# Creation Care in a Maasai Context

Prepared by Suzana Sitayo

## Lesson Plan #2) Maasai Creation Care

**Context: TEE & Mamas**

- This bullet and font style identify comments added by Beth.

## The surveys

- There is no survey with lesson 2.
- There are surveys before lesson 1 and after lesson 3.

## Lesson 2

| | | | |
|---|---|---|---|
| **Name** | **2) Pastoralist Maasai Traditional Environmental Knowledge for Creation Care** | **Teaching Equipment Needed** | • Pictures of the effects of climate change<br>• Optional: bring a 3-legged stool, *olorika*<br>• Flipchart, marker pen, clipper |
| **Context** | Students under TEE Program and Maasai mamas | **Student Supplies/ Handouts** | |

| | | |
|---|---|---|
| **Main Point** |  | **The Maasai world view—of the interdependence between humans, the environment, and *Engai*—is similar to Old Testament "Creation Triangle."** |
| **Learning Outcomes** | As a result of this lesson, the learner will: | |
| **Cognitive:** Know  | **Maasai**<br>• Understand that the Maasai triangulated worldview on the importance of harmony with *Enkai*, humans, and non-human creation for humanity wellbeing is similar to the "creation triangle" in the Bible.  <br>o The concept of blessing (*empiris e Engai*) or curse (*Engo'oki*) as a result of hostile relationship between man and God but also between humankind and non-human creation.  <br>o The Maasai worldview of ecosystem.<br>▪ **Side one:** The importance of land (*Oldonyo le Engai* for worship) water sources and good weather *(osupuko and orpurkel* for grazing) for human and livestock survival**.**<br>▪ **Side two:** The importance of livestock and plants (medicine) for human survival and for worship (animal for sacrifice and rituals, trees for altars, etc.).<br>• Know that the Maasai traditional environmental knowledge (TEK) are good ways to take care of creation.  <br>o Traditional land use plan e.g., zoning per season<br>o Managing of scarce resources<br>o Common use of nature and resources and the ecosystem<br>o Keeping trees for domestic, worshiping and medicinal purposes<br>o Prohibition of killing wild animals for cultural reason<br>o Keeping domestic animals for food and worship purposes<br>o Traditional rules, regulation and taboos for environmental conservation<br>o The responsibility of community leadership in environmental care. | |

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**Context: TEE & Mamas**

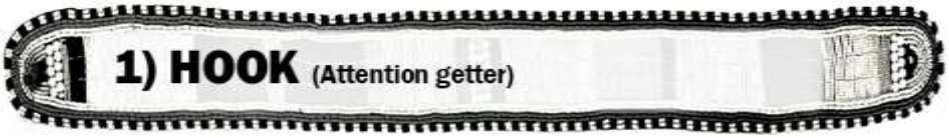
| | |
|---|---|
| | **Hope**<br>➢ BEE: This was identified and content is included below, but it would be stronger to develop this learning outcome here. |
| **Affective:** Feel  | • **Proud to be Maasai,** who sustain biodiversity, protect ecosystem and environmentally sustain livelihoods (not engaged in carbon generating industries/agrobusiness, etc.) who have the "…capacity to adapt to harsh environment characterized by the scarcity, dispersion and variability of natural resources over vast territories."[1] |
| **Applicative:** Do  | • Identify several challenges that prevent the applicability of Maasai TEK<br>• Identify **three ways** that Maasai traditional knowledge (TEK) and creation care practices are **also** best practices of climate change mitigation (reduction) and/or adaptation (increased resilience for climate change impacts).<br>• Identify **one or two new ways** that can expand traditional Maasai creation care for climate change mitigation and/or adaptation.<br>• **Write one stanza of a song** about traditional Maasai environmental knowledge and practices that are also best practices of climate change mitigation (reduction). Use the common melody that is known by most students. |

## Introduction

We have had the grace to participate in three important lessons about Creation Care, through a project organized by Dr. Beth Elness-Hanson, Mama Anya.

