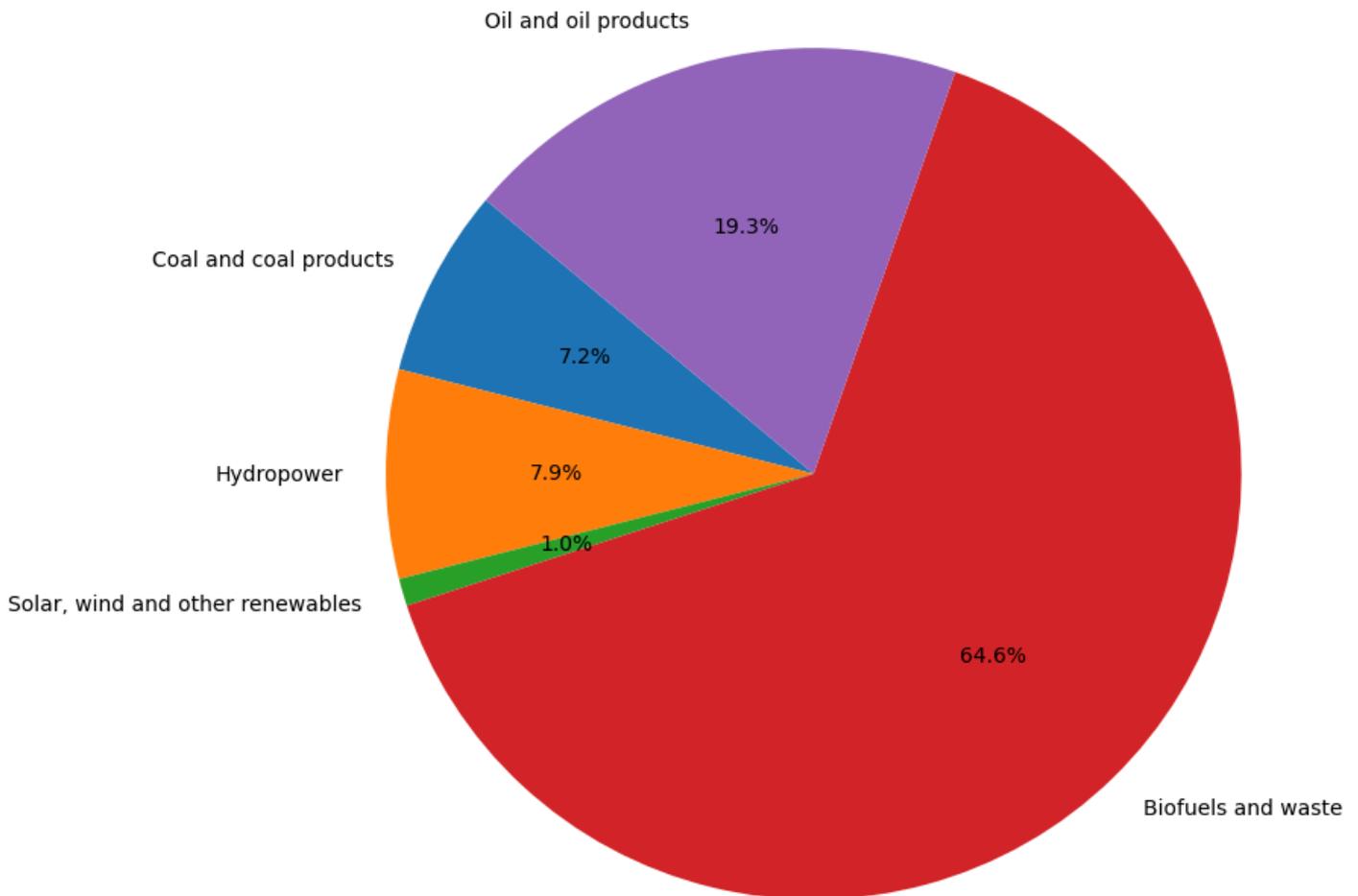7.9%

1.0%

64.6%

Biofuels and waste

Figure 3(b): Fact file on Nepal's energy

- Almost all of Nepal's electricity generation comes from hydropower, harnessing its mountainous river systems for renewable electricity.
- Electricity access in Nepal has increased dramatically over the last two decades — from around 19% of the population without electricity in 2000 to only about 6% without access today.
- Despite large river potential (~83,000 MW), Nepal has developed only a small fraction of its economically viable hydropower capacity — planned targets aim to expand generation capacity aggressively over the next decade.
