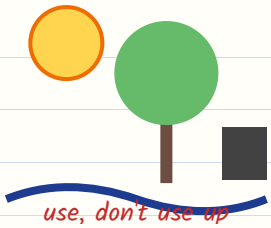
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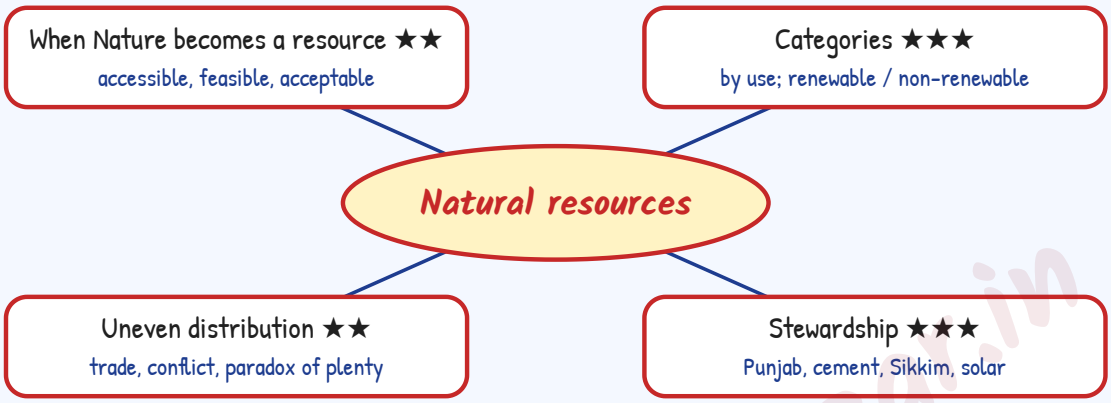
Class 8 · Social Science · Part 1 · Chapter 1 · Geography

Natural Resources and Their Use



New NCERT Exploring Society: India and Beyond, Grade 8 · 2026-27

Chapter map (★ = important for tests)



What is inside

1. When does Nature become a resource?
2. Categories by use; restoration and regeneration
3. Renewable resources; ecosystem services
4. Non-renewable resources; mineral map
5. Distribution: trade, Kaveri, paradox of plenty
6. Stewardship: groundwater, soil, Punjab caselet
7. Cement, Auroville, Vṛikshāyurveda, Sikkim caselet
8. International Solar Alliance; fairness; lokasangraha
9. Questions and activities: all 5 answered
10. Toolkit; exam-style questions, 3 case studies, practice set of 48 questions, 20 MCQs, 6 A–R, answers

★ **Exam tip:** **Score here**: three tests for a resource (**technologically accessible, economically feasible, culturally acceptable**); the two ways to categorise (by **use**; **renewable / non-renewable**); and the case facts: **80%** of Punjab over-exploited, India's coal ≈ **50 years**, Sikkim **100% organic in 2016**, ISA **2015**.

Big questions: How do we categorise natural resources? How is their distribution linked to life? What happens when we overexploit them?

Definition ✎ **One-line chapter**: Nature's gifts become resources when we can use them; renewables stay renewable only if we let Nature restore and regenerate them, and non-renewables must be used wisely, so we must act as stewards.

Based on NCERT "Exploring Society: India and Beyond" Grade 8 Part 1 (2026-27), Chapter 1. Maps and figures redrawn, answers written by us. New book: questions are Exam-style.

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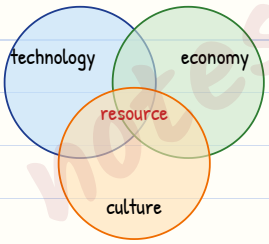
Opening quote (Christiana Figueres and Tom Rivett-Carnac, *The Future We Choose*): we must move toward a **regenerative economy** that works in harmony with Nature, repurposes used resources, minimises waste and replenishes depleted resources. Images: Dudhsagar waterfall (Goa), a **microhydel plant** in Himachal Pradesh (flowing water → electricity), an **offshore oil rig** (petroleum from below the seabed).

When does Nature become a resource? ★★

Definition ✎ **Nature**: the totality of life and non-life forms in our environment **not created by humans**. When humans use them for sustenance or to make things, they become **resources**. A tree exists on its own; when we cut it and make furniture, we see it as a resource. **Natural resources**: materials and substances that occur in Nature and are **valuable to humans**.

Three conditions for something to be a resource

Condition	Example of failing it
Technologically accessible	petroleum deep under the ocean that we cannot reach
Economically feasible	extraction cost too high
Culturally acceptable	cutting trees in **sacred groves**



all three must hold

Ans. **"Exploitation"** normally sounds negative; here it simply means the **extraction, utilisation and consumption** of natural resources. Earth's treasures, many formed over **millions of years**, include obvious ones (water, air, soil) and not-so-obvious ones (coal, petroleum, precious stones, metal ores, timber).