The lessons are:
1. Biblical Creation Care
2. Maasai Traditional Environmental Knowledge (TEK)
3. Climate Science: Mitigation and Adaptation

Welcome to the second Lesson on Maasai traditional Environmental Knowledge (TEK)These three lessons will enable us to manage the environment created by God, to sustain people, livestock, and all living things found in Maasai land.

| Time | Content |
|---|---|
| 5 |  <br>Teacher: We are going to play a multiple-choice quiz game with two questions. Get in groups of 2 to help each other answer the questions. Get a scrap/blank piece of paper out to write down your answers. |

[1] Gaafar Rizgallah. "AU Guidliness to secure Pastoralism [sec] and prevent conflict in Africa". African Union, 26 Sept 2022. https://au.int/en/pressreleases/20220926/au-guidelines-secure-pastoralism-and-prevent-conflict-africa

1. How much of Tanzania's national income (gross domestic product, GDP) comes from tourism? A) over 10% B) over 15% C) over 20%
   - **Answer: C) over 20%,** which is about 8.25 trillion shillings generated by 1,790,301 tourists who visited Tanzania in 2023 alone.[1]

2. What percent of Tanzania's tourists come to Maasai areas?
   A) 19% B) 29% C) 39%

   - **Answer: C) 39%** Over 13.3% of the tourists visited the Ngorongoro Conservation Area alone (during 2023, *excluding* Arusha National Park and Mt. Kilimanjaro).[2] Adding visits to Serengeti (12.0%) and Tarangire (9.0%), we see that 3 of the top 5 tourist attractions are places in Maasailand! (See teaching notes at the end for the chart for all listings.)

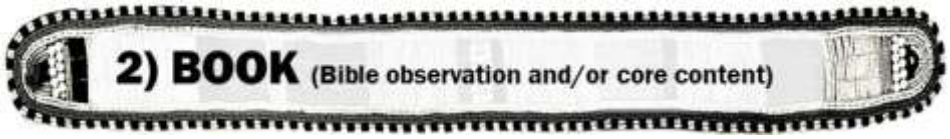
- Raise your hand if you got both questions correct! Hongera sana!
- Develop a hypothesis base on the observations of this data for why you think that so much of the tourism income comes into this northern part of Tanzania? You have 2 minutes to come up with a quick hypothesis.
- Let's get 3 volunteer groups to share their hypothesis with the entire class.
  *Discuss briefly.*

1

## Transition statement: (connecting Hook to Main Point)

- The main reason why Maasai areas are visited by many tourists is the presence of natural environments in the wild.
- This demonstrates the Masai mastery in protecting the environment and biodiversity.
- Now let's take a look at how the Maasai have been dealing with creation care.

5




## Maasai Traditional Environmental Knowledge (TEK)


- Consider the following techniques:

| Sustainable **pastoralism** | Protecting **biodiversity** | Protecting **ecosystems** | Preserving **grasslands** | Environmentally **sustainable livelihoods** |
|---|---|---|---|---|
| | | | | |
| | | | | |

- Now you will form five groups, and each group will discuss one of the five topics
- Discuss the Maasai traditional knowledge (TEK) and creation care practices on your topic.
- then write three points you have discussed in point form on a large sheet of paper which at the end we will paste on the wall.

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## Science


- While listening to the following scientific ways of creation care, each one will identify **one or two new ways** that can expand traditional Maasai creation care for climate change mitigation and/or adaptation.

1. **Pastoralism** in our context is both a livestock management system and a way of life that provides Maasai with the basic life needs.
   - **Sustainable pastoralism** is a livestock production system that manages land and herds in an organized way to provide economic, social, and environmental benefit.
   - Sustainable pastoralist contributes to Environmental services**:** Preserving land and ecosystem, biodiversity conservation, food and water security and animal product, and supporting resilient livelihoods.
   - There is a widespread myth that "*Pastoralist degrade the environment because they hoard animals."* The evidence shows that …degradation occurs where common property system is eroded and where livestock herd are prevented from moving to allow pastures to rest.[2]
   - However, pastoralists must be settled for their own good and preserve land otherwise they might lose their land. Permanent settlements improve their access to provided central services. The best way to effectively manage their livestock is to carefully manage their grazing land.
   - Another widespread myth: *Pastoralist create conflict* "Pastoralism worldwide is characterized by peace, owing to the strong traditions of cooperation and resource sharing amongst pastoralist communities. Where conflicts prevail, there are usually underlying factors such as the erosion of local governance arrangements, expropriation of natural resources or alienation from services and decision making. Conflict is usually a manifestation of failure to provide security and basic services, and uphold basic rights, including common land right."[3]
   - **Four enemies of pastoralism** (for more explanation see Lesson Notes below.)
     - Land grabbing for conservation,
     - Climate change,
     - Non-friendly policies, and
     - Demographic changes.

