

SI Environmental Science - Full Discipline Demo

Deforestation

Final Report - Answer Guide

Institution	Science Interactive University
Session	SI Environmental Science - Full Discipline Demo
Course	SI Environmental Science - Full Discipline Demo
Instructor	Sales SI Demo

Test Your Knowledge

Categorize each phrase to the mechanism of deforestation being described.

Clearcutting	Slash and burn	Selective logging
1	2	3

⌘ Leaves forest intact but less diverse

⌘ Results in a layer of ash which provides nutrients for crops

⌘ Subsistence agriculture technique for clearing a small area

⌘ Practice of removing all trees from a large, forested area

⌘ Creates expanses of exposed topsoil

⌘ Practice of removing only a few species of trees from a forest

Correct answers:

1 Practice of removing all trees from a large, forested area

Creates expanses of exposed topsoil

2 Results in a layer of ash which provides nutrients for crops

Subsistence agriculture technique for clearing a small area

3 Leaves forest intact but less diverse

Practice of removing only a few species of trees from a forest

Categorize each statement as true or false.

True	False
1	2

⌘ Small-scale subsistence agriculture is the primary source of global deforestation.

⌘ Boreal forests are clearcut primarily for agricultural use.

⌘ Deforested land is susceptible to erosion and other forms of storm damage.

⌘ Deforestation decreases the incidence of drought.

⌘ Preventative deforestation solutions are preferred over restorative solutions.

⌘ Deforested areas naturally reforest within a few years.

Correct answers:

1

Preventative deforestation solutions are preferred over restorative solutions.

Deforested land is susceptible to erosion and other forms of storm damage.

Small-scale subsistence agriculture is the primary source of global deforestation.

2

Deforested areas naturally reforest within a few years.

Boreal forests are clearcut primarily for agricultural use.

Deforestation decreases the incidence of drought.

Exploration

Deforestation occurs only in the tropics

☐ True

☒ False



_____ accounts for the majority of deforestation occurring in boreal regions.

- ☐ Commercial agriculture
- ☐ Subsistence agriculture
- ☒ Commercial logging
- ☐ Fuel wood removal

✓

Deforestation impacts include _____.

- ☐ decreased biodiversity
- ☐ food insecurity
- ☐ increased erosion
- ☒ All of the above

✓

Consumer decisions function as a preventative deforestation solution.

- ☒ True
- ☐ False

✓

Exercise 1

Why is it important to preserve the tropical forests of Madagascar?

Madagascar is the fourth largest island on Earth and a biodiversity hotspot. Over 90% of the estimated 250,000 species of plants and animals on the island are endemics, occurring nowhere else on Earth. These organisms risk extinction as forests are destroyed.

What is the primary cause of deforestation in Madagascar? Which solutions to deforestation best address this cause?

Slash and burn subsistence agriculture is the primary cause of deforestation in Madagascar. Community education and ecotourism development through land ownership transfers are effective solutions to subsistence agriculture deforestation. Education informs community members of the importance of forest preservation and ecotourism provides income to the residents for protecting the forest.

**Why are preventative solutions to deforestation more effective than restorative solutions?
What is the most successful restorative technique used in Madagascar?**

Preventative deforestation solutions are preferred over restorative solutions because of the time required for restoration and because artificially restored forests often lack the diversity of the original, intact forests protected by preventative solutions. Madagascar has had some success with artificially planting introduced tree species in the central highlands but has been less successful with planting native species.

Data Table 1: Madagascar Deforestation
(SAMPLE ANSWER BELOW)

Tropical forest loss (%)	80
Causes	Slash and burn agriculture, commercial agriculture, logging and firewood collection
Effects	Soil erosion, loss of biodiversity, economic impacts to pharmaceutical and ecotourism businesses
Solutions	Legislation to protect forests, reforestation efforts, ecotourism expansion.

Competency Review

_____ is the practice of removing all trees from a forested area resulting in expanses of exposed topsoil.

- ☒ Clearcutting

☐ Selective logging

☐ Slash and burn agriculture

☐ Reforestation

✓

_____ is the primary source of global deforestation.

- ☐ Commercial logging
- ☐ Commercial agriculture
- ☐ Mining
- ☒ Subsistence agriculture

✓

Deforested land is susceptible to erosion and other forms of storm damage.

- ☒ True
- ☐ False

✓

Preventative deforestation solutions to protect intact forests include _____.

- ☐ legislation
- ☐ community education
- ☐ land ownership transfers
- ☒ All of the above

✓

Preventative solutions to deforestation are preferred over restorative solutions because of the time and biodiversity challenges associated with reforestation.

- ☒ True
- ☐ False

✓

Most of Madagascar's endemic species are associated with the _____ ecosystem.

- ☐ boreal forest
- ☐ grassland
- ☒ tropical forest
- ☐ desert

✓

Commercial logging is the primary cause of deforestation in Madagascar.

☐ True

☒ False



_____ is a solution to deforestation from subsistence agriculture by providing an income stream to local residents.

☐ Logging legislation

☐ Natural reforestation

☒ Ecotourism

☐ Consumer choice



Extension Questions

The government of a developing country owns a significant area of intact tropical forest and wishes to both preserve the forest for future generations and maintain logging and pharmaceutical income generated by the forest. Apply your knowledge of deforestation sources, impacts, and solutions to suggest a plan for the government to follow. (SAMPLE ANSWER BELOW)

The government should set aside parts of the forest for selective logging and the harvesting of pharmaceutical plants. The government should pass laws to ban clearcutting and limit the amount of timber cut by selective logging. The remaining land could be transferred to a conservation organization or ecotourism business. Locals should be employed by any businesses operative within the forest to provide an income stream to acquire food so that subsistence agriculture is no longer required. Community education should also be offered to inform the locals on the importance of the forest and its resources.