- Hydropower capacity has more than doubled in recent years (e.g., from around 1,069 MW to over 2,100 MW within a few years), helping meet rising demand and reduce reliance on imports.
- Nepal exports surplus hydroelectricity to India during wet seasons and has begun negotiating trade with other neighbours for long-term electricity export.
- Most of Nepal's primary energy use still relies on traditional biomass (e.g., wood and agricultural residue) because electricity represents a small share of overall energy consumption.

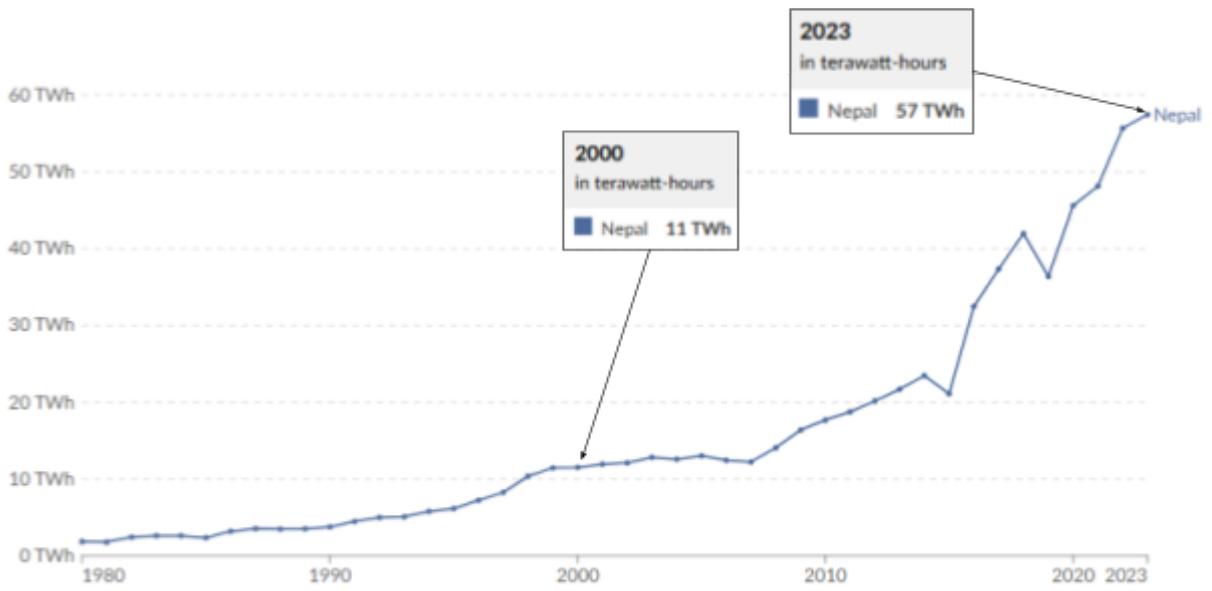**Figure 3(c): Total energy consumption for Nepal, 1980-2023**