2. **Protecting Biodiversity:**

- In simple terms, biodiversity refers to all types of life on Earth. Protecting biodiversity that is protection of variety of living species in the world. According to various studies, there may be between 100 million living species on earth.
- The diversity of species (including plants, animals, bacteria, and fungi) and ecosystem keep the global ecosystem in balance, providing everything in nature that we, as humans, need to survive, including food, clean water, medicine and shelter.[4]
- Here are five ways to conserve biodiversity (see lesson notes for more):
  - Prevent the cutting of trees.

[2] Daves,J. (IUCN),Ouedraogo, R (WISP), Hagelberg,N, and M. Niamir-Fuller (UNEP) Brief for GSDR 2015. *Sustainable Pastoralism for the Post 2015 Agenda*
[3] Daves,J. (IUCN),Ouedraogo, R (WISP), Hagelberg,N, and M. Niamir-Fuller (UNEP) Brief for GSDR 2015. *Sustainable Pastoralism for the Post 2015 Agenda*
[4] http://news.un.org>en>story Biodiversity: What is it and how can we protect it? | UN News

- Put a ban on hunting of animals.
- Efficiently utilize natural resources.
- Develop protected areas for animals where no human activities are allowed.
- Poaching and hunting of wild animals should be prevented.

**3. Protecting Ecosystems**

- Let start this subtopic by review the Maasai worldview of ecosystem.
  - The triangle of interdependency.
    - **Side one,** The importance of land (*Oldonyo le Engai* for worship) water sources and good weather *(osupuko and orpurkel* for grazing) for human and livestock survival**.**
    - **Side two**, the importance of livestock and plants (medicine) for human survival and for worship (animal for sacrifice and rituals, trees for altars etc).
    - **Side three,** importance of harmonious relation with fellow humans, God and non-human creation for God's blessing and sustenance of human and non-human creation.
  - Now, let us see how this is similar to the scientific concept of an ecosystem.
    - "An ecosystem is a geographic area where plants, animals, and other organisms, as well as weather and landscapes, work together to form a bubble of life."[5]
    - Ecosystems consist of living organisms and non-living things like temperature, humidity and land**.**
  - Importance of ecosystems
    - All of the Earth's plants and animals rely on ecosystems to provide food and habitat. Ecosystems must maintain a delicate balance in order to stay vital. For example, a deer living in the meadow ecosystem needs water to drink, vegetation to eat and shrubs and bracken to sleep and hide in. If the deer population increases too much for their current ecosystem to provide these things, the extra deer will have to search for food and shelter elsewhere, encroaching on the habitats and ecosystems of other species.[6]
  - Protecting the Earth's Ecosystems (see lesson notes for more clarifications)
    - The ecosystems of the Earth can be protected through responsible use
    - diverse cropping systems that help maintain soil productivity and prevent erosion instead of single crop system.
    - little use of fertilizer
    - Conserve water resources and responsible water usage
    - Proper waste management
    - Avoiding the use of pesticides
    - Planting native species
    - Reforestation
    - Protect wildlife in your area, you can respect wildlife habitats, report instances of illegal wildlife trade or poaching, not support wildlife-exploitation activities.

**4. Preserving grasslands**

[5] "Ecosystem," National Geographic: Education, accessed July 3, 2024, https://education.nationalgeographic.org/resource/ecosystem.
[6] http//siencing.com/the-importance-of-our-ecosystem-ways-to-protect-it

- [Grasslands are also a type of ecosystem, but it will have special focus here in a Maasai context.]
- "Grasslands are found where there is not enough regular rainfall to support the growth of a forest, but not so little that a desert forms. In fact, grasslands often lie between forests and deserts."[7]
  - Grasslands are carbon sinks (meaning they have the ability to store large amounts of carbon). (Grasslands are also an ecosystem, but it will have special focus here in a Maasai context.)
  - Allowing grasslands to rest during the dry season [by moving to *osupuko*] and return from high grounds [*osupuko*] to go to low grounds [*olpurkel*] when the rains return, which is a good way of managing grass, trees, flowers [flora]).
  - "Grasslands store approximately 34% of the global terrestrial stock of carbon according to the World Resources Institute. Unlike forests where vegetation is the primary source of carbon storage, most of the grassland carbon is stored in the soil."[8]
  - "Increased drought and wildfire risk make grasslands more reliable carbon sinks than trees…Trees are still critical. The study does not suggest that grasslands should replace forests on the landscape or diminish the many other benefits of trees."[9]
  - "Threats to natural grasslands, as well as the wildlife that live on them, include farming, overgrazing, invasive species, illegal hunting, and climate change."[3]