Don't miss out: Nature as sacred. In many indigenous traditions Nature is a **nurturer and nourisher**. Practices: **tulasī pūjā** (Fig. 1.6), sacred groves, worship of rivers, banyan and peepal, offering **arghyam** (water) to Sūrya, gentle ploughing that retains soil moisture (Fig. 1.4), honey collected without destroying the hive (Fig. 1.5).

★ ***Exam tip:*** **Think about it answered**: everything around us leads back to Nature: cotton shirt (cotton plant), wooden desk (tree), steel tiffin (iron ore), notebook (wood pulp), and even the **plastic button** (petroleum).

Categories of natural resources ★★★

Ans. As in Science, we **categorise** using shared characteristics (criteria) and **name** the categories, so we can discuss ideas with one word and communicate better (e.g. living and non-living).

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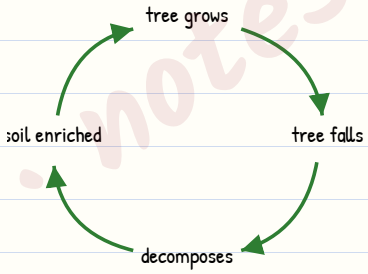
★ **Exam tip:** Think about it answered: **criteria** for categorising resources: by **use** (life, materials, energy); by **renewability** (renewable / non-renewable); by **origin** (biotic from living things / abiotic); by **distribution** (found everywhere / found in a few places); by **development** (in use now / potential).

1. By use

Category	What it means	Examples
Essential for life	life cannot exist without them; we cannot make them	air (atmosphere), water (rivers, ponds), food from soil and living things
Resources for materials	turned into useful or beautiful objects	wood into a chair or a statuette; marble, coal, gold
Resources for energy	power buildings, transport, production	coal, water, petroleum, natural gas, sunlight, wind

2. Renewable and non-renewable

Definition ✎ **Nature's principle**: it works in a **restorative and regenerative** way. **Restoration**: returning something to its original healthy state after damage (a cut on your skin heals; a forest recovers after a wildfire). **Regeneration** goes further: Nature's ability to **create new life** and conditions for thriving.



Nature works in cycles with no waste

Ans. **Examples of restoration and regeneration**: planting the trees that originally grew in a cleared area brings back food and shelter for birds and squirrels, so life returns. A fallen tree is eaten by bacteria, fungi and insects, becomes soil, and new trees grow from seeds; eventually some fall and the cycle starts again.

Renewable resources ★★★

Definition ✎ Resources that Nature **renews over time**: abundant sunshine; rivers fed by rain and melting glaciers; forests that renew themselves; soil replenished by natural processes. Solar, wind and water energy and timber are renewable **as long as we manage them sustainably**. **Condition**: the natural rhythm of restoration and regeneration must **not be disturbed**; harvest timber faster than trees grow and the forest is depleted.

✗ **Don't do this:** **Cycles already disturbed**: fossil fuel-driven industrialisation and cutting forests have raised temperatures; some Himalayan **glaciers** melt faster than snowfall replaces them, threatening **water security** for people in the plains who depend on this "**water tower**".

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Don't miss out: tuna. Communities traditionally avoided fishing in the **spawning season**. Commercial fishing led to over-fishing; tuna fell so fast that countries signed agreements to control fishing. Tuna keep the ocean balanced by eating smaller fish and shrimps, and are still declining.

Ans. **Industrial waste** (Fig. 1.10): industries make goods we need but often release wastes into rivers. Many cannot decay into food for any lifeform, so the river's cycle breaks and the river becomes **poisonous**, unable to support life.

★ ***Exam tip:*** **Let's explore answered: human actions that stop Nature restoring itself**: dumping garbage and plastic in drains and lakes, sewage in rivers, cutting trees for roads, concreting all open ground, burning crop stubble, over-pumping borewells. **Interventions**: waste segregation and composting, sewage treatment, tree planting with native species, rainwater harvesting pits, reviving lakes, banning single-use plastic.

Definition ✎ **Ecosystem functions and services**: Nature's inherent ways of working are **ecosystem functions** (a forest filters water, prevents soil erosion, provides habitat). When these benefit humans (clean water, protected farmland, pollinated crops) they are **ecosystem services**.

Oxygen numbers: a mature tree produces about **275 litres** of oxygen a day; a person needs about **350 litres** a day. So each of us needs the oxygen of more than one tree.

Ans. **Let's explore: research renewables in your region** (sample report): rivers and lakes have shrunk, groundwater has fallen, tree cover reduced by construction; reasons: urban growth, encroachment, over-pumping; remedies: protect lakes, recharge wells, plant native trees.

Non-renewable resources ★★★

Definition ✎ Created over **long periods**; cannot be replenished at the rate we use them: fossil fuels (**coal, petroleum**), minerals and metals (**iron, copper, gold**). India has large coal reserves, but they may last only about **another 50 years** as electricity demand rises with population and development. Until sustainable options spread, use coal **judiciously**.

