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Q5

The process of desertification does not have climate boundaries. Justify with examples.

UPSC Civil Services Mains 2020 · GS I · 10 marks · Geophysical Phenomena

Important Geophysical phenomena such as earthquakes, tsunami, volcanic activity, cyclone etc., geographical features and their location-changes in critical geographical features (including water-bodies and ice-caps) and in flora and fauna and the effects of such changes.

Core demand of the question

- The process of desertification does not have climate boundaries. Justify with examples
- Keep the justification within a 10-mark length

Revision summary

Desertification is land degradation, not only the existence of a desert climate.

UNCCD already includes semi-arid and dry sub-humid lands.

Thar salinity and grazing push barrenness beyond dune cores.

The **Sahel** and Aral cases show drought plus policy, not a sealed climate wall.

Process follows soil and use, so it crosses climate boundaries.

Introduction

Desertification is the persistent degradation of drylands, but the process does not stop at a rainfall isohyet. Bad land use can desertify a semi-arid margin, and even wetter belts, while good management can hold a desert edge. Climate sets a risk. It does not draw a legal fence.

Body

Why climate is not a boundary

- **UNCCD** treats desertification as land degradation in arid, semi-arid, and dry sub-humid areas. The definition already crosses 'true desert' into farm and savanna.
- Overgrazing, salinisation, groundwater mining, and deforestation can push land across a threshold even when rainfall has not become Saharan.
- Conversely, irrigation and enclosure can green a desert margin without a climate-zone change on the map.

Examples

- **Thar:** Rajasthan's arid core is climatic, but canal-side waterlogging and salinity, plus grazing pressure on the Gujarat-Haryana fringe, spread desert-like soils beyond the old dune line.
- **Sahel:** the 1970s-80s famines mixed drought with overcultivation and herd pressure. Recovery and new degradation have both occurred under similar rainfall bands. The boundary moved with use, not only with ITCZ.

- **Aral Sea** basin: Soviet irrigation of cotton in a dry climate collapsed a sea and salted farm belts. The disaster is hydrological, not a new Köppen class arriving from the west.
- Himalayan rain-shadow and Western Ghat rain-shadow pockets, plus mined laterite plateaus, show barrenness inside monsoon India.

Justification

- Climate zones are averages. Desertification is a process of soil, vegetation, and people. It therefore leaks across maps wherever the land is pushed.

Flow diagram

Climate risk -> Dryland
Land use water mining -> Dryland
Dryland -> Thar fringe
Dryland -> Sahel
Dryland -> Aral basin

Conclusion

Desertification has climatic preference, not climatic borders. **Thar** fringes, the **Sahel**, and the **Aral basin** justify the claim: misuse and water politics can manufacture desert conditions outside the textbook desert.

Facts & figures

UNCCD

UN convention that defines desertification in drylands beyond hyper-arid cores.

Thar

Indian arid region where canals, salinity, and grazing extend degradation onto the fringe.

Sahel

African dry savanna whose famine decades mixed rainfall failure with land pressure.

Aral Sea

Irrigation diversion that desiccated a lake and salted surrounding farmland.

ISRO desertification atlas

Indian mapping that shows degradation in many districts, not only in the Thar core.