**5. Environmentally sustainable livelihoods**

- "…encompasses the skills, assets (both material and social) and the approaches which will be used by individuals and communities in order to survive. The sustainability element implies that these individuals or communities can confront and overcome moments of stress and/or crisis, and that they are able to maintain or even improve current and future skills and assets without exploiting their supply of natural resources."[10]
- Threats for environmental livelihood security (ELS). External influencing factors such as climate change, population growth, and governance can all impact upon attaining ELS.[11]
- There are core resources ("capital") that are considered in sustainable livelihoods: Natural, human, social, physical, and economic resources.[4] (See figure in Teaching Notes at the bottom.)

[7] Christina Nunez, "Grasslands Information and Facts," Environment, March 15, 2019, https://www.nationalgeographic.com/environment/article/grasslands.
[8] Gord Vaadeland, "Grasslands, Forests & Wetlands - Nature's Carbon Capture & Storage Solution," CPAWS, March 22, 2016, https://cpaws.org/grasslands-forests-wetlands-natures-carbon-capture-storage-solution/.
[9] Katherine E. Kerlin, "Grasslands More Reliable Carbon Sink Than Trees," University of California–Davis, July 9, 2018, https://climatechange.ucdavis.edu/climate/news/grasslands-more-reliable-carbon-sink-than-trees.
[10] Desirée Elizondo, "Application of the Sustainable Livelihoods Framework in Development Projects" (United Nations Development Programme, 2017), 1, https://www.undp.org/sites/g/files/zskgke326/files/migration/latinamerica/UNDP_RBLAC_Livelihoods-Guidance-Note_EN-210July2017.pdf.
[11] Researchgate.net. Environmental Science & Policy. December 2015

3

### Question for quick answers

- Identify **one or two new ways** that can expand traditional Maasai creation care for climate change mitigation and/or adaptation.


3

### Maasai


- So, let's now connect these mitigation and adaptation practices with the big picture of the Maasai understanding of the world (worldview).
- These traditional environmental knowledge practices of the Maasai are good for creation care.
  - These creation care practices represent the Maasai understanding of the world that centers on mutual dependence (interdependence) with the environment that is created by *Engai*—seen in caring for people, livestock, all living things, and the land (humans and non-human creation)—which then sustains Maasai life and livelihoods.
    - So, the Maasai understand that human flourishing (well-being) in life comes from harmonious relationships with 1) *Engai*, 2) other people, and 2) non-human creation.
    - These three aspects are seen as a three-legged stool, *olorika*.
    - With all three legs being strong, it can be solid—even on uneven ground—and work optimally.
  - The Maasai concept of blessing (*empiris e Engai*) or curse (*Engo'oki*) as a result of hostile relation between man and God but also between man and non-human creation.
    - This made the Maasai respect the natural laws/customary laws that requires them to take care of creation in order to obtain blessings and avoid curses.
  - Maasai have an age-set system with set of customary laws that prohibit any unnecessary attempt of distraction of biodiversity by the warriors *ilmuran.*
    - Violence towards biodiversity is normally done by children; the uncircumcised *Ilayok* have to be cleansed through rituals before and after circumcision rites. Therefore, it is forbidden and it is shame for *Ilmuran* to destroy biodiversity unnecessarily.

6

### Bible: Biblical Creation Triangle


- This Maasai understanding of the world—represented by a three-legged stool—is similar to the biblical understanding of the world seen in the "creation triangle."[5]
- Biblical scholars call this the "creation triangle," where peace (shalom) comes from harmony with God, others, and non-human creation.
- The peace (shalom) comes from being reconciled (in a right relationship) with God that is lived out in peace with others (social justice) and peace with creation (creation care/environmentalism).
  - Thus, the Christian worldview centers on the gospel—the good news that reconciles sinful and selfish people to the Creator God.