★ ***Exam tip:*** **Let's explore answered**: non-renewables we use daily: petrol/diesel (bus, scooter), LPG, coal-based electricity, plastic, metal utensils. Substitutes: electric or CNG vehicles and cycling, solar cookers and biogas, solar or wind electricity, cloth and jute bags, recycled metals. Steps to switch: rooftop solar, public transport, energy-efficient appliances, recycling.

Distribution of natural resources ★★

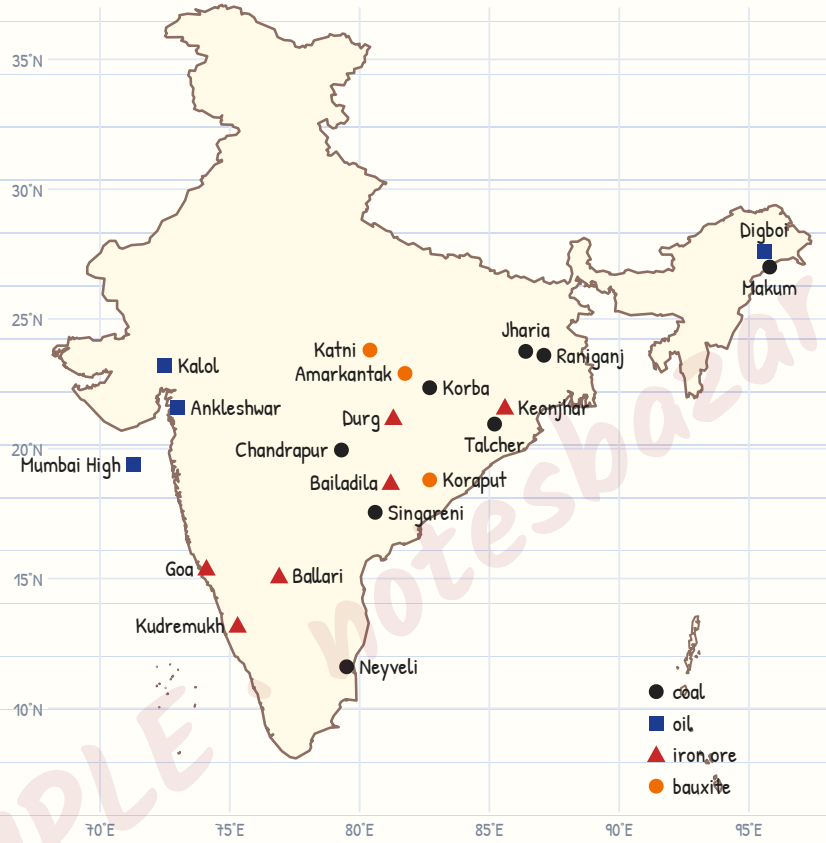
Ans. Resources are **not evenly distributed** across the planet or within countries. This shapes **settlements, trade, international relations** and even **conflicts**: many wars have been fought to control resources.

Mineral	Main areas (Fig. 1.11)
Coal	Jharia, Bokaro, Raniganj (Jharkhand–West Bengal), Korba, Talcher, Chandrapur, Singareni, Neyveli, Makum

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Oil	Digboi, Naharkatia, Moran, Hugrijan (Assam); Mumbai High, Bassein (offshore); Ankleshwar, Kalol (Gujarat)
Iron ore	Bailadila, Durg, Gua, Keonjhar, Mayurbhanj, Ballari, Kudremukh, Chikkamagaluru, Chitradurga, Goa, Ratnagiri
Bauxite	Amarkantak, Katni, Bilaspur, Koraput

★ **Exam tip:** Pattern: coal and iron ore cluster in the **east-central plateau** (Jharkhand, Odisha, Chhattisgarh); oil in **Assam and the western coast**.



Important minerals (redrawn from Fig. 1.11; outline and positions approximate, not to scale)

Implications of distribution ★★

Benefits	Costs
industries near resources create **jobs** for local people	people in resource-rich areas often **displaced** from their homes
townships grow, expanding opportunities for others	**sacred places** threatened, leading to **conflicts**
modern facilities improve the **quality of life**	short- and long-term damage to the environment

> **Ans. Trade**: national and international trade depend on where resources are. With human knowledge and skills they create unique products like **Wootz steel**; trade fuelled large empires in India.

> **Ans. Sharing across boundaries**: Nature ignores political borders. **Kaveri** water is shared by **Karnataka, Tamil Nadu, Kerala and Puducherry** (Mettur dam, Tamil Nadu) through negotiation and careful management. The **Brahmaputra** (Yarlung Tsangpo in Tibet, Jamuna in Bangladesh) is shared by countries (Fig. 1.12).

