Lesson Plan #2) Maasai Environmental Knowledge for Creation Care

Note from Beth: This lesson plan was provided to the Maasai collaborative writers 2 months after the writing workshops. After giving the writers time to develop their own ideas and approaches, these lesson plans are designed to be a "conversation partner" in support of reflection on content and active learning pedagogy.

Name	**Lesson 2: Pastoralist Maasai Traditional Environmental Knowledge for Creation Care**	**Teaching Equipment Needed**	• Chalkboard and chalk • Optional: bring a 3-legged stool, *olorika*
Context	Form 2 Biology	**Student Supplies/Handouts**	• Blank paper and pen/pencil

Introduction to the aim of the lessons:

- Welcome to the **second of three lessons** that are about creation care in a Maasai context to better prevent and prepare for the challenges from climate change.
- This is part of a research project prepared by Mama Anya, a former teacher at MGLSS, that is designed to be a blessing to the Maasai.
- Anonymous surveys were taken at the beginning of lesson 1. There will not be a survey at the beginning of lesson 2.

Main Point	**The Maasai understanding of the world** (worldview) **centers on mutual dependence** (interdependence) **with the environment created by *Engai*:** **1. caring for people,** **2. livestock, all living things, and the land** (non-human creation) **3. which then sustains Maasai life and livelihoods.**
Learning Outcomes	As a result of this lesson, the learner will:
Cognitive: Know 	**The Maasai understanding of the world (worldview)** • Know that the Maasai understanding of the world centers on mutual dependence (interdependence) with the environment created by *Engai*—caring for people, livestock, all living things, and the land (humans and non-human creation)—which then sustains Maasai life and livelihoods. • Know that the Maasai understand that human flourishing (well-being) in life comes from harmonious relationships with Engai, other people, and non-human creation. • Understand that Maasai traditional environmental knowledge (TEK) and practices are good for caring for the environment. **Climate change mitigation** • Realize that Maasai traditional environmental knowledge (TEK/creation care) and practices are often similar to best practices of climate change mitigation (reduction).

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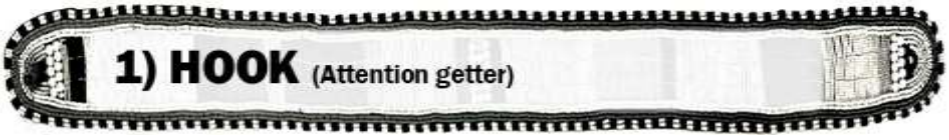
	• Learn news ways to reduce the effects of climate change (mitigation) and increase resilience to the impacts of climate change (adaptation). **Biblical creation triangle**  • Know that the Maasai understanding of the world is similar to the biblical understanding of the world seen in the "creation triangle." • The "creation triangle" represents the peace (shalom) that 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/environmental ethics). **Hope**  • Know that our Creator, the God of Hope, loves the world and will never abandon it. • Understand that followers of Jesus are empowered by the Holy Spirit to be a blessing to others (social justice) and the creation (environment).
Affective: Feel 	• **Proud** to be Maasai, who care for the creation in many good ways. • **Committed and motivated** to practice Maasai traditional environmental knowledge (TEK). • **Hopeful** for their future, because God loves the world and will never abandon it.
Applicative: Do 	• 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). • Identify **one or two new ways** that can expand traditional Maasai creation care for climate change mitigation and/or adaptation. • Write the **second verse** of a song about traditional Maasai environmental knowledge and practices that are also best practices of climate change mitigation (reduction).

Time	Content
7	 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. 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]

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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)

- I have a hypothesis for why 39% of tourism income comes from the northern area of Tanzania, it is because of the Maasai! The traditional environmental care practices of the Maasai include protecting biodiversity. The Maasai do NOT kill and eat wild animals. So, the tourists can come and look at them, and some come to hunt them.
- We will also look at other traditional Maasai practices that care for the environment. Thus, in this lesson we will discuss that the Maasai understanding of the world centers on mutual dependence (interdependence) with the environment created by Engai—caring for people, livestock, all living things, and the land (humans and non-human creation)—which then sustains life.

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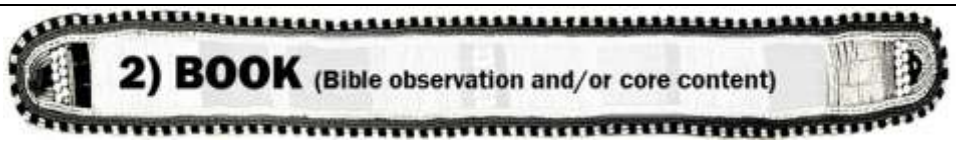

The Maasai understanding of the world (worldview)

- Let's discover more about Maasai *traditional environmental knowledge* (TEK) and creation care practices.
- Work with your discussion partner and develop a list of all the Maasai practices that care for the creation.
- I will give you 5 minutes to work and come up with as many Maasai creation care practices as possible.
  Toward the end of the time when students are working,
  write these 5 column headings on the top of the chalkboard.