- The power of the gospel enables the transformation that we discussed in the first lesson.
  - Selfishness, apathy (uncaring), and greed are driving the climate change crisis.
  - Good science is not enough. Knowledge doesn't empower us to overcome human selfishness and greed.
  - We need to be transformed! We need to have a meaning and purpose in life that is not just human greed, consumerism, and doing things that make lots of money but are contributing to GHGs and climate change.
  - Living as gospel-centered people gives us a purpose in life to make a difference.
  - The Holy Spirit empowers us and our Christian communities to live out our biblical convictions in a way to be a blessing to the world.
- As followers of Jesus, we live out our faith—empowered by the Holy Spirit—in service to others (social justice) and service to the creation (environmentalism).
  - Amazingly, that the power that raised Christ from the dead is available to us who believe!
  - Ephesians 1:18–20 "I pray that the eyes of your heart may be enlightened in order that you may know the hope to which he has called you, the riches of his glorious inheritance in his people, and his incomparably great power for us who believe. That power is the same as the mighty strength he exerted when he raised Christ from the dead and seated him at his right hand in the heavenly realms…"

2

## Look continued: Hope


- Thus, we can face the challenges of climate change with **hope**.
- First, we know that our Creator, the God of Hope, loves the world, and **God will never abandon it.**
- Second, as followers of Jesus Christ, **we are empowered by the Holy Spirit** to be a blessing to others (social justice) and the creation (environment).

10


- Questions for quick short answers.
  - Why is it important to maintain ecosystems?
  - How can I conserve water in my surroundings?
  - What are some restoration projects I can join?
  - What can I do to protect wildlife in my area?

- **Engaging in restoration projects**
  - Participating in ecosystem restoration projects allows you to actively contribute to the rehabilitation of degraded habitats. Restoration projects aim to enhance ecological integrity and improve the wellbeing of both ecosystems and local communities.
  - Trees play a crucial role in carbon sequestration and provide habitat for various species.

- **Educating and raising awareness**

| | |
|---|---|
| | ○ **Stay informed:** Keep yourself updated on environmental issues, conservation practices, and scientific advancements related to ecosystems.<br>○ **Share knowledge:** Raise awareness among your co-workers, family, friends, and community about the importance of maintaining ecosystems and the actions they can take.<br>○ **Engage in environmental education programs:** Support or participate in local environmental education initiatives that promote ecological literacy and provide training to local communities on matters such as sustainable farming.[12]<br><br>**Song writing**<br>• Each group: Write one stanza of a song about traditional Maasai environmental knowledge and practices that are also best practices of climate change mitigation (reduction). Use the common melody that is known by most students |
| | **Prayer** |
| 45 | **End of Class** |

# TEACHING NOTES:

Brief for GSDR 2015 Sustainable Pastoralism for the Post 2015 Agenda Davies, J. (IUCN), Ouedraogo, R (WISP), Hagelberg, N. and M. Niamir-Fuller (UNEP)*

**OPPORTUNITIES AND BARRIERS TO PASTORALISM FOR GLOBAL FOOD PRODUCTION AND ENVIRONMENTAL STEWARDSHIP.**

There is increasingly robust scientific evidence to show that pastoralism — extensive livestock production in the rangelands — is one of the most sustainable food systems on the planet. Pastoralism is practiced by between 200 and 500 million people worldwide, encompassing nomadic communities, transhumant herders, agro_pastoralists and ranchers, many of whom are facing similar challenges in both developed and developing countries. Global map of pastoralism Pastoral livelihoods, especially in Africa, are portrayed as unproductive and environmentally destructive, leading policy makers and local authorities to inadvertently or sometimes deliberately undermine elements of pastoralism that are known to be vital for sustainability and resilience: for example herd mobility, communal resource management, and adapted local breeds. . Progress in pastoral areas generally falls behind that of other communities, creating poverty and vulnerability that undermine the sustainability of the system. More than two decades of research has provided evidence that pastoralism is economically rational and viable, and is a vital tool for poverty alleviation, and large-scale conservation and ecosystem management. This paper summarizes recent research and scientific analysis to highlight three overlooked facts, three widespread myths, four emerging issues, and a suite of options for a new development paradigm for sustainable pastoralism.

## Three overlooked facts

1. **Mobility of livestock (and wildlife) is essential for the health of dryland ecosystems:** for carbon sequestration, watershed protection, and biodiversity conservation. Under-grazing is often as much of a problem as over grazing. Evidence shows that some form of mobility is essential for both pastoral economies and for sustainable rangelands management.