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★ *Exam tip:* Let's explore answered: international conflicts: the Indus waters (India and Pakistan; Indus Waters Treaty 1960, put in abeyance by India in 2025), the Nile (Ethiopia's Grand Renaissance Dam, Egypt and Sudan), the Mekong (dams in China and countries downstream), oil in the Persian Gulf (Gulf War 1990–91).

The "Paradox of Plenty" ★★★

Definition ✎ Having plenty of natural resources does not guarantee prosperity. Some resource-rich regions grow more slowly: the natural resource curse or paradox of plenty. Often they cannot develop industries that turn resources into products of higher value (see "Factors of Production"). India has generally avoided this curse by investing in such industries.

★ *Exam tip:* Let's explore answered: inputs needed to use resources: technology and machines, skilled workers, money (capital), roads, railways and ports, electricity and water, research, and good governance and planning.

Remember: whether resources become lasting benefits or temporary windfalls depends on human knowledge, good governance and strategic planning, and on balancing extraction with sustainability.

★ *Exam tip:* Let's explore answered: two resources mapped: coal (Jharkhand, Odisha, Chhattisgarh, West Bengal; activities: mining, thermal power, steel) and iron ore (Odisha, Chhattisgarh, Karnataka, Goa; activities: steel plants, export). Extraction gives jobs now but causes deforestation, displacement and pollution; responsible use: reclaim mined land, recycle steel, share benefits with local people.

Responsible and wise use: stewardship ★★★

Definition ✎ Stewardship: respecting Nature and using resources so that renewables can restore and regenerate, and non-renewables are used responsibly and judiciously. Careless use has caused pollution, biodiversity loss (decline in the variety of life on Earth) and climate change, faster in recent years.

Restoring renewables: two examples

Ans. Groundwater: in most states farmers pump water faster than the water table refills; the deficit builds up, raising costs and finally leaving no water; many growing cities may soon run out. Remedies: traditional water harvesting, reviving ponds and tanks, cutting wasteful use, treating and reusing water.

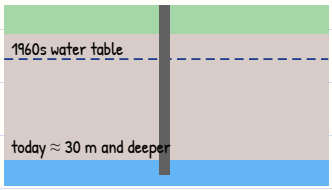
Ans. Soil: improper use of chemical fertilisers and pesticides has degraded soil (Fig. 1.14: crop failure). Traditional farming saw soil as Mother Earth and used cow dung and natural fertilisers, mulching, multi-cropping: holistic soil management we must relearn.

Caselet: overexploitation of groundwater in Punjab

- Punjab was home to the Green Revolution, which helped India become self-sufficient in food.
- In the 1960s farmers shifted to high-yielding varieties of wheat and paddy needing more water; they pumped groundwater.
- Free power led to over-pumping (still common in much of India).
- Chemical pesticides and fertilisers dissolved into groundwater, causing health hazards.
- Groundwater is now inaccessible up to about 30 metres in large areas; almost 80% of Punjab is "over-exploited" (drawn much faster than it can be restored).

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- **Lesson**: food security was ensured in the short term, but long-term damage will take time and effort to heal.



water table falling (schematic)

Fig. 1.17: the depth-to-water-level map of Punjab (June 2022) shows large central districts (around Sangrur, Moga, Ludhiana, Patiala) with water **20–40 m and more than 40 m below ground** (m bgl = metres below ground level).

The case of cement ★★

Ans. Houses, schools, hospitals, bridges, roads and airports need cement, but its production is one of the **most polluting industries**: fine dust enters the lungs of people and animals, settles on leaves (reducing yields) and pollutes soil and water. The **Central Pollution Control Board** (CPCB) has guidelines to minimise it.

Ans. **Alternatives**: traditional materials like **stone and mud** (Jaisalmer fort, a 12th-century mud structure later refurbished with sandstone), new **plant-based** materials, and **recycled** waste plastic. **Auroville Earth Institute** (UNESCO Chair for Earthen Architecture) builds modern mud buildings: less polluting, local jobs, suited to the climate.

Vṛikṣhāyurveda (vṛikṣha = tree, āyurveda = science of life): an ancient Indian botanical science, formalised in **Surapala's Vṛikṣhāyurveda** (about the **10th century CE**). It recommends plants for different soils; methods of seed collection, preservation and pre-planting treatment; irrigation by species, growth stage and season; **natural pest repellents** and companion plants; **crop rotation and mixed cropping**; and ploughing that keeps soil moist and helps fungi, bacteria and earthworms.

Caselet: Pema's farm in Sikkim

Stage	What happened
Problem	declining yields, mounting debts from expensive chemical inputs
Decision	the state government promoted organic farming; the family switched
Hard start	yields dropped at first as the soil recovered from years of chemicals
Methods	compost, natural pest repellents from **neem and garlic**, multiple crops through the year
Result (~5 years)	farm thriving; **cardamom, ginger** and traditional vegetables sold at premium prices

Ans. In **2016** Sikkim became a **100% organic state**: biodiversity flourished (insects and birds returned), tourism grew, and farmers' incomes rose about **20%** on average: a **global model** of sustainable agriculture.