Sustainable **pastoralism**	Protecting **biodiversity**	Protecting **ecosystems**	Preserving **grasslands**	Environmentally **sustainable** livelihoods
…				

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- Thanks for your work! We are going to work together and write out all your ideas on

	the chalkboard and put them into these categories. • But first, we need to define these categories. 1. **Sustainable pastoralism** is "A system of dynamically managing livestock and land for economic, social and environmental benefit."[3] This has been a cornerstone of human societies for millennia. 2. **Protecting biodiversity** is sustaining life for "the billions of unique living organisms that inhabit Earth, and the interactions among them." [4] • The biodiversity is "at risk from "deforestation, intensive mono-culture [agriculture], urbanisation), direct exploitation such as hunting and over-fishing, climate change, pollution, and invasive alien species. • "Preserving biodiversity is paramount, not only for its intrinsic value, but also because it provides us with e.g., clean air, fresh water, good quality soil and crop pollination. • "It helps us fight climate change and adapt to it, and [it] helps reduce the impact of natural hazards. Thus, its decline has fundamental consequences for society, the economy and human health."[5] 3. **Protecting ecosystems.** "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."[6] • "Ecosystems contain *biotic* or **living**, parts, as well as *abiotic* factors, or **nonliving** parts. Biotic factors include plants, animals, and other organisms. Abiotic factors include rocks, temperature, and humidity."[7] 4. **Preserving grasslands** [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."[8] • "Depending on how they're defined, grasslands account for between 20 and 40 percent of the world's land area. They are generally open and fairly flat, and they exist on every continent except Antarctica, which makes them vulnerable to pressure from human populations. • "Threats to natural grasslands, as well as the wildlife that live on them, include farming, overgrazing, invasive species, illegal hunting, and climate change."[9] 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] • There are core resources ("capital") that are considered in sustainable livelihoods: Natural, human, social, physical, and economic resources.[11] *See figure in Teaching Notes at the bottom.*
5	**Maasai traditional environmental knowledge (TEK)** • So, let's put into these category headings on the blackboard the things from your lists. *The teacher can add information from the following list into the categories in the table drawn on the blackboard.* 1. **Sustainable pastoralism** (semi-nomadic pasturing of cattle)

- "…pastoralism was…a highly productive system of land use that was more compatible with wildlife conservation than other rural production systems."[12]
- "Once vilified as a destructive land use, since the late 1980s pastoralism has come to be understood as the livelihood system most compatible with wildlife. Unlike agriculturalists, who directly compete with wildlife habitat for productive land, pastoralists typically manage their rangelands in ways that support both wildlife and livestock."[13]
- "Pastoralism is the dominant livestock production system in most of Africa. Pastoral practices are based on local endogenous knowledge of both the environment and the animal. It is based on the continued capacity to adapt to a harsh environment, characterized by the scarcity, dispersion and variability of natural resources over vast territories."
- Making strategic and sustainable use of land areas where, "Farming in the arid and semi-arid zones is socially unacceptable (low food security because of crop failure risks) and economically not feasible."[14] Arid lands "…are unsuitable for rainfed agriculture (the driest spot [in Monduli District] is Mfereji village in the rift valley with about 200 mm rainfall annually). Soils are generally shallow and not fertile."[15]

2. Protecting biodiversity

- Not hunting wild animals or poaching, because they are not used as food sources.
- Even lion hunting, a former prestigious act for a warrior, is no longer supported.

3. Protecting ecosystems

- "Manzano and others pointed to a growing body of scholarly research demonstrating what the Maasai had long known: that their management of the land did not degrade the Serengeti ecosystem but had actually helped sustain and even create it—the grasslands the Maasai had cultivated for hundreds of years were the same grasslands that many wild animals needed to thrive."[16]
- Not cutting down wood, in general, no logging industry; no mangrove destruction. Rather scrounging for deadwood for fires.
- Not burning for slash and burn agriculture. Perhaps limited burns for pest management.
- Not making charcoal.

4. **Preserving grasslands, which 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."[17]
- "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."[18]

5. Environmentally sustainable livelihoods

- Not engaged in carbon generating industries/agro-business/etc.
- No CO_2 producing industry. However, cows do produce some methane, CH_4.