[12] http://www.green.earth/blog/ how-ca-you-maintain-the-ecosystem-in-your-surrounding-area

2. **Sustainable pastoral systems are** more efficient, productive, and resilient than sedentary, agricultural systems in the rangelands, when all factors and environmental benefits are counted, and they provide healthier products for human consumption. Pastoralism accounts for 25% of the world's land area, and provides the majority of organic meat and milk, much of which remains beyond the reach of existing local and regional markets.
3. **Pastoralism is a universal issue:** it is a logical adaptation for the management of heterogenous, often relatively low-grade resources on a large scale. Although pastoralists in developed and developing countries face different challenges in terms of access to social and financial services, they share many common environmental and economic challenges and opportunities.

## Three Widespread Myths

1. "**Pastoralists degrade the environment because they hoard animals".** Evidence shows that where pastoral mobility and governance institutions are still intact, widespread degradation is rare; degradation occurs where common property systems are eroded and where livestock herds are prevented from moving to allow pastures to rest. This fact is behind environmental payments to encourage mobile herding in countries such as
2. "**Pastoralists must be settled for their own good**, and to preserve land for other uses". Evidence shows that sedenterization usually creates more poverty and environmental damage. The best way to effectively manage rangelands is through carefully timed grazing, which demands herd mobility and intelligent management. When effectively managed, rangelands support not only livestock but also biodiversity, and this combination offers the best options for sustainable and resilient livelihoods. Pastoral people often choose settlement, for example to improve their access to centrally provided services, and yet, adapting such services to remote and mobile populations will achieve great benefits.
3. **Pastoralists create conflict:** Pastoralism worldwide is characterized by peace, owing to the strong traditions of cooperation and resource sharing amongst pastoralist communities. Where conflicts prevail, there are usually underlying factors such as the erosion of local governance arrangements, expropriation of natural resources or alienation from services and decision making. Conflict is usually a manifestation of failure to provide security and basic services, and uphold basic rights, including common land rights.

## Four Emerging Issues

1. **Land grabbing for conservation,** biofuel production, large scale agriculture, mineral extraction, and other activities is occurring at a fast pace. Many countries do not adequately protect pastoral land tenure, and chronically under-invest in these areas. This is made easier where governments classify drylands as "waste lands", allowing them to assume that changing the use of land does not impose a cost. Safeguards are needed to prevent the annexing of critical commonly managed pastoral resources, such as seasonal grazing, access corridors, or watering points.
2. **Climate change** already has an impact on pastoralists, although pastoralism is generally more resilient and adaptive than sedentary farming. Pastoralism is a natural adaptation to climatically uncertain and variable environments, and since climate change will amplify such characteristics pastoralism will increasingly play a role in resilient food production systems.
3. **Pastoralist empowerment** is steadily gaining ground and this is already being felt in changing public policy and sentiment. Although there is a long way to go, pastoralists can no longer be overlooked for being disorganized, ill-informed, and withstanding change. There is a growing pastoralist voice demanding action to uphold their rights and take their livelihoods into consideration in sustainable development.

4. **Demographic changes** affect pastoralists around the world in different ways. In many African countries a growing pastoralist population is surviving on a declining available land area. In a number of industrialized countries the challenge is depopulation of rural areas which leads to insufficient labor for effective herding and breakdown in transmission of local knowledge.

## Economic, Social and Environmental Benefits

- Sustainable pastoralism contributes to soil formation, soil fertility and soil carbon, water regulation, pest and disease regulation, biodiversity conservation and fire management.
- In addition pastoralism contributes to economic growth and resilient livelihoods in lands that are exposed to unpredictable climates and numerous natural hazards.
- Evidence is also increasing that extensively produced livestock products are healthier for consumers than products from intensive systems.
- Pastoral poverty, particularly in the developing world, is the outcome of long-term underinvestment in basic human development: in education, health, security and good governance. On a purely economic basis pastoralism contributes strongly to rural economies, but this wealth is not translated into development.