★ ***Exam tip:*** **Compare**: Punjab shows the cost of chasing short-term output; Sikkim shows a whole region can switch to sustainable farming and gain both ecologically and economically.

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Responsible and judicious use of non-renewables ★★

Ans. Use non-renewables so they **last long enough** for humanity to find sustainable alternatives; switch to **renewable energy** for as many purposes as possible. Fig. 1.21: one of the world's largest solar parks, in **Rajasthan**, can power about **15%** of Rajasthan's current needs; Fig. 1.22: a solar farm near **Raichur**, Karnataka.

Definition ✎ **International Solar Alliance**: **India and France** launched the International Alliance for Solar Energy in **2015**, a coalition of **sunshine-rich countries** committed to solar power. India has channelled billions into solar projects in developing nations, shared expertise and created affordable financing. The **Bhadla Solar Park** symbolises India's solar ambitions: environmental responsibility and economic opportunity.

✗ **Don't do this:** **Fairness**: access to resources, even water and clean air, is often **unfair**. Many city areas lack regular drinking water; air pollution from industries and fossil fuels hurts those least able to protect themselves.

Lokasangraha (Bhagavad Gītā): everyone must rise above personal desires and act for the **wellbeing of all**. We must be **stewards** of resources toward restoration, regeneration and sustainability.

Before we move on

- "Natural resources" are materials and substances in Nature that are valuable to humans.
- Resources can be categorised in different ways; **renewable and non-renewable** are useful categories.
- The **resource curse** can be overcome by investing in technology and skills.
- Do not overexploit renewables; use non-renewables wisely to stretch them longer.

A note on history's darker periods (end of chapter): history includes wars and cruelty. The book's approach is to study darker periods **with detachment and sensitivity**: understand what made them possible so they do not recur, but **never blame anyone living today** (e.g. today's Germans are not to blame for Nazism in World War II, 1939–45).

★ **Exam tip:** **Let's explore answered: resources in your region** (example, Odisha): iron ore, bauxite, coal and forests in the hills; fish along the coast; fertile rice plains. They are unevenly spread: minerals in the interior plateau, fish on the coast.

Questions and activities

1. What can make a renewable resource non-renewable tomorrow? Describe actions that can prevent this.

Ans. A resource stays renewable only if Nature can **restore and regenerate** it. It becomes non-renewable (at least for a long time) when used **faster than it renews** or when its renewing cycle is damaged:

- **Groundwater**: pumped faster than rain refills it; almost **80%** of Punjab is over-exploited, water deeper than 30 m in large areas.
- **Forests**: timber cut faster than trees grow.
- **Fish**: commercial over-fishing (tuna) faster than they breed.

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- **Rivers**: untreated industrial waste poisons them; global warming melts Himalayan glaciers faster than snowfall replaces them.
- **Soil**: degraded by careless chemical fertilisers and pesticides.

Prevention: rainwater harvesting, reviving ponds and tanks, treating and reusing water, less water-hungry crops; letting fish and forests recover (no fishing in spawning season, replanting native trees); compost, mulching, mixed cropping, organic farming (Sikkim); treating industrial waste; renewable energy to slow global warming.

2. Name five ecosystem functions that serve humans.

Ans.

1. **Producing oxygen** (trees and plants).
2. **Filtering and storing water** (forests, wetlands recharge groundwater).
3. **Preventing soil erosion** (roots hold soil, protecting farmland).
4. **Pollination** of crops (bees, butterflies, birds).
5. **Providing habitat and food** (forests and oceans).

Others: decomposing waste and recycling nutrients, controlling floods, moderating climate. When they benefit us they are **ecosystem services**.

3. What are renewable resources? How are they different from non-renewable ones? How can we keep them available? Give two examples.

Ans. **Renewable**: renewed by Nature's cycles if used sustainably (sunlight, wind, flowing water, timber, fish, soil). **Non-renewable**: formed over millions of years, cannot be replaced as fast as used (coal, petroleum, natural gas, iron, copper, gold; India's coal may last ≈ 50 years).

	Renewable	***Non-renewable***
Renewal	by natural cycles	millions of years; not at our rate of use
Examples	sun, wind, water, forests, soil	coal, petroleum, iron ore, gold
Care	don't use faster than they regenerate	use carefully; find substitutes

Ans. **Two examples**: (1) **Water**: harvest rainwater, revive ponds and tanks, drip irrigation, no over-pumping. (2) **Forests**: cut only what can regrow, replant native trees, protect sacred groves. (Also organic farming; fishing only outside the breeding season.)