	• Not using artificial fertilizers that cause phosphate and nitrate runoff and water pollution. Not using herbicides and pesticides used in agro-business. • No blast fishing. • No mining industries, which put arsenic, lead, copper pollution or contamination into groundwater. • No hydrocarbon oil spills from shipping refuse on the ports and plastic wastes from land-based sources as well as excess nutrients from wastewater disposal in the ocean. • Traditional Maasai pastoralists do not significantly contribute to the environmental challenges of urban cities.
4	**Climate change mitigation and adaptation**  *This section is to help student realize that Maasai traditional environmental knowledge (TEK/creation care) and practices are often similar to best practices of climate change mitigation (reduction).* • Now, let's work together and identify which of these practices are also best practices of climate change **mitigation** (reduction) and/or **adaptation** (increased resilience for climate change impacts). This will help us understand the differences between **causes** and **impacts**. Let's first define these two words. • "**Mitigation** [reduction] measures are those actions that are taken to reduce and curb greenhouse gas [GHG] emissions." • "**Adaptation** measures are based on reducing vulnerability to the effects of climate change. • "Mitigation, therefore, attends to the causes of climate change, while adaptation addresses its impacts."[19] *This step does not need much time and effort. After it is evident that the students understand the difference between mitigation and adaptation, then move on to the next concept.* • Are there practices that the Maasai don't traditionally do, but these are things that they could easily do without a lot of resources?  *Do not put a lot of time into this question at this time. Lesson 3 will go into more detail, but repetition is a good teaching method, and this also reinforces that there is new knowledge that can be used.* • **Plant trees** which absorb CO_2. (Mitigation) • Use more **efficient wood burning cooking stoves** to reduce burning of wood (which puts GHGs into the environment).[20] (Mitigation) *See Teaching Notes on burning biomass at the bottom.* • Integrate **water harvesting** and storage mechanisms.[21] (Adaptation) • Put in place **food security** enhancement strategies.[22] (Adaptation)

3) LOOK (interpretation/reflection on core content)

Maasai traditional environmental knowledge (TEK)

3

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.

Biblical creation triangle

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- 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."
- Biblical scholars call this the "creation triangle," where peace (*shalom*) comes from harmony with God, others, and non-human creation.[23]
- 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!

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	• 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	**Hope** Thus, we can face the challenges of climate change with **hope.** **1.** First, we know that our Creator, the God of Hope, loves the world, **and God will never abandon it.** **2.** 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).
0 0	 *Due to limited time, focus on the song competition application.* **In your conversation group of students:** • Identify three ways that Maasai traditional knowledge and creation care practices are also best practices of climate change mitigation (reduction) and/or adaptation (increased resilience for climate change impacts). • Identify one or two new ways that can expand traditional Maasai creation care for climate change mitigation and/or adaptation.
15	**Song competition** Remember, as part of this special project, there will be a song competition. • Get in the same groups from the first lesson, continue writing your song to the same traditional Maasai tune. • Your first verse was about **God commissioning us to care for God's good creation.** • Now write the **second verse** of a song **about traditional Maasai environmental knowledge** and practices that are also best practices of climate change mitigation (reduction). • Remember, the guidelines are: 1. Take a traditional Maasai tune and write new words based on this lesson. 2. You can adapt the traditional Maasai tune, but it must be something that your family back in Maasailand will enjoy. 3. The language must be Maa. 4. The content of the verses needs to connect to the lesson content. 5. There will be a minimum of 3 verses, one for each lesson. 6. Your group must be a minimum of 3 Maasai students who are in the classroom now. You can have more people. 7. Later, we will have a competition judged by Dr. Seth Sululu, a Maasai professor of music at Tumaini University Makumira. 8. The winning group will have their song professionally produced at the Cultural Arts Center at TUMA for free distribution in Maasailand.

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	• To repeat our task: write the **second verse** of a song about traditional Maasai environmental knowledge and practices that are also best practices of climate change mitigation (reduction). *Provide as much time as possible to work on writing a song verse.* *At the end of the time:* • Can we have 2 or 3 groups share their verse with us? Only volunteer if you are ready and can sing it without much delay. *At the end of the lesson, encourage the development of the song verses.* • You may keep working on your verse for the song competition after classes. • In the next and last lesson, you will also add one more verse. So, this project will continue to develop.
50	**End of Class: If time, review main point.**

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TEACHING NOTES:

Resources

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[3] Razingrim Ouedraogo, "Pastoralism to Sustaining Rangelands Ecology" (World Initiative for Sustainable Pastoralism, August 9, 2016), https://openknowledge.fao.org/server/api/core/bitstreams/cccf94e5-04fa-4ef1-a0e3-05423b6fe584/content#:~:text=A%20system%20of%20dynamically%20managing,economic%2C%20social%20and%20environmental%20benefit.
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[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.
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[13] Gardner, 24.
[14] J. Douwe Meindertsma and Jan J. Kessler, eds., *Planning for a Better Environment in Monduli District* (Rotterdam: Netherlands Economic Institute, 1997), 46.
[15] Meindertsma and Kessler, 43.
[16] Stephanie McCrummen, "'This Will Finish Us,'" *The Atlantic*, April 8, 2024, 25.
[17] 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/.
[18] 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.
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