2023
in terawatt-hours
■ Nepal   57 TWh

2000
in terawatt-hours
■ Nepal   11 TWh

Figure 4(a): Change in forest cover in Nepal, 1992-2016

1992
CHINA
26.2% tree cover
NEPAL
Kathmandu
INDIA

2016
CHINA
44.9% tree cover
NEPAL
Kathmandu
INDIA
100 km
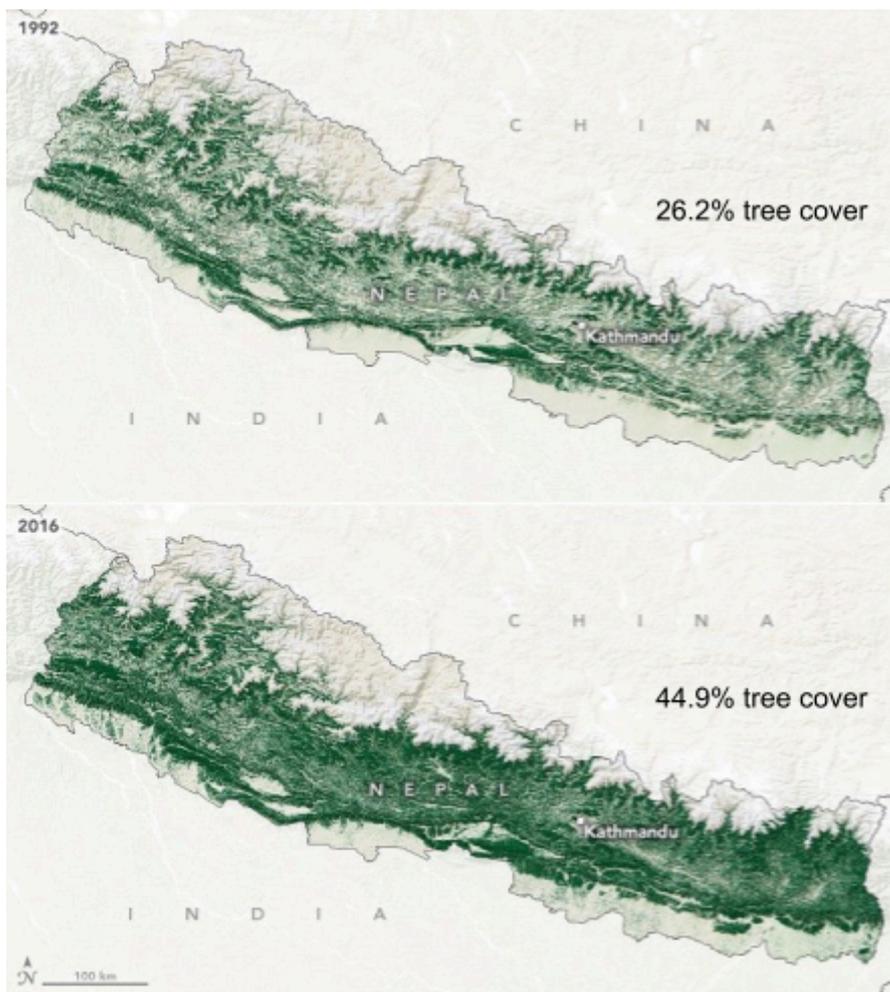
Figure 4(b): Protected areas of Nepal