## Enabling Sustainable Pastoralism

The rising global demand for livestock products (meat, milk, fat, fiber, hides) underlines the urgency for transformation in the production and consumption of livestock products towards greater sustainability. At the same time, the increasing degradation of rangelands highlights the need for sustainable solutions for the conservation and sustainable use of such ecosystems. The Post_2015 Agenda provides an opportunity to work globally towards enabling sustainable pastoralism on healthy rangelands, and to provide a significant share of livestock products in local and international markets. Investment in enabling sustainable pastoralism will rest upon the following six pillars:

1. Innovation in the provision of basic services that are appropriate to the mobile production systems of pastoralists, including renewable energy, mobile health and veterinary services, long distance schools and communications, and safe water for humans and animals;
2. Legal protection of collective land and natural resource rights, and private rights, to manage grazing areas, wildlife, water sources and livestock movement corridors, risk and resilience, and to enable land use planning and ecosystem management by pastoralists;
3. Equitable value chains and market access that provide economic opportunities to pastoralists through information, diversification, certification, niche markets, payments for ecosystem services, sustainable tourism, and local and sub-regional marketing infrastructure;
4. Empowered pastoralist institutions and systems through respect for indigenous knowledge and breeds, enabling knowledge sharing and networking, professional certification of herders and shepherds in sustainable land management, Free, Prior and Informed Consent, and improving representation in decision making;
5. Supportive policies and fair trade by creating a more level playing field with other sectors — where subsidies are fair, tariffs are levied for environmental costs of different sectors, and banking, credit and insurance are available;
6. Awareness of consumers and producers to respect the environmental values of rangeland biodiversity, genetic diversity of breeds, the cultural values of pastoralism and the health benefits of pastoral products.

## Source

*WISP (World Initiative for Sustainable Pastoralism) with support from IUCN, UNEP and IFAD, has worked to bring the science of pastoralism to the stage of policy makers.*

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## Strategies for Biodiversity Conservation

Following are the important strategies for biodiversity conservation:

1. All the varieties of food, timber plants, livestock, microbes and agricultural animals should be conserved.
2. All the economically important organisms should be identified and conserved.
3. Unique ecosystems should be preserved first.
4. The resources should be utilized efficiently.
5. Poaching and hunting of wild animals should be prevented.
6. The reserves and protected areas should be developed carefully.
7. The levels of pollutants should be reduced in the environment.
8. Deforestation should be strictly prohibited.
9. Environmental laws should be followed strictly.
10. The useful and endangered species of plants and animals should be conserved in their nature as well as artificial habitats.
11. Public awareness should be created regarding biodiversity conservation and its importance.
12. **Why should you conserve biodiversity?**

    It is believed that an area with higher species abundance has a more stable environment compared to an area with lower species abundance. We can further claim the necessity of biodiversity by considering our degree of dependency on the environment. We depend directly on various species of plants for our various needs. Similarly, we depend on various species of animals and microbes for different reasons.

    Biodiversity is being lost due to the loss of habitat, over-exploitation of resources, climatic changes, pollution, invasive exotic species, diseases, hunting, etc. Since it provides us with several economic and ethical benefits and adds aesthetic value, it is very important to conserve biodiversity.

# You Can Maintain the Ecosystems in Your Surrounding Area in 8 Easy Ways

**1. Promoting biodiversity in your surroundings**

One of the key ways to maintain ecosystems is by promoting biodiversity in our surrounding area. Biodiversity refers to the variety of species, genes, and ecosystems present in a given area. You can support biodiversity by:

- **Planting native species:** Choose native plants when landscaping your surroundings. Native plants provide food and habitat for local wildlife and are adapted to the local climate and soil conditions.
- **Creating wildlife-friendly spaces:** Set up bird feeders, birdhouses, and nesting areas for various wildlife species. Create water sources like bird baths for small ponds to attract diverse wildlife.
- **Avoiding the use of pesticides:** Minimise or eliminate the use of pesticides. Pesticides can harm beneficial insects and disrupt the delicate balance of ecosystems..

**2. Conserving water resources**

Water is a vital resource for all living organisms, and conserving water is crucial for maintaining ecosystems. Here are some ways you can conserve water in your surroundings:

- **Fix leaks:** Check for and repair any leaks in plumbing fixtures, faucets, or irrigation systems. Even a small leak can waste a significant amount of water over time.
- **Water-efficient landscaping:** Use drought-tolerant plants in your surroundings, and consider installing a rainwater harvesting system to collect and reuse rainwater for irrigation purposes. Also, be sure of your plant's watering needs and avoid over-watering.
- **Responsible water usage:** Be mindful of your water consumption habits. Promote efficient water usage at home and in the office, turn off the tap while brushing your teeth, take shorter showers, avoid overwatering gardens, and use shorter wash cycles on washing machines.