4. Identify cultural practices in your home and neighbourhood that show mindfulness in using natural resources.

Ans. (Depends on your area.) Common examples:

Practice	***Examples***
Nature as sacred	sacred groves never cut; worship of tulasī, banyan, peepal; arghyam to the Sun in gratitude
Saving water	rainwater in tanks, stepwells and village ponds; water from washing rice or vegetables used for plants
Avoiding waste	banana or sal-leaf plates; cloth bags; mending clothes; passing things to younger siblings
Food and farming	cow dung manure and fuel; composting kitchen waste; no fishing in the breeding season

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Saving energy	switching off lights and fans; drying clothes in the sun; walking or cycling short trips

5. What should we keep in mind when producing goods for our current use?

Ans.

- **Sustainable rate**: renewables no faster than they regenerate; non-renewables carefully while substitutes are developed.
- **Less pollution and waste**: treat industrial waste before release; cement factories should follow **CPCB** rules to cut dust; reuse and recycle, as Nature's cycles leave no waste.
- **Sustainable materials and energy**: local and traditional materials like stone and mud (Auroville), plant-based and recycled materials, solar power.
- **People and fairness**: create local jobs, do not displace communities or harm sacred places, keep fair access to water and clean air.
- **Future generations**: act as **stewards** and work for the wellbeing of all (**lokasangraha**).

★ ***Exam tip:*** **Exam framing**: for 5 marks, give 5 points under headings (rate, pollution, materials, fairness, future), each with one example from the chapter.

Don't miss out answered: traditional practices that keep balance: sacred groves (Devrai, Kavu, Sarna), seasonal fishing bans, Bishnoi protection of khejri trees and blackbuck, zabo farming in Nagaland, johads and kunds for water in Rajasthan.

Key terms toolkit ★★★

Term	Meaning
Nature	all life and non-life forms not created by humans
Natural resource	material in Nature valuable to humans (accessible, feasible, acceptable)
Exploitation (here)	extraction, utilisation and consumption of resources
Restoration	returning to the original healthy state after damage
Regeneration	Nature creating new life and conditions for thriving
Renewable resource	renewed by natural cycles if used sustainably
Non-renewable resource	formed over long periods; not replaced at our rate of use
Ecosystem function / service	Nature's working / its benefit to humans
Paradox of plenty	resource-rich regions failing to prosper (resource curse)
Over-exploited	used much faster than it can be restored
Biodiversity loss	decline in the variety of life on Earth
Stewardship	responsible care of resources for all, now and in future
Arghyam	offering of water as respect or gratitude
Lokasangraha	acting for the wellbeing of all (Bhagavad Gītā)

★ ***Exam tip:*** **Numbers and dates**: tree 275 L O_2/day vs person 350 L; coal ≈ 50 years; Punjab 80% over-exploited, water below 30 m; HYV shift 1960s; Sikkim organic 2016, incomes +20%; ISA 2015 (India + France); Surapala ≈ 10th century CE.

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Memory trick: TEC for a resource: Technology (accessible), Economy (feasible), Culture (acceptable).

Exam-style questions *Exam-style*

1. What are natural resources? [1]

   Ans. Materials and substances in Nature valuable to humans

2. Name the river shared by Karnataka and Tamil Nadu. [1]

   Ans. Kaveri

3. Give the three conditions for something to be a resource. [2]

   Ans. Technologically accessible, economically feasible, culturally acceptable

4. Differentiate restoration and regeneration. [2]

   Ans. Healing back to the original state vs creating new life and conditions

5. Explain the paradox of plenty. How has India avoided it? [3]

   Ans. Resource-rich regions grow slowly as they don't make high-value products; India invested in such industries

6. Why is cement production a concern? Suggest alternatives. [3]

   Ans. Dust harms lungs, plants, soil, water; stone, mud, plant-based and recycled materials

7. State two aims of the International Solar Alliance. [2]

   Ans. Harness solar power in sunny countries; finance and share expertise

8. Explain the categories of natural resources with examples. [5]

   Ans. By use (life: air, water; materials: wood, marble; energy: coal, sunlight) and by renewability (renewable: sun, forests; non-renewable: coal, metals), with the condition for renewables.

Case study 1: the Punjab water crisis Exam-style. Read the Punjab caselet.

(i) Which decade saw the shift to high-yielding varieties? **1960s**. [1]

(ii) Give two causes of over-pumping. **Water-hungry HYV crops; free power**. [2]

(iii) What share of Punjab is over-exploited? **Almost 80%**. [1]

(iv) How did chemicals affect people? **Dissolved in groundwater, health hazards**. [1]

Case study 2: Sikkim goes organic Exam-style.

(i) When did Sikkim become fully organic? **2016**. [1]

(ii) Why did yields fall at first? **Soil was recovering from chemicals**. [1]

(iii) Name two natural pest repellents. **Neem, garlic**. [1]

(iv) Give two benefits. **Biodiversity returned; incomes rose ~20%; tourism**. [2]

Practice set: test yourself *Exam-style*

Try every question before looking at the answers at the end of the chapter. 40 or more out of 48 means you are ready for the test.