National park
Wildlife reserve
Conservation area
Hunting reserve
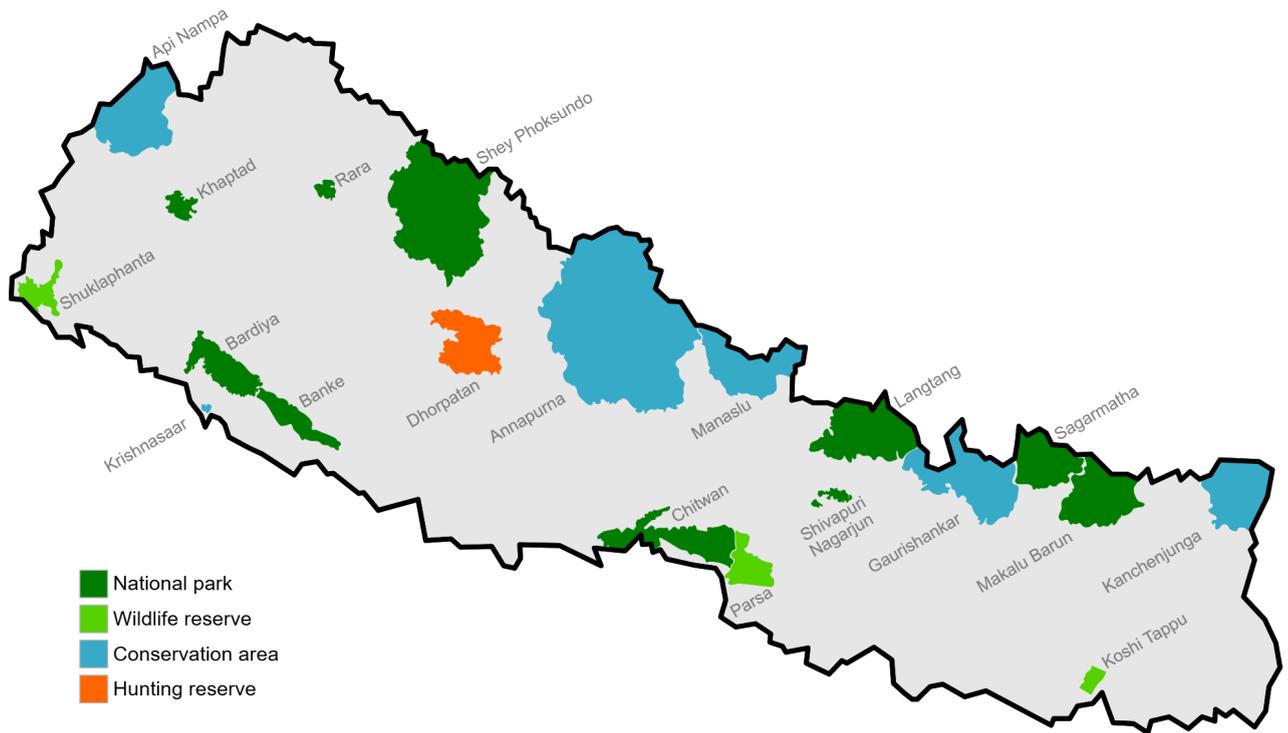
Figure 5(a): A simplified food web from Nepal

Bengal tiger (*Panthera tigris tigris*)

White-rumped vulture
(*Gyps bengalensis*)

Chital / spotted deer (*Axis axis*)

Wild boar (*Sus scrofa*)