**3. Proper waste management**

Effective waste management is essential to prevent pollution and maintain a clean environment. Consider the following waste management practices:

- **Reduce, reuse, recycle:** Practise the 3R principle by reducing waste generation, reusing items whenever possible, and recycling materials such as paper, plastic, glass, and metal.
- **Composting:** Compost organic waste like food scraps and yard trimmings. Composting not only reduces waste but also provides nutrient-rich soil for your garden.
- **Responsible disposal:** Dispose of hazardous materials, such as batteries and chemicals, at designated collection points to prevent environmental contamination.

**4. Supporting local environmental organisations**

Engaging with local environmental organisations is an effective way to contribute to ecosystem maintenance. These organisations work towards conservation efforts, raise awareness, and implement initiatives to protect and restore ecosystems. You can support them by:

- **Volunteering your time:** Offer your skills, time, or resources to local environmental organisations. They often organise events, campaigns, and restoration projects that rely on community participation.

**5. Engaging in restoration projects**

Participating in ecosystem restoration projects like those of like DGB Group allows you to actively contribute to the rehabilitation of degraded habitats. Restoration projects aim to enhance ecological integrity and improve the wellbeing of both ecosystems and local communities. Some restoration project options include:

- Tree planting initiatives: Join tree planting activities in your local area

- Forest restoration through carbon credits: Forests are biodiversity hotspots and provide valuable services like water filtration and flood mitigation. Participate in forest restoration projects to revive and protect these important ecosystems through carbon credits.

**6. Educating and raising awareness**

Education and awareness play a pivotal role in maintaining ecosystems. By educating ourselves and others, we can foster a sense of responsibility and inspire action. Consider the following:

- **Stay informed:** Keep yourself updated on environmental issues, conservation practices, and scientific advancements related to ecosystems
- **Share knowledge:** Raise awareness among your employees, co-workers, family, friends, and community about the importance of maintaining ecosystems and the actions they can take.
- **Engage in environmental education programmes:** Support or participate in local environmental education initiatives that promote ecological literacy and provide training to local communities on matters such as sustainable farming.

**7. Protecting wildlife**

Protecting wildlife is an integral part of maintaining ecosystems. Every species contributes to the balance and functionality of an ecosystem. Here's what you can do to protect wildlife:

- **Respect wildlife habitats:** Avoid disturbing or destroying habitats, especially during nesting or breeding seasons. Support wildlife conservation Swan sitting in a nest.
- **Prevent wildlife trafficking:** Report any instances of illegal wildlife trade or poaching to the appropriate authorities. Don’t support wildlife-exploitation activities such as roadside zoos, circuses with wild animals, and petting of wildlife cubs such as tigers and lions.

**8. Sustainable land-use practices**

Practising sustainable land use is essential for maintaining ecosystems. Consider the following sustainable land-use practices:

- **Sustainable agriculture:** Use sustainable farming techniques on your farm or support local farmers who practise sustainable farming methods that prioritise soil health, biodiversity, and water conservation.
- **Responsible land development:** Encourage responsible land development practices that minimise habitat destruction and prioritise conservation areas.
- **Land restoration:** Promote land restoration efforts in degraded areas, such as reforestation, afforestation, soil rehabilitation, and habitat restoration.

# Frequently Asked Questions (FAQ)

## FAQ 1: Why is it important to maintain ecosystems?

Maintaining ecosystems is crucial because they provide essential services, support biodiversity, and contribute to the overall health and wellbeing of the environment and human society. By maintaining ecosystems, we can ensure the continued provision of clean air, water, and food and promote a sustainable future.

## FAQ 2: How can I conserve water in my surroundings?

You can conserve water in your surroundings by fixing leaks, using water-efficient landscaping, and practising responsible water usage, such as using shorter machine washing cycles, turning off the tap while brushing your teeth, and taking shorter showers.

### FAQ 3: What are some restoration projects I can join?

You can join restoration projects such as tree planting services or forest restoration projects in your surroundings. These projects aim to enhance ecosystem health and resilience.

### FAQ 4: What can I do to protect wildlife in my area?

To protect wildlife in your area, you can respect wildlife habitats, report instances of illegal wildlife trade or poaching, not support wildlife-exploitation activities, and encourage responsible pet ownership.

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[4] Jaqueline Garcia-Yi, "Market Participation and Agro-Biodiversity Loss: The Case of Native Chili Varieties in the Amazon Rainforest of Peru," *Sustainability* 6 (February 1, 2014): 617, https://doi.org/10.3390/su6020615.
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