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A. Fill in the blanks (1 mark each)

1. A mature tree produces about _____ litres of oxygen a day.
2. India's coal may last about _____ more years.
3. Cement guidelines are made by the _____.
4. Sikkim became 100% organic in _____.
5. Surapala's _____ dates to about the 10th century CE.
6. The ISA was launched by India and _____.
7. Offering water to the Sun is called _____.
8. The Mettur dam is on the _____ river.

B. True or false? (1 mark each)

1. Sunlight is a non-renewable resource.
2. Plenty of resources always makes a country rich.
3. Free power led to over-pumping in Punjab.
4. Petroleum is formed over millions of years.
5. Resources are evenly distributed across India.
6. Tuna help keep the ocean ecosystem balanced.
7. Auroville builds modern mud buildings.
8. Restoration goes beyond regeneration.

C. Very short answer (1 mark each)

1. Name one resource essential for life.
2. Name a famous Indian steel made from local iron.
3. Which park symbolises India's solar ambitions?
4. Name two oilfields in Assam.
5. What is biodiversity loss?
6. Name two iron ore areas in Karnataka.
7. What does m bgl stand for?
8. Name two crops sold by Pema's family.
9. Which idea of the Gītā means acting for all?
10. Name the Green Revolution state in this chapter.

D. Short answer I (2 marks each)

1. When does a tree become a resource?
2. Why are glaciers called a "water tower"?
3. How does industrial waste break Nature's cycle?
4. Give two benefits of industries near resources.
5. Give two costs of resource extraction for local people.
6. Why do resources cause tension between states?
7. How did traditional farming care for soil?

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8. Why is access to resources sometimes unfair?

E. Short answer II (3 marks each)

1. Explain ecosystem functions and ecosystem services with examples.
2. "Renewable resources remain renewable on one condition." Explain.
3. Describe three teachings of Vṛikṣhāyurveda.
4. How does uneven distribution of resources affect trade and conflict?
5. Suggest three steps to restore groundwater.
6. Why must non-renewables be used judiciously?

F. Long answer (5 marks each)

1. Describe the Punjab groundwater crisis: causes, effects and lessons.
2. Compare the Punjab and Sikkim caselets.
3. "We must be stewards of Nature." Explain with examples from the chapter.
4. Explain how the distribution of natural resources shapes life, with Indian examples.

G. Challenge (HOTS) questions

1. Is a sacred grove a resource? Use the three conditions.
2. Why might a farmer resist switching to organic farming at first?
3. A town grows around a coal mine. Why may its future be uncertain?
4. Why is it fair to call solar power both "responsibility and opportunity"?

Case study 3: the river and the factory Exam-style. A factory releases untreated waste into a river; fish die and villagers downstream fall ill.
(i) Which natural process has been disturbed? [1] (ii) Why can't the river clean itself? [1] (iii) Suggest two remedies. [2] (iv) Which ecosystem service has the village lost? [1]

My score (fill in after checking the answers)

Section	A /8	B /8	C /10	D /16	E /18	F /20	G (bonus)	Total /80
My marks								

Rough work

20 MCQs

1. A resource must be
(a) rare (b) man-made (c) accessible, feasible and acceptable (d) costly

2. Cutting trees in sacred groves fails the test of being
(a) culturally acceptable (b) feasible (c) accessible (d) renewable

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3. A non-renewable resource is
(a) wind (b) timber (c) sunlight (d) coal

4. Restoration means
(a) creating new life (b) returning to a healthy state (c) mining (d) recycling only

5. Sunlight, coal and wind are resources for
(a) materials (b) energy (c) food (d) shelter

6. A person needs about how much oxygen daily?
(a) 100 L (b) 275 L (c) 1000 L (d) 350 L

7. Mumbai High produces
(a) oil (b) iron ore (c) bauxite (d) coal

8. Jharia is known for
(a) gold (b) oil (c) coal (d) bauxite

9. Paradox of plenty is also called
(a) green revolution (b) regeneration (c) stewardship (d) resource curse

10. Kaveri water is shared by
(a) Punjab, Haryana (b) Karnataka, TN, Kerala, Puducherry (c) Gujarat, MP (d) Assam, Bengal