Greater one-horned rhinoceros
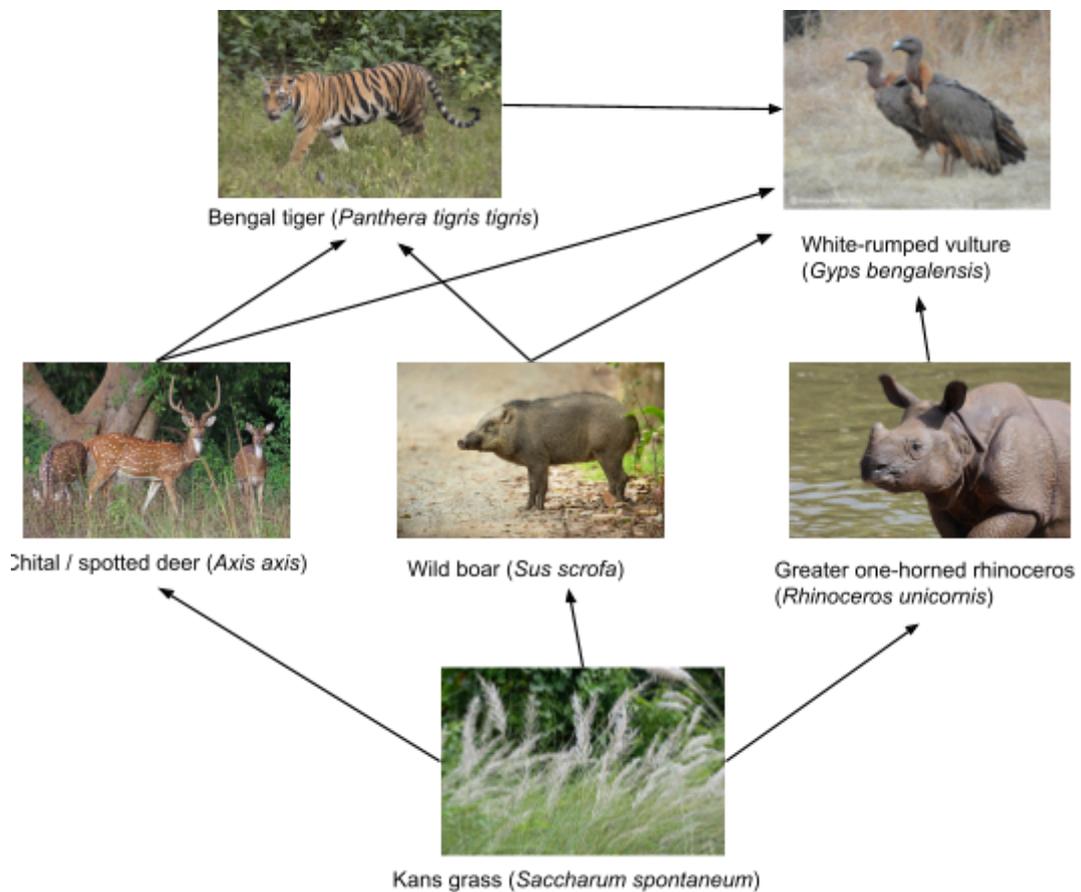(*Rhinoceros unicornis*)

Kans grass (*Saccharum spontaneum*)

Figure 5(b): Fact file on White-rumped vulture (*Gyps bengalensis*)

● It is listed as Critically Endangered on the IUCN Red List (BirdLife/IUCN assessment).
● The species has suffered an extremely rapid decline of >99% over three generations, primarily due to diclofenac (a veterinary anti-inflammatory drug) in livestock carcasses causing fatal kidney failure in *Gyps* vultures.
● The global population is estimated at about 4,000–6,000 mature individuals, and the overall trend is decreasing.
● In Nepal, veterinary diclofenac was banned in 2006, followed by the rollout of Vulture Safe Zones and promotion of vulture-safe alternatives (e.g., meloxicam).
● Long-term monitoring in Nepal found a rapid decline up to ~2013, followed by partial recovery (≈2013–2018) in some areas, linked to conservation measures reducing diclofenac availability.
● Conservation work in Nepal includes Vulture Safe Zones, community-managed safe feeding sites, and a Vulture Conservation Breeding Centre as part of national recovery efforts.

Figure 6: Ecological footprints of of five South Asian countries: Pakistan, India, Bangladesh, Nepal, and Sri Lanka, 1990-2022
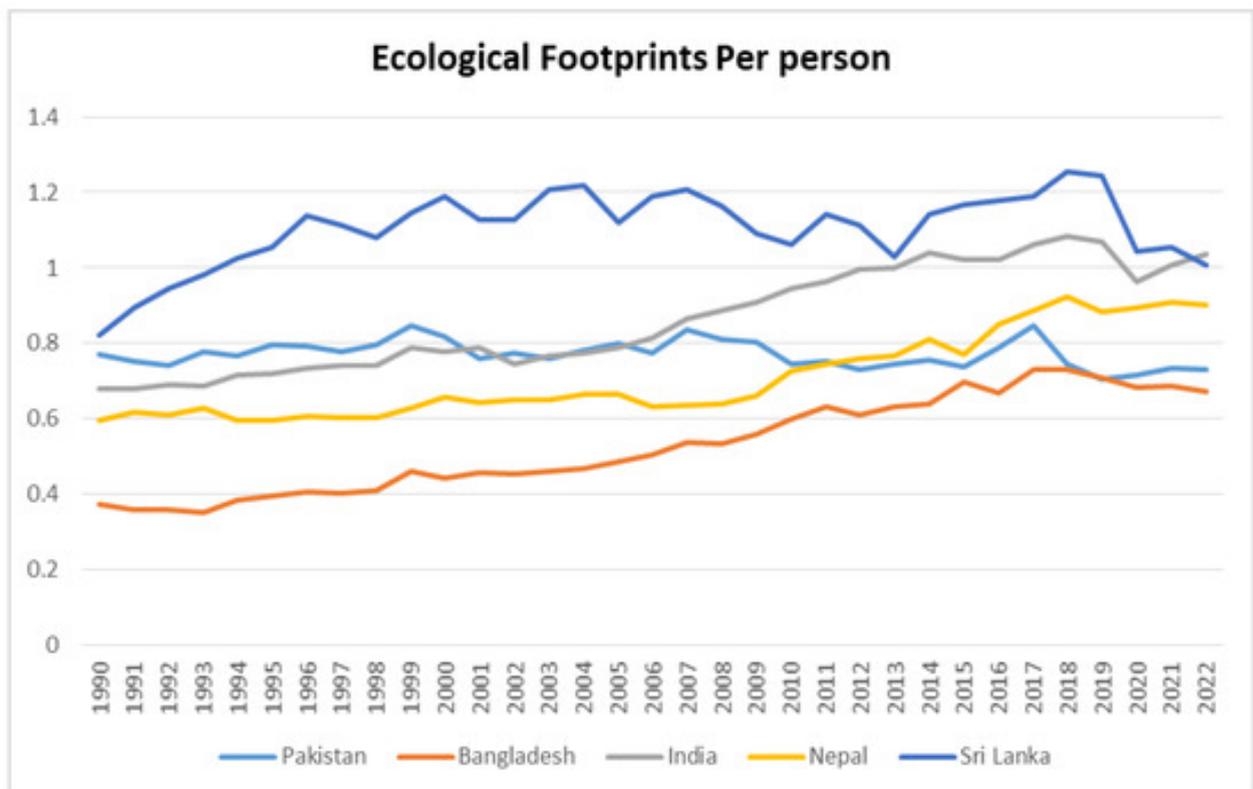
References:

Figure 1(a)
By TUBS, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=15111490

Figure 1(b)
By Globe-trotter - Own work based on Perry-Castañeda Map Collection, University of Texas Libraries, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=22746794

Figure 1(d)
By Captain Blood, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=15482287

Figure 1(e)
By Beck, H.E., Zimmermann, N. E., McVicar, T. R., Vergopolan, N., Berg, A., & Wood, E. F. - "Present and future Köppen-Geiger climate classification maps at 1-km resolution". Nature Scientific Data. DOI:10.1038/sdata.2018.214., CC BY 4.0, https://commons.wikimedia.org/wiki/File:Koppen-Geiger_Map_v2_NPL_1991%E2%80%932020.svg

Figure 2(b)
By Sdgedfegw - Own work, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=99605936

Figure 3(a)
Created in ChatGPT using data from: https://www.iea.org/countries/nepal/energy-mix

Figure 3(c)
U.S. Energy Information Administration (2025); Energy Institute - Statistical Review of World Energy (2025) – with major processing by Our World in Data. "Primary energy consumption" [dataset]. U.S. Energy Information Administration, "International Energy Data"; Energy Institute, "Statistical Review of World Energy" [original data].

Figure 4(a)
https://science.nasa.gov/earth/earth-observatory/how-nepal-regenerated-its-forests-150937/

Figure 4(b)
By CrlNvl - Own work, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=55399631

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By Charles J. Sharp - Own work, from Sharp Photography, sharpphotography.co.uk, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=65623793

Figure 6
Mehmood, U., Aslam, M. U., & Javed, M. A. (2023). Associating Economic Growth and Ecological Footprints through Human Capital and Biocapacity in South Asia. World, 4(3), 598-611. https://doi.org/10.3390/world4030037