11. Over-exploited area of Punjab
(a) 50% (b) 20% (c) 80% (d) 5%

12. Punjab shifted to HYV seeds in the
(a) 1960s (b) 1940s (c) 1990s (d) 2010s

13. Cement factory pollution guidelines come from
(a) ISRO (b) CPCB (c) NITI Aayog (d) UNESCO

14. Auroville Earth Institute promotes
(a) steel (b) plastic (c) earthen architecture (d) glass

15. Sikkim became fully organic in
(a) 2005 (b) 2010 (c) 2020 (d) 2016

16. Natural pest repellents used by Pema
(a) neem and garlic (b) urea (c) DDT (d) salt

17. International Solar Alliance was launched in
(a) 2015 (b) 2010 (c) 2005 (d) 2020

18. Bhadla Solar Park is in
(a) Gujarat (b) Karnataka (c) Tamil Nadu (d) Rajasthan

19. Lokasangraha comes from
(a) Arthaśhāstra (b) the Bhagavad Gītā (c) Rigveda (d) Vṛikṣhāyurveda

20. Wootz is a type of
(a) cloth (b) pottery (c) steel (d) paint

1 (c) · 2 (a) · 3 (d) · 4 (b) · 5 (b) · 6 (d) · 7 (a) · 8 (c) · 9 (d) · 10 (b) · 11 (c) · 12 (a) · 13 (b) · 14 (c) · 15 (d) · 16 (a) · 17 (a) · 18 (d) · 19 (b) · 20 (c)

Assertion–Reason (6)

(a) Both true, R explains A. (b) Both true, R does not explain A. (c) A true, R false. (d) A false, R true.

1. A: Forests can become non-renewable. R: Timber may be cut faster than trees regrow.
2. A: Coal is a renewable resource. R: India has large coal reserves.
3. A: Sikkim's farm yields fell at first. R: The soil was recovering from years of chemicals.
4. A: Rich resources always bring prosperity. R: Some regions cannot make high-value products.
5. A: Cement is a polluting industry. R: India launched the International Solar Alliance.
6. A: Groundwater in Punjab is over-exploited. R: Free power led to over-pumping.

Key: 1 (a) · 2 (d) · 3 (a) · 4 (d) · 5 (b) · 6 (a)

Answers to the practice set

A. 1. 275 2. 50 3. Central Pollution Control Board 4. 2016 5. Vṛikṣhāyurveda 6. France 7. arghyam 8. Kaveri

B. 1. F 2. F (paradox of plenty) 3. T 4. T 5. F 6. T 7. T 8. F (regeneration goes beyond)

C. 1. air / water / soil 2. Wootz steel 3. Bhadla Solar Park 4. Digboi, Naharkatia (also Moran, Hugrijan) 5. decline in the variety of life on Earth 6. Ballari, Kudremukh (Chikkamagaluru, Chitradurga) 7. metres below ground level 8.

cardamom, ginger 9. lokasangraha 10. Punjab

D. 1. When we cut it and use its wood (e.g. furniture)

2. They store water as ice and feed rivers in the plains

3. Its waste cannot decay into food for life, so the river becomes poisonous

4. Local jobs; townships and better facilities

5. Displacement; threat to sacred places (conflicts)

6. Nature ignores borders, e.g. Kaveri sharing

7. Cow dung, mulching, multi-cropping (soil as Mother Earth)

8. Poor areas lack regular water; pollution hits those least able to protect themselves

E. 1. Functions: forest filters water, holds soil, gives habitat; services: clean water, safe farms, pollinated crops

2. Natural restoration and regeneration must not be disturbed (timber, glaciers)

3. Plants for each soil, natural pest control, crop rotation/mixed cropping, moisture-saving ploughing

4. Shapes trade routes and products (Wootz), wars over resources, sharing disputes (Kaveri, Brahmaputra)

5. Rainwater harvesting, reviving ponds and tanks, less wasteful use and reuse

6. They take millions of years to form; coal may last 50 years; we need time for alternatives

F. 1. See p. 7 2. Punjab: chemicals, HYV, over-pumping, short-term gain; Sikkim: organic, slow start, long-term gains

3. Groundwater, soil, cement alternatives, solar, lokasangraha 4. Settlements, jobs, townships, trade, displacement, Kaveri, paradox of plenty

G. 1. Its trees are accessible and feasible to cut but not culturally acceptable, so its timber is not treated as a resource; its other services (water, shade) still benefit people

2. Yields and income drop for the first few years

3. Coal is non-renewable and may run out in ~50 years; jobs depend on one industry

4. It protects the environment and creates industry, jobs and exports

Case study 3. (i) restoration and regeneration (Nature's cycle) (ii) the waste cannot decay into food for any lifeform (iii) treat waste before release; CPCB checks; switch to cleaner processes (iv) clean water (and fish)

Last-night summary

- Nature becomes a resource when it is technologically accessible, economically feasible and culturally acceptable.
- Categories: by use (life, materials, energy) and renewable (renewed by restoration and regeneration) vs non-renewable (coal, oil, metals; coal ≈ 50 years).
- Resources are unevenly spread: jobs and trade but also displacement and disputes (Kaveri); the paradox of plenty, which India has avoided.
- Stewardship: Punjab groundwater (80% over-exploited), soil care, cement alternatives (Auroville), Vṛikṣhāyurveda, Sikkim organic (2016).
- Renewable energy (ISA 2015, Bhadla), fair access, lokasangraha: act for the wellbeing of all.

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